REVISION OF THE NEW WORLD PILOPHORINI (HETEROPTERA: MIRIDAE: PHYLINAE)

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ABSTRACT

The Pilophorini of the New World, including the genera *Alepidiella* Poppius (1 species), *Pilophorus* Hahn (44 species, 7 described as new), and *Sthenaridea* Reuter (7 species, 4 described as new) are revised. *Alepidea* Reuter is synonymized with *Pilophorus* and *Paramixia* Reuter is synonymized with *Sthenaridea* Reuter. The following species synonymies are created (junior names first): *Pilophorus depictus* Knight = *P. furvus* Knight; *P. pinicola* Knight = *P. amoenus* Uhler; *P. crassipes* Poppius and *P. banksianae* Knight = *P. crassipes* Heidemann; *P. desertinus* Knight, *P. hesperus* Knight, *P. jezzardi* Knight, *P. mexicanus* Knight, and *P. microsetosus* Knight = *P. tibialis* Van Duzee; *P. barberi* Knight = *P. americanus* Poppius; *P. merinoi* Knight = *P. clavicornis* Poppius; *P. bellula* Hussey and *P. gracilis squamosa* Knight = *P. gracilis* Uhler; *P. australis* Knight = *P. brunneus* Poppius; *P. nicholi* Knight and *P. utahensis* Knight = *P. discretus* Van Duzee; *P. hirtus* Knight = *P. longisetosus* Knight; *P. tanneri* Knight = *P. salicis* Knight; *P. opacus* Knight = *P. vicarius* Poppius; *Psallus politus* Uhler and *Sthenarus plebejus* Reuter = *Sthenaridea vulgaris* (Distant). Line drawings are presented for the antennae, male genitalic structures, and pronotum and hemelytra of all species; habitus views are presented for 10 species; scanning electron micrographs are presented for setal types, surface structure, and vesical structure. Keys to the genera and species are included.

INTRODUCTION

The tribe Pilophorini as recognized by Wagner (1955) and Schuh (1974) contains 13 genera, with most of the approximately 140 species distributed in the Old and New World tropics and adjacent areas of the Palearctic and Nearctic. Schuh (1974, 1976, 1984) elucidated the monophyly of the group based on the following characters: (1) head concave behind; (2) body with laceolate scalelike setae, often in aggregations; (3) pretarsi with lamellate, recurved, and apically convergent parempodia; (4) female genitalia evaginated along the posterior margin of the posterior wall; (5) male genitalia with the vesica usually not twisted and with a modified and much reduced secondary gonopore.

The New World *Pilophorus* have never been revised, although a number of useful papers have appeared over the years. Poppius (1914a) was the first to elucidate the fauna in detail, describing seven new species of *Pilophorus* and incorporating what was known about the fauna into a world key for the genus. Knight (1923, 1926a, 1941) described several new species of *Pilophorus* and, like Blatchley (1926), provided keys to the species from the eastern United States. Kelton (1980) diagnosed and keyed the species of *Pilophorus* from the Canadian prairie provinces.

Knight (1968), who was the first to treat *Pilophorus* from the western United States, described 14 new species and provided a key. Later, he (1973) summarized knowledge of the North American *Pilophorus* fauna with a key, descriptions of eight new species, and a summary of distributional and host data. Knight's more recent works were based solely on his own collections. Furthermore, he often described species from single male or female specimens. In many cases his only criterion for differentiating species was a comparison of the length of antennal segment 2 with the distance from the "apex of the clypeus to the base of the pronotum." For these reasons he described several *Pilophorus* species which we consider to be synonyms. No systematic work on North American *Pilophorus* has made use of the male genitalia, the only published illustrations being those provided by Kelton (1959) in his morphological study of male genitalia in the Miridae.

No comprehensive papers exist for New World members of the genus *Sthenaridea*. The group has a long history of flawed diagnoses, as evidenced by the lengthy generic synonymy. Even though aspects of the male genitalia were illustrated for two species by Carvalho (1948) and Maldonado (1969), no comparative study of these structures has ever been undertaken for the New World fauna.

The monotypic *Alepidiella* has usually been treated in conjunction with work on other groups.

In light of this history, we have attempted to resolve problems of taxon recognition by examining specimens from many collections, by taking a critical approach to the use of measurements as diagnostic characters, by

basing diagnoses of all species on males, and by illustrating male genitalia of all species.

SPECIES RECOGNITION

Variation among species in the Pilophorini is in some cases very subtle. To avoid possible ambiguity we offer the following description of our approach to species recognition.

SEXUAL DIMORPHISM: Sexual dimorphism is almost nonexistent in *Sthenaridea* and is very limited in *Pilophorus* as compared to some myrmecomorphic phylines (e.g., *Coquillettia* Uhler). The most strongly dimorphic species in the New World fauna is *P. schaffneri*, in which the hemelytra in the females are conspicuously shorter than in the males but still cover the entire abdomen. Otherwise, pilophorine females are usually slightly larger than males, with the hemelytra somewhat less elongate, and like most phylines, the eyes slightly smaller as compared to the total size of the head. Because of size variation between sexes, and because size often serves as a convenient distinguishing character, we have diagnosed all species only on the basis of male specimens. Therefore, when using the key and the diagnoses it is always helpful—and sometimes essential—to have specimens of both sexes for comparison.

MALE GENITALIA: The male genitalia have been widely used in systematic work on the Old World Pilophorini but never for the New World fauna. Western European *Pilophorus* have been treated in greatest detail by Wagner; however, Wagner's (e.g., 1952, 1973) presentation of information on the male genitalia is of limited value because none of his drawings are accurate. These illustrations omitted the mesial vesical spine, which according to our dissections is present in all western European and probably all Palearctic species, as well as most species from southeast Asia (Schuh, 1984). Male genitalia of *Sthenaridea* from the New World have been illustrated by Carvalho (1948) and Maldonado (1969) and from Africa and the Orient by Linnavuori (1975) and Schuh (1974, 1984).

Male genitalia in New World *Pilophorus* are of great value in the recognition of species groups. Within a group, genitalic morphology is distinct and reasonably constant. However, only a few species can be recognized by genitalic morphology alone. In contrast, the male genitalia in *Sthenaridea* appear to allow for discrimination of all species and represent the only way to accurately recognize some of them.

VESTITURE: Knight and others have used attributes of the vestiture to diagnose species of North American *Pilophorus*. These are of three types: silvery scalelike setae (figs. 1A, 3F), which appear to represent a synapomorphy for the Pilophorini (Schuh, 1974, 1984); reclining, suberect, or erect simple setae which are sometimes bristlelike (figs. 1B–E); and slightly flattened, recumbent, shining setae (fig. 1B).

With regard to the scalelike setae, most of Knight's observations seem to be valid. However, our studies indicate that the criteria he applied to simple setae were not uniform, and although some of the species he recognized on the basis of vestiture type appear to be valid (e.g., *setiger* Knight, with long erect setae covering most of the dorsum), others (e.g., most of the synonyms of *tibialis* Van Duzee) do not. Many couplets in our key rely on vestiture, but there is some infraspecific variation (e.g., in *tibialis* Van Duzee, *vicarius* Poppius) which must be taken into account to accurately identify species.

COLORATION: Color has been used by previous authors to diagnose some *Pilophorus* species. Our studies indicate that coloration of the body and hemelytra is often helpful in recognizing species, but it is fallible. Much more valuable is the coloration of antennal segments 3 and 4; however, these segments are easily broken off and are frequently missing in preserved specimens. When present, they allow for unequivocal recognition of otherwise difficult-to-separate species such as *americanus* and *tibialis*. In other species assemblages, such as the *clavatus* group, antennal coloration is comparatively monotonous and of only limited use.

LENGTH OF LABIUM: Knight (1973) used length of the labium as a diagnostic character for several of the species of *Pilophorus* he recognized. We have examined this attribute carefully and conclude that in only one case, *Pilophorus walshii*, is the length of the labium distinctive, and that other characters must be used to recognize all other species.

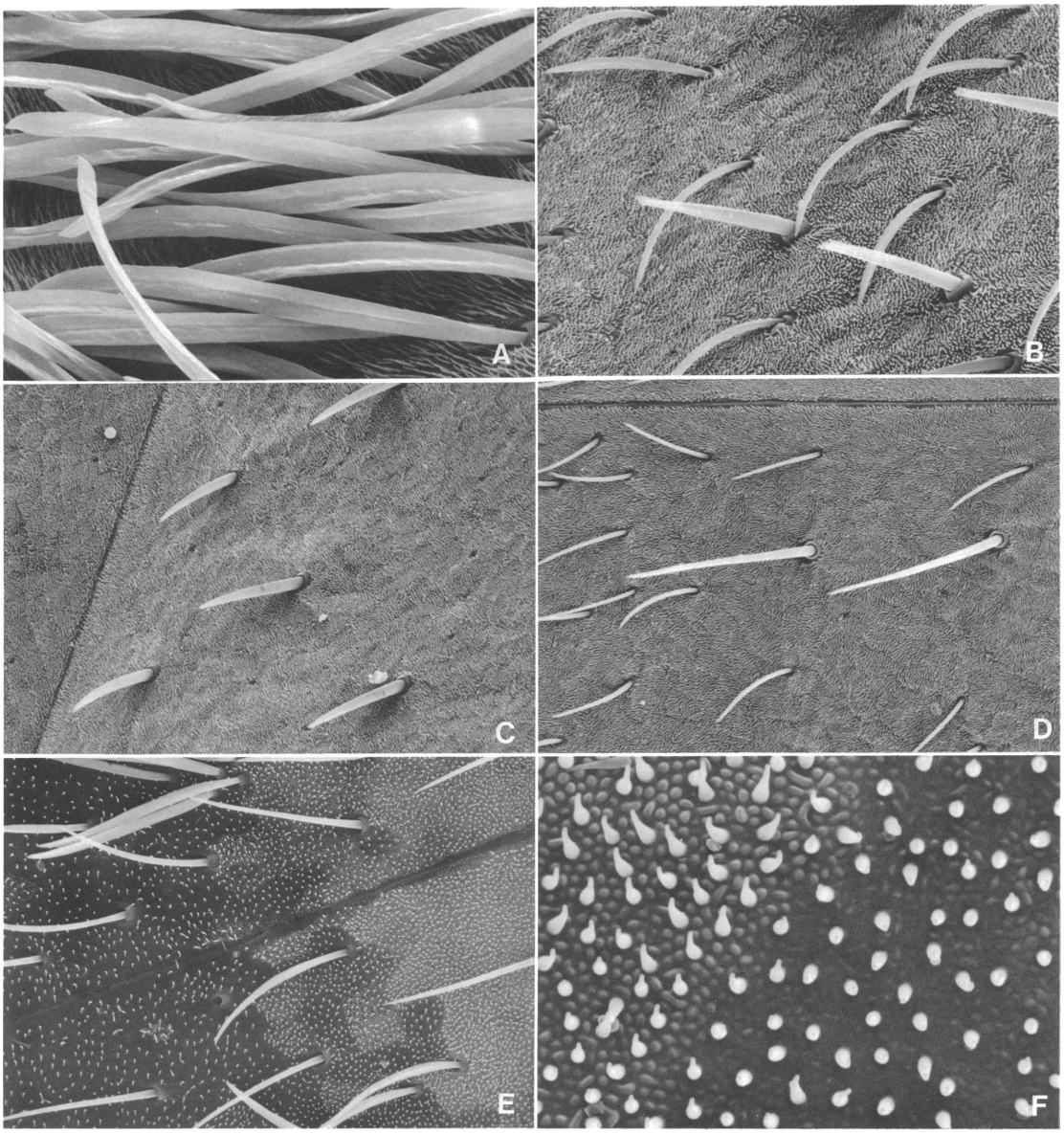

Fig. 1. **A.** *Pilophorus vicarius*, scalelike setae on hemelytron (1800×). **B.** *Pilophorus vicarius*, recumbent shining and erect setae on hemelytron (875×). **C.** *Pilophorus walshii*, common setae on hemelytron (525×). **D.** *Pilophorus longisetosus*, reclining and erect setae on hemelytron (500×). **E.** *Pilophorus juniperi*, common and scalelike setae, and surface texture on hemelytron (775×). **F.** *Pilophorus longisetosus*, structural detail of hemelytral surface showing change in texture (6750×).

MATERIALS AND METHODS

ORGANIZATION: This revision is organized by species groups for comparative purposes. Not all of the groups recognized in the paper are necessarily monophyletic, a matter that will require integration with the Old World fauna.

MEASUREMENTS: Some measurements are listed in the diagnoses, descriptions, and keys.

A complete listing of five measurements for all species is given in table 1.

SPECIMENS EXAMINED: We attempted to examine as much material as possible. The approximately 9000 specimens studied included the types of all but three species native to the New World, as well as many of the specimens studied by Uhler and nearly all those seen by Knight when he prepared his 1968 and 1973 papers. This effort has allowed us to designate several lectotypes, reidentify material examined by previous authors, and correct distributions of species such as *americanus*, *clavatus*, *neoclavatus*, *perplexus*, *tibialis*, and others which have been routinely misidentified.

Kelton (1982a, 1982b) recorded *Pilophorus confusus* (Kirschbaum) from Nova Scotia; he provided an excellent figure of this European species. In view of the singular record and the fact that we examined no specimens, we have not included *confusus* in our species treatments.

Locality data are recorded under Specimens Examined. Holotypes are recorded separately, with data being transcribed exactly from the labels. Counts of numbers of specimens examined do not include holotypes. Dates for previously described *Alepidiella* and *Pilophorus* are noted for earliest and latest records of capture only; no dates are given for previously described species of *Sthenaridea*. Because of the relatively large numbers of specimens available for most species, depositories are given only for the holotypes and new species, with summary information on depositories included for all other specimens.

HOSTS: Host information is recorded in summary, and repeated in a form similar to what was found on the locality labels. Some label data clearly represent sitting records, such as *Pilophorus americanus* on *Acacia*, rabbitbrush, and *Ribes*, and *P. tibialis* on *Artemisia*. Available information suggests that most, if not all, *Pilophorus* species are at least in part predaceous. In most cases, aphids and other homopterans seem to be the prey, and plant host specificity on the part of *Pilophorus* may be influenced by the host specificity of the prey. Of the two major host groupings, those that develop on the Coniferae seem to be much more restricted in their occurrence than those that breed on dicotyledonous plants.

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We also thank the following individuals and their respective institutions. The abbreviations listed are used in the Specimens Examined section:

AMNH	American Museum of Natural History
BM[NH]	William R. Dolling, British Museum (Natural History), London
CARP	Diego Carpinteiro, Buenos Aires, Argentina
CAS	Paul H. Arnaud, Jr., California Academy of Sciences, San Francisco
CNC	Leonard A. Kelton and Robert Foottit, Biosystematics Research Centre, Agriculture Canada, Ottawa
CU	James K. Liebherr and E. Richard Hoebeke, Department of Entomology, Cornell University, Ithaca, New York
HM	Antti Jansson, University Zoological Museum, Helsinki
JCMC	José C. M. Carvalho, Rio de Janeiro, Brazil
JM	Jenaro Maldonado C., Cayey School of Medicine, Cayey, Puerto Rico
JTP	John T. Polhemus, Englewood, Colorado
KU	Peter D. Ashlock and Alex Slater, Snow Entomological Museum, University of Kansas, Lawrence
LSU	Joan Chapin and David A. Rider, Entomology Museum, Louisiana State University, Baton Rouge
MNRJ	José C. M. Carvalho, Museu Nacional de Historia Natural, Rio de Janeiro, Brazil
MSU	Roland L. Fischer, Department of Entomology, Michigan State University, East Lansing

OSU John D. Lattin, Department of Entomology, Oregon State University, Corvallis
PDA Alfred G. Wheeler, Jr., Pennsylvania Department of Agriculture, Harrisburg
TAM Joseph C. Schaffner, Department of Entomology, Texas A&M University, College Station
TJH Thomas J. Henry, Personal Collection
UCB John Chemsak, Department of Entomology, University of California, Berkeley
UCD Robert O. Schuster, Department of Entomology, University of California, Davis
UCR John Pinto and Saul Frommer, Department of Entomology, University of California, Riverside
UID William F. Barr, Department of Entomology, University of Idaho, Moscow
UM Barry OConnor, Museum of Zoology, University of Michigan, Ann Arbor
UNAM Harry Brailovsky, Instituto de Biologia, Universidad Nacional Autonoma, Mexico, D.F.
USNM Thomas J. Henry and Richard C. Froeschner, National Museum of Natural History, Washington, D.C.
USU Wilford J. Hanson, Department of Biology, Utah State University, Logan
WAG René H. Cobben, Department of Entomology, Agricultural University, Wageningen, Netherlands
WSU Willam J. Turner, Department of Entomology, Washington State University, Pullman
ZIL I. M. Kerzhner, Zoological Institute, Leningrad, USSR

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Kathleen Schmidt prepared the dorsal view illustrations. We thank her for her precise attention to detail and for the opportunity to grace this paper with her work.

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SYSTEMATICS

KEY TO GENERA OF NEW WORLD PILOPHORINI

1. Sericeous scalelike setae scattered, not in patches, always present on thoracic pleuron, and sometimes on dorsum and abdominal venter 2
– Sericeous scalelike setae on dorsum arranged in patches on scutellum and usually as transverse bands on the hemelytra (figs. 5, 7), those on thoracic pleuron aggregated in an elongate patch on the posterior margin of mesepimeron and a tiny patch on the posterior margin of the metepisternum, and usually with a patch anterolaterally on abdominal venter ..... *Pilophorus*
2. Small species, length apex tylus–cuneal fracture never more than 2.00 mm; antennal segment 2 of nearly uniform diameter over entire length; vesica in male a simple tube (figs. 31C, E, 32B, D, 34B, C, E, 35B) ..... *Sthenaridea*
– Larger species, distance apex tylus–cuneal fracture 2.70 mm or greater; antennal segment 2 distinctly swollen distally (fig. 3E); vesica tubelike, but with a distinct gonopore, a large mesial spine, and some subapical ornamentation (fig. 2C) ..... *Alepidiella*

ALEPIDIELLA POPPIUS

Type species: *Alepidiella heidemanni* Poppius

Alepidiella Poppius, 1914a: 252 (n. gen., desc.). – Blatchley, 1926: 817 (desc.). – Knight, 1927: 40 (host). – Knight, 1941: 119 (dist.). – Carvalho, 1952: 82 (as type).

Diagnosis: See *Alepidiella heidemanni.*

Alepidiella heidemanni Poppius

Figures 2A–E

Alepidiella heidemanni Poppius, 1914a: 253 (n. sp., desc.). – Blatchley, 1926: 817 (desc., dist.).

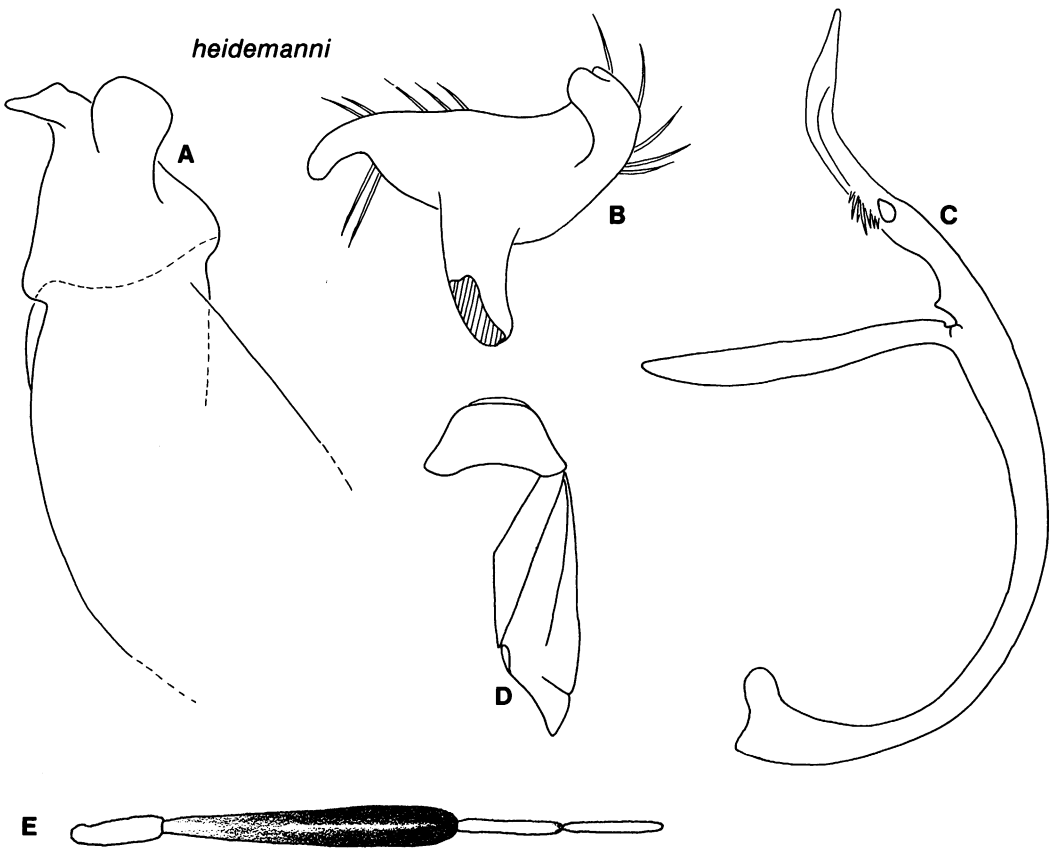

Fig. 2. *Alepidiella heidemanni*. **A.** Phallotheca. **B.** Left paramere, posterior view. **C.** Vesica. **D.** Pronotum and hemelytron, ♂. **E.** Antenna.

– Knight, 1927: 50 (dist., host). – Knight, 1941: 199 (dist., host). – Froeschner, 1949: 144 (key). – Slater and Baranowski, 1978: 173 (key). – Henry and Smith, 1979: 215 (dist.).

HOLOTYPE: ♂, Washington, D.C., 18–VII–[19]07; W. L. McAtee Collector; Collection O. Heidemann; deposited in the USNM.

DIAGNOSIS: Recognized by the generally distributed scalelike setae and the enlarged second antennal segment.

DESCRIPTION: Elongate ovoid, medium size, length apex tylus–cuneal fracture 2.70–2.92 mm. COLORATION: Generally cuneus, castaneous, hemelytra somewhat lighter, contrasting with texture and coloration of remainder of membrane. SURFACE AND VESTITURE: scalelike setae uniformly distributed over entire dorsum and thoracic pleuron, and on lateral ⅓ of abdominal venter. STRUCTURE: Head unmodified, antennal segment 2 swollen as in figure 2E, pronotum without demarcated lobes and not swollen, mesoscutum broadly exposed, scutellum not elevated, costal margin of hemelytra weakly convexly rounded; vesica with a large, simple, lanceolate, median spinelike process (fig. 2C).

HOSTS: *Pinus virginiana, P. taeda.*

DISTRIBUTION: Southeastern United States: west to central Texas, north to Maryland, and south to Georgia.

SPECIMENS EXAMINED: 18 specimens collected between May 29 and July 18; deposited in: AMNH, KU, TJH, TAM, USNM. – USA: **Arkansas:** *Polk Co.:* Cove. **District of Columbia. Florida:** *Marion Co.:* Silver Springs. **Georgia:** *Oconee Co.:* Durham Farm, at light. **Maryland:** *Montgomery Co.:* Glen Echo. **North Carolina:** *Mecklenburg Co.:* Rt 51, 1 mi W of Rt 16 near Matthews. **Okla-**

homa: *Mayers Co.:* Strang. *McCurtain Co.:* Idabel. **Texas:** *Brazos Co.:* College Station, at light. *Harrison Co.:* Karnack.

PILOPHORUS HAHN

Type species: *Pilophorus clavatus* Linnaeus

Pilophorus Hahn, 1826: 22 (n. gen., desc.). – Poppius, 1914a: 237 (key to spp.). – Van Duzee, 1918: 295 (key to North American spp.). – Knight, 1923: 538 (key to Connecticut species). – Knight, 1941: 119 (key to Illinois spp.). – Knight, 1968: 165 (key to western North American spp.). – Knight, 1973: 129 (key to North American spp.). – Kelton, 1980: 274 (key to spp. of Canadian prairie provinces).

Alepidia Reuter, 1909: 75 (n. gen., desc.; type species: *Pilophorus gracilis* Reuter). – Van Duzee, 1917: 380 (cat.). NEW SYNONYMY.

DIAGNOSIS: Recognized by the pronotum with lateral margins and apex flattened, the presence of patches of scalelike setae anterolaterally and often posteriorly on the scutellum (three patches total), an elongate row of scalelike setae on the posterior margin of the mesepimeron and usually a short row of setae on the posterior margin of the metepisternum, usually with patch of scalelike setae on the anterolateral portion of abdominal sternum, a transverse band of scalelike setae anteriorly on the corium placed at the same level as the patch on the posterior margin of the metepisternum, a transverse band or patches of scalelike setae about ⅔ of the way posteriorly on the corium and clavus, and a dark fumose area on the membrane at least partially covering the cells and contrasting in color and texture with the remainder of the membrane (fig. 3E); vesica flat (figs. 6B, 8C, 15A) or twisted (figs. 22B, 23F) and always with a semicircular opening (figs. 3C, D) rather than a heavily sclerotized secondary gonopore of the type found in most Miridae, some glassy spicules subtending the secondary gonopore distally (figs. 3B, D), although these may be weakly developed, and usually with a variously formed spinelike process mesially (figs. 3A, 11F–J).

DISCUSSION: Comparison of the characters used to diagnose *Alepidia* Reuter, including the slender second antennal segment, the nearly straight lateral corial margins, and the dorsum destitute of white pubescence, as well as the structure of the male genitalia, indicates that they fit within the range of variation of *Pilophorus,* and that *Alepidia gracilis* belongs to a group of species including at least *Pilophorus floridanus* and probably several western North American species, all of which we have placed in the *Pilophorus exiguus* group. If *gracilis* were to be treated as a distinct genus, then species groups in addition to that containing *gracilis* would have to recognized as distinct genera.

Of the specimens we examined, two from Florida are not dealt with in the following species treatments because we hesitate to describe new species based on single specimens; nonetheless, we point out the existence of these specimens to encourage additional collecting. One light-trap-collected male from the Archbold Biological Station, Lake Placid (USNM), has the scalelike setae on the hemelytra arranged similarly to those in *floridanus*, but differs by having a much broader pronotum.

The other specimen, also a light-trap-collected male from Homestead (USNM), may represent a *Pilophorus* species. It has aggregations of scalelike setae on the posterior margin of the mesepimeron and metepisternum, as well as a vague indication of anterior and posterior bands of scalelike setae on the hemelytra. It is anomalous among *Pilophorus* species in having the entire dorsum and abdominal venter uniformly covered with scalelike setae that are grouped into small patches on the abdomen; additionally, there is a patch of scalelike setae on the mesepisternum. The aspect of the specimen is much like that of *Hyseloecus* Reuter.

KEY TO THE NEW WORLD *PILOPHORUS* SPECIES

1. Scutellum distinctly demarcated from mesoscutum, moderately to strongly swollen and elevated, sometimes nearly conical; posterior band of setae on corium in the form of several distinct patches (figs. 4D, H, K); abdominal sternum without patches of scalelike setae anterolaterally; relatively small, stout bodied species, length apex tylus–cuneal fracture in males usually less than 2.65 mm 2

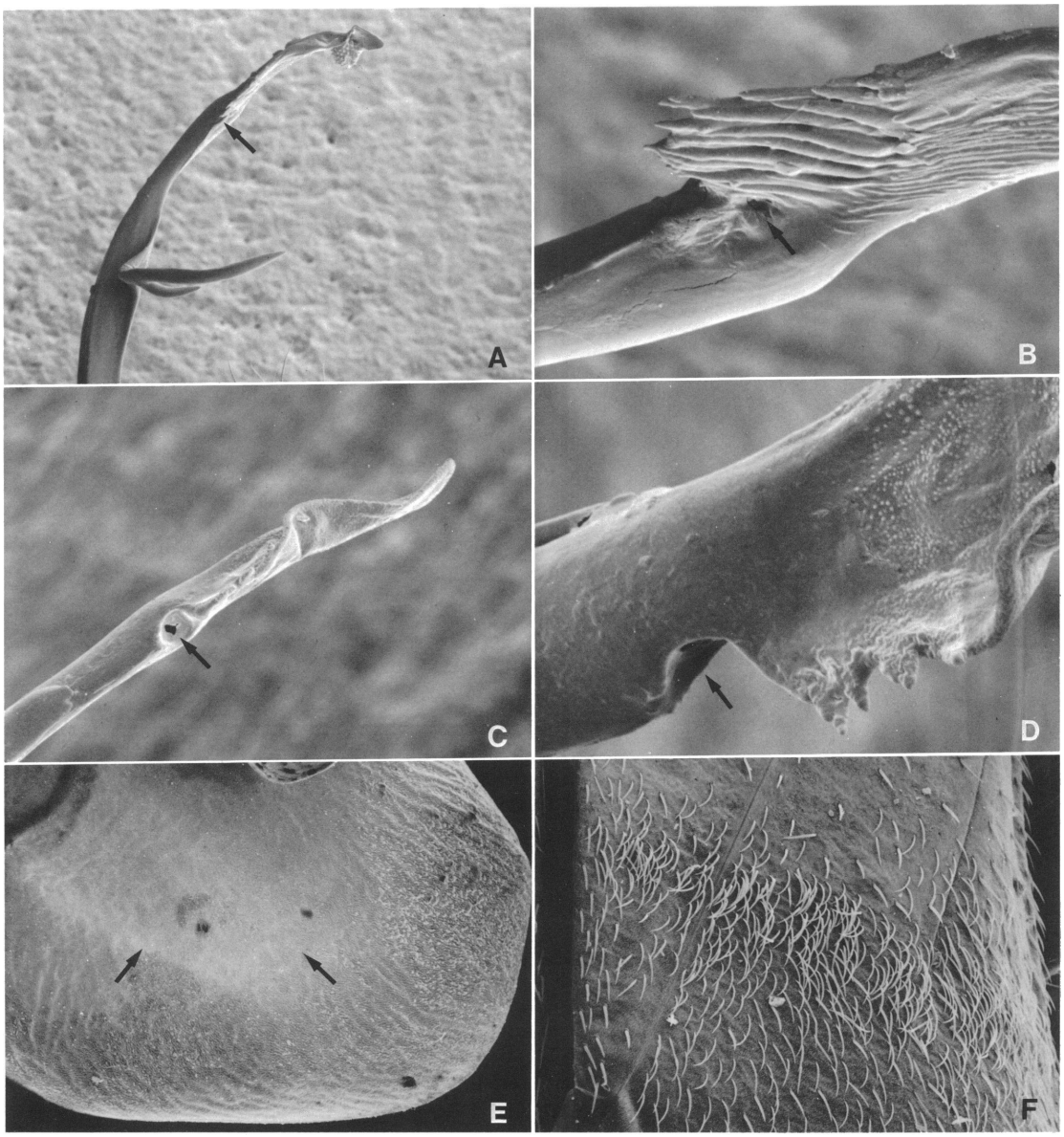

Fig. 3. **A.** *Pilophorus vicarius*, distal half of vesica (250×). **B.** *Pilophorus vicarius*, detail of secondary gonopore and glassy spicules (1350×). **C.** *Pilophorus furvus*, apical portion of vesica (850×). **D.** *Pilophorus furvus*, detail of secondary gonopore and weakly developed glassy spicules (2500×). **E.** *Pilophorus schwarzi*, membrane, arrows indicating change in texture associated with fuscous patch (165×). **F.** *Pilophorus diffusus*, posterior band of scalelike setae on hemelytron (160×).

– Scutellum and mesoscutum not so distinctly demarcated, scutellum at most very weakly elevated, never conical; posterior band of setae on corium complete and unbroken across entire width (sometimes posterior band offset at claval suture); abdominal sternum with patches of scalelike setae anterolaterally; generally larger species with more elongate body form, length apex tylus–cuneal fracture usually greater than 2.50 mm, if not, posterior band of setae on corium always complete and at most slightly offset 4

2. Corium posteriad of posterior band of setae

with uniform texture, contrasting in its entirety with corium anterior to band; scutellum strongly swollen and elevated; length of antennal segment 2 ranging from 0.97–1.08 mm; eastern USA, Pennsylvania south to Mississippi ..... *furvus*

– Corium posteriad of posterior band of setae without uniform texture and not contrasting in its entirety with area anteriad of band; scutellum weakly to strongly swollen; length of antennal segment 2 ranging from 0.63–0.80 mm 3

3. Scutellum strongly swollen, weakly conical; eastern USA, West Virginia south to Florida ..... *heidemanni*

– Scutellum swollen, but only forming a low mound; Florida and Georgia .... *nasicus*

4. Corium posteriad of posterior band of setae with uniform texture across entire width, weakly to highly polished (e.g., fig. 14) . . 5

– Corium posteriad of posterior band of setae polished on exocorium, mattelike, and never polished on endorcorium, if textural distinction between exocorium and endocorium obscure then hemelytra with isolated patches of scalelike setae 18

5. Anterior and posterior band of setae complete and nearly straight, scales usually neatly and compactly arranged; color of body and appendages variable but body never black with entirely pale appendages 6

– Anterior and posterior band of setae usually absent, or if present then arranged in several dispersed patches; body black or nearly so, appendages pale; eastern North America ..... *gracilis*

6. Antennal segment 3 distinctly and completely white (figs. 8F, 9D, H) 7

– Antennal segment 3 never distinctly and completely white 9

7. Relatively small species, length apex tylus–cuneal fracture less than 3.30 mm; antennal segment 2 distinctly incrassate distally (fig. 9D); anterior portion of corium and clavus yellowish to ochraceous; eastern North America, south to Tennessee ... *piceicola*

– Relatively larger species, length apex tylus–cuneal usually near 3.60 mm (specimens from Florida sometimes 3.30 and 3.40 mm), and antennal segment 2 weakly incrassate distally (figs. 8F, 9H); coloration of anterior portion of corium and clavus variable .. 8

8. Anterior portion of corium and clavus smooth and devoid of setae except for a few tiny, dark, recumbent simple setae, coloration of area usually orange or orange red, sometimes much darker and nearly castaneous; pronotal form distinctly campanulate (fig. 8E); some specimens from northern tier states with more strongly incrassate antennal segment 2 but pronotum alway distinctly campanulate; eastern North America, south to Florida ..... *amoenus*

– Anterior portion of corium and clavus not appearing so neat as above, always with some scattered, recumbent, shining setae, coloration usually ochraceous; pronotum trapezoidal, lateral margins nearly straight; eastern North America, south to Tennessee ..... *strobicola*

9. Antennal segment 3 unicolorous dark (e.g., fig. 10D); mesial spine of vesica with one to several denticles apically (figs. 10B, F, 11B, G, H, J) 10

– Antennal segment 3 light proximally and dark distally (e.g., fig. 13F); apex of mesial spine of vesica simple, without denticles ... 13

10. Corium and clavus beset with erect, heavy, black bristles of length slightly less than diameter of antennal segment 3; vertex, frons, and anterior margin of pronotum with some scattered scalelike setae 11

– Corium and clavus rather sparsely covered with recumbent or reclining dark or pale fine simple setae, never beset with heavy erect black bristles; head and pronotum without scalelike setae 12

11. Relatively small, broad-bodied species, length apex tylus–cuneal fracture 3.04–3.27 mm; pronotum flattened, trapezoidal, lateral margins nearly straight (fig. 10I); hemelytra just anterior to posterior band of setae with a broad, contrasting, pruinose band; Mississippi, Florida ..... *henryi*

– Larger, more elongate species, length apex tylus–cuneal fracture 3.50–4.30 mm; pronotum rounded, campanulate, lateral margins concave (fig. 10C); hemelytra at most weakly pruinose anterior to posterior band of setae; eastern North America, south to Alabama ..... *crassipes*

12. Relatively small species, length apex tylus–cuneal fracture 2.44–3.04 mm; mesial spine of vesica with a single apical denticle (fig. 11B); eastern United States; known from *Taxodium* ..... *taxodii*

– Relatively large, extremely variable species, length apex tylus–cuneal fracture 2.83–4.62 mm; mesial spine of vesica with more than 1 (usually 3 or 4) apical denticles (figs. 11G–J); specimens from Durango, Mexico with dark bristlelike setae on dorsum; on *Pinus*, from Durango, Mexico to northwestern United States ..... *tibialis*

13. Relatively small species, maximum length apex tylus–cuneal fracture less than 2.90 mm; pronotum strongly campanulate, highly polished, shining; antennal segment 2 weakly to abruptly incrassate distally .. 14
– Larger species, minimum length apex tylus–cuneal fracture 3.30 mm; pronotum, if campanulate, never highly polished and shining; antennal segment 2 variable .. 15
14. Antennal segment 2 at least 1.25 mm long, distinctly incrassate on distal ⅓ (fig. 6J); posterior band of setae on hemelytra distinctly interrupted laterally on endocorium (fig. 6I); eastern United States .... *laetus*
– Antennal segment 2 not more than 1.15 mm long, weakly incrassate on distal ⅓ (fig. 6E); posterior band of setae on hemelytra not distinctly interrupted as above, nearly contiguous (fig. 6D); northeastern United States ..... *juniperi*
15. Antennal segment 2 greatly enlarged, more or less terete, nearly 2 times diameter of segment 1 (ratio = 1.00:0.57); pronotum distinctly campanulate; known from *Abies concolor*; northern California, southern Oregon ..... *concolor*
– Antennal segment 2 at most weakly incrassate distally, maximum diameter less than 1½ times that of segment one (ratio = 1.00: 0.70); pronotum never distinctly campanulate 16
16. Posterior band of setae on hemelytra diffuse, somewhat scattered, not compactly arranged (figs. 3F, 15B); rather stout bodied species ..... *diffusus*
– Posterior band of scalelike setae on hemelytra neatly and compactly arranged (fig. 13E); more elongate species 17
17. Dorsum usually only with recumbent brown setae, sometimes with a few erect or suberect, dark, weakly bristlelike setae; Rocky Mountains and west ..... *americanus*
– Dorsum always with heavy, erect, black bristlelike setae; Great Plains and east ..... *uhleri*
18. Pronotum campanulate, or if not, posterior band of setae discontinuous on corium, either offset or interrupted at radial vein (fig. 17); median spine of vesica simple, without a subbasal thumblike process (e.g., figs. 18B, F); vesica flat, never twisted (e.g., figs. 18B, F); on Coniferae 19
– Pronotum trapezoidal, seldom campanulate; posterior band of setae on corium always continuous, although sometimes offset at claval suture; median spine of vesica always with a distinct thumblike subbasal process (e.g., figs. 25B, F, J); vesica always twisted, never flat (figs. 25B, F, J); always on dicotyledonous plants 28
19. Posterior band of setae on hemelytra always with the portion of band on clavus offset distinctly posterior to adjacent segment on endocorium (figs. 17, 18C); band sometimes diffuse or nearly absent; eastern and southeastern United States 20
– Posterior band of setae on hemelytra never distinctly offset at claval suture, always nearly complete, and with setae neatly and compactly arranged; mostly western United States and northern Mexico; also Minnesota, Wisconsin, and southern Manitoba 21
20. Head, pronotum, and scutellum black or nearly so, hemelytra often somewhat lighter; legs and antennal segments 1 and 2 pale yellow white, and in strong contrast to body; scalelike setae on hemelytra, if present, usually scattered (fig. 18O); eastern North America ..... *gracilis*
– Head, pronotum, and scutellum castaneous; femora and tibiae reddish to castaneous, antennal segments 1 and 2 reddish, not strongly contrasting with body; scalelike setae on hemelytra arranged in neat patches (fig. 17); Florida ..... *floridanus*
21. Pronotum distinctly campanulate, posterior band of setae on hemelytra not offset at endocorium/exocorium, or if so by only about ½ the length of a seta 22
– Pronotum not distinctly campanulate (especially in males); posterior band of setae on hemelytra offset at endocorium/exocorium by a distance equal to at least the length of a seta 26
22. Relatively small species, length apex tylus–cuneal fracture less than 2.60 mm; somber colored, mostly brown or olive, hemelytra without strongly contrasting areas and not distinctly contrasting with coloration of head, pronotum, and scutellum; antennal segment 2 at most very weakly incrassate distally 23
– Moderately large species, length apex tylus–cuneal fracture greater than 2.60 mm; most of corium and clavus distinctly olive orange or olive brown, distinctly in contrast with exocorium posteriorly, as well as with the nearly black head, pronotum, and scutellum; antennal segment 2 distinctly, although not strongly, incrassate distally .. 25
23. Antennal segment 4 white on proximal half

and dark apically (fig. 16D); southern New Mexico, western Texas, northeastern Mexico ..... *cembroides*

– Antennal segment 4 unicolorous dark, sometimes light on extreme base only (e.g., fig. 16H) 24

24. Profemora and trochanters pale, not strongly contrasting with coxae; very small species, length apex tylus–cuneal fracture 2.00–2.50 mm; distal end of antennal segment 2 about equal in diameter to proximal end, length 0.80–0.95 mm; small species, length apex tylus–cuneal fracture 2.00–2.50 mm; southwestern USA ..... *exiguus*

– Profemora and trochanters cantaneous, strongly contrasting with most of coxae; distal end of antennal segment 2 of greater diameter than proximal end; slightly larger species, length apex tylus–cuneal fracture 2.50–2.60 mm; southwestern USA; known from piñon pine ..... *fuscipennis*

25. Relatively elongate slender species, length apex tylus–cuneal fracture 2.36–3.05 mm, width pronotum 0.77–1.04 mm; posterior band of setae straight, not offset at radial vein (fig. 16G); Arizona, California, Nevada; known from piñon pine ..... *clavicornis*

– Relatively stout bodied species, length apex tylus–cuneal fracture 2.63–3.05 mm, width pronotum 0.90–1.24 mm; posterior band of setae usually offset at radial vein (fig. 20I; but see also fig. 21); far western United States; known from *Pinus ponderosa* ..... *stonedahli*

26. Genae relatively long, about ¾ the height of an eye in lateral view; length apex tylus–cuneal fracture 2.75–3.10 mm; Rocky Mountains; known from *Pinus ponderosa* ..... *dislocatus*

– Genae relatively short, about ⅔ the height of an eye in lateral view; length apex tylus–cuneal fracture less than 2.15–2.60 mm; known from *Pinus* sp., not *ponderosa* 27

27. Most of body and appendages castaneous, in strong contrast with the intense orange of anterior portion of corium posteriorly; antennal segment 2 distinctly, although not strongly, incrassate distally; sexually dimorphic, females with much shorter membrane than males; Mexico; known from piñon pine ..... *schaffneri*

– Body dull brown, appendages light yellow brown; antennal segment 2 not incrassate distally; Minnesota, Wisconsin, southern Manitoba; known from *Pinus banksiana* ..... *geminus*

28. Hemelytra with erect setae over most of surface (most easily visible in lateral view) and with some recumbent, usually shining setae 29

– Hemelytra without erect setae as above, although with some shining recumbent setae 37

29. Posterior band of setae on hemelytra offset anteriorly on clavus by a distance nearly equal to width of the band; head, pronotum, and scutellum nearly black, corium and clavus castaneous to nearly black 30

– Posterior band of setae on hemelytra usually continuous across corium and clavus, if offset, distance never as great as width of band; coloration variable, but head, pronotum, and scutellum never black, although often deep castaneous 31

30. Erect setae on dorsum slender, as long as greatest diameter of antennal segment 2, covering head, pronotum, scutellum and hemelytra; Rocky Mountain states ..... *longisetosus*

– Erect setae on dorsum more bristlelike than in *longisetosus*, slightly shorter than greatest diameter of antennal segment 2, generally restricted to clavus and corium, nearly absent from head, pronotum, and scutellum; corium and clavus sometimes nearly devoid of erect setae in northern populations; western United States ..... *vicarius*

31. Head, pronotum, scutellum, corium, and clavus covered with slender, erect setae 32

– Corium and clavus beset with erect or semierect bristlelike setae; head, pronotum, and scutellum at most with only a few erect setae 34

32. Smaller species, length apex tylus–cuneal fracture not more than 2.70 mm; antennal segment 3 entirely dark, segment 4 light on basal ½; southwestern United States and Mexico ..... *balli*

– Larger species, length apex tylus–cuneal fracture at least 2.65 mm, usually greater than 2.80 mm; antennal coloration variable 33

33. General appearance shaggy; medium brown to light brown species; antennal segment 3 mostly dark, segment 4 light on proximal ½; southern California and northern Baja California ..... *tomentosus*

– Not appearing shaggy, although dorsum with long erect setae; head, pronotum, and scutellum often nearly black, hemelytra rust brown; antennal segment 3 light basally, segment 4 entirely dark; northeastern United States, Minnesota east to New York ..... *setiger*

34. Pronotum distinctly campanulate, transversely rugose and dull; northern California, Oregon, Nevada ..... *schwarzi*
– Pronotum not distinctly campanulate nor rugose, usually at least slightly shining, sometimes distinctly polished 35
35. Meso- and metatrochanters infuscate, unicolorous with femora; vertex relatively wide, interocular space ranging from 0.55–0.60 mm; western United States ... *nevadensis*
– Meso- and metatrochanters pale, contrasting with darker femora; vertex relatively narrower, interocular space ranging from 0.45–0.55 mm 36
36. Head, pronotum, scutellum, and all femora and tibiae castaneous, corium and clavus somewhat lighter but not of contrasting tone; northeastern North America (European introduction) ..... *clavatus*
– Head, pronotum, scutellum, femora, and tibiae orange brown, sometimes darker, clavus and corium golden; western United States ..... *salicis*
37. Relatively large, broad-bodied species, length apex tylus–cuneal fracture at least 3.00 mm, width pronotum at least 1.20 mm; general coloration dark, head, pronotum, and scutellum castaneous 38
– Smaller or more elongate species, length apex tylus–cuneal fracture usually less than 3.00 mm, width pronotum less than 1.20 mm; coloration variable 39
38. Posterior band of setae on hemelytra distinctly offset at claval suture; northeastern United States ..... *neoclavatus*
– Posterior band of scalelike setae not offset, forming a neat, nearly straight line across entire corium and clavus; widespread (European introduction) ..... *perplexus*
39. Posterior band of setae on hemelytra distinctly offset at claval suture by a distance about equal to width of the band 40
– Posterior band of setae on hemelytra continuous across clavus and corium, not offset 41
40. Labium reaching near posterior margin of mesosternum; length antennal segment 2 usually less than 1.15 mm; eastern North Amnerica; known from *Gleditsia triacanthos* ..... *walshii*
– Labium longer, near about apex of mesocoxae; length of antennal segment 2 usually greater than 1.20 mm; eastern North America ..... *brunneus*
41. Short stocky species, length apex tylus–cuneal fracture less than 2.50 mm; corial margin broadly convex and explanate, not sinuous (fig. 23L); southern Arizona .. *explanatus*
– Larger, more elongate species, length apex tylus–cuneal fracture at least 2.50 mm; lateral corial margin distinctly sinuous and not explanate (figs. 22K, L, 23G) 42
42. Antennal segment 3 light basally and contrastingly dark distally; Arizona .... *chiricahuae*
– Antennal segment 3 unicolorous, usually medium to dark brown, proximal portion sometimes gradually paler 43
43. Length apex tylus–cuneal fracture greater than 2.60 mm; Mojave Desert ..... *discretus*
– Length apex tylus–cuneal fracture less than 2.60 mm; western Texas ..... *minutus*

PILOPHORUS FURVUS SPECIES GROUP

Recognized by the short, squat body form, the short second antennal segment, the discontinuous posterior band of scalelike setae on the hemelytra, the absence of patches of scalelike setae on the abdominal venter, the flat vesica without a mesial spinelike process, and the habit of living on species of *Pinus*.

Pilophorus furvus Knight
Figures 3C, D, 4A–E

Pilophorus furvus Knight, 1923: 539 (n. sp., desc.). – Blatchley, 1926: 813 (desc., dist., key). – Bradley and Hinks, 1968: 40 (dist., host). – Knight, 1973: 133 (dist., key).

Pilophorus depictus Knight, 1923: 539 (n. sp., desc., key). – Blatchley, 1926: 814 (desc., dist., key). – Knight, 1973: 133 (dist., key). NEW SYNONYMY.

HOLOTYPE: ♀, Lakehurst, N.J., VI–30; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus depictus* Knight: ♀, Washington, D.C., VII-12-09; deposited in CU.

DIAGNOSIS: Scutellum strongly elevated as in *heidemanni*; posterior band of hemelytral setae transverse and more or less continuous, located at position of change in surface texture of corium, in contrast to *heidemanni* and *nasicus* with a discontinuous band of disjunct patches of setae located anterior to the change in hemelytral surface texture, and antennal segment 2 long.

DESCRIPTION: Moderately small, stout-bodied, length apex tylus–cuneal fracture 2.35–2.89 mm. COLORATION: Body and appendages generally castaneous, hemelytra

anterior to posterior transverse setal band varying between specimens from bright orange to generally castaneous, antennal segment 1 dark on dorsal and ventral surfaces, light on outer and inner surfaces, segment 2 generally castaneous, segments 3 and 4 white on proximal ¼, castaneous distally, metatrochanters white, all first and second tarsal segments white. SURFACE AND VESTITURE: Hemelytra polished over entire width posteriad of posterior transverse band of setae, band of setae composed of 4 more or less distinct patches (fig. 4D); abdominal venter without patches of scalelike setae anterolaterally; dorsum with scattered, neat, short, dark reclining setae. STRUCTURE: Face elongate below eyes in frontal view, with genae raised; pronotal lobes very weakly demarcated, pronotum distinctly inflated posteriorly, mesoscutum broadly exposed; scutellum conspicuously swollen, elevated, and more or less bluntly conical; antennal segment 2 as in figure 4E; metatibiae nearly cylindrical and straight; vesica flat, shaft tubular, without a mesial process (fig. 4B).

HOSTS: *Pinus virginiana, Quercus ilicifolia.*

DISTRIBUTION: Eastern United States: southern Alabama north to central Pennsylvania.

SPECIMENS EXAMINED: 18 specimens collected between June 13 and September 9; deposited in: AMNH, CNC, KU, LSU, PDA, USNM. – USA: **Alabama:** *Clay Co.:* Cheaha St. Pk., Cheaha Mt. *Mobile Co.:* Mobile. **Maryland:** *Prince Georges Co.:*Beltsville. **Mississippi:** *Harrison Co.:* Biloxi. **North Carolina:** *Macon Co.:* Highlands, Westside Cove. *Wake Co.:* Raleigh. **Pennsylvania:** *Dauphin Co.:* Mid. Paxt. Twp., Rt 443, Fish Crk. Val. Sch. *Schuylkill Co.:* Rt 81, 5 mi S of Frackville.

DISCUSSION: Knight (1923) described *furvus* and *depictus* on the basis of single female specimens. He indicated that the two species were closely related but that they could be distinguished by differences in overall size, the coloration of the hemelytra, the length of antennal segment 2 relative to the width of the head, and the apparent absence of scalelike setae laterally on the thorax in *depictus.* Our examination of the holotypes of both nominal species and 18 additional specimens suggests that only one species is involved and that Knight's observation about the setae on the thoracic pleuron was erroneous (both types possessing a relatively long row of scalelike setae on the posterior margin of the mesepimeron and a short row on the dorsal posterior margin of the metepisternum), and that the range of variation in color and the length of the second antennal segment in the two specimens is within the limits of infraspecific variation. We therefore are treating the two species as synonymous, *furvus* having page priority and being the better known name. There is substantial size variation in the specimens we examined, with those from the northern part of the range being larger than those from the southern part; however, as with color variation, this seems to represent variation within a single, rather widespread, taxon.

Most available data suggest that members of the *furvus* species group breed on species of *Pinus.* A. G. Wheeler, Jr. collected a series of adults of *furvus* on *Quercus ilicifolia* in the pitch pine/scrub oak barrens in Schuylkill County in east central Pennsylvania. Whether or not this presents a breeding record on oak will require further field observations of this uncommon species.

Pilophorus heidemanni Poppius

Figures 4F–I, 5

Pilophorus heidemanni Poppius, 1914a: 240 (n. sp., desc., key). – Knight, 1923: 538 (key). – Blatchley, 1926: 814 (desc., key, dist.). – Knight, 1973: 134 (dist., host). – Wheeler et al., 1983: 143 (mention).

HOLOTYPE: ♂, Berkeley, W. Va., 20–8–[18]91; Collection O. Heidemann; deposited in the USNM.

DIAGNOSIS: Recognized by the disjunct and discontinuous posterior band of setae placed anteriad of the point of surface texture demarcation on the hemelytra and the rather strongly inflated scutellum; separated from *nasicus* by the more strongly inflated scutellum and the broader and less strongly protruding head, and from *furvus* by the shorter antennal segment 2, disjunct nature of the posterior band of scalelike setae and its placement a substantial distance anteriad of the change in surface texture on the hemelytra (fig. 5).

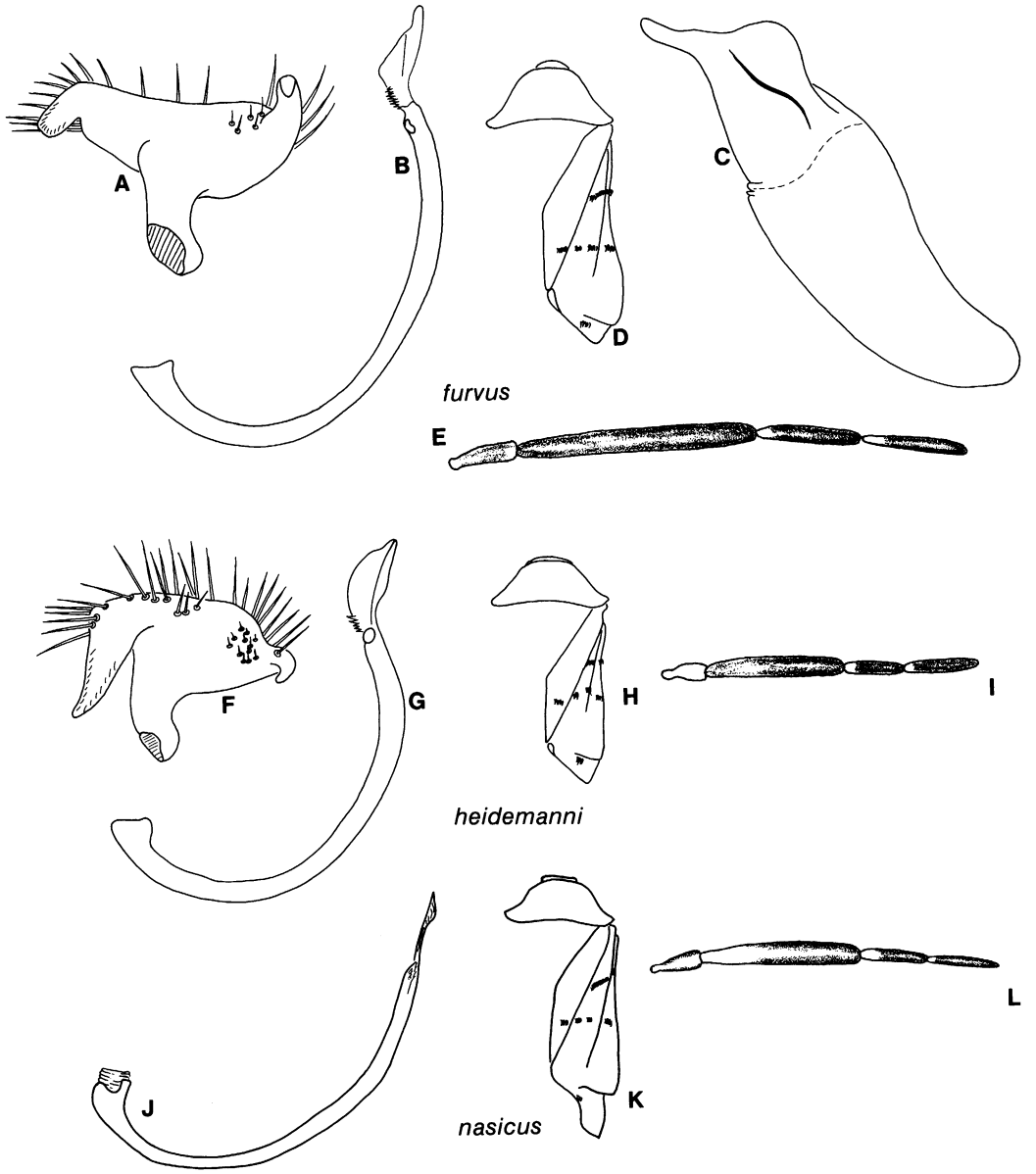

Fig. 4. A–E. *Pilophorus furvus*. **A.** Left paramere, posterior view. **B.** Vesica. **C.** Phallotheca. **D.** Pronotum and hemelytron, ♂. **E.** Antenna. F–I. *Pilophorus heidemanni*. **F.** Left paramere, posterior view. **G.** Vesica. **H.** Pronotum and hemelytron, ♂. **I.** Antenna. J–L. *Pilophorus nasicus*. **J.** Vesica. **K.** Pronotum and hemelytron, ♂. **L.** Antenna.

DESCRIPTION: Small, stout-bodied, length apex tylus–cuneal fracture 2.09–2.32 mm. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to change in surface texture varying between specimens from orange to nearly black, antennal segment 1 dark on dorsal and ventral surfaces, light on outer and inner surfaces, segment 2 castaneous distally and somewhat lighter proximally, segment 3 white on proximal ⅕, castaneous distally, segment 4 castaneous except at extreme base, procoxae, most of meso- and metacoxae, meso- and metatrochanters, and all first and second tar-

sal segments white. SURFACE AND VESTITURE: Hemelytra polished posteriorly, but the polished area of an irregular shape mostly posteriad of the apex of the clavus and laterally curving anteriad; posterior band of scalelike setae placed anterior to the change in surface texture of the hemelytra and composed of 4 distinct patches (fig. 4H) placed in a discontinuous and disjunct row; scalelike setae on the posterior margin of the mesepimeron in the form of two patches; abdominal venter without a patch of scalelike setae anterolaterally; dorsum with scattered, neat, short, dark reclining setae. STRUCTURE: Face weakly elongate and distinctly narrowed below eyes in frontal view, genae broadly rounded and not raised; pronotal lobes not demarcated, pronotum strongly inflated; mesoscutum broadly exposed, scutellum strongly swollen and elevated, and bluntly conical; antennal segment 2 as in figure 4I; metatibiae nearly cylindrical and straight; vesica flat, shaft tubular, without a mesial process (fig. 4G).

HOSTS: *Pinus clausa, P. taeda,* stone pine.

DISTRIBUTION: Eastern United States: central Florida north to Maryland and West Virginia and west to Louisiana and Arkansas.

SPECIMENS EXAMINED: 30 specimens collected between March 20 and October 6; deposited in: AMNH, CNC, LSU, PDA, TJH, UM, USNM. – USA: **Arkansas:** *Logan Co.:* Magazine. **Florida:** *Lake Co.:* Lakeland. *Marion Co.:* Rt 40, 15 mi E of Lynne; Rt 40, 12 mi W of Lynne. *Osceola Co.:* Rt 441, 4 mi E of Ashton. *Volusia Co.:* Orange City; Sanford. **Louisiana:** *East Baton Rouge Par.:* LSU Campus. *Lafayette Par.:* Lafayette. *St. Tammany Par.:* Slidell. **Maryland:** *Prince Georges Co.:* Oxon Hill. **North Carolina:** *Mecklenburg Co.:* Rt 51, 6 mi W of Matthews; Rt 51, 1 mi W of Rt 16 near Matthews. *Polk Co.:* Tryon. **South Carolina:** *Edgefield Co.:* Edgefield. *Oconee Co.:* Walhalla; Seneca. **Virginia:** *Warren Co.:* Front Royal. **West Virginia:** *Morgan Co.:* Berkeley.

Pilophorus nasicus Knight
Figures 4J–L

Pilophorus nasicus Knight, 1926a: 18 (n. sp., desc.). – Blatchley, 1926: 814 (desc., dist., key). – Khalaf, 1971: 340 (dist.). – Knight, 1973: 133 (key, dist.). – Henry and Smith, 1979: 215 (dist.).

HOLOTYPE: ♂, Newberry, Fla., Nov. 1911; Wm. T. Davis collection; deposited in the USNM.

DIAGNOSIS: Recognized by the weakly swollen scutellum, the discontinuous but only weakly disjunct row of setae placed anterior to the point of surface texture demarcation on the hemelytra, and the narrowed anteriorly projecting head; separated from *heidemanni* by the much less strongly inflated scutellum and the more strongly protruding and narrow head, and from *furvus* by the shorter antennal segment 2, the less strongly inflated scutellum, and the placement of the posterior band of scalelike setae a substantial distance anteriad of the change in surface texture of the hemelytra.

DESCRIPTION: Small, stout-bodied, length apex tylus–cuneal fracture 2.05–2.30 mm. COLORATION: Body and appendages deep orange to weakly castaneous, hemelytra anterior to change in surface texture generally orange, antennal segment 1 reddish on dorsal and ventral surfaces, light on outer and inner surfaces, segment 2 generally castaneous, segment 3 white on proximal ¼, castaneous distally, segment 4 castaneous except at extreme base, procoxae, most of meso- and metacoxae, meso- and metatrochanters, and all first and second tarsal segments white. SURFACE AND VESTITURE: Hemelytra polished posteriorly, but only posterior to level of apex of clavus, posterior band of scalelike setae composed of 4 distinct patches (fig. 4K) in a discontinuous and somewhat disjunct row placed well anterior to the change in surface texture of the hemelytra; scalelike setae on the posterior margin of the mesepimeron in the form of two small, distinct patches, abdominal venter without a patch of scalelike setae anterolaterally; dorsum with scattered, neat, short, dark reclining setae. STRUCTURE: Head rather strongly projecting anteriorly, face elongate and distinctly narrowed below eyes in frontal view, genae not raised; pronotal lobes not demarcated, pronotal disc low and not inflated; mesoscutum broadly exposed, scutellum swollen, noticeably elevated, and more or less in the shape of a low pyramid; antennal segment 2 as in

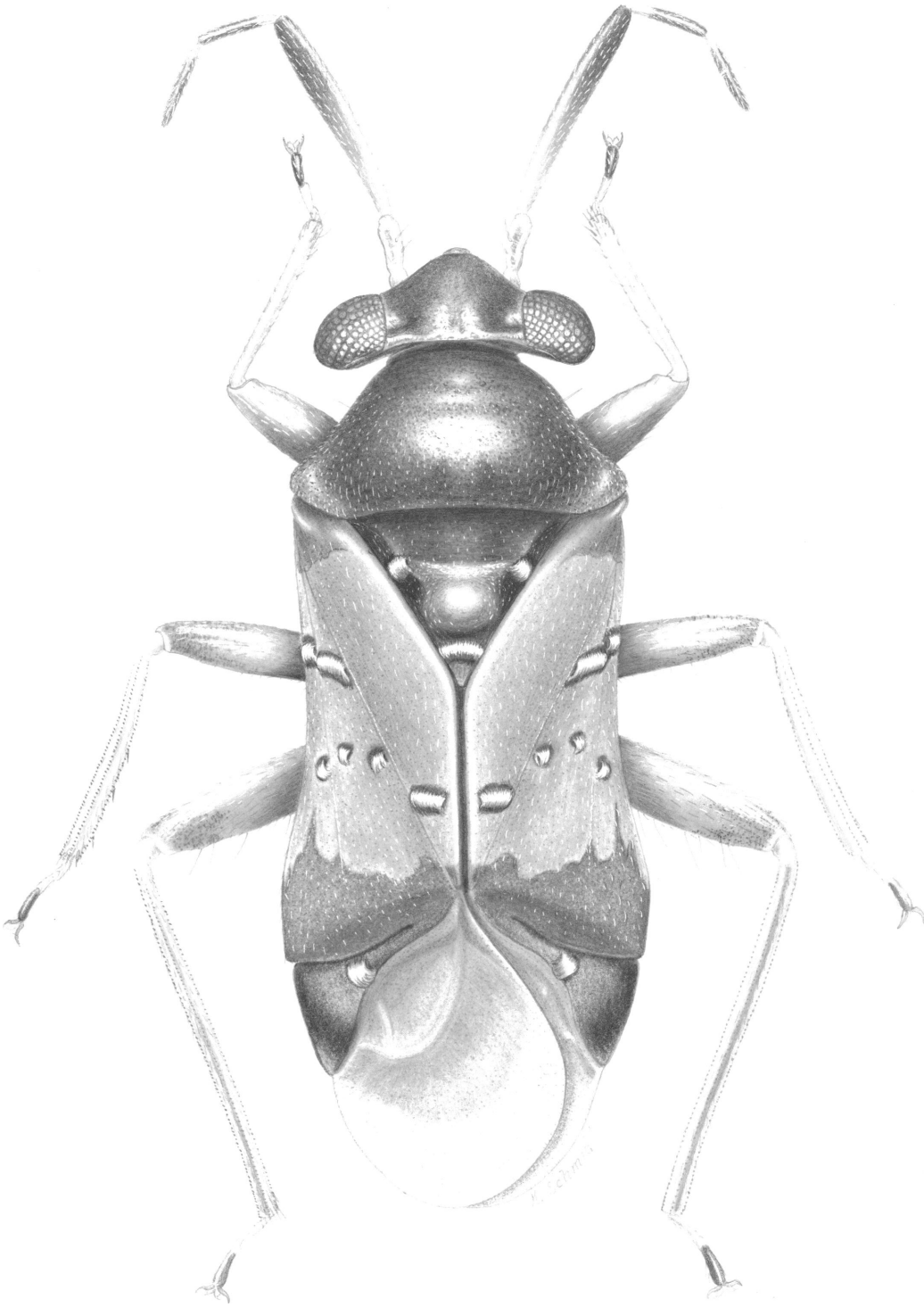

Fig. 5. *Pilophorus heidmanni*, dorsal habitus, ♂.

figure 4L; metatibiae nearly cylindrical and straight; vesica flat, shaft tubular, without a mesial process (fig. 4J).

HOSTS: No information available.

DISTRIBUTION: Florida and Georgia.

SPECIMENS EXAMINED: Two specimens collected between February 11 and October 1; deposited in: USNM. – USA: **Florida:** *Highlands Co.:* Archbold Biol. Sta. **Georgia:** *Muscogee Co.:* Fort Benning.

PILOPHORUS JUNIPERI SPECIES GROUP

Recognized by the hemelytra with a uniform polished texture posteriad of the posterior band of scalelike setae, relatively small elongate body, the second antennal segment clavate on the distal third, the flat vesica with a simple mesial spinelike process, and the habit of breeding on species of Coniferae.

Pilophorus juniperi Knight
Figures 1E, 6A–E

Pilophorus juniperi Knight, 1923: 543 (n. sp., desc., key, host). – Blatchley, 1926: 813 (desc., key, dist., host). – Knight, 1941: 123 (desc., dist., host). – Froeschner, 1949: 144 (key). – Knight, 1973: 138 (syn., dist., host, habitus fig.). – Akingbohungbe et al., 1972: 12 (dist., host). – Akingbohungbe et al., 1973: 13 (desc. of nymph). – Akingbohungbe, 1974: 252 (chromosome number). – Wheeler and Henry, 1977: 644 (dist., desc., figs. of adult and nymph, biol., host). – Akingbohungbe, 1983: 39 (testis follicle number). – Wheeler et al., 1983: 143 (dist., host).

HOLOTYPE: ♂, White Plains, N.Y., 18.VII.15, on cedar; deposited in the USNM.

DIAGNOSIS: Distinguished from *laetus* by the uninterrupted posterior band of setae on the hemelytra (fig. 6D) and antennal segment 2 not more than 1.14 mm long.

DESCRIPTION: Relatively small, length apex tylus–cuneal fracture 2.28–2.77 mm. COLORATION: Body and appendages generally castaneous, in contrast to orange or red-orange hemelytra anterior to posterior transverse setal band; antennal segment 1 infuscate, segment 2 pale on slightly more than proximal ½, castaneous on slightly less than distal ½, segment 3 white on proximal ½, castaneous distally, segment 4 castaneous, pro- and metacoxae generally white. SURFACE AND VESTITURE: Corium polished over entire width posterior to posterior transverse band of setae, band of setae complete (fig. 6D); dorsum with short, neat, dark, reclining setae (fig. 1E). STRUCTURE: Face flattened and the head nearly round in frontal view with the genae appearing as mandibles, pronotum narrow and nearly straight-sided anteriorly; antennal segment 2 short, mean length not more that 1.10 mm, clavate, enlarged on distal ⅓; metatibiae nearly cylindrical, rather strongly curved just proximad of midpoint; vesica flat, with a simple mesial process (fig. 6B).

HOSTS: *Chamaecyparis lawsoniana glauca, Juniperus chinensis sargenti, J. c. pfitzeriana hetzi, J. virginiana, J. communis, Thuja orientalis.*

DISTRIBUTION: Eastern United States: west to eastern Kansas and South Dakota, north to Minnesota and Massachusetts, and south to North Carolina, Tennessee, and Missouri.

SPECIMENS EXAMINED: 246 specimens collected between June 20 and September 19, the majority collected in July and early August; deposited in: AMNH, CAS, CU, JTP, KU, LSU, PDA, TAM, UCB, UM, USNM, WSU. – USA: **Connecticut:** *Tolland Co.:* Storrs. **District of Columbia. Illinois:** *Boone Co.:* Belvidere. *La Salle Co.:* Starved Rock. **Iowa:** *Boone Co.:* Ledges St. Pk. *Carroll Co.:* Coon Rapids. *Clay Co.:* Peterson; 1 mi E of Peterson. *Decatur Co.:* Leon. *Dickinson Co.:* Spirit Lk. *Lee Co.:* Fort Madison. *Linn Co.:* Palisades-Kepler St. Pk. *Monroe Co.:* Albia. *Storey Co.:* Ames. **Kansas:** *Riley Co.:* Manhattan, at light. **Maryland:** *Montgomery Co.:* Plummers Island; Forest Glen. **Massachusetts:** *Middlesex Co.:* Holliston. **Michigan:** *Washtenaw Co.:* Ypsilanti. **Minnesota:** *County ?:* Grey Cloud Island. **Missouri:** *Cole Co.:* Jefferson City. *Randolph Co.:* 1 mi E of Moberly. *County ?:* Roaring River St. Pk. **New Jersey:** *Ocean Co.:* Lakehurst. *Bergen Co.:* Bear Swamp, Ramapo Mountains. **New York:** *Nassau Co.:* Muttontown Pk., E Norwich. *Orange Co.:* Pine Island. *Suffolk Co.:* Medford; Bayshore; Cold Spring Harbor. *Westchester Co.:* Ward Pound Ridge Reservation; White Plains; Lk. Waccabuc. *County ?:* South Haven. **North Carolina:** *Mecklenburg Co.:* Rt 51, 6 mi W of Matthews; Charlotte. **Pennsylvania:** *Bucks Co.:* Plumsteadville. *Cum-*

berland Co.: Cumberland Valley HS. *Dauphin Co.:* Harrisburg, East Harrisburg Cemetery; Hershey, Hershey Hotel. *Monroe Co.:* Delaware Water Gap; Stroudsburg, LeBar's Rhododendron Nursery. *Montgomery Co.:* Huntingdon Valley. *Philadelphia Co.:* Chestnut Hills, Morris Arboretum. *Wayne Co.:* Abrahamsville, Sunnybrook Nursery. *York Co.:* Manchester, Daubers Nursery. **South Dakota:** *Brookings Co.:* Brookings. **Tennessee:** *Knox Co.:* Univ. Tennessee Agric. Campus. **Virginia:** *Pulaski Co.:* Pulaski. *Fairfax Co.:* Vienna. **West Virginia:** *Greenbrier Co.:* Rt 60, 6 mi W of Lewisburg. *Morgan Co.:* Berkeley. **Wisconsin:** *Dane Co.:* Madison, at light.

Pilophorus laetus Heidemann
Figures 6F–J

Pilophorus laetus Heidemann, 1892: 225 (diag.; as Uhler MS name). – Poppius, 1914a: 238 (key; attributed to Uhler). – Carvalho, 1958: 147 (cat.). – Khalaf, 1971: 340 (dist.). – Akingbohungbe et al., 1972: 12 (dist.). – Wheeler and Henry, 1975: 359 (lectotype designation, disc.). – Henry and Smith, 1979: 215 (dist.). – Wheeler et al., 1983: 143 (dist., hosts).

Pilophorus laetus Van Duzee, 1918: 294 (as new species; synonymized by Carvalho, 1958: 147). – Knight, 1923: 543 (desc., key, host). – Blatchley, 1926: 812 (desc., key, host, dist.). – Knight, 1941: 121 (key). – Froeschner, 1949: 144 (key). – Knight, 1973: 137 (syn., dist., host).

LECTOTYPE: ♀, Washngtn, D.C., 11/7, 90; Heidemann Collector; deposited in the USNM.

HOLOTYPE OF SYNONYM: ♀, Rock Creek, DC, 20/6.90; Heideman [sic] Collector; deposited in CAS.

DIAGNOSIS: Distinguished from *juniperi* by the interrupted posterior band of setae on the hemelytra (fig. 6I) and antennal segment 2 at least 1.25 mm long.

DESCRIPTION: Relatively small, length apex tylus–cuneal fracture 2.61–2.93 mm. COLORATION: Body and appendages generally castaneous, in contrast to orange or red-orange hemelytra anterior to posterior transverse setal band; antennal segment 1 infuscate, segment 2 light on proximal ⅔, castaneous on distal ⅓, segments 3 and 4 white on proximal ½, castaneous distally, pro- and metacoxae generally white. SURFACE AND VESTITURE: Corium polished over entire width posterior to posterior transverse band of setae, band of setae interrupted just mesad of radial vein (fig. 6I); dorsum with short, neat, dark, reclining setae. STRUCTURE: Face flattened and the head nearly round in frontal view with the genae appearing as mandibles; pronotum narrow and nearly straight-sided anteriorly, antennal segment 2 long, mean length at least 1.25 mm, obviously clavate, enlarged on distal ⅓; metatibiae nearly cylindrical, rather strongly curved just proximad of midpoint; vesica flat, with a simple mesial process (fig. 6G).

HOSTS: *Juniperus virginiana, Picea abies* (seedling), *Pinus banksiana, P. echinata, P. ponderosa* (seedling), *P. rigida, P. strobus, P. sylvestris, P. taeda, P. virginiana,* Austrian pine (seedling) (*P. nigra*), red pine (*P. resinosa*), slash pine (*P. elliottii*).

DISTRIBUTION: Eastern North America: west to Missouri and Minnesota, north to Ontario and Minnesota, and south to Alabama, Louisiana, and Florida.

SPECIMENS EXAMINED: 221 specimens collected between May 5 and September 24, the majority collected in July and August; deposited in: AMNH, CAS, CNC, CU, JTP, KU, LSU, OSU, PDA, TAM, TJH, UCB, UM, USNM. – CANADA: **Ontario:** Copetown; Thessalton; Turkey Point; Vienna. USA: **Alabama:** *Covington Co.:* 2 mi S of Opp on Rt 331. *Mobile Co.:* Mobile. *Tallapoosa Co.:* Alexander City. **District of Columbia:** Rock Crk. **Florida:** *Jackson Co.:* Florida Caverns St. Pk. **Georgia:** *Clark Co.:* Athens; 3 mi W of Athens. *Fulton Co.:* College Park. *Habersham Co.:* Demerest, at light. *County ?:* Neel Gap. **Louisiana:** *Natchitoches Par.:* Kisatchie Nat. For., at light; Red Dirt Wildlife Management Area. *Rapides Par.:* Alexandria. **Maryland:** *Anne Arundel Co.:* Odenton. *Baltimore Co.:* Baltimore. *Dorchester Co.:* near Lloyds. *Frederick Co.:* 4 mi W of Frederick, Gambril St. Pk.; Sugarloaf Mountain. *Montgomery Co.:* Cabin John; Glen Echo, Summer; Great Falls. *Prince Georges Co.:* Oxon Hill, black light; Bladensburg; Branchville to Beltsville; College Park; Hyattsville. *County ?:* Pautuxent River. **Minnesota:** *Crow Wing Co.:* Brianerd. **Mississippi:** *Lowndes Co.:* Columbus. *Newton Co.:* Union. *Pearl River Co.:* beating pine. **Missouri:** *Monroe*

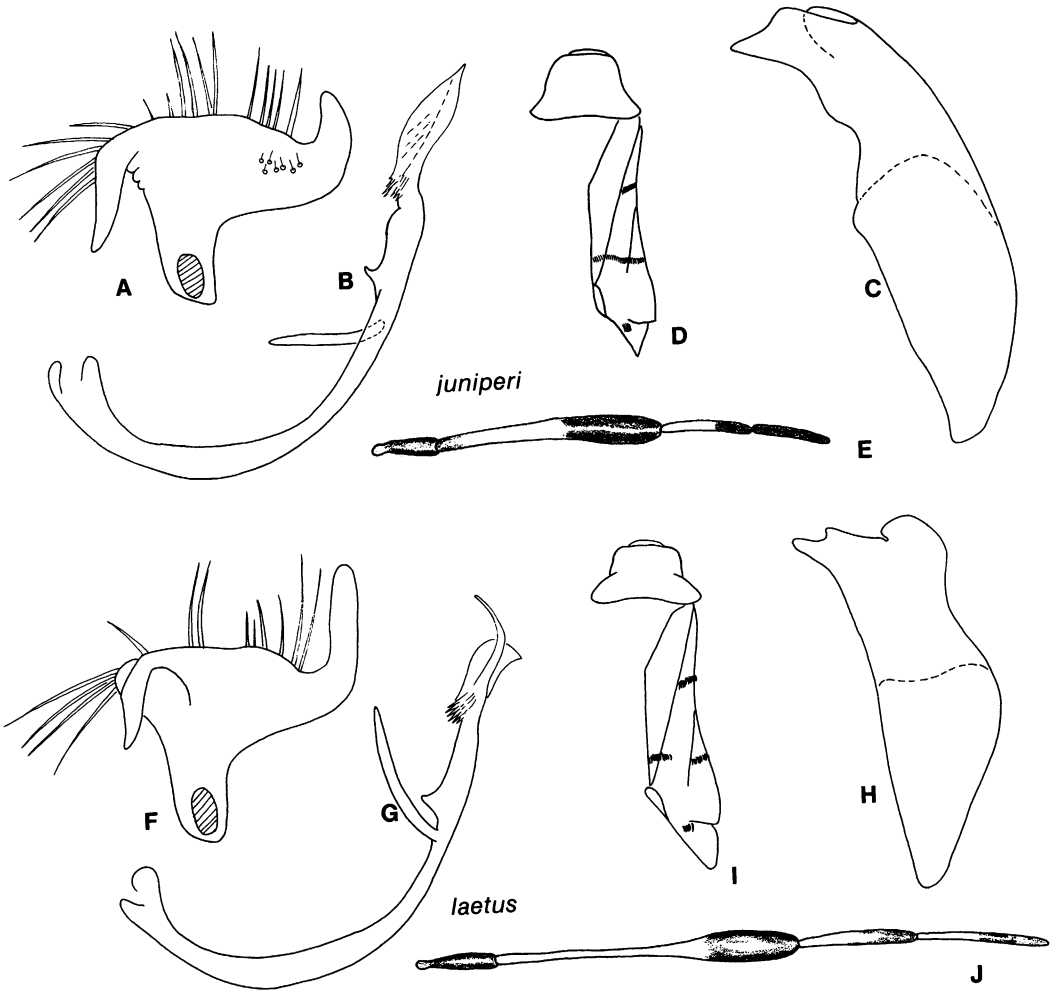

Fig. 6. A–E. *Pilophorus juniperi.* **A.** Left paramere, posterior view. **B.** Vesica. **C.** Phallotheca. **D.** Pronotum and hemelytron, ♂. **E.** Antenna. F–J. *Pilophorus laetus.* **F.** Left paramere, posterior view. **G.** Vesica. **H.** Phallotheca. **I.** Pronotum and hemelytron, ♂. **J.** Antenna.

Co.: Stevens; Madison. **New Jersey:** *Burlington Co.:* Riverton. *Cape May Co.:* Woodbine. *Ocean Co.:* Lakehurst; Lakehurst, Horizon Lk. **New York:** *Suffolk Co.:* Bayshore. *Ulster Co.:* Saugerties. **North Carolina:** *Buncombe Co.:* Swannanoa Valley. *Dare Co.:* Kill Devil Hills. *Guilford Co.:* Greensboro. *Macon Co.:* Wayah Bald, 5300 ft. *Mecklenberg Co.:* Rt 51, 1 mi W of Rt 16 near Matthews. *Moore Co.:* Southern Pines. *Pender Co.:* Rocky Point. *Swain Co.:* Cherokee, Soco Valley. *Union Co.:* Monroe. **Pennsylvania:** *Centre Co.:* Potter Twp., Spring Mills. *Clearfield Co.:* DuBois, R. Nelson Tree Nursery. *Cumberland Co.:* Turnpike, 8 mi S of Blue Mt. exit. *Dauphin Co.:* Mid. Paxt. Twp., Rt 443, Fish Crk. Val. School; Conewago Twp., ½ mi from Brandt farm. *Erie Co.:* Union City. *Franklin Co.:* Mont Alto. *Indiana Co.:* Indiana; Strongstown, Carino Nursery; 14 mi E of Indiana, Carino Nursery; Shelocta. *Lycoming Co.:* Old Fort Nursery near Muncy. *Northumberland Co.:* Northumberland. *Philadelphia Co.:* Philadelphia. *Schuylkill Co.:* I-81 near Rt 901. *Somerset Co.:* Thomas Mills, Blough's Nursery. *Wayne Co.:* Curtis Nursery near Callicoon, New York. **South Carolina:** *Edgefield Co.:* Edgefield. *Oconee Co.:* Clemson; Walhalla. *Pickens Co.:* Table Rock St. Pk., 1500 ft. **Tennessee:** *Cumberland Co.:* Grassy Cove.

Fentress Co.: Allardt, 1650 ft. *Polk Co.:* 10 mi E of Cleveland. *Sevier Co.:* Great Smoky Mts. Nat. Pk., Norse Camp. **Virginia:** *Arlington Co.:* Arlington; Arlington, Four Mile Run. *Fairfax Co.:* Dunn-Loring; Great Falls; Herndon; Vienna. *Falls Church.:* Falls Church. *County ?:* Passage Crk. **West Virginia:** *Hardy Co.:* Lost River St. Pk. *Morgan Co.:* Berkeley; Berkeley Springs.

PILOPHORUS AMOENUS SPECIES GROUP

Recognized by the hemelytra with a uniform texture posteriad of the posterior band of scalelike setae, the third antennal segment completely white, the flat vesica with a simple mesial spinelike process, and the habit of breeding on species of *Pinus*.

Pilophorus amoenus Uhler

Figures 7, 8A–F

Pilophorus amoenus Uhler, 1887: 30 (n. sp., desc.). – Poppius, 1914a: 238 (key). – Knight, 1923: 542 (desc., dist., host, key). – Blatchley, 1926: 811 (desc., dist., host, figs., key). – Knight, 1941: 122 (desc., dist., host, key). – Kelton, 1959: 36 (figs. of male genitalia). – Akingbohungbe et al., 1972: 12 (dist., host). – Knight, 1973: 137 (dist., host, key). – Wheeler et al., 1983: 142 (dist., host).

Pilophorus pinicola Knight, 1973: 138 (n. sp., desc., host, key). – Kelton, 1980: 277 (diag., dist., map, key). NEW SYNONYMY.

LECTOTYPE: ♀, In. or Ill. [handwritten], 23; P. R. Uhler collection; *Pilophorus amoenus* Uhler [handwritten]; LECTOTYPE *Pilophorus amoenus* Uhler, det. R. T. Schuh and M. D. Schwartz; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus pinicola* Knight: ♀, Brainerd, MINN., Aug. 23-25, 1971, Harry H. Knight, on *Pinus banksiana*; deposited in the USNM.

DIAGNOSIS: Distinguished from *piceicola* and *strobicola* by the more strongly campaniform pronotum, the hemelytra usually orange (although occasionally deep brown), and the less strongly incrassate antennal segment 2.

DESCRIPTION: Large species, length apex tylus–cuneal fracture 3.35–3.83. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to posterior transverse setal band orange, antennal segment 1 dark on dorsal half and pale on ventral half, segment 2 castaneous distally, segment 3 white, segment 4 generally white and infuscate apically, procoxae pale proximally, metatrochanters pale, metacoxae pale distally. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, smooth and weakly shining; posterior band of setae complete and straight; no or a very few scalelike setae on the dorsal posterior margin of the metepisternum, and a large angled patch sublaterally on abdominal sternites 3–4; dorsum with scattered, neat, reclining, dark setae. STRUCTURE: Face relatively broad in frontal view, the outline of the genae weakly rounded, the genae distinctly elevated and very broadly rounded; pronotum with anterior and posterior lobes confluent, moderately arched in lateral view, surface weakly rugose, lateral margins distinctly concave, general outline campaniform; antennal segment 2 weakly clavate (fig. 8F); metatibiae slightly flattened, greatest width slightly less than 2 times thickness, weakly curving; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 8C).

HOSTS: *Pinus banksiana, P. clausa, P. rigida, P. strobus, P. sylvestris, P. virginiana,* scrub pine, *Chamaecyparis* sp., *Picea abies.*

DISTRIBUTION: Eastern North America: west to Manitoba, north from Manitoba to New Brunswick, and south to northern Florida.

SPECIMENS EXAMINED: Approximately 495 specimens collected between June 8 and August 30; deposited in: AMNH, CAS, CNC, JTP, KU, LSU, PDA, TAM, TJH, UCB, USNM. – CANADA: **Manitoba:** Falcon Lk. **New Brunswick:** Sussex. **Ontario:** Thessalon; Dundas; Eagle River; MacKey. **Quebec:** Fabre. USA: **Connecticut:** *Tolland Co.:* Mansfield. **District of Columbia. Florida:** *Bay Co.:* 5 mi W of Rt 231 along Rt 20. *Gulf Co.:* Fort St. Joe. *Jackson Co.:* Florida Caverns St. Pk. *Liberty Co.:* Torreya St. Pk. **Georgia:** *Rabun Co.:* Clayton. **Indiana:** "In.". **Kentucky:** *County ?:* Crossville. **Maryland:** *Anne Arundel Co.:* Odenton. *Montgomery Co.* Silver Spring; Great Falls; Cabin John Bridge; Glen Echo; Plummers Island. *Prince Georges Co.:* Oxon Hill; Beltsville; Bladensburg. *St*

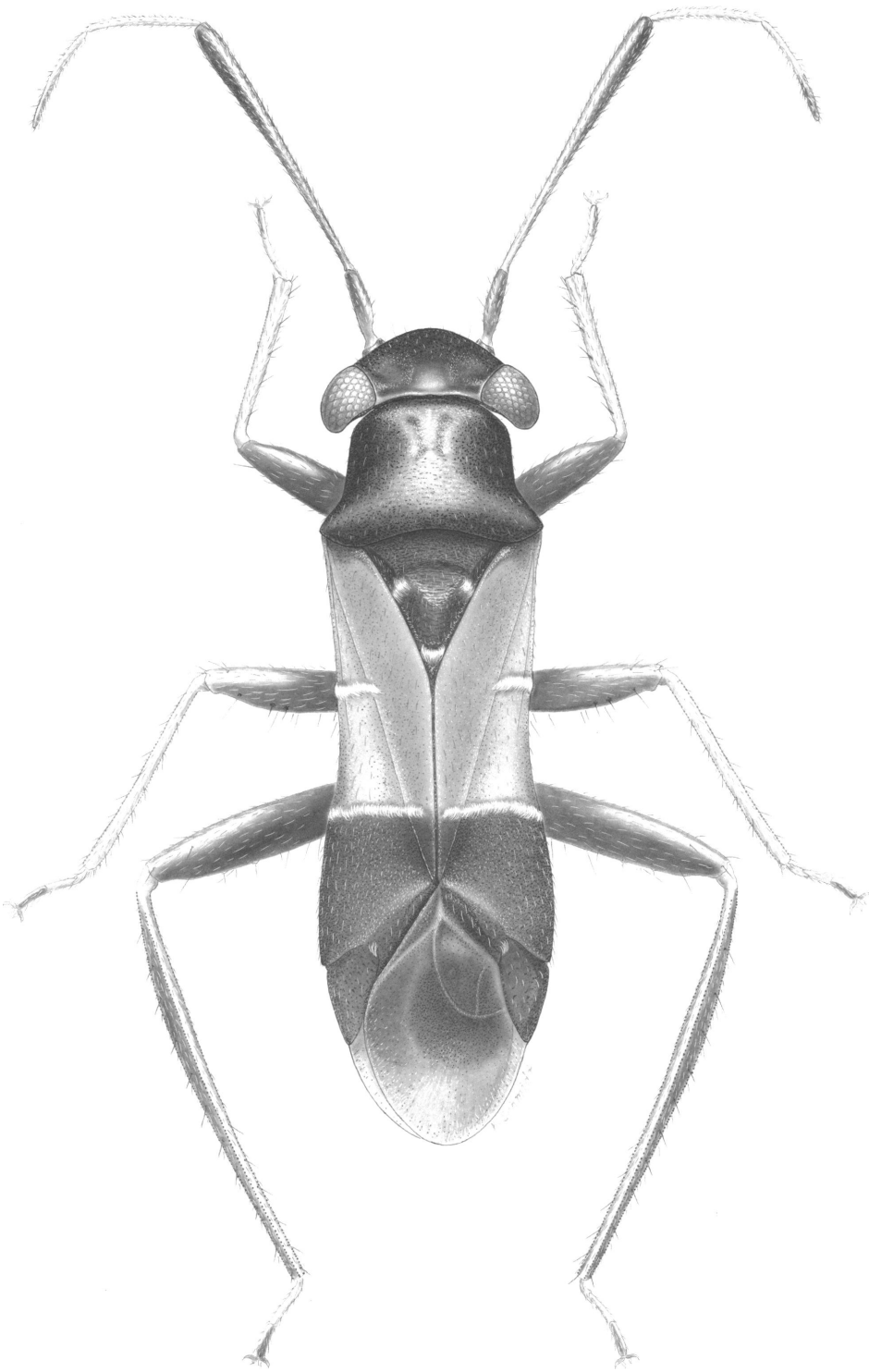

Fig. 7. *Pilophorus amoenus*, dorsal habitus, ♂.

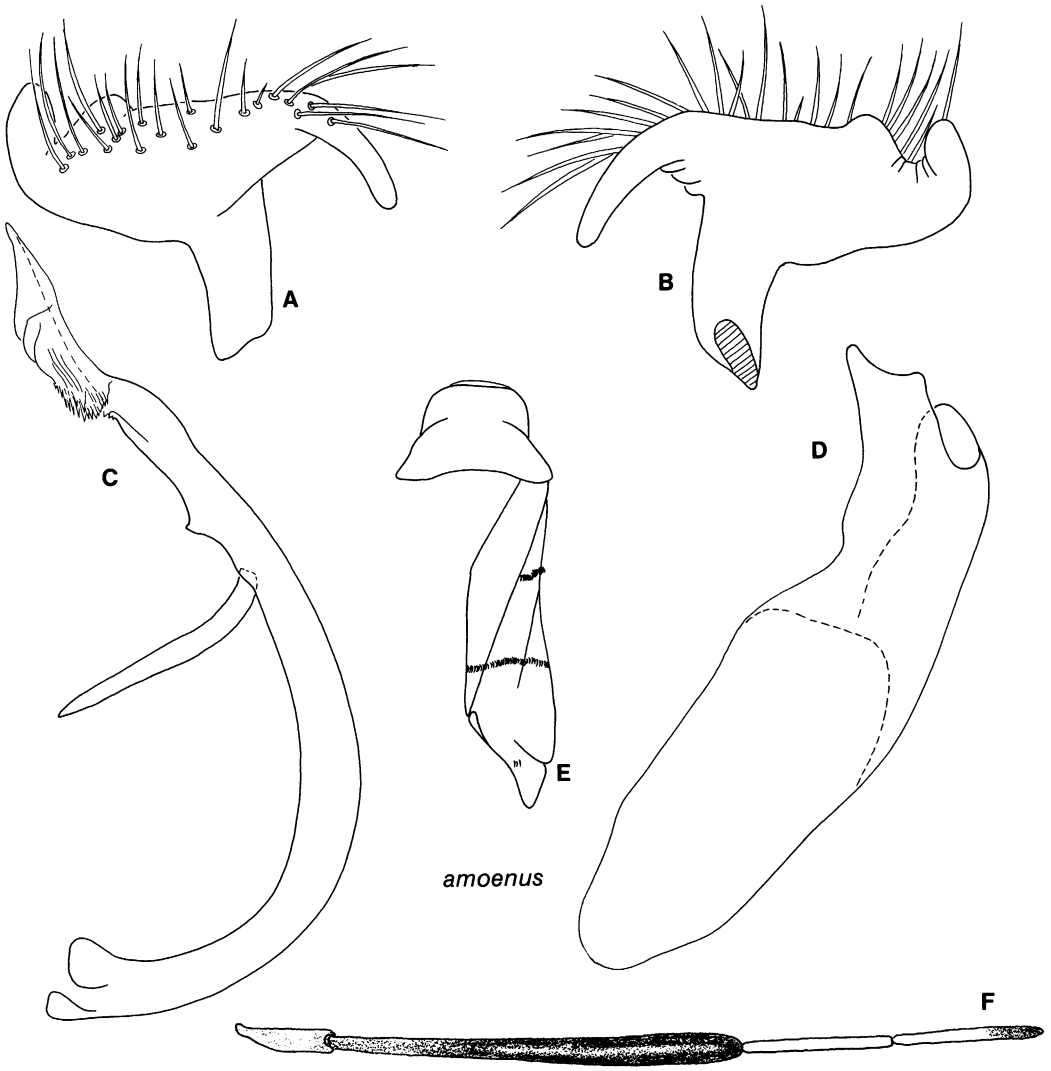

Fig. 8. *Pilophorus amoenus*. **A.** Left paramere, frontal view. **B.** Left paramere, posterior view. **C.** Vesica. **D.** Phallotheca. **E.** Pronotum and hemelytron, ♂. **F.** Antenna.

Mary's Co.: 2.3 mi E of Piney Pt. *County ?:* Corner Conduit and Potomac Rds; Patuxent River. **Massachusetts:** *Barnstable Co.:* Woods Hole. *Middlesex Co.:* Cambridge. *Plymouth Co.:* Wareham. **Michigan:** *Barrien Co.:* Harbert. *Emmet Co. Kalamazoo Co.:* Gull Lk. Biol. Sta. *Midland Co. Newaygo Co.:* T12N R12W Sec 27. **Minnesota:** *Cook Co.:* Grand Marais. *Crow Wing Co.:* Brainerd. **New Jersey:** *Ocean Co.:* Lakehurst. **New York:** *Columbia Co.:* Hudson. *Essex Co.:* Lake Placid. *Nassau Co.:* Huntington. *Suffolk Co.:* Bay Shore; Bellport. **North Carolina:** *Guilford Co.:* Greensboro. *Macon Co.:* Highlands. *Polk Co.:* Tryon. *Swain Co.:* Cherokee; Soco Val. *Transylvania Co.:* Lk. Toxaway. *Wake Co.:* Raleigh. **Pennsylvania:** *Bedford Co.:* 6 mi E of Bedford. *Berks Co.:* Reading. *Blair Co.:* Yellow Spring, Short Mt. Nursery. *Centre Co.:* 2.4 mi S of Potters Mills; Boalsburg, Enchanted Hill Nursery. *Clarion Co.:* Marianne, Eccles Nursery. *Clearfield Co.:* DuBois, R. Nelson Tree Nursery. *Crawford Co.?:* Hartstown Bg. *Cumberland Co.:* Mt. Holly

Springs; Newville, Conifer Hills. *Dauphin Co.:* Rush Twp.; Conewago Twp., Rt 743, 4 mi S of Hershey; I-81, 3 mi S of Grantville exit; Conewago Twp., ½ mi from Brandt Farm; Mid. Paxt. Twp, Rt 443, Fish Crk. Val. Sch.; 3 mi W of Harrisburg; Manada Gap; Rockville. *Indiana Co.:* Canales Nursery, Miller Farm. *Lebanon Co.:* Rt 443, 3.7 mi S of Swedburg. *Luzerne Co.:* Pretti Nursery near Tomicken. *Monroe Co.:* 3 mi E of Brodheadsville on Greenview Dr. *Montgomery Co.:* near Dresher, Mainland, Mainland Nursery. *Northampton Co.:* Easton, St. Mary's Cemetery. *Northumberland Co.:* Rt 61, Paxinos. *Philadephia Co.:* Chesnut Hill. *Potter Co.:* Roulette. *Schuylkill Co.:* Kepner; I-81 near Rt 901; I-81, 4 mi N of 209. *Union Co.:* Rt 11-15, White Deer Exit. *Warren Co.:* I-81, Strasburg, exit 75. *Washington Co.:* 1 mi S of Westland. *York Co.:* Wellsville, Pinchot St. Pk. **South Carolina:** *Oconee Co.:* Mountain Rest, 1300 ft. *Spartanburg Co.:* Spartanburg. **Tennessee:** *Cumberland Co.:* Grassy Cove. *Fortress Co.:* Allardt. *Knox Co.:* Univ. Tenn. P. & S. S. Farm. *Sevier Co.:* Gattlinburg, Great Smoky Mt. Nat. Pk., 1500 ft. **Virginia:** *Arlington Co.:* Four Mile Run. *Fairfax Co.:* Black Pond; Vienna; Great Falls. *Nelson Co.:. County ?:* Glencarlyn; near Dead Run Swamp; Shenadoah Nat. Pk.; Cobbs Island; Stubblefield Falls. **West Virginia:** *Berkeley Co.:* Rt 9 near Johnsonville. *Botetourt Co.:* I-81 S Rest Area, 1.5 mi N of Rt 640. *Greenbriar Co.:* I-64, E of Alta exit. *Morgan Co.:* Berkeley sp. **Wisconsin:** *Ashland Co.:* Ashland. *Oneida Co. Wood Co.:* Griffith St. Nursery. *County ?:* Camby; Lakewood.

DISCUSSION: Uhler (1887) described *amoenus* without mentioning the label information of the specimens he examined. We located a female specimen in the type collection of the National Museum of Natural History, Washington, D.C., with a handwritten locality of either Indiana or Illinois and have designated it as the lectotype. We have designated as paralectotypes three male and two female specimens with the same label data.

Knight (1973) described *pinicola* from Minnesota, which he related to *piceicola*. Our examination of Knight's specimens indicates that *pinicola* is a junior synonym of *amoenus* based on the coloration of the antennae, structure of the pronotum, and coloration of the hemelytra.

Pilophorus piceicola Knight
Figures 9A–D

Pilophorus piceicola Knight, 1926a: 19 (n. sp., desc., host). – Blatchley, 1926: 811 (desc., dist., host, key). – Knight, 1973: 138 (dist., host, key). – Wheeler, 1979: 32 (disc., host). – Kelton, 1980: 276 (diag., host, dist., map, key). – Wheeler et al., 1983: 143 (dist., host).

HOLOTYPE: ♂, Hartsdale, N.Y., July 5, 1924, J. R. Torre-Bueno, on *Picea excelsa*; deposited in the USNM.

DIAGNOSIS: Distinguished from *amoenus* and *strobicola* by the more strongly incrassate antennal segment 2, the entirely white antennal segment 4, the smaller size and more compact body form, and the shorter mesial spine of the vesica.

DESCRIPTION: Moderate size species, length apex tylus–cuneal fracture 2.97–3.27 mm. COLORATION: Body and appendages castaneous to nearly black except as below, hemelytra anterior to posterior transverse setal band yellow ochraceous, antennal segment 1 pale, segment 2 pale proximally and castaneous on distal ½, segments 3 and 4 white, procoxae white proximally, metatrochanters white, metacoxae white distally, pro- and mesotibiae pale. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, smooth and weakly shining, band of setae complete, nearly straight and rather broad (fig. 9C); a large angled patch of scalelike setae sublaterally on abdominal sternites 2–3; dorsum with scattered, neat, dark, reclining setae. STRUCTURE: Face elongate in frontal view, the genae angled, moderately elevated, and broadly rounded; pronotum with anterior and posterior lobes confluent, weakly arched in lateral view, surface of anterior lobe granulose, surface of posterior lobe rugose, lateral margins weakly concave; antennal segment 2 strongly clavate (fig. 9D); metatibiae weakly flattened and weakly curved, greatest width only slightly greater than greatest thickness; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 9B).

HOSTS: *Picea abies, P. glauca, P. g. alber-*

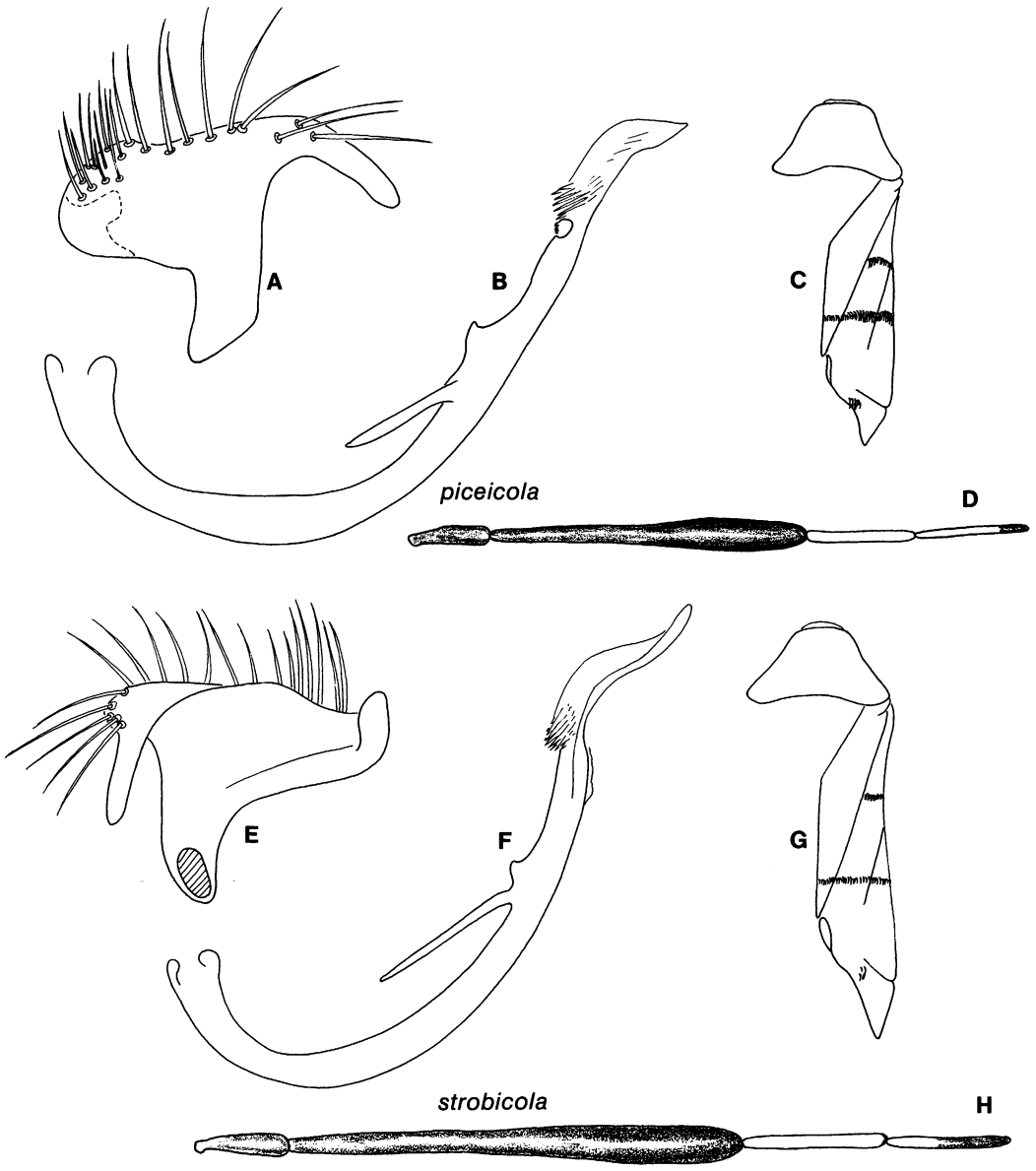

Fig. 9. A–D. *Pilophorus piceicola.* **A.** Left paramere, frontal view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus strobicola.* **E.** Left paramere, posterior view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna.

tiana, P. polita, P. pungens, P. rubens, Pinus sylvestris, Pseudotsuga menziesii.

DISTRIBUTION: Eastern North America: west to Manitoba, north to Manitoba, Quebec, and Maine, and south to Tennessee.

SPECIMENS EXAMINED: 242 specimens collected between June 9 and August 16; deposited in: AMNH, CAS, CNC, JTP, KU, LSU, PDA, TAM, UCB, USNM. – CANADA: **Manitoba:** E Braintree; 2 mi W of Stockton; Turtle Mt. **Ontario:** Thessalon; Lk. Temagami; Sault St. Marie. **Quebec:** Knowlton; Laniel; Otter Lk.; Showville. USA: **Connecticut:** *Hartford Co.:* Hartford. *New Haven Co.:*

Waterbury. **Indiana:** *Howard Co.:* NW Howard Co. *Porter Co.:* 2–3 mi W of Michigan City near LaPorte Co. line. **Iowa:** *Clay Co.:* Peterson. *Story Co.:* Ames; Ames. **Maine:** *Aroostook Co.:* Masardis. *Piscaquis Co.:* Greenville. *Waldo Co.:* Belmont. **Michigan:** *Cheboygan Co. Ingham Co. Washtenaw Co.:* Ann Arbor. *Wexford Co.:* T24N R9W Sec 16. **Minnesota:** *Clay Co.:* Moorhead. **New Hampshire:** *County ?:* Mt. Monadnock. **New York:** *Delaware Co.:* Cadosia. *Franklin Co.:* Adirondacks, Fish Crk. Pond. *Greene Co.:* Tannersville, Onteora Pk., 240–2600 ft. *Nassau Co.:* Roslyn, cemetery on Rt 25A; Old Brookville on Rt 25A; East Meadow near Rt 25 on Bluebird Rd. *Suffolk Co.:* Cold Spring Harbor; Bayshore, Brentwood Rd; Caumsett St. Pk., Lloyd Neck. *Tompkins Co.:* Ithaca. *Westchester Co.:* Lewisboro; Hartsdale; White Plains. **Pennsylvania:** *Adams Co.:* Gettysburg, Longview Nursery. *Allegheny Co.:* Caraopolis Nursery. *Beaver Co.:* Racoon St. Pk. *Blair Co.:* Altoona, Pleasant Valley Nursery; Altoona, Fanella Nursery. *Bucks Co.:* Danboro; 5 Spruce Farm. *Centre Co.:* Memorial Pk.; State College. *Clarion Co.:* Rimersburg, Eccles Nurseries. *Clinton Co.:* Lock Haven, St. Mary's Cemetery. *Crawford Co.:* Cochranton; Blooming Valley, Blooming Valley Nursery. *Dauphin Co.:* Harrisburg, East Harrisburg Cemetery; 3 mi S of Hershey; S of Hershey, Conewago Twp.; N Harrisburg, Bamberger Rd. *Erie Co.:* Fairview, Fairview Evergreen Nurseries. *Fayette Co.:* Royal. *Indiana Co.:* Musser Forests; Indiana, Oakland Cemetery; Shelocta, Canale's Nursery; Strongstown, Carino Nurseries. *Lebanon Co.:* Rt 22 at I-81. *Luzerne Co.:* Pratti Nursery near Tomicken. *Mercer Co.:* Mercer. *Monroe Co.:* Sciota. *Montgomery Co.:* Mainland, Mainland Nursery; Harleyville, County Line Nursery; Norristown, Brouse Nursery; Lansdale, St. John's Church; Dresher, Manuf. Golf Club; Willow Grove. *Northampton Co.:* Bath, Braxmeyer. *Philadelphia Co.:* Chestnut Hills, Morris Arboretum; Chestnut Hill. *Snyder Co.:* Beavertown, Shade Mt. Nursery. *Somerset Co.:* Jennerstown, Schmucker's Nursery. *York Co.:* Dover, Strathmeyer Forest; Manchester, Daubers Nursery. *Washington Co.:* McMurray, Kurtz's Nursery; Washington, 625 N Main; Fort Washington. **Tennessee:** *Sevier Co.:* Great Smoky Mts. Nat. Pk., Norse Camp. **West Virginia:** *Greenbrier Co.:* White Sulphur Springs. *Nicholas Co.:* Craigsville. *Preston Co.:* Terra Alta Pk. *Tucker Co.:* near Dolly Sods, ca. 4000 ft.

Pilophorus strobicola Knight
Figures 9E–H

Pilophorus strobicola Knight, 1926a: 19 (n. sp., diag., host). – Blatchley, 1926: 810 (desc., dist., host, key). – Knight, 1941: 122 (desc., dist., host, key). – Kelton, 1959: 36 (figures of male genitalia). – Knight, 1973: 137 (dist., host, key). – Wheeler et al., 1983: 143 (dist., host).

Pilophorus crassipes: Knight not Poppius, 1923: 542 (desc., dist., host, key).

HOLOTYPE: ♂, Ithaca, N.Y., 30.VI.1920, H. H. Knight; *Pinus strobus*; deposited in the USNM.

DIAGNOSIS: Distinguished from *piceicola* by the less strongly incrassate antennal segment 2 and larger size, and from *amoenus* by the noncampaniform pronotum and the rather shaggy appearance of the hemelytral vestiture.

DESCRIPTION: Large species, length apex tylus–cuneal fracture 3.27–3.63 mm. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to posterior transverse setal band medium orange brown, antennal segment 1 infuscate dorsally and lighter ventrally, segment 2 infuscate proximally and castaneous on distal ½, segment 3 white, segment 4 white proximally and infuscate apically, procoxae white proximally, metatrochanters white, metacoxae white distally, pro- and mesotibiae pale. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, smooth and weakly shining; posterior band of setae complete, nearly straight, a large angled patch sublaterally on abdominal sternites 2–4; dorsum with some scattered, reclining, dark setae and slightly thickened scattered golden shining setae on hemelytra and silvery shining setae on pronotum and scutellum. STRUCTURE: Face elongate in frontal view, the genae angled, moderately elevated, and broadly rounded; pronotum with anterior and posterior lobes confluent, posterior lobe moderately swollen and elevated, lateral margins distinctly concave; antennal segment

2 weakly but distinctly clavate (fig. 9H); metatibiae slightly flattened and gently curving, greatest width slightly proximad of midpoint and about half again as great as thickness; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 9F).

HOSTS: *Picea abies*, *Pinus strobus*, *P. sylvestris*, *P. banksiana*, jack pine, *Larix decidua*.

DISTRIBUTION: Eastern North America: west to Iowa and Minnesota, north to Minnesota, Quebec, and New Brunswick, and south to North Carolina.

SPECIMENS EXAMINED: 331 specimens collected between June 25 and September 1; deposited in: AMNH, CAS, CNC, KU, LSU, PDA, TAM, USNM. – CANADA: **New Brunswick:** Berwick. **Nova Scotia:** Coldbrook. **Ontario:** Marmora; Ottawa. **Quebec:** Magog; Quyon; Shawville. USA: **Connecticut:** *Hartford Co.:* Hartford. **Illinois:** *Ogle Co.:* White Pine Forest Pk. **Indiana:** *Howard Co.:* NW Howard Co. *Porter Co.:* 2–3 mi W of Michigan City, near LaPorte Co. line. **Iowa:** *Allamakee Co.:* Lansing. *Delaware Co.:* Backbone St. Pk. *Grundy Co.:* Grundy Center. *Jones Co.:* Wapsipinicon St. Pk. *Story Co.:* Ames. **Maine:** *Hancock Co.:* Mt. Desert. *Kennebec Co.:* Clinton; Pittston. *Oxford Co.:* Paris. **Massachusetts:** *Berkshire Co.:* Hartsville, Lk. Buel. *Essex Co.:* Saugus; Marblehead. *Franklin Co.:* Sunderland, Mt. Toby. *Middlesex Co.:* Boston, Arnold Arboretum. **Michigan:** *Charlevoix Co.:* Beaver Island. *Emmett Co.:* 1 mi S of Pellston. *Kalamazoo Co.:* Gull Lk. Biol. Sta. *Newaygo Co.:* T12N R12W Sec 27. **Minnesota:** *Carlton Co.:* Elkhorn Crk. *Ramsey Co.:* University Farm. **New Hampshire:** *Coos Co.:* Mt. Washington. *Grafton Co.:* Franconia. *Merrimac Co.:* Boscawen. *Sullivan Co.:* Claremont. **New York:** *Albany Co.:* Rensselaerville. *Cattaraugus Co.:* Gowanda. *Chautauqua Co.:* Jamestown. *Erie Co.:* Hamburg. *Essex Co.:* Lake Placid; Whiteface Mt.; Adirondack Mts., Cascade Lk. *Greene Co.:* Tannersville, Onteora Pk., 2400–2600 ft. *Hamilton Co.:* Sabael, Indian Lk. *Queens Co.:* Flushing Meadow, Corona Park. *St. Lawrence Co.:* Wanakena; Cranberry Lk. *Suffolk Co.:* Bayshore, Brentwood Rd. *Tompkins Co.:* Ithaca; Ithaca, Ringwood. *Westchester Co.:* White Plains; Lk. Waccabuc. *County ?:* Madison Bks.; Mosholu. **North Carolina:** *Macon Co.:* Highlands. *Union Co.:* Monroe. **Pennsylvania:** *Bedford Co.:* PA Turnpike near Breezewood. *Blair Co.:* Duncansville; Altoona, Fanella Nursery. *Bucks Co.:* Danboro. *Cambria Co.:* Adams Nursery near Syberton; Johnstown, Winterset Nursery. *Clinton Co.:* Rt 144, Tamarack. *Crawford Co.:* Titusville. *Dauphin Co.:* Harrisburg, East Harrisburg Cemetery; Rt 325, Clark's Valley, 10 mi N of jct 225. *Forest Co.:* Muzette. *Indiana Co.:* Indiana, Oakland Cemetery; Shelocta, Canale's Nursery. *Lehigh Co.:* Zionville, Lehigh Valley Nursery. *Montgomery Co.:* Huntingdon Valley. *Philadelphia Co.:* Philadelphia. *Schuylkill Co.:* New Ringold, Hidden View Nursery. *Wayne Co.:* Honesdale; Curtis Nursery near Callicoon, N.Y. *Westmoreland Co.:* Greensburg, St. Clair Cemetery. **Tennessee:** *Carter Co.:* Roan Mountain. **Vermont:** *Grand Island Co.:* Grand Island St. Pk. *Orange Co.:* Union Village. **West Virginia:** *Greenbriar Co.:* White Sulphur Springs. *Preston Co.:* Terra Alta Pk. *Tucker Co.:* Rt 32, S of Thomas.

PILOPHORUS CRASSIPES SPECIES GROUP

Recognized by the hemelytra with a uniform polished texture posteriad of the posterior band of scalelike setae, the unicolorous dark third antennal segment, the flat vesica with subapical denticles on the mesial spinelike process, and the habit of breeding on species of Coniferae.

Pilophorus crassipes Heidemann
Figures 10A–D

Pilophorus crassipes Heidemann, 1892: 225 (diag.; as Uhler MS name). – Knight and McAtee, 1929: 14, 27 (syn., dist., host). – Wheeler and Henry, 1975: 358 (syn.; lectotype designation). – Henry and Smith, 1979: 215 (dist.). – Wheeler, 1980: 483 (figure of first instar). – McPherson et al., 1983: 37 (flight activity). – Wheeler et al., 1983: 143 (dist., host).

Pilophorus crassipes Poppius, 1914a: 242 (in part; key, desc.; as n. sp. attributed to Uhler). REVISED SYNONYMY.

Pilophorus crassipes Van Duzee, 1918: 293 (as n. sp., desc., dist. host; synonymized by Wheeler and Henry, 1975: 358).

Pilophorus vanduzeei Knight, 1923: 540 (n. sp., desc., host, key). – Knight, 1926a: 19 (correction

of misidentifications, dist.). – Knight, 1941: 120 (desc., dist., host, key). – Knight, 1973: 135 (dist., host, key) (syn. by Wheeler and Henry, 1975: 358).

Pilophorus banksianae Knight, 1973: 134 (n. sp., desc., host, key). NEW SYNONYMY.

LECTOTYPE: ♂, Washngtn, D.C., 11/7.90; O. Heidemann; deposited in the USNM.

HOLOTYPES OF SYNONYMS: *Pilophorus banksianae* Knight: ♀, Brainerd, MINN., Aug. 23-25, 1971, Harry H. Knight; on *Pinus banksiana*; deposited in the USNM. *Pilophorus crassipes* Van Duzee: Washngtn, DC, 15-6; Heideman [sic]; deposited in CAS. *Pilophorus vanduzeei* Knight: ♂, Taghanic, Ithaca, N.Y., 11-VII-1920, H. H. Knight Collector; *Pinus resinosa*; deposited in the USNM.

LECTOTYPE OF SYNONYM: *Pilophorus crassipes* Poppius: ♀, Lakehurst, N.J., 29.VI.11; deposited in the USNM.

DIAGNOSIS: Distinguished from *henryi*, *taxodii*, and *tibialis* by the bicolored antennal segment 4, *henryi* and *taxodii* by the larger size, *taxodii* by the much darker coloration, and *tibialis* by the more campaniform pronotum and the generally smaller number of denticles on the vesical spine, and *taxodii* and *tibialis* by the presence of heavy, erect, black bristles on the scutellum and hemelytra as well as some scattered scalelike setae on the anterior margin of the pronotum.

DESCRIPTION: Large species, length apex tylus–cuneal fracture 3.56–4.29 mm. COLORATION: Body and appendages generally castaneous, hemelytra anterior to posterior transverse setal band varying from rather bright orange brown (similar to coloration usually seen in *amoenus*) to deep chocolate brown, antennal segment 1 infuscate, segment 2 infuscate proximally and castaneous distally, segment 3 castaneous, segment 4 white on proximal ½, castaneous apically. SURFACE AND VESTITURE: Corium polished over entire width posterior to posterior transverse band of setae, band of setae complete and straight, a small patch of scalelike setae sublaterally on abdominal sternite 2; hemelytra and scutellum with scattered, erect, heavy black bristles of moderate length; frons, vertex, and anterior lobe of pronotum with a few appressed silvery flattened setae. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate, not rounded, genae raised in the form of a broadly rounded carina; pronotum with anterior and posterior lobes confluent, transversely rounded, lateral margins weakly concave; antennal segment 2 long, weakly clavate (fig. 10D); metatibiae strongly curved, greatest width at least 2 times thickness; vesica flat, mesial process with two small teeth subapically (fig. 10B).

HOSTS: *Larix* sp., *Pinus banksiana*, *P. echinata*, *P. mugo*, *P. ponderosa*, *P. resinosa*, *P. rigida*, *P. strobus*, *P. sylvestris*, *P. taeda*, *P. virginiana*, *Tsuga canadensis*.

DISTRIBUTION: Eastern North America: west to eastern Colorado, north to Minnesota, Ontario, and New Hampshire, and south to Alabama, Mississippi, and Louisiana. A single specimen deposited in the Canadian National Collection from 10 mi NE of Jacala, Hidalgo, Mexico, seems almost certainly to be mislabeled.

SPECIMENS EXAMINED: 388 specimens collected between May 18 and September 25, the majority having been collected in July; deposited in: AMNH, CAS, CNC, JTP, KU, LSU, PDA, TAM, UCB, USNM. – CANADA: **Ontario:** Catharines; Fergus; Arthur; One Sided Lk.; St. Catharines; Shawanaga; Ridgeway; Thessalon. MEXICO: **Hidalgo:** 10 mi NE of Jacala. USA: **Alabama:** *Clay Co.:* Cheaha St. Pk., blacklight. *Macon Co.:* Tuskegee, at light. **Colorado:** *Douglas Co.:* Roxborough Rd near Chatfield Pk.; Waterton; Roxborough Rd near Waterton, 5600 ft. *Elbert Co.:* 10 mi E of Kiowa. **Connecticut:** *Tolland Co.:* Mansfield Center. **District of Columbia:**. **Georgia:** *Clarke Co.:* 3 mi N of Athens, black light trap. *De Kalb Co.:* Atlanta. *Rabun Co.:* Clayton, 2000–3700 ft. **Illinois:** *Boone Co.:* Belvidere. **Indiana:** *Howard Co.:* NW Howard Co. **Iowa:** *Henry Co.:* Mt. Pleasant. *Story Co.:* Ames. **Louisiana:** *Jefferson Davis Par.:* Jennings. *St. Tammany Par.:* Slidell. **Maryland:** *Montgomery Co.:* Glen Echo; Great Falls; Plummers Island. *Prince Georges Co.:* Paint Br., Beltsville; Beltsville; Bladensburg. *County ?:* Corner of Conduit and Potomac Rds. **Massachusetts:** *Barnstable Co.:* Wellfleet; N Falmouth, Cape Cod; Woods Hole. *Nantucket Co.:* Nantucket. *Norfolk Co.:* Natick. **Michigan:** *Cheboygan Co.:* Douglas Lk. *Huron Co.:* Sand Point.

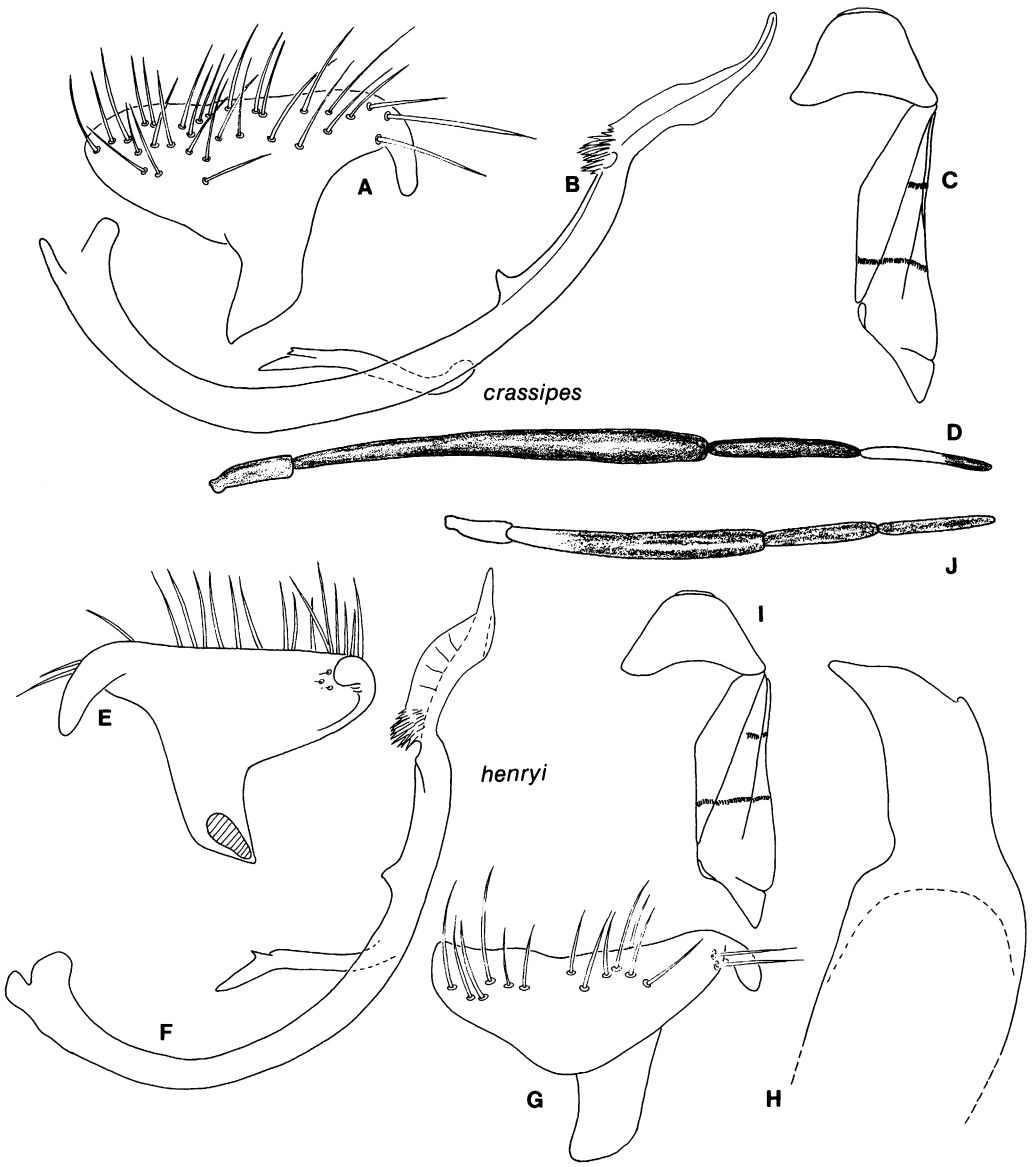

Fig. 10. A–D. *Pilophorus crassipes*. **A.** Left paramere, frontal view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–J. *Pilophorus henryi*. **E.** Left paramere, posterior view. **F.** Vesica. **G.** Left paramere, frontal view. **H.** Phallotheca. **I.** Pronotum and hemelytron, ♂. **J.** Antenna.

Minnesota: *Cass Co.:* Bena. *Crow Wing Co.:* Brainerd. *Itasca Co.:* Itasca Pk. **Mississippi:** *Forrest Co.:* Ashe Nursery near Maxie. *Holmes Co.:* Tchula. *Jackson Co.:* Horn Island. **Nebraska:** *Glen Sioux Co. Nemaha Co.:* Coryell Pk., 2 mi S of Brock. **New Hampshire:** *Belknap Co.:* Barnstead. *Grafton Co.:* Franconia. **New Jersey:** *Burlington Co.:* Riverton; Chatsworth. *Ocean Co.:* Lakehurst. **New York:** *Columbia Co.:* Lk. Charlotte. *Schenectady Co.:* Schenectady. *Suffolk Co.:* Amagansett; Bayshore; Flanders; Huntington; Lloyd's Neck; Riverhead; Yaphank. *Tompkins Co.:* Taghanic, Ithaca; Ithaca; McLean. *Ulster Co.:* Rt 44 & 45 E of Kerhonkson; Rt 28 near outlet of Ashokan Reservoir. **North Carolina:** *Dare Co.:* Kill Devil Hills. *Macon Co.:* Highlands, Whiteside Cove.

Mecklenberg Co.: Rt 51, 1 mi W of Rt 16 near Matthews; Youngblood and Hamilton Rds. **Pennsylvania:** *Bedford Co.:* Bedford Hunting Lodge Nursery. *Berks Co.:* Hamburg. *Centre Co.:* State College. *Cumberland Co.:* Conifer Hill, Newville; Turnpike E of Blue Mt.; near Carlisle. *Dauphin Co.:* Mid. Paxt. Twp., Rt 443, Fish Crk. Val. Sch.; Hershey, Hershey Hotel; Harrisburg; Rockville. *Erie Co.:* Fairview, Pollack. *Indiana Co.:* Miller Farm, Canales Nursery; Indiana, Oakland Cemetery. *Monroe Co.:* 3 mi E of Brodheadsville, Greenview Dr. *Schuylkill Co.:* I-81 and Rt 61 near Frackville; Airport Rd near Minersville; I-81, ½ mi S of Rt 25. *Union Co.:* Rt 11–15, White Deer exit. **South Carolina:** *Anderson Co.:* Anderson. **Tennessee:** *Anderson Co.:* Oak Ridge. **Virginia:** *Arlington Co.:* Arlington. *Fairfax Co.:* Falls Church; Dunn Loring; Vienna. *Princess Anne Co.:* Virginia Beach. *County?:* Chain Bridge. **West Virginia:** *Morgan Co.:* Berkeley Springs. **Wisconsin:** *Douglas Co.:* Brule. *Trampealeau Co.:* near Osseo on Co. Rts G & K.

DISCUSSION: Wheeler and Henry (1975: 358) gave a description of the nomenclatorial history of *crassipes* Heidemann. Some additional comments are in order with regard to *crassipes* Poppius, however.

Knight (1968, 1973) believed that the type locality of *crassipes* Poppius was Manitou, Colorado, even though Poppius (1914a) designated no type and no lectotype was subsequently designated. On that basis Knight concluded that *crassipes* was the senior synonym of the western North American species *americanus* Poppius (1914a: 243)—over which it had page priority—even though Poppius had indicated that he examined material from the eastern United States in preparing his description of *crassipes*.

Because no lectotype had been designated for *crassipes* Poppius, we searched the collections of the USNM in an effort to find the material on which the original description was based. That search produced three relevant specimens, all of which are from the eastern United States. We have designated one of these as the lectotype (see above) and the remaining two as paralectotypes (1♂ from Lakehurst, New Jersey and 1♀ from Washington, D.C.). We found no specimens from Arizona or Colorado, the other localities listed by Poppius, which matched Poppius' published label data. Furthermore, specimens from those localities, but with different dates, are all *tibialis*. Therefore, we conclude, contrary to Knight, that *crassipes* Poppius is a junior synonym of *crassipes* Heidemann.

Knight (1973) described *banksianae*, based on specimens from Minnesota and Iowa collected on *Pinus banksiana* and *Pinus strobus*. He related his new species to *Pilophorus pinicola*, also described as new from the same Minnesota locality and collected on *Pinus banksiana*. Our examination indicates that *banksianae* is a junior synonym of *crassipes*, based on the general structure, antennal coloration, and genitalic structure (see discussion under *amoenus* for placement of *pinicola*). *Pilophorus vanduzeei* Knight was previously synonymized with *crassipes* by Wheeler and Henry (1975).

Pilophorus henryi, new species
Figures 10E–J

HOLOTYPE: ♂, USA: Florida: Highlands Co., Lake Placid, Archbold Biological Station, April 27, 1981, T. J. Henry and A. G. Wheeler collectors; blacklight trap; deposited in the USNM.

DIAGNOSIS: Distinguished from *taxodii* and *tibialis* by the presence of heavy black bristles on the hemelytra, the less extensive patch of scalelike setae ventrally on the abdomen, and the presence of some scattered scalelike setae on the anterior margin of the pronotum, *crassipes* and *taxodii* by the less campaniform pronotum, *tibialis* by the smaller number of subapical teeth on the vesical spine, and *crassipes*, *taxodii*, and *tibialis* by the presence of a conspicuous broad pruinose band anterior to the posterior band of setae on the hemelytra.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 3.04 mm. COLORATION: Body and appendages generally castaneous, hemelytra anterior to posterior transverse setal band castaneous, antennal segment 1 infuscate, segment 2 infuscate proximally and reddish to castaneous distally, segment 3 reddish to castaneous, segment 4 white (or nearly so), pro- and mesotibiae, metacoxae distally, and metatrochanters light. SURFACE AND VES-

TITURE: Corium polished over entire width posterior to posterior transverse band of setae, band of setae complete and straight, a small patch of scalelike setae sublaterally on abdominal sternite 2; frons, vertex, and anterior lobe of pronotum with some scattered, appressed, silvery, flattened setae; hemelytra with heavy, erect, black, bristles; hemelytra anterior to posterior band of scalelike setae with a broad pruinose band. STRUCTURE: Face elongate in frontal view, the outline of the genae sinuous, the genae raised in the form of a broadly rounded carina; pronotum with anterior and posterior lobes confluent, posterior lobe not distinctly swollen and or elevated, lateral margins nearly straight; antennal segment 2 nearly cylindrical and slightly enlarged (fig. 10J); metatibiae moderately flattened, greatest width just proximad of midpoint about half again as great as thickness; vesica flat, mesial process with 1 tooth subapically (fig. 10F).

ETYMOLOGY: Named in honor of Thomas J. Henry.

HOSTS: Unknown.

DISTRIBUTION: Florida and Georgia.

PARATYPES: USA: **Florida:** *Lee Co.:* Fort Myers, June 21, 1951, Price, Beamer, Wood (KU), 1♂. **Mississippi:** *Harrison Co.:* Biloxi, June 2 1950, J. T. Polhemus (AMNH), 1♂.

Pilophorus taxodii Knight
Figures 11A–D

Pilophorus taxodii Knight, 1941: 121 (n. sp., desc., fig., host, key). – Froeschner, 1949: 144 (key). – Knight, 1973: 137 (dist., host, key). – Snodgrass et al., 1984: 854 (dist., host).

HOLOTYPE: Not examined.

DIAGNOSIS: Distinguished from *crassipes* and *henryi* by the absence of heavy black bristles on the hemelytra, the more extensive patch of scalelike setae lateroventrally on the abdomen (less extensive and dense than in *tibialis*), *crassipes* and *tibialis* by the generally smaller size, and *henryi* and *tibialis* by the more campaniform pronotum, and *tibialis* by the smaller number of subapical teeth on the vesical spine.

DESCRIPTION: Medium-size species, length apex tylus–cuneal fracture 2.44–3.04 mm. COLORATION: Body and appendages ranging from partially orange brown through deep brown in individual specimens, hemelytra anterior to posterior transverse setal band varying from bright orange to medium brown, antennal segment 1 pale, segment 2 pale proximally and much darker distally, segment 3 dark, segment 4 white. SURFACE AND VESTITURE: Corium polished over entire width posterior to posterior transverse band of setae, band of setae complete and straight, a diffuse patch of scalelike setae sublaterally on abdominal sternites 2–4 (possibly 5); dorsum with scattered, reclining, brown, simple setae. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate and rounded ventrally, the genae raised in the form of a broadly rounded carina; pronotum with anterior and posterior lobes confluent, posterior lobe not swollen or elevated, lateral margins weakly curved, general shape campaniform; antennal segment 2 slender (fig. 11D); metatibiae strongly flattened, especially on proximal ½, greatest width about 2 times thickness, tibia conspicuously curving; vesica flat, mesial process with 1 tooth subapically (fig. 11B).

HOSTS: *Taxodium distichum.*

DISTRIBUTION: Southern Illinois south to Florida and west to west central Texas.

SPECIMENS EXAMINED: 78 specimens, including one male and two topotypic female paratypes, collected between April 21 and July 11; deposited in: AMNH, LSU, TAM, TJH, USNM. – USA: **Florida:** *Martin Co.:* Rt 98–411, 7 mi S of Okeechobee; 9 mi S of Okeechobee. **Illinois:** *Alexander Co.:* Horseshoe Lk. *Pulaski Co.:* Karnak. **Louisiana:** *East Baton Rogue Par.:* LSU Campus, at light. **Texas:** *Blanco Co.:* Cypress Mills. *Guadalupe Co.:* Seguin. *Kerr Co.:* Kerrville.

DISCUSSION: Although very similar in coloration and morphology, the specimens from Florida, Louisiana, and Texas are substantially smaller than those from Illinois.

Pilophorus tibialis Van Duzee
Figures 11E–L, 12

Pilophorus tibialis Van Duzee, 1918: 292 (n. sp., desc., host). – Knight, 1968: 165 (dist.). – Knight, 1973: 136 (dist., key).

Pilophorus hesperus Knight, 1968: 169 (n. sp., desc., host, key). – Knight, 1973: 134 (dist., host, key). NEW SYNONYMY.

Pilophorus jezzardi Knight, 1968: 170 (n. sp., desc.,

host, key). – Knight, 1973: 134 (dist., host, key). NEW SYNONYMY.

Pilophorus microsetosus Knight, 1968: 169 (n. sp., desc., host, key). – Knight, 1973: 134 (dist., host, key). NEW SYNONYMY.

Pilophorus desertinus Knight, 1973: 136 (n. sp., desc., key). NEW SYNONYMY.

Pilophorus mexicanus Knight, 1973: 135 (n. sp., desc., key). NEW SYNONYMY.

HOLOTYPE: ♂, Cayton, Cal., Shasta Co., July 12, 1918; E. P. Van Duzee collector; deposited in the CAS.

HOLOTYPES OF SYNONYMS: *Pilophorus desertinus* Knight: ♂, 8 mi. W. Minden, 5500′, Douglas Co., Nev., VII-6-1966, C. W. O'Brien. *Pilophorus hesperus* Knight, ♂, Trinidad, Colo., Stonewall, 8500′, Aug. 7, 1925, H. H. Knight. *Pilophorus jezzardi* Knight: ♀, Ft. Garland, Colo., Aug. 10, 1925, H. H. Knight, *Pinus edulis*. *Pilophorus mexicanus* Knight: ♂, 22 miles east of Landa de Matamoros, Queretaro, Mexico, July 22-23, 1970, Murray, Hart, Phelps, Schaffner. *Pilophorus microsetosus* Knight: ♂, MERCURY, NEVADA, 12M (W), Aug. 24, 1965, Joe Merino, on *Pinus monophylla*. All specimens deposited in the USNM.

DIAGNOSIS: Distinguished from *crassipes* and *henryi* by the absence of heavy, black, bristles on the hemelytra (except in some Mexican specimens) and the more extensive patch of scalelike setae ventrally on the abdomen, *henryi* and *taxodii* by the generally larger size, *henryi* by the absence of a broad pruinose band anterior to the posterior setal band on the hemelytra, *crassipes* by the less campaniform pronotum, and *crassipes*, *henryi*, and *taxodii* by the greater number of subapical teeth on the vesical spine.

This species is most easily confused with *americanus*, with which it is broadly sympatric; it can be separated most easily by the coloration of antennal segments 3 and 4, 3 being totally dark and 4 totally white, whereas both segments 3 and 4 are bicolored in *americanus*; when these structures are missing *tibialis* can be separated from *americanus* with certainty only by dissecting the male genitalia.

DESCRIPTION: Generally large species, length apex tylus–cuneal fracture 2.83–4.62 mm. COLORATION: Body and appendages ranging from partially orange brown through castaneous to nearly black in individual specimens, hemelytra anterior to posterior transverse setal band varying from bright orange to nearly black, antennal segment 1 infuscate, segment 2 infuscate proximally and castaneous distally, segment 3 castaneous, segment 4 white, rarely infuscate distally. SURFACE AND VESTITURE: Corium polished over entire width posterior to posterior transverse band of setae, band of setae complete and straight, a large angled patch of scalelike setae sublaterally on abdominal sternites 2–5; dorsum generally with reclining pale or brown simple setae, sometimes with suberect pale or brown simple setae occasionally appearing as weak bristles (specimens from Durango, Mexico); area posterior to posterior band of setae sometimes beset with recumbent, golden, shining setae. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate, not rounded, the genae raised in the form of a broadly rounded carina; pronotum with anterior and posterior lobes confluent, posterior lobe swollen and strongly elevated, lateral margins nearly straight; antennal segment 2 long, weakly clavate (fig. 11L); metatibiae strongly flattened and strongly curving in most northern populations, weakly flattened and slightly curving in populations from Durango, Mexico; vesica flat, mesial process with 2–4 teeth subapically (fig. 11F–J).

HOSTS: *Pinus aristata*, *P. attenuata*, *P. chihuahuana*, *P. contorta*, *P. edulis*, *P. flexilis*, *P. monophylla*, *P. monticola*, *P. ponderosa*, *P. sabiniana*, *Juniperus scopulorum*, *J. monosperma*, *J. occidentalis*, *J. virginiana*, *Pseudotsuga menziesii*, *Abies lasiocarpa*, *Picea* sp., *Artemisia*, *Quercus garryana*.

DISTRIBUTION: Western North America: east to western South Dakota and west Texas, north to British Columbia, and south to Central Mexico (Queretaro).

SPECIMENS EXAMINED: Approximately 2475 specimens collected between May 29 and September 19, the majority in July and early August; deposited in: AMNH, CAS, CNC, JTP, KU, OSU, TAM, UCB, UCR, UID, USNM, ZIL. – CANADA: **British Columbia:** Kaslo; Goldstream; Oliver; Parksville; Salmo. MEXICO: **Chihuahua:** Majaica, 45 mi NW of Chihuahua, 7000 ft. **Coahuila:** 20 mi SE of Saltillo; 33 mi SE of Saltillo near Jame,

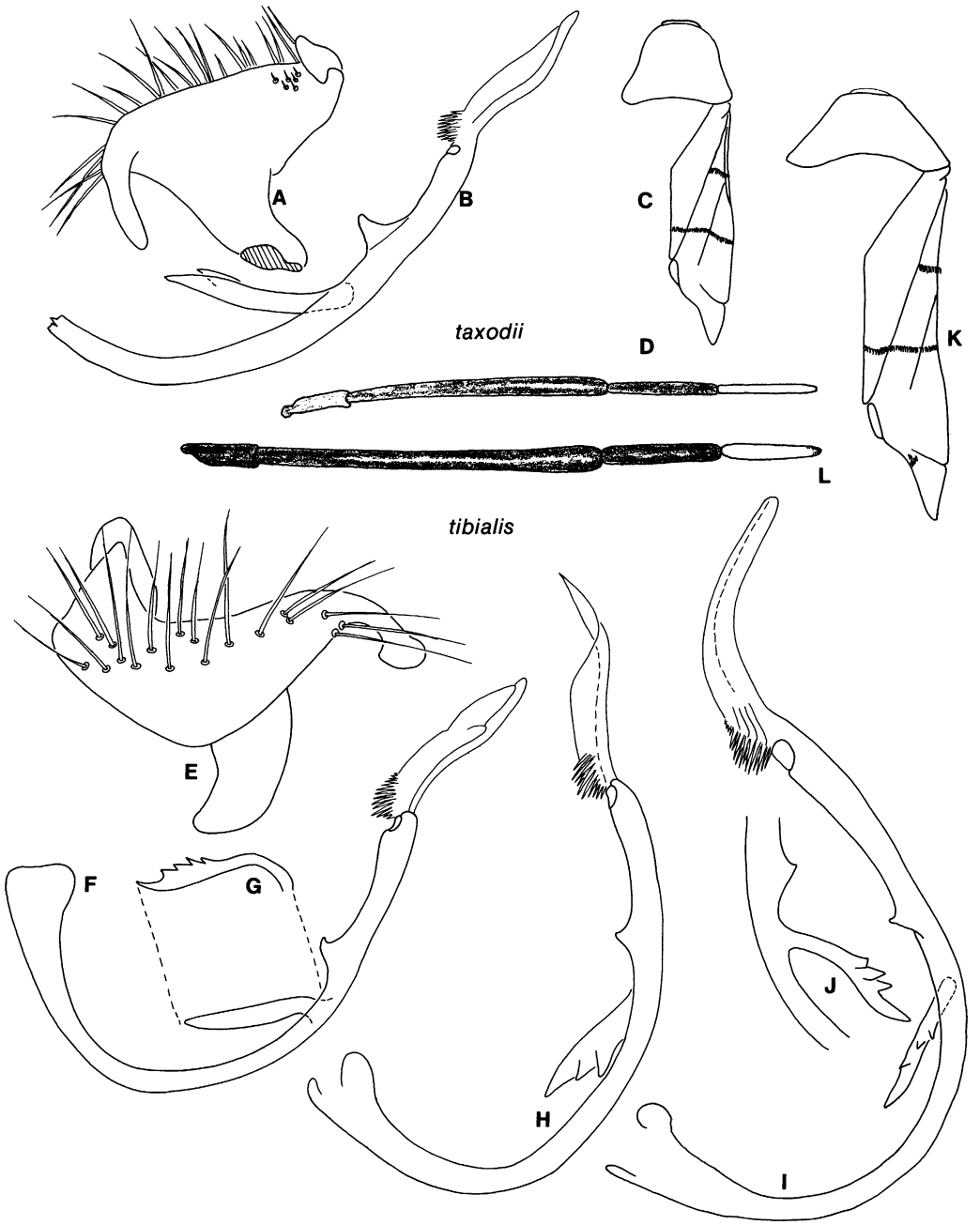

Fig. 11. A–D. *Pilophorus taxodii.* **A.** Left paramere, posterior view. **B.** Vesica (basal portion broken). **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–L. *Pilophorus tibialis.* **E.** Left paramere, frontal view. **F.** Vesica (Josephine Co., Oregon). **G.** Detail of mesial vesical spine. **H.** Vesica (Big Bend Nat. Pk., Texas). **I.** Vesica (White Pine Co., Nevada). **J.** Detail of mesial vesical spine. **K.** Pronotum and hemelytron, ♂. **L.** Antenna.

7500 ft. **Durango:** Durango; 23 mi W of Durango, 7500 ft; 25 mi W of Durango, 7800 ft; El Salto; 3 mi E of El Salto, 8400 ft; 10 mi W of El Salto, 9000 ft; 9 mi W of La

Ciudad, 9000 ft; 24 mi W of La Ciudad, 7000 ft; 30 mi W of Durango, 8000 ft; Navios. **Mexico:** 6 mi E of Valle de Bravo. **Nuevo Leon:** 3 mi S of Pacheco; 18 mi N of La Escondida; 2 mi N of La Ascension; 2 mi N of Pablillo. **Puebla:** Tlahuapan. **Queretaro:** 22 mi E of Landa de Matamoros, 5200 ft. **Zacatecas:** San Juan. USA: **Arizona:** *Apache Co.:* 5 mi SW of Springerville; 8 mi N of Alpine; Eagar, Apache Nat. For.; McNary; Big Lk., Apache Nat. For., 9100 ft. *Cochise Co.:* Chiricahua Nat. Monument; Chiricahua Mts., Onion Saddle; Chiricahua Mts., Rustler Pk., 7500 ft; Chiricahua Mts.; Portal; 10 mi W of Portal, 2000 m; Huachuca Mts., Upper Carr Cyn., 7500 ft; Huachuca Mts., Carr Peak. *Coconino Co.:* Happy Jack, Coconino Nat. For., 7600 ft; Flagstaff, Coconino Nat. For.; 17 mi NW of Flagstaff; San Francisco Mts., Coconino Nat. For., 9650 ft; Kaibab Lk., Kaibab Nat. For.; Canyon Point, Sitgreaves Nat. For., 7600 ft; Grand Cyn. Nat. Pk.; Bright Angel; Williams. *Gila Co.:* Globe, Tonto Nat. For. *Graham Co.:* Graham Mts., Hospital Flat, 9500 ft. *Greenlee Co.:* Granville, Apache Nat. For., 6900 ft. *Maricopa Co.:* E of Sunflower; Four Peaks Rd, mile 11. *Mohave Co.:* Hualapi Mts., SE of Kingman, 4000–6400 ft. *Navajo Co.:* Show Low, Sitgreaves Nat. For. *Pima Co.:* S of Coronado Nat. For. on Mt. Lemmon Rd, 4700 ft; Tucson; Bear Wallow, Santa Catalina Mts., 8000 ft; Mt. Lemmon, Santa Catalina Mts. *Yavapai Co.:* 1 mi E of Stoneman Lk. interchange on I-17, 5200 ft; Prescott. *County ?:* Glenn Oaks. **California:** *Eldorado Co.:* Georgetown; Strawberry Valley. *Fresno Co.:* Mt. Kaiser, 10,000 ft. *Humboldt Co.:* Cobbs, NE of Bridgeville. *Lake Co.:* 22 mi E of Lucerne. *Madera Co.:* Mugler Meadow; Jackass Meadow. *Mariposa Co.:* Feliciana Mt.; 4 mi S of Miami Ranger Sta.; 2 mi N of Uson, 3000 ft; Yosemite Nat. Pk., Yosemite Crk. Ranger Sta. *Modoc Co.:* Buck Crk. *Mono Co.:* Lee Vining; Coleville; Mammoth Lks. *Napa Co.:* 2 mi NNE of Angwin, 1300 ft. *Nevada Co.:* Sagehen near Hobart Mills; 1 mi S of Grass Valley; 2 mi N of Cisco. *Placer Co.:* Donner Lk.; Cisco, Tahoe Nat. For.; Truckee, Tahoe Nat. For. *Riverside Co.:* San Jacinto Mts., Herky Crk. *San Louis Obispo Co.:* Oso Flaco Lk. *Shasta Co.:* 4 mi S of Rt 89-299 Jct, 1000 m; 7.6 mi N of Manton, 1138 m; 1 mi W of Fall River Mills, 1030 m; Cayton; Shasta Springs. *Siskiyou Co.:* 1 mi W of Bartle; Siskiyou Nat. For.; Big Flat; Shovel Crk. Meadow, Willow Crk. Mt.; Mt. Hebron Summit; 9 mi E of Shasta City, 3500 ft; McCloud, 3520 ft; 1 mi E of I-5 towards McCloud; just NW of McCloud; 0.5 mi S of Lava Beds Nat. Mon. toward Medicine Lk.; 6.5 mi S of Lava Beds Nat. Mon. toward Medicine Lk. *Tehama Co.:* 14 mi W of Mineral, 2800 ft; Deer Crk.; 13 mi W of Mineral, 875 m; Dales. *Trinity Co.:* Coffee Crk.; Carrville, 2400–2500 ft; Van Duzen Rd. *Tulare Co.:* Rattlesnake Crk., 900 ft; Sequoia Nat. Pk. *Tuolumne Co.:* Oakland Rec. Camp. *Yolo Co.:* Rumsey. *County ?:* Sisson. **Colorado:** *Boulder Co.:* Nederland, Roosevelt Nat. For. *Chaffee Co.:* Salida; Poncha Springs; Monarch Pass, San Isabel Nat. For., 10,500 ft; 10 mi N of Salida; E of Buena Vista, Old Midland Dr. *Clear Creek Co.:* Jct I-70 and Hwy 40. *Costilla Co.:* Fort Garland. *Dolores Co.:* 29 mi SW of Norwood. *Douglas Co.:* Roxborough Rd near Waterton, 5600 ft; Trout Crk. Pass, Pike Nat. For.; Waterton. *Eagle Co.:* Vail; Water Wheel Ranch near Bond; McCoy. *El Paso Co.:* Cheyenne Cyn., 6300 ft; Manitou. *Garfield Co.:* Mc Andrews Lk., 7000 ft. *Gilpin Co.:* Idaho Springs. *Grand Co.:* St. Louis Crk. Cmpgrd., 3.4 mi W of Graser, 9000 ft. *Gunnison Co.:* 16 mi N of Almont, Lodgepole Cmpgrd.; Maysville; Agate, Gunnison Nat. For., 9500 ft; Crested Butte, 8000 ft. *Huerfano Co.:* 5 mi W of Walsenburg. *Jackson Co.:* near Cowdry on Hwy 125. *Jefferson Co.:* 5 mi W of Buffalo Crk.; Evergreen; Indian Hills. *Lake Co.:* Leadville. *La Plata Co.:* Durango. *Larimer Co.:* Owl Cyn., 6000 ft; Pingree Pk.; 7 mi E of Estes Park on Hwy 36; 3 mi E of Estes Park; Estes Park; Fort Collins; Chambers Lk., Roosevelt Nat. For., 9200 ft; Fall River Rd, Rocky Mt. Nat. Pk., 9500 ft; Mountain Park, Roosevelt Nat. For., 6600 ft; Ward, Roosevelt Nat. For. *Las Animas Co.:* Stonewall; 3 mi N of Stonewall; 1 mi E of Stonewall Fire Dept.; 5 mi E of Stonewall; 1 mi S of Cuchara Pass, 9000 ft; S side of Cuchara Pass on Rt 12. *Mineral Co.:* San Juan Mts. *Montezuma Co.:* Mancos; Mesa Verde Nat. Pk., 7000 ft. *Montrose Co.:* Nucid; 10 mi W of Montrose. *Park Co.:* 3 mi S of Guffey; Wilkerson Pass, Pike Nat. For. *Pitkin Co.:* near Redstone; Aspen, White River Nat. For. *Rio Blanco Co.:* W Evacua-

tion Crk., 6400 ft. *Routt Co.:* Rabbit Ears Pass, 9400 ft. *Summit Co.:* Dillon Reservoir near Dillon Dam. *Teller Co.:* Twin Crk. at Florissant. **Idaho:** *Benawah Co.:* 10 mi N of Tansed; vicinity of Emida, St. Joe Nat. For., T43N R52W; 2 mi W of Santa at jct of Rts 3 & 6. *Butte Co.:* Craters of the Moon Nat. Monument. *Caribou Co.:* Pine Bar Cmpgrd., 11 mi E of Wayan on Rt 34, 6000 ft. *Custer Co.:* 8 mi E of Stanley. *Idaho Co.:* White Bird Summit on Hwy 95, 4245 ft; 10 mi N of Nez Perce; Lochsa River Valley near Colgate Licks. *Kootenai Co.:* Athol. *Latah Co.:* 5.5 mi N of Moscow on Hwy 95; 5 mi N of Moscow, T40N R5W Sec 18; E city limit of Deary. *Shoshone Co.:* Cedar Crk. Rec. Area, 3 mi NW of Clarkia. *Valley Co.:* McCall. **Montana:** *Glacier Co.:* Glacier Nat. Pk., 10 mi W of Babb. *Granite Co.:* + 15 mi S of Drummond on Rt 10A. *Mineral Co.:* Haugan. *Missoula Co.:* Thibideau Cmpgrd. on Blackfood River E of Missoula. *County ?:* Bear Paw Mt. **Nebraska:** *Glenn Sioux Co.* **Nevada:** *Clark Co.:* Charleston Peak, 6500 ft. *Elko Co.:* 6 mi E of Wells. *Lander Co.:* Austin Summit; 7 mi SE of Austin. *Nye Co.:* Mercury, Nevada Atomic Test Site. *Washoe Co.:* 4.5 mi SW of Washoe, 6200 ft; Reno. *White Pine Co.:* 4.2 mi W of Baker, Wheeler Peak Rd, 6500 ft; Wheeler Peak Drive, 7000–10,000 ft; Wheeler Peak Rd, Humboldt Nat. For. near Baker. **New Mexico:** *Bernalillo Co.:* Tajique. *Grant Co.:* McMillan Camp, 14 mi N of Silver City, 7000 ft. *Guadalupe Co.:* Santa Rosa. *Los Alamos Co.:* Bandalier Nat. Mon. entrance. *Otero Co.:* 6 mi N of piñon; 2 mi SW of Mayhill; Mayhill; Cloudcroft; Mountain Park. *Sandoval Co.:* 6 mi E of Jemez, blacklight. *San Miguel Co.:* Las Vegas HS. *Santa Fe Co.:* 8 mi E of Los Alamos; Glorieta, Santa Fe Nat. For. *Socorro Co.:* 2 mi W of Magdalena; 6 mi W of Magdalena; Magdalena; 12 mi W of Magdalena. **Oregon:** *Baker Co.:* Wallowa Mts., 17 mi E of Medical Spgs., Two Color Cmpgrd.; Wallowa Mts., 20 mi E of Medical Spgs., Boulder Park. *Benton Co.:* Corvallis. *Clackamas Co.:* Government Camp. *Crook Co.:* Ochoco Summit, 31.7 mi E of Prineville. *Curry Co.:* Little Redwood Cmpgrd., R12W T40S Sec 29. *Deschutes Co.:* 10 mi W of Sisters on Hwy 20; 5 mi S of Sisters; 6 mi W of Sisters, 3400 ft; S side of Black Butte; Black Butte, 5500 ft. *Grant Co.:* Malheur Nat. For., Dixie Cmpgrd.; Malhuer Nat. For., Funny Bug Basin. *Hood River Co.:* White River at Hwy 35; R9E T3S Sec 18, 4300 ft; 6 mi SE of Parkdale, 3320 ft. *Jackson Co.:* 0.5 mi E of Pinehurst; Colestin. *Jefferson Co.:* 10 mi W of Sisters on Hwy 20. *Josephine Co.:* 4 mi NE of Cave Junction on Hwy 199; O'Brien; 7 mi S of Cave Junction, 400 m. *Klamath Co.:* 11 mi NE of Bly; 4 mi S of Four Mile Lk.; 9 mi W of Keno; 1 mi W of Crescent, 4500 ft; Spencer Crk. Rd off Rt 66. *Linn Co.:* 1 mi W of jct Hwy 22 on Hwy 20; 3 mi NW of Elgin on Hwy 244. *Union Co.:* Two Color Cmpgrd., Wallowa Whitman Nat. For. *Wallowa Co.:* Wallowa-Whitman Nat. For., Hurricane Crk.; Wallowa-Whitman NF, Miram Lk. Trail, 7370 ft. *Wasco Co.:* 1 mi E of Mosier. **South Dakota:** *Custer Co.:* Black Hills. *Lawrence Co.:* Cheyenne Crossing on Rt 14A. *Pennington Co.:* 5 mi NE of Keystone at jct of Rts 16 & 16A. **Texas:** *Brewster Co.:* Big Bend Nat. Pk., Green Gulch, 5300 ft. **Utah:** *Carbon Co.:* 8 mi NW of Helper of Rt 50/6, 8000 ft. *Daggett Co.:* Lodgepole Cmpgrd. near Daniel Pass on UT 40; Uinta Mts., 0.2 mi N of jct 44 & 260, 7500 ft. *Garfield Co.:* Bryce Cyn. Nat. Pk. *San Juan Co.:* 2.7 mi W of Rt 95 on Rt 263, 6000 ft; 3 mi W of Clay Hills Crossing Rd on Rt 263. *Wasatch Co.:* Dock Flat, 1 mi NE of Rt 40, 8000 ft. *Wayne Co.:* 10.5 mi N of jct Hwy 24 on Hwy 72, 8050 ft. **Washington:** *Asotin Co.:* 2.5 mi S of Anatone near Rattlesnake Summitt. *Chelan Co.:* Pump Chance Crk., 3 mi E of Swauk Pass, 4600 ft; R15E T26N Sec 9. *Kittatas Co.:* Easton. *Lewis Co.:* Chehalis. *Spokane Co.:* near Cheney. *Whatcom Co.:* Ross Lk., trailhead S of Ross Dam on Rt 20. **Wyoming:** *Albany Co.:* Tie Siding. *Fremont Co.:* Wind River Mts., Sink Crk. Cmpgrd. on Rt 131. *Niobrara Co.:* Lusk. *Park Co.:* Shoshone Nat. For. *Teton Co.:* Grand Teton Nat. Pk.

DISCUSSION: Knight (1968) described *hesperus*, *jezzardi*, and *microsetosus*; he later (Knight, 1973) described *desertinus* and *mexicanus*. He distinguished these taxa primarily on the basis of size, general coloration, and variation in the dorsal vestiture. Our examination of the holotypes and substantial additional material attributable to Knight's taxa indicates that even though they vary in size and coloration, within and between popula-

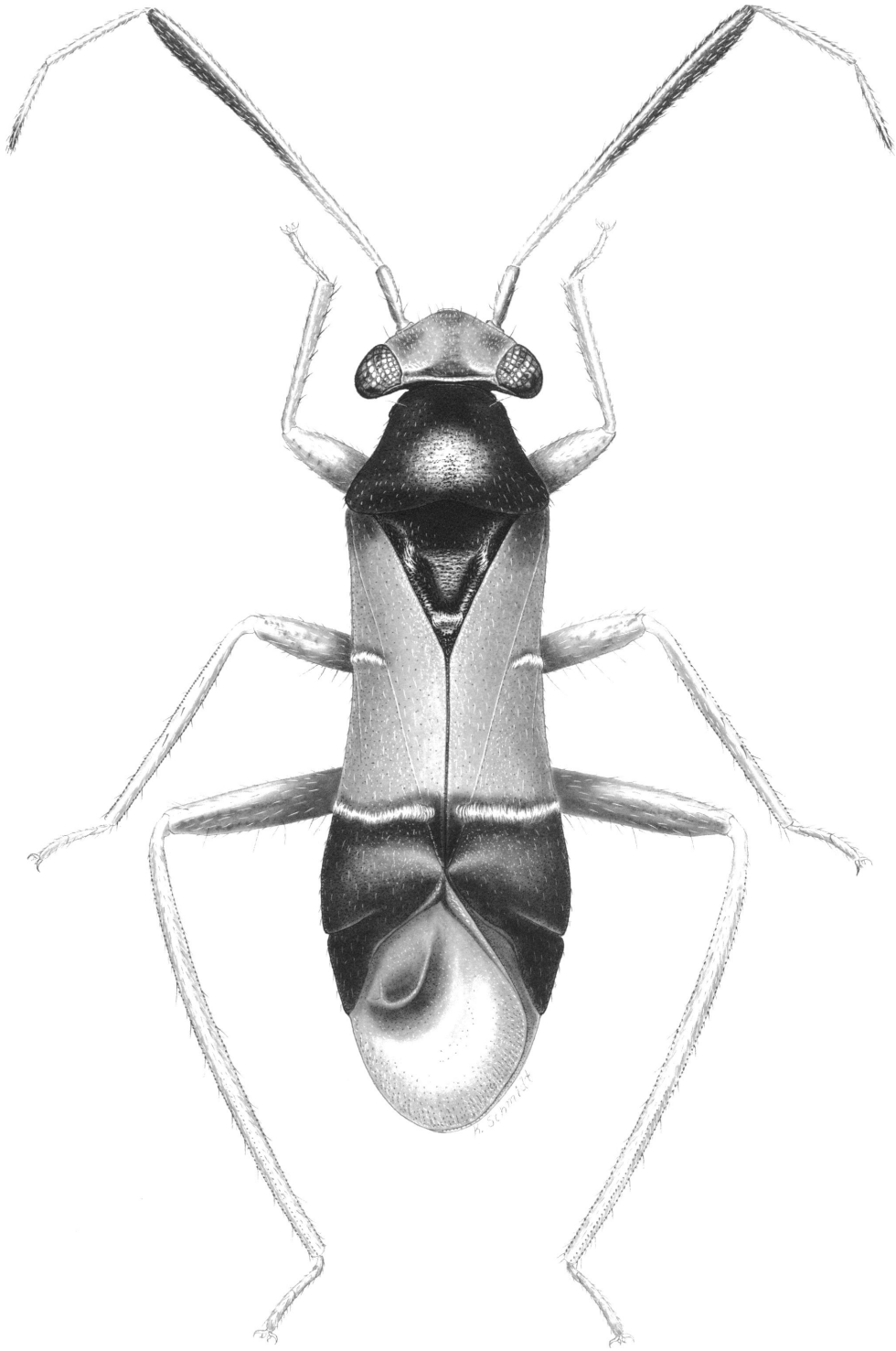

Fig. 12. *Pilophorus tibialis*, dorsal habitus, ♂.

tions, all five nominal species have the following combination of characters that are also found in *Pilophorus tibialis:* (1) antennal segment 3 dark and segment 4 white; (2) the hind tibiae in the males moderately to very strongly flattened and curved (less strongly so in some Mexican populations); (3) at most a very limited number of slender suberect black bristles on the dorsum (more numerous in some Mexican populations); (4) and 2–4 spicules on the mesial vesical spine. On the basis of these characteristics and our inability to find any constant between-population variation, we are treating all six species as synonymous, *tibialis* being the senior synonym.

Specimens from Granville, Arizona and Big Bend National Park, Texas, are distinctive for their uniformly small size. The Arizona specimens are additionally distinguished by their polished pronotum, mesoscutum, and scutellum.

PILOPHORUS AMERICANUS SPECIES GROUP

Recognized by the hemelytra with uniform polished texture posteriad of the posterior band of scalelike setae, the third antennal segment light proximally and dark distally, the flat vesica with a simple mesial spinelike process, and the habit of breeding on species of Coniferae.

Pilophorus americanus Poppius
Figures 13A–F

Pilophorus americanus Poppius, 1914a: 243 (n. sp., desc., key). – Wheeler and Henry, 1975: 359 (n. [= revised] status, host).

Pilophorus crassipes: Knight, 1968: 167 (syn., dist., disc., key). – Knight, 1973: 173 (syns., dist., disc., key).

Pilophorus barberi Knight, 1968: 171 (n. sp., desc., key). – Knight, 1973: 137 (dist.). NEW SYNONYMY.

LECTOTYPE: ♂, Williams, Ar., 21.7; H. S. Barber collecter; *P. americanus* n. sp.; LECTOTYPE *Pilophorus americanus* Poppius, det. R. T. Schuh and M. D. Schwartz; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus barberi* Knight: ♀, Huachuca Mts., Ariz., July 29, [19]05, collection of H. G. Barber; deposited in the USNM.

DIAGNOSIS: Distinguished from *uhleri* by the absence or very limited number of erect, black, bristles on the dorsum (which are usually much heavier in *uhleri*), as well as by the distribution and host preferences, from *concolor* by the slender second antennal segment (fig. 13F), and from *diffusus* by the neat, straight posterior band of setae on the hemelytra.

This species is easily confused with *tibialis*, with which it is sympatric over much of its range, but can be distinguished by the coloration of antennal segments 3 and 4, which are light basally and dark distally, whereas in *tibialis* segment 3 is totally dark and 4 almost totally light; when these structures are absent the male genitalia are diagnostic.

DESCRIPTION: Large species, length apex tylus–cuneal fracture 3.39–4.25 mm. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to posterior transverse setal band light ochraceous to brown, antennal segment 1 darker on dorsal half and lighter on ventral half, segment 2 deep red proximally and castaneous distally, segments 3 and 4 white proximally and castaneous distally, procoxae pale proximally, metatrochanters pale, metacoxae pale distally. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, smooth and weakly shining, band of setae complete and straight, a large angled patch of scalelike setae sublaterally on abdominal sternites 2–5; dorsum with pale or light brown, reclining, simple setae, sometimes with semierect brown setae, occasionally appearing weakly bristlelike; area posterior to posterior band of scalelike setae often beset with recumbent, golden, shining setae. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate, genae straight and not curved, weakly elevated and broadly rounded; pronotum with anterior and posterior lobes confluent, posterior lobe elevated and moderately swollen, lateral margins weakly concave; antennal segment 2 slightly incrassate (fig. 13F); metatibiae only weakly flattened, greatest width about 1⅓

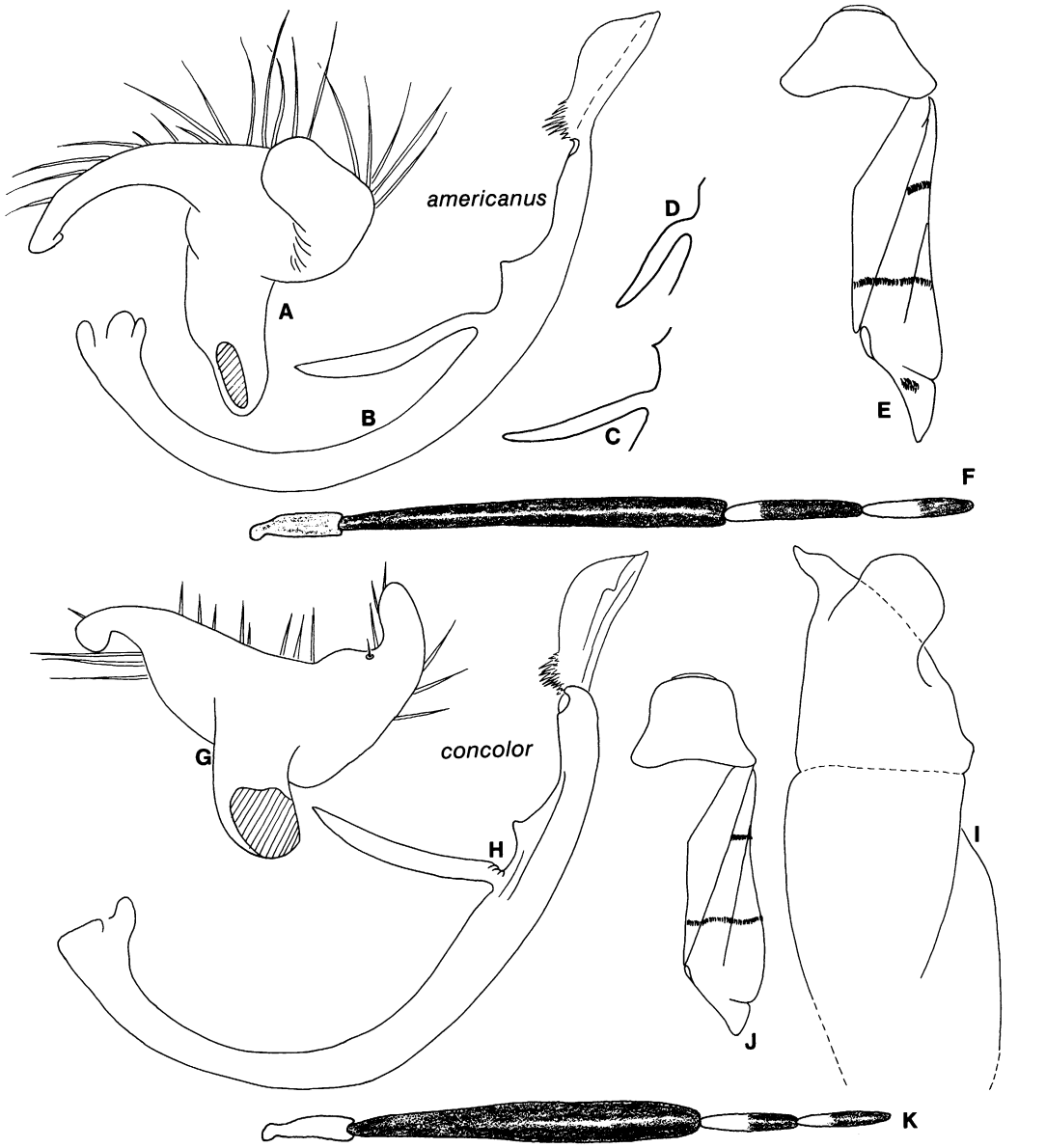

Fig. 13. A–F. *Pilophorus americanus*. **A.** Left paramere, posterior view. **B.** Vesica (Pitkin Co., Colorado). C, D. Detail of vesical spine. **C.** Duchesne Co., Utah. **D.** Jackson Co., Colorado. **E.** Pronotum and hemelytron, ♂. **F.** Antenna. G–K. *Pilophorus concolor*. **G.** Left paramere, posterior view. **H.** Vesica. **I.** Phallotheca. **J.** Pronotum and hemelytron, ♂. **K.** Antenna.

times greatest thickness (usually more strongly flattened in females than in males), and only weakly curving; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 13B–D).

HOSTS: *Abies amabilis*, *Picea* sp., *Pinus albicaulis*, *P. contorta*, *P. flexilis*, *P. monophylla*, *P. monticola*, *P. ponderosa*, *P. strobiformis*, *Pseudotsuga menziesii*, *Acacia* sp., rabbitbrush, *Ribes* sp.

DISTRIBUTION: Western North America: east to eastern Colorado and New Mexico, north to the Yukon Territory, and south to southern Arizona.

SPECIMENS EXAMINED: Approximately 1000 specimens collected between July 9 and September 19; deposited in: AMNH, CNC, JTP, KU, OSU, TAM, UCB, UID, USNM. – CANADA: **Alberta:** Coal Valley; Elkwater Park; High Prairie. **British Columbia:** Victoria; Kasio; Hedley; Donald Station; Madden Lk.; Princeton; 20 mi W of Princeton; Manning Park, Blackwall; Glacier Nat. Pk.; Aspen Grove; Jaffray; Fernie; Osoyoos, Anarchist Mt.; Terrace. **Yukon Territory:** Morley River; Rancheria. USA: **Arizona:** *Apache Co.:* Eager, Apache Nat. For. *Coconino Co.:* Williams; Flagstaff; Cyn. Point, Sitgreaves Nat. For., 7600 ft. *Cochise Co.:* Chircahua Mts., Rustler Pk., 7500 ft; Huachuca Mts. *Navajo Co.:* Big Lk., Apache Nat. For. *Pima Co.:* Santa Catalina Mts., Mt. Lemmon. **California:** *El Dorado Co.:* Camino; Lk. Tahoe near Bijou; Strawberry. *Inyo Co.:* Lone Pine. *Lassen Co.:* 24 mi W ofjct Hwys 36 & 44, Bogard Cmpgrd. *Madera Co.:* Beasoro Meadow. *Mariposa Co.?:* Yosemite Nat. Pk. *Nevada Co.:* Sagehen Crk. Station near Hobart Mills. *Placer Co.:* Cisco, Tahoe Nat. For. *Sierra Co.:* 15 mi N of Truckee. *Siskiyou Co.:* Shovel Crk. Meadow, Willow Crk. Mt.; 6.6 mi S of Lava Beds Nat. Mon., Medicine Lk. Rd. *Trinity Co.:* Coffee Crk. **Colorado:** *Boulder Co.:* Nederland, Roosevelt Nat. For. *Chaffee Co.:* Poncha Springs. *Clear Creek Co.:* Mt. Goliath area. *Douglas Co.:* Chatfield St. Pk.; Trout Crk. Pass, Pike Nat. For. *Grand Co.:* 12.3 mi N of Grand Lk. on Hwy 34; 5.3 mi S of Fraser on Hwy 40; Grand Lk. entrance, Rocky Mt. Nat. Pk.; 3.4 mi SW of Frazer, 9000 ft. *Gunnison Co.:* Crested Butte, 8000 ft; Lost Lk., Gunnison Nat. For., 9500 ft. *Jackson Co.:* near Wyoming border on Rt 125; Gould, 9200 ft. *Jefferson Co.:* Indian Hills; Deer Crk. Cyn. *Lake Co.:* Leadville. *Larimer Co.:* Pingree Peak; Ward, Roosevelt Nat. For., Chambers Lk., Roosevelt Nat. For., 9200 ft; Rolinsville, Roosevelt Nat. For., Fall River Rd, Rocky Mt. Nat. Pk., 9500 ft. *Las Animas Co.:* Stonewall, 9000 ft. *La Plata Co.:* La Plata, San Juan Nat. For., 8500 ft. *Park Co.:* Wilkerson Pass, Pike Nat. For. *Pitkin Co.:* Aspen, White River Nat. For. near Redstone. *Rio Blanco Co.:* 10 mi S of Buford, Hill Crk. Cmpgrd. *Routt Co.?:* Meadows, Routt Nat. For. *Summit Co.:* 8.7 mi W of jct Hwy 91 on I-70. **Idaho:** *Benewah Co.:* 4 mi E of Emida on Charlie Crk. Rd; 2 mi W of Santa at jct Rts 3 & 6. *Blaine Co.:* N of Ketchum, base of Galena Summit. *Boise Co.:* Bull Trout Lk. *Caribou Co.:* 11 mi E of Wayan on Rt 34, 6000 ft. *Kootenai Co.:* Athol. *Latah Co.:* Skyline Drive; 2 mi W of Deary. *Owyhee Co.:* Sinker Crk. *Valley Co.:* Bear Valley; McCall. **Montana:** *Carbon Co.:* Rt 212 NE of Beartooth Summit. *Deer Lodge Co.:* Silver Lk., 14 mi W of Anaconda on Rt 10A. *Gallatin Co.:* Mooseflat Cmpgrd., 26 mi S of Bozeman Hot Spgs on Rt 191; Idaho border at Targhee Pass Summit on Rt 191. *Glacier Co.:* Glacier Nat. Pk., 10 mi W of Babb. *Jefferson Co.:* 6 mi E of Butte, 6375 ft, Homestake Pass. *Missoula Co.:* E of Lolo Pass Summitt on Rt 12. *Park Co.:* Colter Cmpgrd., 2 mi E of Cooke City on Rt 212; Rt 212 at Wyoming border. **Nevada:** *White Pine Co.:* Humboldt Nat. For., Wheeler Peak Cmpgrd., 9951 ft. *Washoe Co.:* 4 mi SE of jct Hwy 395 on Hwy 17; 10 mi SE of Reno, 4850 ft; 4.5 mi SW of Washoe, 6200 ft. **New Mexico:** *Otero Co.:* 7 mi N of Cloudcroft; Cloudcroft. *Taos Co.:* Tres Ritos. **Oregon:** *Baker Co.:* Wallowa Mts., 17 mi E of Medical Spgs., Two Color Cmpgrd.; Wallowa Mts., 20 mi E of Medical Spgs., Boulder Park; Wallowa Mts., 20 mi E of Medical Spgs., N of Eagle Mdw. *Benton Co.:* Lobster Valley, 15 mi SW of Alsea. *Clackamas Co.:* Timberline Lodge, 6000 ft; Government Camp; 3.2 mi below Timberline Lodge, 4700 ft. *Coos Co.:* Lakeside. *Curry Co.:* Harris Beach St. Pk.; 3 mi S of Port Orford on Rt 101; 8 mi N of Gold Beach, 30 m; 2 mi N of Port Orford, 30 m. *Deschutes Co.:* Deschutes Nat. For., Three Crks. Meadow, 6500 ft; 5 mi S of Sisters, 3900 ft; 9 mi W of Sisters, 3450 ft; 10 mi W of Sisters on Hwy 20; 6 mi E of McKenzie Pass on Hwy 242, 3700 ft. *Grant Co.:* Malheur Nat. For., Funny Bug Basin; Malheur Nat. For., Dixie Cmpgrd.; Blue Mts. *Hood River Co.:* R9E T3S Sec 18, 4300 ft; R10E T1S Sec 31; Mt. Hood, Cloud Cap Inn, 6000 ft; 1.2 mi NE of Cloud Cap, Mount Hood; Trillium Lk., 3500 ft; Cooper Spur; ½ mi N of Parkdale. *Jackson Co.:* Medford, black light trap. *Klamath Co.:* Klamath Falls, black light trap; Crater Lk. Nat. Pk., Cleetwood Cove Trail; 1 mi W of Crescent, ca. 4500 ft; 10 mi NE of Bly; 11 mi NE of Bly; 4 mi S of Four Mile Lk. *Lane Co.:* Frog Camp, E of Rain-

bow, 5300 ft; Frog Camp Cmpgrd., NE corner Lane Co. *Linn Co.:* 1 mi W of Santiam Jct., 3700 ft; T14S R6E Sec 20; Big Lk., 4650 ft. *Marion Co.:* Breitenbush Lk., 5600 ft. *Union Co.:* 0.1 mi NE of Tollgate Shopping Center on Hwy 204; High Ridge Lookout, Umatilla Nat. For., 5303 ft. *Wallowa Co.:* Wallowa-Whitman Nat. For., Minam Lk. trail, 7380 ft. *Wasco Co.:* Warm Springs River. **Utah:** *Box Elder Co.:* Raft River Mts., 5 mi SW of Clear Crk. Cmpgrd. *Cache Co.:* Tony Grove Lk. Cmpgrd., 8400 ft. *Dagget Co.:* Grizzly Ridge. *Duchesne Co.:* Left fork Indian Cyn., summit on 33, 9100 ft; 0.5 mi S of Avintaquin Cmpgrd., 9000 ft; Ashley Nat. For., Grandview Trail, T3S R8W Secs 17 & 19. *Summit Co.:* 20.2 mi E of Kansas on Rt 150. *Uintah Co.:* Uinta Mts. near Little Brush Crk., 8620 ft. **Washington:** *Chelan Co.:* Pump Chance Crk., 3 mi E of Swauk Pass, 4600 ft; R15E T26N Sec 9. *Lewis Co.:* Chehalis, 110 Urquart Rd. *Yakima Co.:* 1.5 mi N of Co. line on Rt 97. *County ?:* Dartford. **Wyoming:** *Albany Co.:* 10 mi S of Tie Siding; 10 mi S of Foxpark, 8200 ft. *Big Horn Co.:* 27 mi W of Burgess Junction on Alt 14. *Carbon Co.:* Parkside Cmpgrd., 11 mi S of Red Lodge. *Fremont Co.:* 25 mi SW of Shoshone Nat. For. boundary on Rt 131; 14 mi S of Shoshone Nat. For. boundary on Rt 131. *Lincoln Co.:* Salt River Pass, 15 mi S of Afton on Rt 29, 7630 ft. *Park Co.:* 5 mi S of Tower Falls, 7350 ft; Green River Lk., Wind River Mts., 8500 ft. *Sheridan Co.:* Big Horn Mts., 7 mi E of Burgess Jct. *Shoshone Co.:* Fox Crk. Cmpgrd., 6.9 mi E of Cooke City on Rt 212. *Sublette Co.:* Sacajawea Camp, Middle Piney Crk., 8400 ft. *Teton Co.:* 2 mi SE of Colter Bay Village, 7000 ft; Grand Teton Nat. Pk.

DISCUSSION: Poppius (1914a) described *americanus* from two male specimens from Williams and Bright Angel, Arizona; he indicated that the species was almost indistinguishable from *cinnamopterus* (Kirschbaum). We have designated the specimen from Williams as the lectotype and that from Bright Angel the paralectotype.

Knight (1968: 167) treated *americanus* as a junior synonym of *crassipes* Poppius. We did not find any specimens of *americanus* bearing the label data cited by Knight and therefore cannot confirm his identification (see also discussion under *crassipes* Heidemann).

Knight (1968) described *barberi* on the basis of a single specimen from the Huachuca Mountains, Arizona. Our comparison of these specimens with a long series of specimens from all over the western United States indicates that they are synonymous, *americanus* having priority.

Pilophorus concolor, new species

Figures 13G–K, 14

HOLOTYPE: ♂, USA: California: Siskiyou Co., 24 mi E of Mc Cloud on Hwy 89, VIII-9-1980, coll. G. Stonedahl; ex *Abies concolor*; deposited in the AMNH.

DIAGNOSIS: Distinguished from *americanus*, *diffusus*, and *uhleri* by the greatly enlarged second antennal segment (fig. 13K) and from *diffusus* by the neat straight posterior band of setae on the hemelytra.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 3.27–3.63. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to posterior transverse setal band brown or ochraceous, antennal segment 1 dark on dorsal half and pale on ventral half, segment 2 deep red proximally and castaneous distally, segments 3 and 4 white proximally and castaneous distally, procoxae pale proximally, metatrochanters pale, metacoxae pale distally. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, smooth and weakly shining, band of setae complete and straight, a large angled patch of scalelike setae sublaterally on abdominal sternites 2–4; dorsum with reclining, brown, simple setae. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate, slightly rounded at bucculae, the genae weakly elevated and very broadly rounded; pronotum with anterior and posterior lobes confluent, nearly flat in lateral view, surface distinctly granulose or rugulose, lateral margins moderately concave, general outline campaniform; antennal segment 2 strongly enlarged and more or less terete (fig. 13K); metatibiae strongly flattened and very strongly curving, greatest width about 1½ times

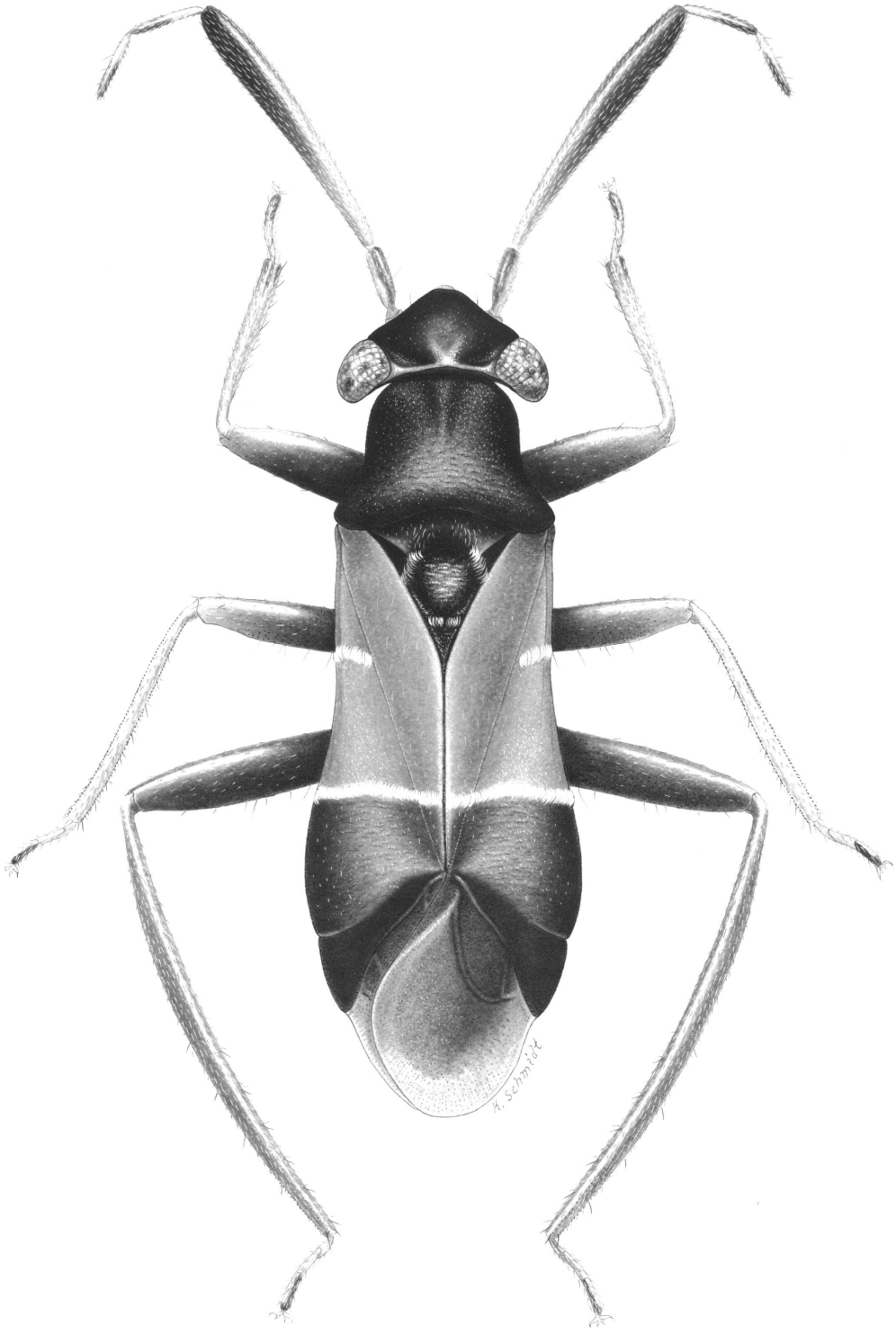

Fig. 14. *Pilophorus concolor,* dorsal habitus, ♂.

greatest thickness; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 13H).

ETYMOLOGY: Named for the host, *Abies concolor*.

HOSTS: *Abies concolor, Pinus monophylla.*

DISTRIBUTION: Western United States: south central Oregon, northern California, and northwestern Nevada.

PARATYPES: 4♂, 9♀, same data as holotype (AMNH, USNM). USA: **California:** *Amador Co.:* Lk. Amador, VII-30 (UCB), 1♂. *Nevada Co.:* Sagehen near Hobart Mills, August 3, 1962, C. A. Toschi (UCB), 1♂. *Siskiyou Co.:* 6.9 mi S of Medicine Lk. on Powder Hill Rd, July 19, 1985, G. M. Stonedahl and J. D. McIver (AMNH), 1♀. *Tuolumne Co.:* Strawberry, August 15, 1962, C. A. Toschi (UCB), 1♂. **Nevada:** *Washoe Co.:* 4 mi SE of jct Hwy 395 on Hwy 17, August 11, 1980, G. Stonedahl, ex *Pinus monophylla* (AMNH), 1♀. **Oregon:** *Klamath Co.:* 4 mi W of Keno, 4250 ft, July 19, 1986, R. T. Schuh, ex *Abies concolor* 3♂, 2♀; + 12 mi W of Keno, July 29, 1986, R. T. Schuh, ex *Abies concolor* (AMNH), 1♂; Rocky Point, Upper Klamath Lk., August 21, 1927, C. C. Sperry (USNM), 1♀.

Pilophorus diffusus Knight
Figures 3F, 15A–C

Pilophorus diffusus Knight, 1968: 168 (n. sp., desc., key). – Knight, 1973: 134 (dist., host, key).

HOLOTYPE: ♂, Pingree Park, Colo., Aug. 20, 1925, H. H. Knight; deposited in the USNM.

DIAGNOSIS: Allied to *americanus, concolor,* and *uhleri* by the bicolored third antennal segment, the large size, and the hemelytra of a uniform texture posteriorly; distinguished from all other North American *Pilophorus* species by the diffuse nature of the posterior band of scalelike setae on the hemelytra.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 3.16–3.56 mm. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to posterior transverse setal band varying from brown to almost totally black, antennal segment 1 dark, segment 2 infuscate proximally and castaneous distally, segments 3 and 4 white on proximal ⅓ to ½ and castaneous on distal portion. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, weakly shining; posterior band of setae complete, rather broad and jagged-edged, with setae somewhat scattered (fig. 3F, 15B), a large angled patch of scalelike setae sublaterally on abdominal sternites 2–4; dorsum beset with relatively numerous, reclining or suberect, simple setae and some recumbent, golden, shining setae. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate, not rounded, the genae barely elevated; pronotum with anterior and posterior lobes confluent, posterior lobe somewhat swollen and moderately elevated, lateral margins moderately concave; antennal segment 2 slender (fig. 15C); metatibiae very weakly flattened and curving, greatest width only slightly greater than thickness; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 15A).

HOSTS: *Abies* sp., *Picea englemanni, Pinus albicaulis, P. aristata, P. contorta, P. edulis, P. monticola, P. ponderosa, P. flexilis,* rabbitbush.

DISTRIBUTION: Western North America: west to north central Oregon, north to the Yukon Territory, east to the high mountains of Colorado and Wyoming, and south to central Arizona.

SPECIMENS EXAMINED: 354 specimens collected between July 22 and September 6; deposited in: AMNH, CNC, JTP, KU, OSU, UID, USNM. – CANADA: **Alberta:** Banff-Jasper Hwy, Banff Nat. Pk.; Eisenhower Jct; Lk. Louise. **British Columbia:** Fernie; Hedley; Manning Park, Gibson Pass; Mt. Revelstoke Nat. Pk.; Salmo; Yoho Nat. Pk. **Yukon Territory:** Carcross; Morley River; Rancheria; Squange Lk. USA: **Arizona:** *Apache Co.:* St. Johns; Eager, Apache Nat. For. *Coconino Co.:* San Francisco Mts., Coconino Nat. For., 9650 ft. **Colorado:** *Archulata Co.:* Pagosa Springs. *Chaffee Co.:* Buena Vista, 7800 ft; Poncha Springs. *Clear Creek Co.:* Guanella Pass Rd, Green Lk., 9900 ft; Mt. Goliath area. *Douglas Co.:* Trout Crk. Pass, Pike Nat. For. *Grand Co.:* 5.3 mi S of Fraser on Hwy 40; Milner Pass, Rocky Mt. Nat. Pk., 10,500 ft. *Gunnison Co.:* Lost Lk., 9500 ft; Agate, 9500 ft; Crested Butte, 8000 ft; Monarch Pass, 10,500 ft. *Jackson Co.:* Gould, 9200 ft. *Larimer Co.:* Pingree Park; Chambers Lk., Roo-

sevelt Nat. For., 9200 ft; Fall River Rd, Rocky Mt. Nat. Pk., 9500 ft; Estes Park; Brainard Lk., Roosevelt Nat. For., 10,300 ft; Rainbow Lks., Roosevelt Nat. For., 9800 ft; Rolinsville, Roosevelt Nat. For.; Ward, Roosevelt Nat. For. *Mesa Co.:* Jumbo, Grand Mesa Nat. For., 9800 ft. *Pitkin Co.:* Aspen, White River Nat. For. *Rio Blanco Co.:* Hill Crk. Cmpgrd., 10 mi S of Buford. *Routt Co.(?):* Walton Crk.; Meadows. *San Juan Co.:* Silverton, 9800 ft. *Summit Co.:* 5.6 mi W of jct Hwy 91 on I-70. *County ?:* Rices Spur. **Idaho:** *Boise Co.:* Bull Trout Lk. **Montana:** *Carbon Co.:* Rt 212 NE of Beartooth Summit at Rock Crk. Vista. *Glacier Co.:* Glacier Nat. Pk., 10 mi W of Babb. *Park Co.:* Soda Butte Cmpgrd., 2 mi E of Cooke City; Colter Cmpgrd., 2 mi E of Cooke City. **Oregon:** *Hood River Co.:* Cloud Cap, 6000 ft. *Wallowa Co.:* Wallowa-Whitman Nat. For., Miram Lk. Trail. **Wyoming:** *Albany Co.:* 10 mi S of Foxpark, 8200 ft. *Sublette Co.:* Wind River Mts., Big Sandy Trailhead.

Pilophorus uhleri Knight
Figures 15D–F

Pilophorus uhleri Knight, 1923: 541 (n. sp., desc., host). – Blatchley, 1926: 810 (desc., host, key). – Knight, 1941: 122 (desc., dist., host, key). – Knight, 1973: 134 (dist., host, key). – Schuh, 1975: 17 (femoral trichobothria). – Schuh, 1976: 10 (SEM of pretarsus). – Kelton, 1980: 275 (diag., host, dist., map, key). – Wheeler et al., 1983: 143 (dist., host).

HOLOTYPE: ♂, Ithaca, N.Y., 30.VI.1920, H. H. Knight; scotch pine; deposited in the USNM.

DIAGNOSIS: Distinguished from *americanus*, the species it resembles most closely, by the presence of numerous, erect or suberect, rather heavy, black bristles on the dorsum as well as the distribution and host preferences, from *diffusus* by the neat straight posterior band of setae on the hemelytra (fig. 15E), and from *concolor* by the much more slender second antennal segment (fig. 15F).

DESCRIPTION: Large species, length apex tylus–cuneal fracture 3.50–3.77 mm. COLORATION: Body and appendages castaneous to nearly black, hemelytra anterior to posterior transverse setal band usually brown or blackish brown, antennal segment 1 darker on dorsal half and lighter on ventral half, segment 2 deep red proximally and castaneous distally, segments 3 and 4 white proximally and dark distally, metatrochanters pale, metacoxae pale distally. SURFACE AND VESTITURE: Corium of uniform texture over entire width posterior to posterior transverse band of setae, smooth and weakly shining, band of setae complete and straight, a large angled patch of scalelike setae sublaterally on abdominal sternites 2–5; dorsum with heavy, erect, black, bristles. STRUCTURE: Face elongate in frontal view, the outline of the genae angulate, genae straight and not curved, weakly elevated and very broadly rounded; pronotum with anterior and posterior lobes confluent, posterior lobe moderately elevated and swollen, lateral margins weakly concave; antennal segment 2 slightly incrassate distally (fig. 15F); metatibiae slightly flattened and weakly curving, greatest width only slightly greater than thickness (tibiae in females more strongly flattened); vesica flat, mesial process in the form of a simple lanceolate spine (fig. 15D).

HOSTS: *Larix decidua, Picea abies, P. glauca, P. pungens, Pinus banksiana, P. mugo, P. strobus, P. sylvestris, Tsuga canadensis*, aspen.

DISTRIBUTION: Eastern North America: west to Alberta, north to central Manitoba, and south to West Virginia.

SPECIMENS EXAMINED: 185 specimens collected between June 14 and November 5; deposited in: AMNH, CAS, JTP, KU, PDA, TJH, USNM. – CANADA: **Alberta:** Bellis; Nordegg. **Manitoba:** Mafeking; Falcon Lk.; Riding Mt. Nat. Pk.; West Hawk Lk. **New Brunswick:** Edmundton. **Nova Scotia:** Grand Pre; Halifax; Springhill. **Prince Edward Island:** Rustico; Suffolk. **Saskatchewan:** Pierceland. USA: **Iowa:** *Story Co.:* Ames. *Clay Co.:* Peterson. **Massachusetts:** *Worcester Co.:* Petersham. **Michigan:** *Cheboygan Co. Emmett Co. Huron Co.:* Sand Point. *Midland Co. Newaygo Co.:* T12N R12W Sec 27. **Minnesota:** *Cook Co.:* Grand Marais. *Crow Wing Co.:* Brainerd. **New York:** *Chautauqua Co.:* Dunkirk. *Genesee Co.:* Batavia. *Suffolk Co.:* Cold Spring Harbor. *Tompkins Co.:* Ithaca. *Westchester Co.:* White Plains; Lk. Waccabuc. **Pennsylvania:** *Allegheny Co.:* Pyh 39 residence; Breyak Nursery, Allison Park. *Blair*

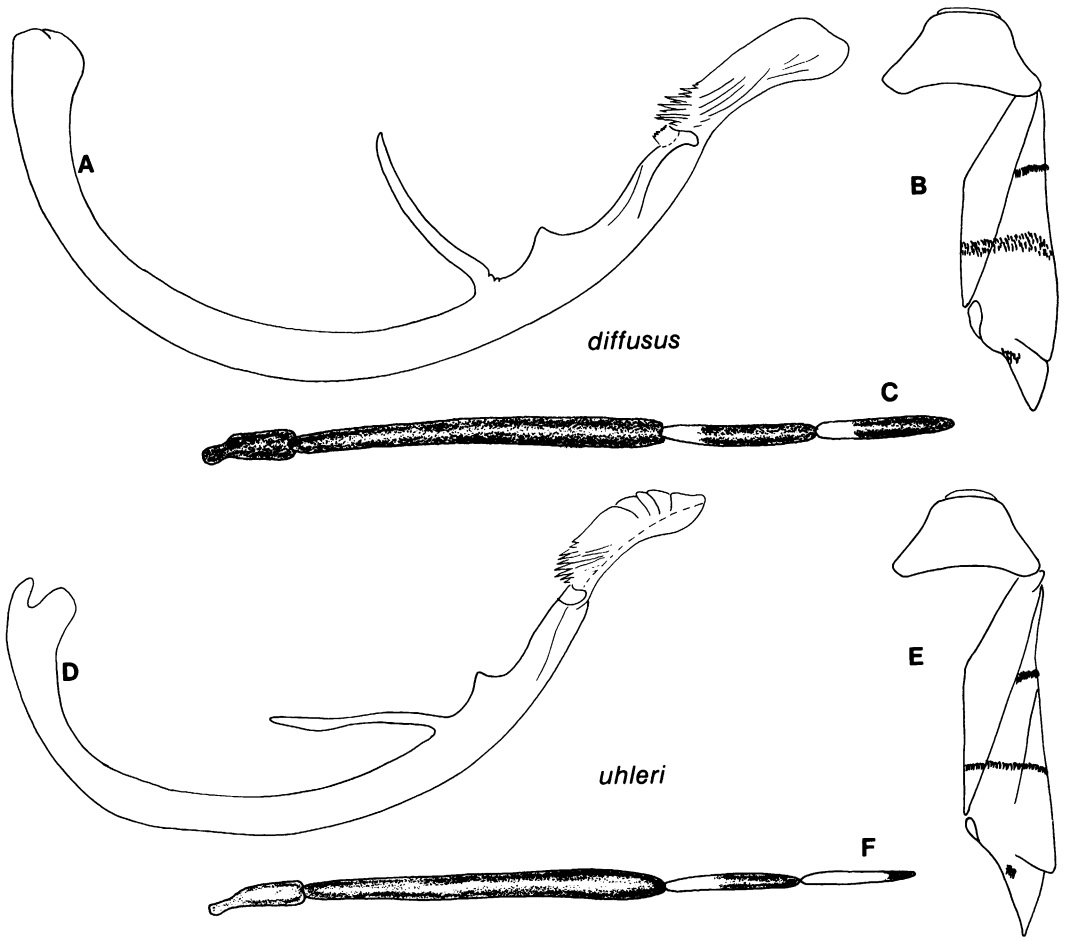

Fig. 15. A–C. *Pilophorus diffusus*. **A.** Vesica. **B.** Pronotum and hemelytron, ♂. **C.** Antenna. D–F. *Pilophorus uhleri*. **D.** Vesica. **E.** Pronotum and hemelytron, ♂. **F.** Antenna.

Co.: Altoona, Fanella Nursery; Duncansville, Higdon's Nursery. *Bradford Co.:* 2 mi N of Centerville. *Centre Co.:* State College; Boalsburg, Enchanted Hill Nursery. *Clarion Co.:* Rimersburg, Eccles Nurseries; Elsion, Skinner Nursery. *Clearfield Co.:* Jordan Twp., Berwinsdale; Dubois, R. Nelson Tree Nursery; Denham's Nursery near Allport. *Crawford Co.:* Titusville. *Dauphin Co.:* Harrisburg, Crooked Hill Rd. *Erie Co.:* Greene Twp. Nursery; Rt 19 & I-90; Union City; Fairview, Pollack. *Indiana Co.:* Strongstown; Indiana, Oakland Cemetery; 10 mi E of Indiana, Pikes Peak Nursery; 14 mi E of Indiana, Carino Nursery; Musser Forest; Cemetery near Fleming's Trailer Park. *Lake Co.:* Honesdale. *Monroe Co.:* Pocono Lk., Wagner's Forest Rd. *Northampton Co.:* Northampton. *Philadelphia Co.:* Chestnut Hill. *Somerset Co.:* Addison, Holiday Nursery; Thomas Mills, Blough's Nursery. *Union Co.:* Milton. *Washington Co.:* Washington, Vogels Home; Slovan; McMurray. *Wayne Co.:* Abrahamsville, Sunnybrook Nursery; Honesdale. *Westmoreland Co.:* Rt 22, New Alexandria; St. Clair Cemetery, Greensburg. **West Virginia:** *Preston Co.:* Terra Alta Pk. **Wisconsin:** *Trampealeau Co.:* near Osseo on Co. Rts G & K. *County ?:* Lakewood.

PILOPHORUS EXIGUUS SPECIES GROUP

Recognized by the hemelytra posteriad of the posterior band of setae smooth, polished

and weakly shining laterad of radial vein and with a matte texture mesad of the radial vein, the vesica in the male with a slender lanceolate spine, and the habit of breeding on species of *Pinus*.

Pilophorus cembroides, new species
Figures 16A–D

HOLOTYPE: ♂, TEXAS, Pecos Co., 36 mi. S. Ft. Stockton, 4500′, V-2-82, D. A. & J. T. Polhemus; deposited in the AMNH.

DIAGNOSIS: Recognized among members of the *exiguus* group by its small size, campanulate pronotum, bicolored antennal segment 4, and the posterior band of scalelike setae not offset at the radial vein; similar in size and general coloration to *exiguus* and *fuscipennis*; distinguished from *clavicornis*, *exiguus*, and *fuscipennis* by the bicolored antennal segment 4 light proximally and dark apically, from *dislocatus*, *floridanus*, *geminus*, *gracilis*, and *schaffneri* by the distinctly campaniform pronotum and the posterior band of setae not offset at the radial vein, and from *stonedahli* by its much smaller size.

DESCRIPTION: Small species, length apex tylus–cuneal fracture 2.49 mm. COLORATION: Body and appendages generally brownish or blackish brown, hemelytra generally brown ochraceous, brown in nonmatte areas, antennal segment 1 dark on dorsal surface and pale on ventral surface, segment 2 generally castaneous but somewhat lighter proximally, segments 3 and 4 white proximally and dark distally (fig. 16D), procoxae pale except proximally and distally, meso- and metacoxae pale distally, meso- and metatrochanters pale. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; posterior band of setae nearly straight, large angled patch of scalelike setae sublaterally on abdominal sternites 2–3; dorsum with recumbent, brown setae. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae straight, very weakly elevated, and broadly rounded; pronotum distinctly campaniform, anterior and posterior lobes confluent, posterior lobe slightly elevated, lateral margins deeply concave; antennal segment 2 moderately enlarged distally; metatibiae nearly cylindrical and straight; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 16B).

ETYMOLOGY: Named for the host, *Pinus cembroides*.

HOSTS: *Pinus cembroides*, *Pinus* sp.

DISTRIBUTION: Central Mexico, western Texas.

PARATYPES: 3♂, same data as holotype (JTP). MEXICO: **Zacatecas:** San Juan, July 6, 1969, L. A. Kelton, ex *Pinus* (CNC), 2♂, 1♀. USA: **Texas:** *Jeff Davis Co.:* Fort Davis, June 1, 1959, Howden and Becker, beating piñon pine (*P. cembroides*), (CNC), 1♂; Mc Donald Observatory, Davis Mts., 7000 ft, June 1, 1959, Howden and Becker (AMNH, CNC), 3♂, 7♀. *Brewster Co.:* Big Bend Nat. Pk., Green Gulch, 5300 ft, March 2, 1959, Howden and Becker, beating piñon pine (*P. cembroides*) (AMNH, CNC), 1♂, 6♀; Big Bend Nat. Pk., Panther Junction, 4000 ft, May 28, 1959, Howden and Becker (CNC), 1♂, 1♀.

Pilophorus clavicornis Poppius
Figures 16E–H

Pilophorus clavicornis Poppius, 1914a: 248 (n. sp., desc.). – Knight, 1968: 168 (dist., key). – Knight, 1973: 142 (dist., key).

Pilophorus merinoi Knight, 1968: 175 (n. sp., desc., host, key). – Knight, 1973: 142 (dist., host, key). NEW SYNONYMY.

HOLOTYPE: ♂, Flagstaff, Ar., Jul. 3; H. S. Barber Collector; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus merino* Knight: ♀, MERCURY, NEVADA, 16M, VI–24–1965, H. Knight & J. Merino; on *Pinus monophylla*; deposited in the USNM.

DIAGNOSIS: Recognized among members of the *exiguus* group by its moderate size, at least weakly clavate second antennal segment, campaniform pronotum, and the posterior band of scalelike setae on the hemelytra not offset at the radial vein; distinguished from *dislocatus*, *floridanus*, *geminus*, *gracilis*, and *schaffneri* by the distinctly campaniform pronotum and the posterior band of setae not offset at the radial vein, from *exiguus* and *cembroides* by its larger size, from *fuscipennis* by its larger size and usually more strongly

incrassate second antennal segment, and from *stonedahli* by its smaller size.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.36–3.05 mm. COLORATION: Body mostly nearly black, appendages mostly castaneous, hemelytra generally ochraceous, nearly black in nonmatte areas, antennal segment 1 very dark on dorsal surface half and pale on ventral surface, segment 2 generally castaneous but somewhat lighter proximally, segments 3 and 4 white proximally and castaneous distally as in figure 16H, procoxae pale mesially, meso- and metatrochanters pale, meso- and metacoxae pale distally. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anterior to the setal band; posterior band of setae on hemelytra complete and nearly straight; large angled patch of setae sublaterally on abdominal sternites 2–3; dorsum with recumbent brown setae. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae weakly elevated, broadly rounded; pronotum distinctly campaniform, anterior and posterior lobes confluent, posterior lobe very weakly elevated, lateral margins deeply concave; antennal segment 2 distinctly but not strongly incrassate; metatibiae cylindrical and straight; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 16F).

HOSTS: *Pinus monophylla*, piñon pine.

DISTRIBUTION: Central and southern Nevada and central Arizona.

SPECIMENS EXAMINED: 86 specimens collected between May 25 and September 2; deposited in: AMNH, JTP, KU, UCB, USNM. – USA: **Arizona:** *Maricopa Co.:* E of Sunflower. **California:** *Inyo Co.:* Bishop, Sherwin Grade. *Placer Co.:* 3900 ft. **Nevada:** *Clark Co.:* Charleston Peak, 6500 ft. *Elko Co.:* 6 mi E of Wells, 6200 ft. *Lyon Co.:* N boundary of Toiyabe Nat. For. on Rt 22, 1780 m. *Nye Co.:* Mercury, 12M(W). *White Pine Co.:* 4.2 mi W of Baker, Wheeler Peak Rd, 2031 m.

DISCUSSION: Knight (1968) described *merinoi* from *Pinus monophylla* in southern Nevada. He related it to *exiguus*. Our examination of the type specimens indicates that *merinoi* is actually a junior synonym of *clavicornis* Poppius.

Pilophorus dislocatus Knight

Figures 16I–L

Pilophorus dislocatus Knight, 1968: 171 (n. sp., desc., host, key). – Knight, 1973: 139 (dist., host, key).

HOLOTYPE: ♂, Trinidad, Colo., Stonewall, 8500′, Aug. 7, 1925, H. H. Knight; *Pinus ponderosa*; deposited in the USNM.

DIAGNOSIS: Recognized among members of the *exiguus* group by the noncampaniform pronotum, the posterior band of scalelike setae conspicuously offset at the radial vein, the moderately large size, the elongate face below the eyes, and the absence of conspicuous sexual dimorphism; distinguished from *geminus* and *schaffneri* by the elongate face below the eyes, *geminus* by the larger size, *schaffneri* by the lack of distinctive sexual dimorphism, *cembroides*, *clavicornis*, *exiguus*, *fuscipennis*, and *stonedahli* by its noncampaniform pronotum and offset posterior band of setae at the radial vein, and from *floridanus* and *gracilis* by the posterior band of setae not offset at the claval suture.

DESCRIPTION: Medium-size species, length apex tylus–cuneal fracture 2.75–3.09 mm. COLORATION: Body dark brown to nearly black, legs generally brown except as noted below, hemelytra generally orange brown, nearly black in nonmatte areas, antennal segment 1 pale, segment 2 pale proximally and castaneous distally, segments 3 and 4 white proximally and dark distally (fig. 16L), procoxae pale mesially, meso- and metacoxae pale distally, meso- and metatrochanters pale. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anterior to the setal band; posterior band of setae broken at radial vein, lateral portion generally offset posteriorly by a distance slightly more than length of a scalelike seta (fig. 16K); large angled patch of scalelike setae sublaterally on abdominal sternites 2–5; dorsum with recumbent brown setae. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae straight, not curved or elevated; pronotum with anterior and posterior lobes confluent, posterior lobe swollen and moderately strongly elevated, lateral margins very weakly concave (prono-

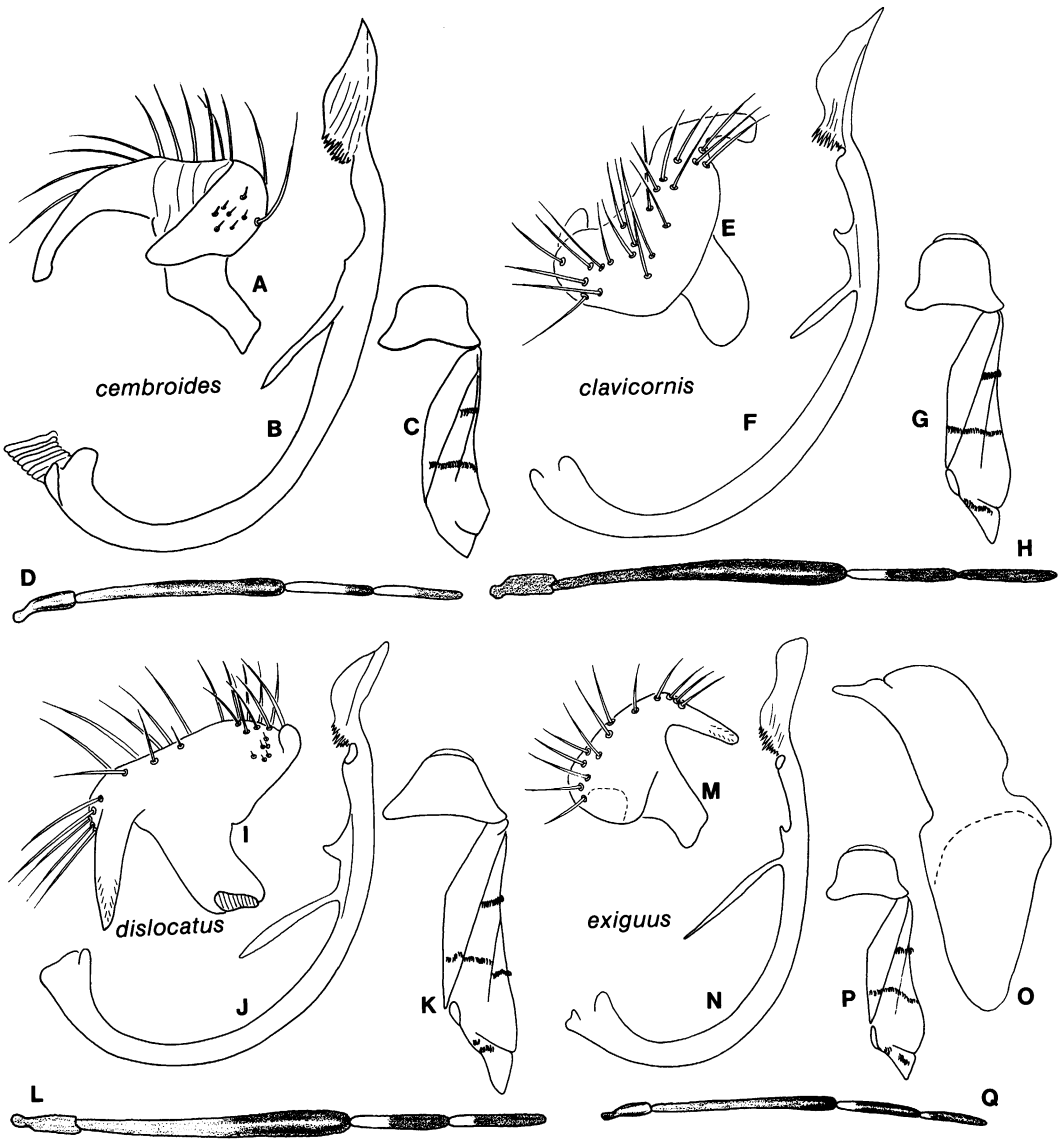

Fig. 16. A–D. *Pilophorus cembroides*. **A.** Left paramere, lateral view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus clavicornis*. **E.** Left paramere, frontal view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna. I–L. *Pilophorus dislocatus*. **I.** Left paramere, posterior view. **J.** Vesica. **K.** Pronotum and hemelytron, ♂. **L.** Antenna. M–Q. *Pilophorus exiguus*. **M.** Left paramere, posterior view. **N.** Vesica. **O.** Phallotheca. **P.** Pronotum and hemelytron, ♂. **Q.** Antenna.

tum less strongly elevated and more distinctly campaniform in female); antennal segment 2 nearly cylindrical; metatibiae very weakly flattened and slightly curving; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 16J).

HOSTS: *Pinus edulis*, *P. ponderosa*, *Ribes* sp.

DISTRIBUTION: Western United States: west and north to central Nevada, east to western South Dakota, and south to southern Arizona.

SPECIMENS EXAMINED: 101 specimens collected between July 17 and September 8; deposited in: AMNH, CNC, JTP, TAM, USNM. – USA: **Arizona:** *Apache Co.:* 8 mi

N of Alpine; Springerville. *Cochise Co.:* Huachuca Mts. *Coconino Co.:* San Francisco Mts.; 17 mi NW of Flagstaff. **Colorado:** *Gunnison Co.:* Maysville. *Jefferson Co.:* Indian Hills. *Las Animas Co.:* Stonewall, W of Trinidad, 8500 ft. *Larimer Co.:* 7 mi E of Estes Park on Hwy 36; Pingree Park. *Montezuma Co.:* Mesa Verde Nat. Pk., 7000 ft. *Park Co.:* Wilkerson Pass, Pike Nat. For. **New Mexico:** *Lincoln Co.:* Ruidoso. *Otero Co.:* Mayhill. **South Dakota:** *Lawrence Co.:* Cheyenne Crossing on Rt 14A. *Pennington Co.:* 5 mi NE of Keystone at jct of Rts 16 & 16A. **Utah:** *Daggett Co.:* Uinta Mts., 9 mi S of Dutch John, 7500 ft.

Pilophorus exiguus Poppius
Figures 16M–Q

Pilophorus exiguus Poppius, 1914a: 246 (n. sp., desc.). – Knight, 1968: 168 (dist., key). – Knight, 1973: 142 (dist., key).

LECTOTYPE: ♂, Br't Angel, Ar., 10. 7, H. S. Barber Collector; *P. exiguus* n. sp.; Type No. 24636, U.S.N.M.; *Pilophorus exiguus* Poppius, LECTOTYPE, det. R. T. Schuh and M. D. Schwartz; deposited in the USNM.

DIAGNOSIS: Among members of the *exiguus* group recognized by the very small size, unicolorous fourth antennal segment, and the anterior femora and trochanters not contrasting with the anterior coxae; distinguished from *dislocatus, floridanus, geminus, gracilis,* and *schaffneri* by the distinctly campaniform pronotum and the posterior band of setae not offset at the radial vein, from *cembroides* and *fuscipennis* by the bicolored fourth antennal segment, and from *clavicornis* and *stonedahli* by its smaller size.

DESCRIPTION: Very small species, length apex tylus–cuneal fracture 2.09–2.46 mm. COLORATION: Body and appendages generally brownish, hemelytra generally ochraceous, brown in nonmatte areas, antennal segment 1 very dark on dorsal surface and pale on ventral surface, segment 2 pale proximally and castaneous distally, segments 3 and 4 white proximally and dark distally (fig. 16Q), procoxae entirely pale, meso- and metacoxae pale distally, all trochanters and pro- and mesofemora and tibiae pale. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein, and with matte texture mesad of radial vein as anteriad of setal band; posterior band of setae broken at radial vein, lateral portion generally offset posteriorly by a distance more or less equal to the length of a scalelike seta (fig. 16P); dorsum with recumbent brown setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–4. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae straight, not curved or elevated; pronotum distinctly campaniform, anterior and posterior lobes confluent, posterior lobe barely elevated, lateral margins deeply concave; antennal segment 2 very slightly enlarged distally; posterior tibiae cylindrical and straight; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 16N).

HOSTS: *Pinus edulis, P. monophylla, Cowania mexicana.*

DISTRIBUTION: Western United States: west to central Nevada, north to northern Utah, east to east central New Mexico, and south to northern Arizona and New Mexico.

SPECIMENS EXAMINED: 106 specimens collected between June 9 and August 24; deposited in: AMNH, CNC, JTP, USNM. – USA: **Arizona:** *Coconino Co.:* 3.5 mi S of Sedona on Rt 179, 4200 ft; Bright Angel (Grand Cyn. Nat. Pk.); Grand Cyn., Grand V.; Kaibab Lk., Kaibab Nat. For. *Mohave Co.:* Hualapai Mts. SE of Kingman, 4000–6400 ft. *Yavapai Co.:* 1 mi E of Stoneman Lk. exit on I-17, 5200 ft. **Colorado:** *Rio Blanco Co.:* W Evacuation Crk. on Rt 45, 7600 ft. **Nevada:** *Clark Co.:* Charleston Peak, 6500 ft. *Lyon Co.:* N boundary Toiyabe Nat. For. on Rt 22, 1780 m. **New Mexico:** *San Miguel Co.:* Pecos. *Santa Fe Co.:* 8 mi E of Los Alamos. **Utah:** *Duchesne Co.:* 3 mi N of Carbon Co. line on Rt 33, 7600 ft. *San Juan Co.:* 3 mi W of Clay Hills Crossing Rd on Rt 263, 5000 ft. *Uintah Co.:* 5–10 mi SW of Bonanza, 5000–5600 ft. *Washington Co.:* Snow Cyn. St. Pk., 4000 ft.

DISCUSSION: Poppius (1914a) described *exiguus* on the basis of one female and two male specimens from Bright Angel, Arizona; all are deposited in the USNM, contrary to the indication in the original publication that specimens were also deposited in the Helsinki Museum. We have selected a male as the

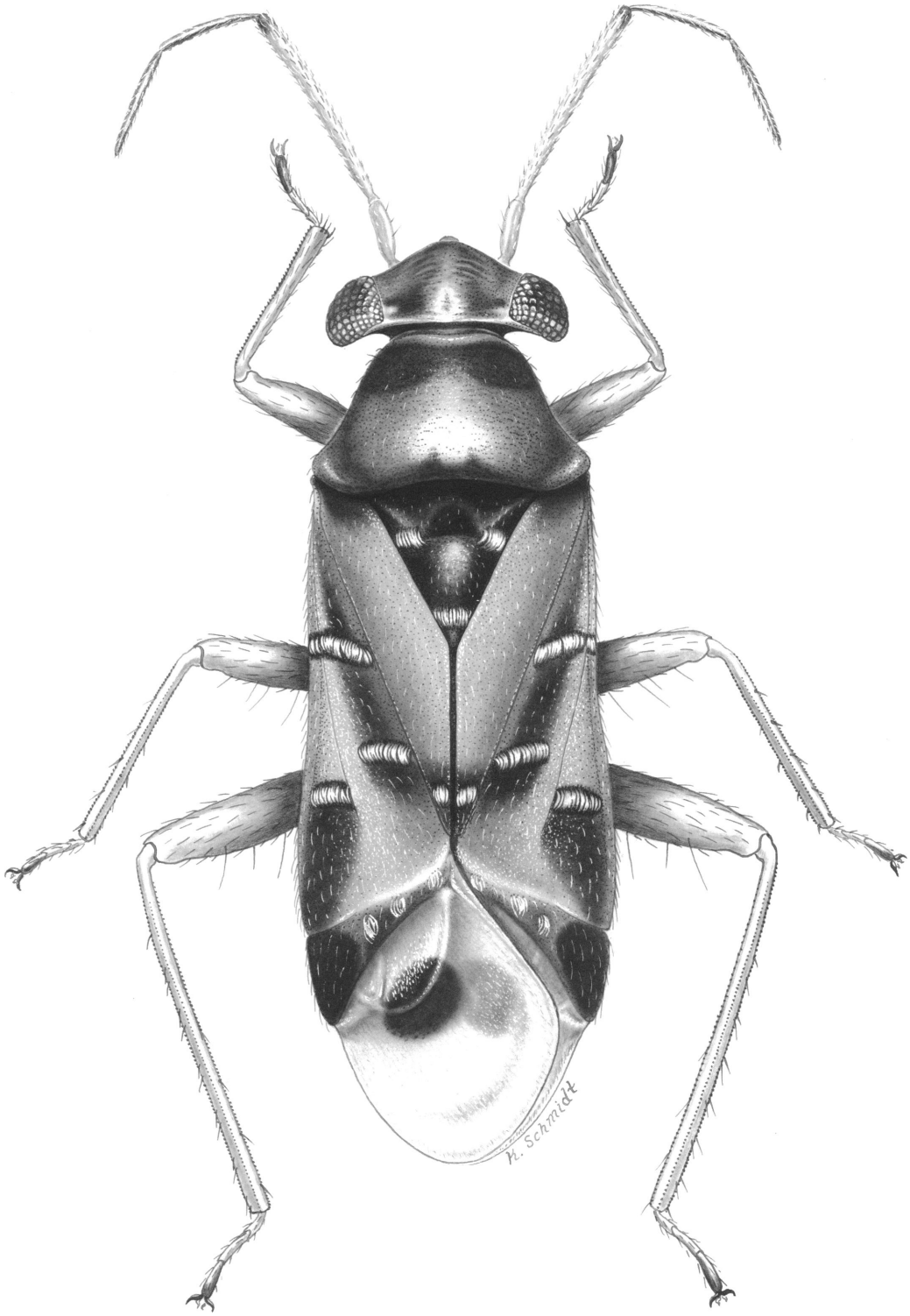

Fig. 17. *Pilophorus floridanus*, dorsal habitus, ♂.

lectotype, labeling the other two specimens as paralectotypes.

Pilophorus floridanus Knight
Figures 17, 18A–D

Pilophorus floridanus Knight, 1973: 140 (n. sp., desc., host).
Alepidea gracilis var. *squamosa* Knight, 1926a: 26 (in part).

HOLOTYPE: ♂, Orange City, Fla., May 6, 1927, E. D. Ball; on stone pine; deposited in the USNM.

DIAGNOSIS: Recognized among members of the *exiguus* group by the posterior band of scalelike setae on the hemelytra offset at both the claval suture and the radial vein (figs. 17, 18C); separated from *gracilis* by the different arrangement of the scalelike setae on the hemelytra, the less elongate body form, and the darker-colored appendages.

DESCRIPTION: Moderate size species, length apex tylus–cuneal fracture 2.41–2.66. COLORATION: Body generally weakly castaneous, hemelytra lighter and variably colored, all coxae pale, remainder of legs suffused with red, antennal segments 1 and 2 weakly infuscate, segments 3 and 4 and all third tarsal segments dark. SURFACE AND VESTITURE: Corium and clavus with practically uniform texture over entire surface, dull, scalelike setae placed in one complete or nearly complete anterior row and as 3 discontinuous patches on posterior half of corium and clavus (fig. 17, 18C); dorsum with recumbent, pale, weakly golden setae; two more or less discrete patches of scalelike setae mid-laterally on abdominal sterna 2 and 3. STRUCTURE: Head transverse and short in dorsal view, head short and broad in frontal view; genae slightly elevated in lateral view; pronotum only very weakly elevated posteriorly, lobes barely demarcated; mesoscutum broadly exposed, scutellum weakly elevated; lateral hemelytral margins weakly sinuous, antennal segment 2 cylindrical (fig. 18D); metatibiae cylindrical and straight; vesica flat, shaft tubular, with a lanceolate mesial process (fig. 18B).

HOSTS: *Pinus clausa.*

DISTRIBUTION: Florida.

SPECIMENS EXAMINED: 15 specimens collected between February 16 and May 9; deposited in: AMHN, TJH, USNM. – USA: **Florida:** *Bay Co.:* 5 mi W of Rt 231 along Rt 20. *Gulf Co.:* Port St. Joe. *Highlands Co.:* Rt 70, 3 mi W of Rt 27 near Archbold Biol. Sta. *Osceola Co.:* Rt 441, 4 mi E of Ashton; Kissimmee. *Palm Beach Co.:* Palm Beach. *Seminole Co.:* Lk. Mary. *Volusia Co.:* Rt 415, 2 mi N of Osteen.

Pilophorus fuscipennis Knight
Figures 18E–H

Pilophorus fuscipennis Knight, 1926a: 23 (n. sp., desc., host). – Knight, 1968: 168 (dist., host, key). – Knight, 1973: 141 (dist., host, key).

HOLOTYPE: ♂, Trinidad, Colo., Stonewall, 8500′, Aug. 7, 1925, H. H. Knight; deposited in the USNM.

DIAGNOSIS: Recognized among members of the *exiguus* group by its relatively small size, the anterior femora and trochanters dark and strongly contrasting with the anterior femora, and the unicolorous fourth antennal segment; distinguished from *dislocatus*, *floridanus*, *geminus*, *gracilis*, and *schaffneri* by the distinctly campaniform pronotum and the posterior band of setae not offset at the claval suture, from *cembroides* by the unicolorous fourth antennal segment, from *exiguus* by the dark anterior femora and trochanters contrasting with the anterior coxae, and from *clavicornis* and *stonedahli* by its smaller size.

DESCRIPTION: Small species, length apex tylus–cuneal fracture 2.47–2.63 mm. COLORATION: Body and appendages generally brownish or blackish brown, hemelytra generally brown ochraceous, deep brown in nonmatte areas, antennal segment 1 very dark on dorsal half and pale on ventral surface, segment 2 generally castaneous but somewhat lighter proximally, segment 3 white proximally and dark distally (fig. 18H), segment 4 entirely dark, procoxae pale except distally, meso- and metacoxae pale distally, meso- and metatrochanters pale. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; posterior band of setae nearly straight or offset slightly posteriorly at radial vein (fig. 18G); dorsum with recumbent brown setae; large angled patch of scalelike

setae sublaterally on abdominal sternites 2–3. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae weakly elevated and broadly rounded; pronotum distinctly campaniform, anterior and posterior lobes confluent, posterior lobe barely elevated, lateral margins deeply concave; antennal segment 2 slightly enlarged distally; metatibiae cylindrical and straight; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 18F).

HOSTS: *Pinus edulis, P. monophylla.*

DISTRIBUTION: Western United States: central Colorado west to southern Nevada, north to northern Utah, and south to northern Arizona and New Mexico.

SPECIMENS EXAMINED: 92 specimens collected between July 2 and September 9; deposited in: AMNH, CAS, CNC, JTP, KU, TAM, USNM. – USA: **Arizona:** *Apache Co.:* Eagar, Apache Nat. For.; 5 mi SW of Springerville. *Cochise Co.:* Chiricahua Mts. *Coconino Co.:* 40 mi S of Grand Cyn. Nat. Pk. **Colorado:** *Chaffee Co.:* 10 mi N of Salida. *Costilla Co.:* Ft. Garland. *Las Animas Co.:* Stonewall, W of Trinidad, 8000–8500 ft; 1 mi E of Stonewall Fire Dept.; 5 mi E of Stonewall; Segundo, 7000 ft. *Montrose Co.:* 10 mi W of Montrose. *Pitkin Co.:* near Redstone. *Rio Blanco Co.:* 4 mi SE of state line on Rt 45, 6400 ft. **Nevada:** *Lyon Co.:* N boundary of Toiyabe Nat. For. on Rt 22, 5700 ft; 3 mi SE of Toiyabe Nat. For. on Rt 338, 6300 ft. **New Mexico:** *Otero Co.:* Cloudcroft; 6 mi N of Piñon. *Los Alamos Co.:* Bandalier Nat. Mon. entrance. *Socorro Co.:* 6 mi W of Magdalena; 12 mi W of Magdelena. **Utah:** *Emery Co.:* 6.2 mi W of Rt 24 in Temple Wash, 5600 ft. *San Juan Co.:* 2.7 mi W of Rt 95 on Rt 263, 6000 ft; Grand Flat near Collins Cyn.

Pilophorus geminus Knight
Figures 18I–L

Pilophorus geminus Knight, 1926a: 22 (n. sp., desc.). – Blatchley, 1926: 816 (desc., dist., key). – Knight, 1941: 122 (dist.). – Knight, 1973: 140 (dist., key). – Kelton, 1980: 277 (diag., host, dist., map, key).

HOLOTYPE: ♂, St. Anthony Park, Minn., 7 Aug., 1924, H. H. Knight; collected at electric light; deposited in the USNM.

DIAGNOSIS: Recognized among members of the *exiguus* group by its small size, noncampaniform pronotum, and posterior band of scalelike setae offset at the radial vein; distinguished from *dislocatus* and *schaffneri* by its smaller size and lighter coloration, from *gracilis* and *floridanus* by the posterior band of setae offset only at the radial vein, and from *cembroides, clavicornis, exiguus, fuscipennis,* and *stonedahli* by its noncampaniform pronotum.

DESCRIPTION: Small species, length apex tylus–cuneal fracture 2.47–2.63. COLORATION: Legs generally orange brown except as noted below, hemelytra generally dusky orange, brown in nonmatte areas, antennal segment 1 pale, segment 2 pale proximally and castaneous distally, segments 3 and 4 castaneous, procoxae pale except at extreme base and apex, meso- and metacoxae pale distally, meso- and metatrochanters pale. SURFACE AND VESTITURE: Hemelytra posterior to the posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; posterior band of setae on hemelytra broken at radial vein, lateral portion generally offset posteriorly by a distance nearly twice the length of a scalelike seta (fig. 18K); dorsum with recumbent brown setae; large angled patch of setae sublaterally on abdominal sternites 2–5. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae straight and not curved or elevated; pronotum with anterior and posterior lobes confluent, posterior lobe weakly swollen and slightly elevated, lateral margins distinctly concave (pronotum more distinctly campaniform in female); antennal segment 2 nearly cylindrical (fig. 18L); metatibiae cylindrical and straight; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 18J).

HOST: *Pinus banksiana.*

DISTRIBUTION: Minnesota, Wisconsin, and southern Manitoba and Ontario.

SPECIMENS EXAMINED: 8 specimens collected between June 20 and August 7; deposited in: AMNH, CNC, USNM. – CANADA: **Manitoba:** Falcon Lk. **Ontario:** MacKey; Petawana. USA: **Minnesota:** *Brown Co.:* New Ulm. **Wisconsin:** *Bayfield Co.:* T45N R9W Sec 84. *Juneau Co.:* Wonewoc.

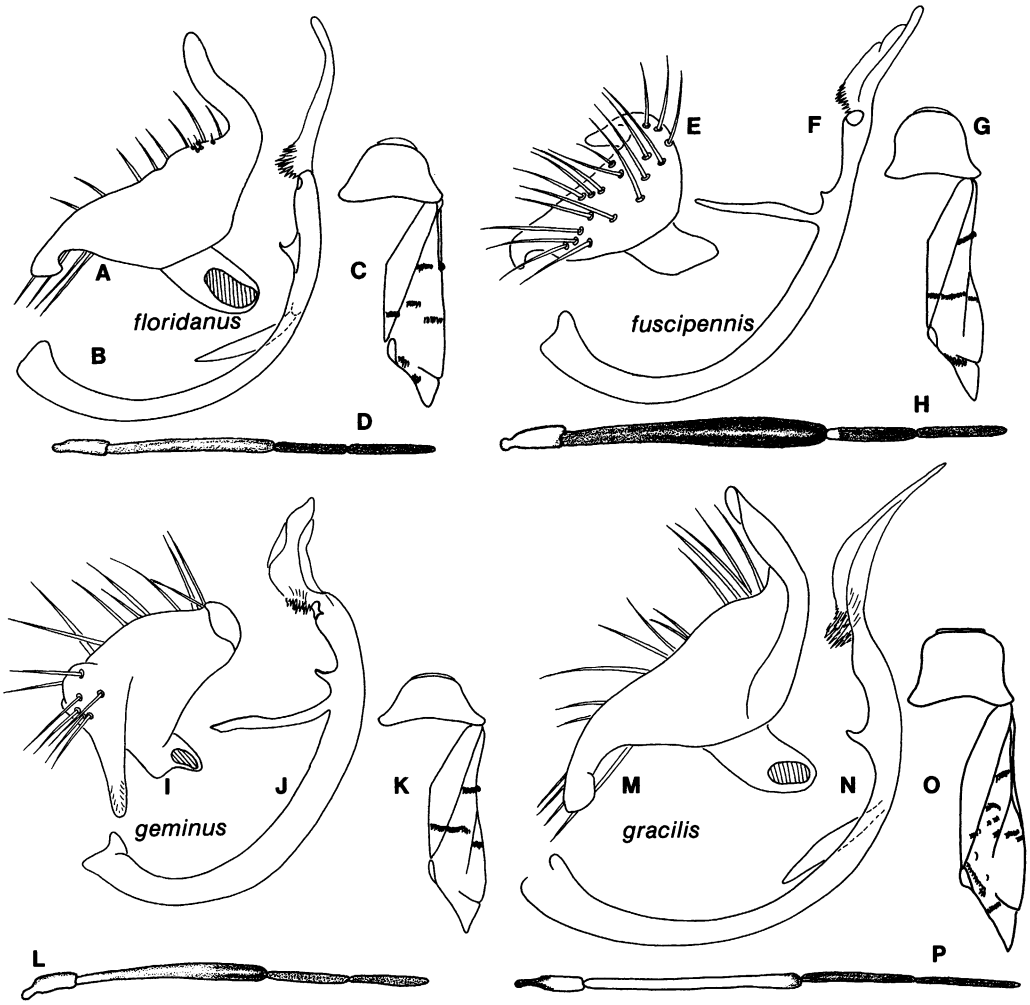

Fig. 18. A–D. *Pilophorus floridanus*. **A.** Left paramere, posterior view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus fuscipennis*. **E.** Left paramere, frontal view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna. I–L. *Pilophorus geminus*. **I.** Left paramere, posterior view. **J.** Vesica. **K.** Pronotum and hemelytron, ♂. **L.** Antenna. M–P. *Pilophorus gracilis*. **M.** Left paramere, posterior view. **N.** Vesica. **O.** Pronotum and hemelytron, ♂. **P.** Antenna.

Pilophorus gracilis Uhler
Figures 18M–P

Pilophorus gracilis Uhler, 1895: 42 (n. sp., desc.).
Alepidia gracilis: Knight, 1923: 537 (desc., dist., host, key). – Knight, 1926a: 25 (disc.). – Blatchley, 1926: 817 (desc., dist., host, key). – Knight, 1941: 119 (desc., dist., host., fig., key). – Kelton, 1959: 36 (figs. male genitalia). – Akingbohungbe et al., 1972: 12 (dist.). – Henry and Smith, 1979: 215 (dist.). – Wheeler et al., 1983: 142 (dist., host). – Snodgrass et al., 1984: 854 (dist.).
Alepidia gracilis var. *squamosa* Knight, 1926a: 26 (n. var., desc., host). NEW SYNONYMY.
Alepidia bellula Hussey, 1954: 200. – Slater and Baranowski, 1978: 173. NEW SYNONYMY.

LECTOTYPE: ♀, Mass.; PR Uhler Collection; *Pilophorus gracilis* Uhler, Mass.; *Pilophorus gracilis* Uhler, det. Uhler; LECTOTYPE *Alepidea gracilis* Uhler, det. R. T. Schuh and M. D. Schwartz; deposited in the USNM.

HOLOTYPES OF SYNONYMS: *Alepidia bellula* Hussey: not examined. *Alepidea gracilis* var. *squamosa* Knight: ♀, Tuskeegee, Ala., June 9, 1917, H. H. Knight; collected at light; deposited in the USNM.

DIAGNOSIS: Recognized among members of the *exiguus* group by the nearly uniform surface texture of the entire corium and clavus and the uniformly pale yellow appendages. The bands of scalelike setae on the hemelytra are often absent or nearly so, a condition never encountered in other species except when they are abraded.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.56–3.14. COLORATION: Body and hemelytra usually nearly black, hemelytra sometimes lighter and variably colored, appendages entirely pale yellow, except antennal segments 3 and 4 and all third tarsal segments dark. SURFACE AND VESTITURE: Corium and clavus of uniform texture over entire surface, weakly rugose and dull or barely shining; scalelike setae placed in one partial anterior row and three irregular discontinuous patches on posterior half of corium and clavus (fig. 18O); dorsum with recumbent, pale, weakly golden setae; two more or less discrete patches of scalelike setae midlaterally on abdominal sternites 2 and 3. STRUCTURE: Elongate, nearly parallel-sided; head transverse and short in dorsal view, with eyes conforming to anterior margin of pronotum, head short and broad in frontal view, genae broadly rounded in lateral view; pronotal lobes very weakly demarcated, pronotum only weakly elevated posteriorly; mesoscutum broadly exposed, scutellum weakly elevated; antennal segment 2 very slender (fig. 18P); metatibiae cylindrical and nearly straight; vesica flat, shaft tubular, with a lanceolate mesial process (fig. 18N).

HOSTS: *Pinus banksiana, P. clausa, P. ellioti, P. glabra, P. resinosa, P. rigida, P. taeda, P. virginiana.*

DISTRIBUTION: Eastern North America: west to Iowa, north to Wisconsin, Ontario, and Masschusetts, and south to northern Florida.

SPECIMENS EXAMINED: 188 specimens collected between May 6 to August 25, the majority in July; deposited in: AMNH, CAS, CNC, JTP, KU, TAM, TJH, UCB, UM, USNM. – CANADA: **Ontario:** Thessalon. USA: **Alabama:** *Clarke Co.:* Thomasville. *Macon Co.:* Tuskegee, at light. *Pike Co.:* Rt 431, Eufala Lk. near Eufala. **Arkansas:** *Hempstead Co.:* Hope. **District of Columbia. Florida:** *Calhoun Co.:* 3 mi E of Bay Co. line. *Liberty Co.:* Torreya St. Pk. **Georgia:** *De Kalb Co.:* Stone Mountain. **Iowa:** *Clayton Co.:* McGregor. *Muscatine Co.:* Muscatine. *Story Co.:* Ames. **Maryland:** *Calvert Co.:* Plum Point. *Montgomery Co.:* Glen Echo; Plummers Island. **Massachusetts:** *Dukes Co.:* Marthas Vineyard. **Michigan:** *Newaygo Co.:* T12N R12W Sec 27. *Washtenaw Co.:* Ann Arbor. **Mississippi:** *Clay Co.:* West Point. *Jackson Co.:* Ocean Springs, Gulf Coast Res. Sta. **New Jersey:** *Burlington Co.:* Medford Twp., Lk. Pine. *Middlesex Co.:* Jamesburg. **New York:** *Chautauqua Co.:* Dunkirk. *Nassau Co.:* Greenvale on Glen Cove Rd. *Orange Co.:* Ft. Montgomery. *Suffolk Co.:* Bayshore; Yaphank; Lloyds Neck; Cold Spring Harbor. *Tompkins Co.:* Taghanic, Ithaca. *Warren Co.:* Lk. George. *Westchester Co.:* White Plains; Lk. Waccabuc. **North Carolina:** *Macon Co.:* Highlands. *Mecklenburg Co.:* Rt 51, 1 mi W of Rt 16 near Matthews. *Wake Co.:* Raleigh. **Pennsylvania:** *Dauphin Co.:* Mid Paxt. Twp., Rt 443, Fish. Crk. Val. Sch. *Monroe Co.:* Delaware Water Gap; 3 mi E of Brodheadville on Greenview Dr. *Philadelphia Co.:* Philadelphia. *Schuylkill Co.:* I-81 and Rt 61 near Frackville. *Somerset Co.:* Thomas Mills, Blough's Nursery. **Tennessee:** *Sevier Co.:* Gatlinburg, 3500 ft; Great Smoky Mts. Nat. Pk., Collins Crk. **Virginia:** *Fairfax Co.:* Vienna. *Loudoun Co.:* Bluemont. **West Virginia:** *Preston Co.:* Aurora. **Wisconsin:** *Wood Co.:* Griffith State Nursery.

DISCUSSION: Reuter (1909) erected the genus *Alepidia* for the species *Pilophorus gracilis* Uhler, on the basis of the slender second antennal segment, the nearly straight lateral corial margins, and the dorsum destitute of white pubescence. Our examination indicates that *gracilis* falls within the range of variation of *Pilophorus* on the basis of male genitalic structure and dorsal vestiture.

Knight (1926a) described the variety *gracilis squamosa* on the basis of specimens from Alabama and Florida. He examined a specimen from Florida of what we consider to be an example of *floridanus*, but unfortunately his designated type and all but one of the remaining paratypes from Alabama represent *gracilis* (Uhler). The specimen representing *floridanus*, a species which Knight described in 1973, was given paratype status.

Knight based his argument for recognition of the variety on the fact that the specimens he examined had patches of scalelike setae on the hemelytra, whereas the specimens on which Uhler based *gracilis*, and later Reuter erected *Alepidia*, did not appear to have such patches. Even though most specimens of *gracilis* appear to be devoid of scalelike setae on the hemelytra, our observations indicate that this view represents infraspecific variation. Knight predicted that his variety would fall if *gracilis* from the type locality were found to have patches of scalelike setae. As we note, it falls for another reason, but his argument about diagnosing *gracilis* (and *Alepidia*) based on the absence of such patches is valid.

Hussey (1954) described a species *bellula* from Michigan. It is our opinion, based on examination of several paratypes collected with the holotype, that this name represents a light colored population of *gracilis*, similar in appearance to the majority of the specimens on which Knight based his variety *squamosa*. We are treating both *squamosa* and *bellula* as junior synonyms of *gracilis*.

Uhler (1895) described *Pilophorus gracilis* in the "Hemiptera of Colorado." It was later designated as the type of the genus *Alepidia* by Reuter (1909) and appears to have been consistently identified by most subsequent authors. In the discussion following his description, Uhler spoke at one point of a female specimen from Colorado and at another point of specimens from Colorado. He also noted that the species "lives on *Pinus inops* [*Pinus virginiana*] in summer, June to September, in Maryland, Virginia, New Jersey; and is also found in Massachusetts." No lectotype has ever been designated for this species. Careful search of the collections of the National Museum of Natural History produced a number of specimens of *gracilis* which appear to have been examined by Uhler, but none are from Colorado, and it is not clear that any author subsequent to Uhler has seen the Colorado specimens which Uhler mentioned in association with his original description. Extensive collecting in Colorado in recent years by J. T. Polhemus has produced no specimens of *gracilis*.

All material in the National Museum identified as *gracilis* and apparently examined by Uhler, and all material identified by subsequent authors as *gracilis* has white or nearly white legs; this is in apparent contrast to Uhler's description in which he refers to the legs as "pale dull piceous, paler on the tibiae." Otherwise, there seems to be no contradiction between Uhler's description and the general conception of *gracilis* by subsequent authors.

Even though there is some confusion about the actual distribution of this species, its identity has never been questioned. We therefore have chosen a Uhler specimen in the the National Museum—from Massachusetts—as the lectotype, and designated four additional specimens from Massachusetts and Washington, D.C., as paralectotypes. One National Museum specimen of *gracilis* was apparently examined by Reuter in his erection of the genus *Alepidia*, as it bears the label "*Alepidia* Rt. n. gen. [handwritten by Reuter], O. M. Reuter det." It is from Washington, D.C., collected on 29/6.[97] by Heidemann and was clearly not included as part of the material on which Uhler based his original description.

Pilophorus schaffneri, new species

Figures 19, 20A–E

HOLOTYPE: ♂, MEXICO: Nuevo Leon, 2 mi n. Pablillo, July 28, 1978, Plitt & Schaffner; deposited in the AMNH.

DIAGNOSIS: Recognized among members of the *exiguus* group by the posterior band of scalelike setae distinctly offset at the radial vein, the castaneous shining pronotum and scutellum, and the conspicuous sexual dimorphism, the females submacropterous; distinguished from *dislocatus*, *floridanus*, *geminus*, and *gracilis* by the castaneous procoxae and from *cembroides*, *clavicornis*, *exiguus*, *fuscipennis*, and *stonedahli* by its noncampaniform pronotum.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.58 mm. COLORATION: Body and appendages generally castaneous, hemelytra generally bright orange, castaneous in nonmatte areas, antennal segment 1 pale, segment 2 pale proximally and castaneous distally, segment 3 white proximally and castaneous distally, segment 4 mostly castaneous with a very small amount of white at base, protibiae pale, metacoxae

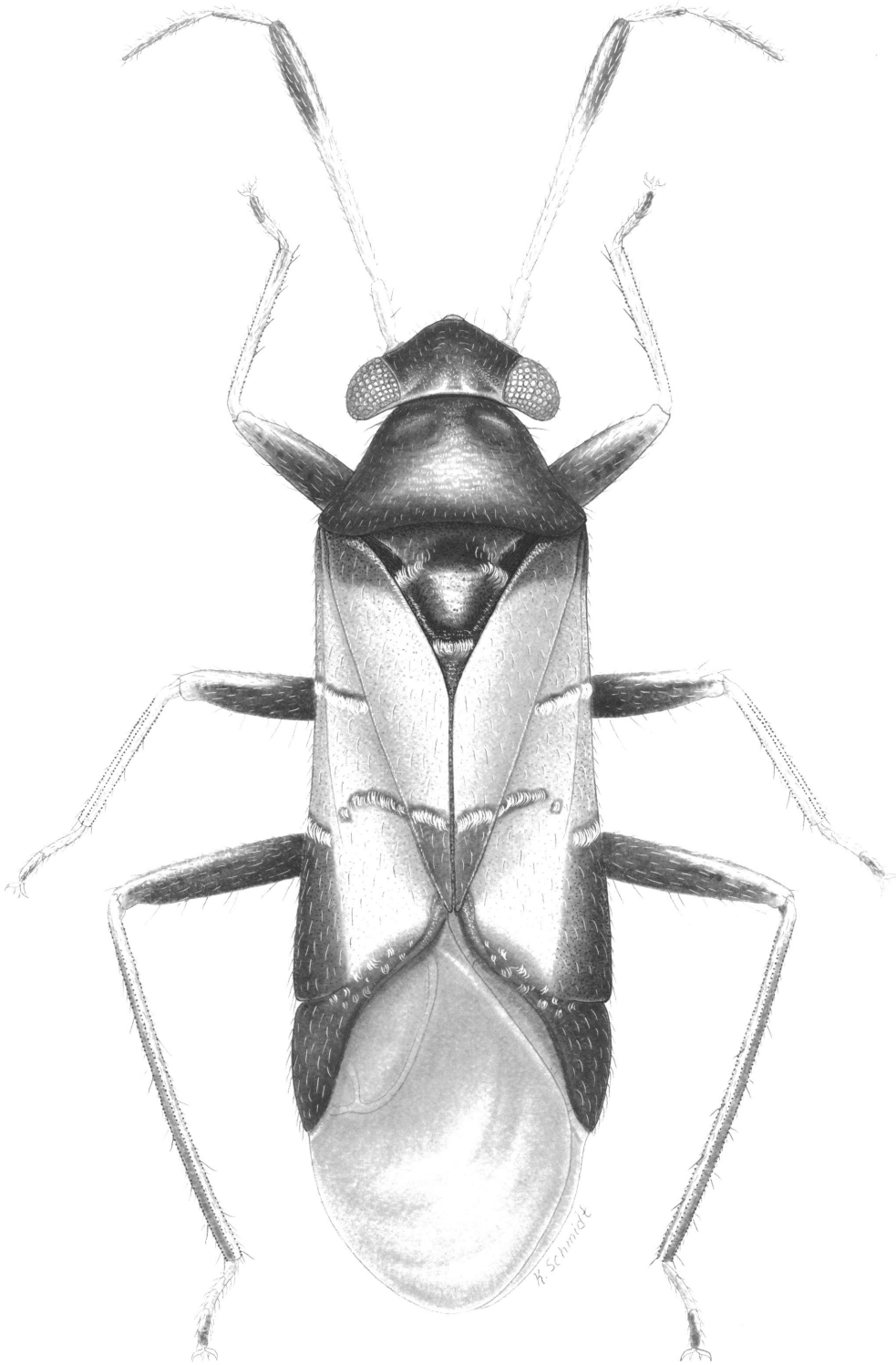

Fig. 19. *Pilophorus schaffneri*, dorsal habitus, ♂.

pale distally. SURFACE AND VESTITURE: Hemelytra posterior to the posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; posterior band of setae broken at radial vein, lateral portion offset posteriorly by a distance slightly greater than the length of a scalelike seta (figs. 19, 20D); 2 (or 3) distinct patches of scalelike setae sublaterally on abdominal sternites 1–5; dorsum with recumbent brown setae. STRUCTURE: Face elongate in frontal view, outline of genae angulate, genae straight and not curved, slightly elevated (carinate) and broadly rounded; pronotum with anterior and posterior lobes confluent, posterior lobe very weakly swollen and slightly elevated, lateral margins weakly concave (pronotum more distinctly campaniform in female); hemelytra and membrane more elongate in males than in females; antennal segment 2 weakly clavate; metatibiae cylindrical and weakly curving (somewhat sinuous); vesica flat, mesial process in the form of a simple lanceolate spine (fig. 20B).

ETYMOLOGY: Named in honor of Joseph C. Schaffner.

HOST: Piñon pine.

DISTRIBUTION: Northeastern Mexico.

PARATYPES: 1♂, 4♀, same data as holotype (AMNH, TAM). MEXICO: **Nuevo Leon:** 2 mi N of La Ascension, July 24, 1976, Peigler, Gruetzmacher, R. & M. Murray, Schaffner, piñon pine (AMNH, TAM), 2♀.

Pilophorus stonedahli, new species
Figures 20F–J, 21

HOLOTYPE: ♂, ID [Idaho], Latah Co., 5½ mi N Moscow on Hwy 95, VII-11-1979, coll. G. Stonedahl, ex *Pinus ponderosa*; deposited in the AMNH.

DIAGNOSIS: Recognized among members of the *exiguus* group by the large size, campaniform pronotum, and posterior band of setae at most slightly offset at the radial vein; similar in structure and coloration to *clavicornis* but recognized by its larger size; distinguished from *dislocatus*, *floridanus*, *geminus*, *gracilis*, and *schaffneri* by the distinctly campaniform pronotum, and from *cembroides*, *clavicornis*, *exiguus*, and *fuscipennis* by its larger size.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 2.63–3.05 mm. COLORATION: Body generally black, hemelytra generally golden brown to orange brown, nearly black in nonmatte areas, antennal segment 1 dark on dorsal surface and pale on ventral surface, segment 2 light proximally and castaneous distally, segments 3 and 4 white proximally and dark distally (fig. 20J), procoxae pale except proximally and distally, meso- and metacoxae pale distally, meso- and metatrochanters pale, protibiae pale. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; posterior band of setae broken at radial vein, lateral portion generally offset posteriorly by a distance more or less equal to the length of a scalelike seta (figs. 20I, 21); large angled patch of scalelike setae sublaterally on abdominal sternites 2–4; dorsum with recumbent brown setae. STRUCTURE: Face moderately elongate in frontal view, outline of genae angulate, broadly rounded; pronotum distinctly campaniform, anterior and posterior lobes confluent, posterior lobe moderately elevated, lateral margins deeply concave; antennal segment 2 moderately enlarged distally; metatibiae weakly flattened and curved; vesica flat, mesial process in the form of a simple lanceolate spine (fig. 20G).

ETYMOLOGY: Named in honor of Gary M. Stonedahl.

HOSTS: *Pinus ponderosa.*

DISTRIBUTION: Eastern Washington, western Idaho, eastern Oregon, northeastern California, coastal mountains of southern California.

PARATYPES: CANADA: **British Columbia:** Oliver, June 27, 1959, R. Madge, ex *Pinus ponderosa*, 1♀; Vaseaux Lk., Oliver, June 16, 1959, ex *Pinus ponderosa*, 1♀. 5♂, 6♀, same data as holotype (AMNH, USNM). USA: **California:** *Inyo Co.:* Big Pine, June 17, 1929, R. L. Usinger, *Pinus ponderosa* (CAS), 2♂, 3♀. *Lassen Co.:* Blue Lk., alt. 1798 m, Eagleville, Likely Rd. September 13, 1976, H. Leach (CAS), 1♀. *Los Angeles Co.:* Wrightwood, August 21, 1967, L. A. Kelton (CNC), 1♀. *San Bernardino Co.:* San Bernardino Mts., Seven Oaks, August 30, 1949, R. A. Flock, *Pinus*

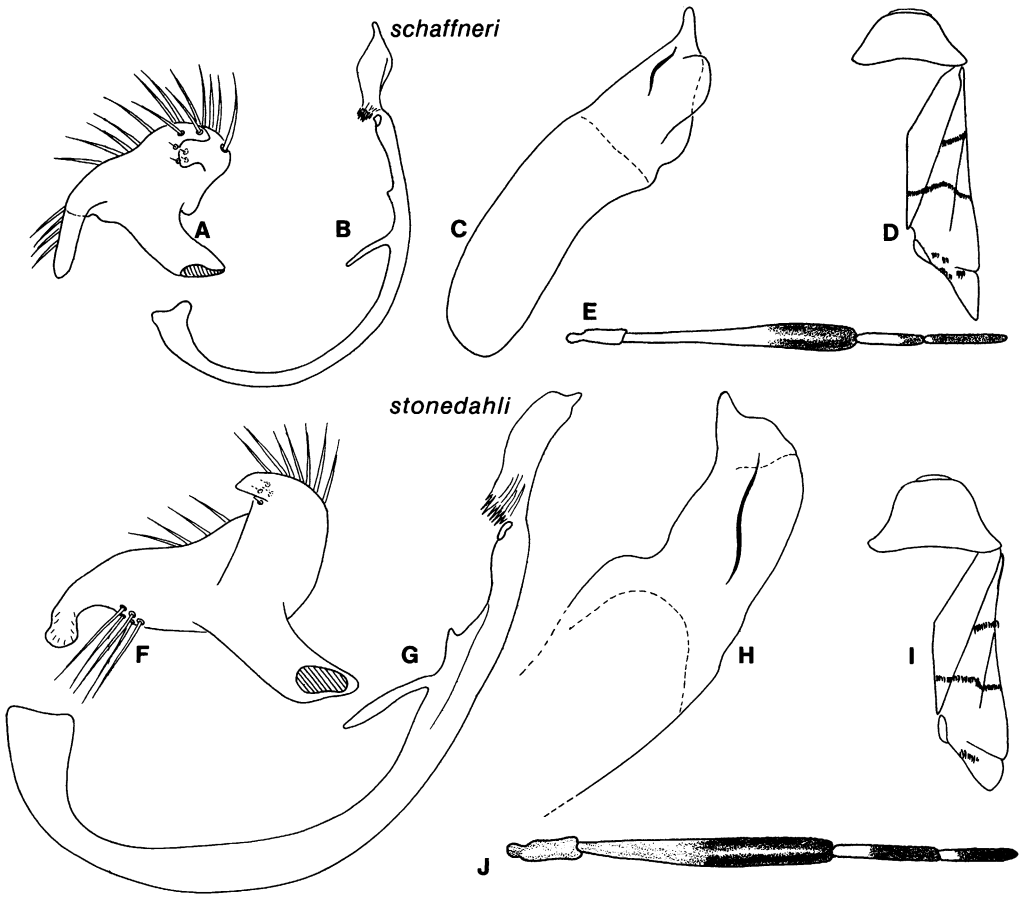

Fig. 20. A–E. *Pilophorus schaffneri*. **A.** Left paramere, posterior view. **B.** Vesica. **C.** Phallotheca. **D.** Pronotum and hemelytron, ♂. **E.** Antenna. F–J. *Pilophorus stonedahli*. **F.** Left paramere, posterior view. **G.** Vesica. **H.** Phallotheca. **I.** Pronotum and hemelytron, ♂. **J.** Antenna.

ponderosa (UCR), 1♂, 1♀. *Santa Barbara Co.:* E of Santa Maria, Miranda Pines, IX-2-82, J. T. Polhemus, *Pinus ponderosa* (AMNH, JTP), 8♂, 9♀. *Stanislaus Co.:* Del Puerto Cyn. at N Fork Del Puerto Crk., 900–1200 ft, May 25, 1980, Lk. Kawakami (UCB), 1♂. *Ventura Co.:* Quatal Cyn., NE corner of county, 3800 ft, July 15, 1965, J. A. Powell (UCB), 1♂, 1♀. *County ?:* Tetley Pk., August 19, 1947, Timberlake, *Pinus ponderosa* (UCR), 3♂, 1♀. **Oregon:** *Hood River Co.:* 3 mi W of Hood R. on I-80, September 13, 1979, coll. G. Stonedahl, ex *Pinus ponderosa* (AMNH), 1♀. **Washington:** *Asotin Co.:* 2.5 mi S of Anatone, N of Rattlesnake Summit, 3900 ft, August 4, 1986, Schuh, Schwartz and Stonedahl, ex *Pinus ponderosa* (AMNH), 1♂, 2♀. *Okanogan Co.*:0.5 mi S of Malott, July 6, 1966, W. Gagne, J. Haddock, *Pinus ponderosa* (UCB), 1♂, 1♀.

DISCUSSION: Specimens from the coastal mountains of southern California have a narrower appearance than those from the northern part of the range, with width of the pronotum ranging from 0.90 to 1.08 mm.

PILOPHORUS CLAVATUS SPECIES GROUP

Recognized by the hemelytra posterior to the posterior band of scalelike setae being smooth, polished, and weakly shining laterad of the radial vein and with a matte texture mesad of the radial vein as anterior to the posterior setal band, the vesica twisted and with the mesial spinelike process with a sub-

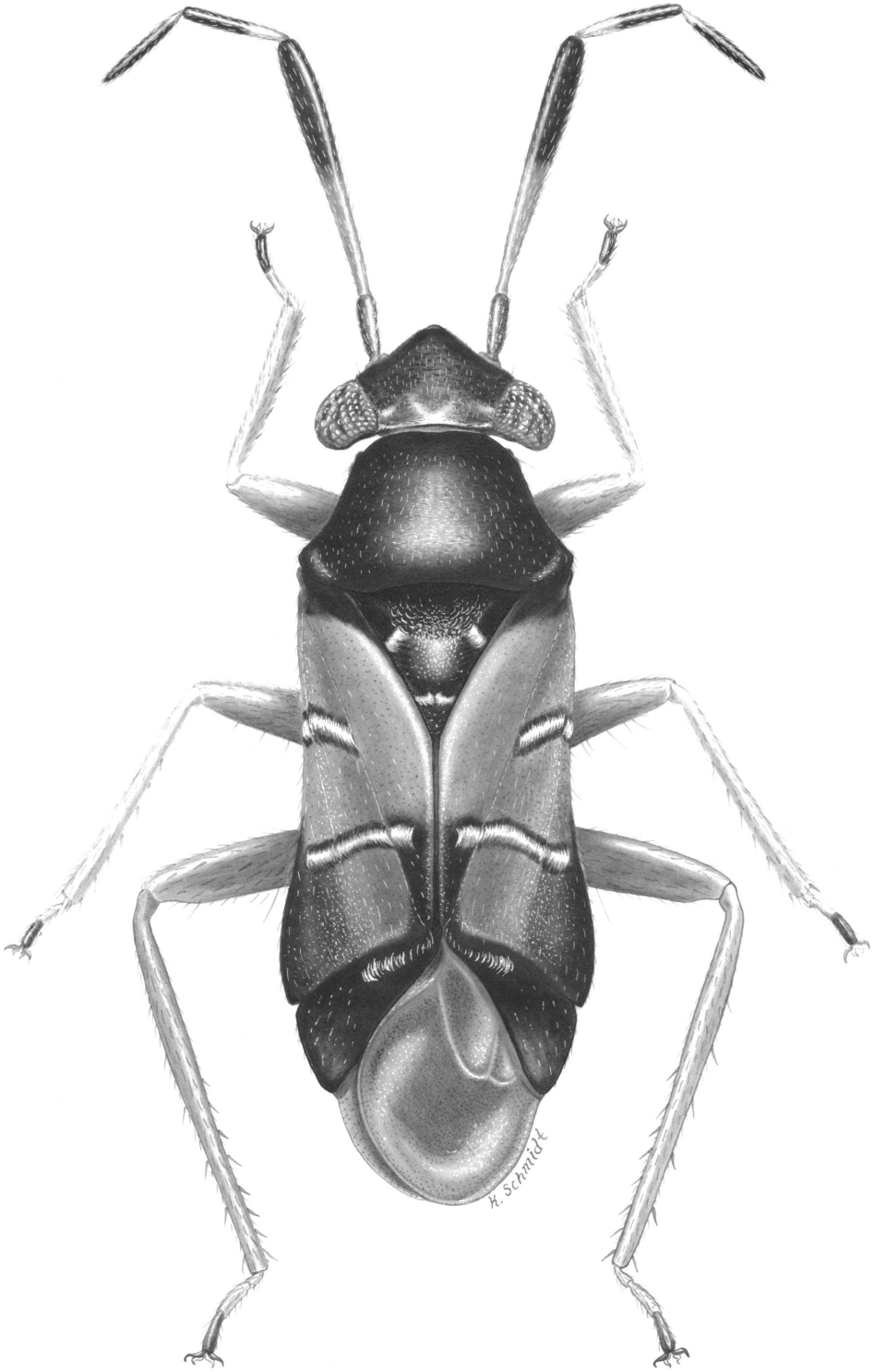

Fig. 21. *Pilophorus stonedahli*, dorsal habitus, ♂.

basal thumblike process, and the habit of breeding on species of dicotyledonous plants.

Pilophorus balli Knight
Figures 22A–D

Pilophorus balli Knight, 1968: 176 (n. sp., desc., key). – Knight, 1973: 143 (dist., key).

HOLOTYPE: ♂, Gnd. Junc., Col., 7–28–[19]00; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra, by its moderate size, dorsal vestiture of erect simple setae of moderate length, the unicolorous dark third antennal segment (fig. 22D), and the smooth, polished, noncampaniform pronotum.

DESCRIPTION: Moderately small, relatively stout-bodied species, length apex tylus–cuneal fracture 2.54–2.70 mm. COLORATION: Brown, hemelytra golden brown, brown in nonmatte areas, antennal segment 1 pale, segments 2 and 3 castaneous, segment 4 light basally and castaneous distally, meso- and metacoxae distally and meso- and metatrochanters pale. SURFACE AND VESTITURE: Body and appendages polished and shining; hemelytra posterior to the posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band, posterior band of setae straight or nearly straight and at most slightly offset at claval suture (fig. 22C); dorsum with scattered, erect, brown simple setae; a large angled patch of scalelike setae sublaterally on abdominal sternites 2–4; scalelike setae on cuneal area in the form of an elongate transverse patch; posterior margin of metepisternum with only a few scalelike setae. STRUCTURE: Face long and angulate below eyes in frontal view, genae appearing nearly straight, smoothly rounded and not elevated in lateral view; gula short and vertical; pronotum, smooth, shining, lobes confluent and not demarcated, weakly swollen and slightly elevated posteriorly, lateral margins nearly straight; mesoscutum only normally elevated and rather narrowly exposed; metatibiae slightly flattened and weakly curving; vesica twisted, mesial process with a subbasal thumblike process (fig. 22B).

HOST: None recorded.

DISTRIBUTION: Western North America: west to western Arizona, north to northern Colorado, east to western Kansas, and south to central Mexico.

SPECIMENS EXAMINED: 11 specimens collected between July 24 and September 7; deposited in: AMNH, CNC, KU, TAM, USNM. – MEXICO: **San Luis Potosi:** 1 mi S of San Lorenzo; El Huizache. USA: **Arizona:** *Coconino Co.:* Flagstaff. **Colorado:** *Larimer Co.:* Fort Collins. *Mesa Co.:* Grand Junction. **Kansas:** *Meade Co.* **New Mexico:** *Eddy Co.:* Carlsbad. **Texas:** *Presidio Co.:* Plata.

Pilophorus brunneus Poppius
Figures 22E–H

Pilophorus brunneus Poppius, 1914a: 244 (n. sp., desc., host, key). – Knight, 1923: 544 (desc., dist., host, key). – Blatchley, 1926: 816 (desc., dist., host, key). – Knight, 1941: 123 (desc., dist., host, key). – Froeschner, 1949: 144 (key). – Knight, 1973: 144 (dist., host, key). – Wheeler and Henry, 1975: 364 (note). – Wheeler et al., 1983: 143 (dist., host).

Pilophorus australis Knight, 1926a: 21 (n. sp., desc., host). – Knight, 1973: 141 (dist., host, key). NEW SYNONYMY.

LECTOTYPE: ♂, Md., Henson Cr., Pr. Georg[es] Co.; on willow; Collection O. Heidemann; *P. brunneus* n. sp.; *Pilophorus schwarzi* Reut., O. H.; Type No. 24624 U.S.N.M.; *Pilophorus brunneus* Poppius, LECTOTYPE, det. R. T. Schuh and M. D. Schwartz; deposited in the USNM.

HOLOTYPE OF SYNONYM: ♂, Donaldsonville, La., 17–VI–1917, H. H. Knight; *Salix*; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with mesially offset posterior band of scalelike setae on the hemelytra, by its size, the recumbent vestiture of the dorsum, and the labium reaching to or near to the apex of the mesocoxae; most easily confused with *walshii*.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.35–2.94 mm. COLORATION: Body and appendages generally medium brown, occasionally much

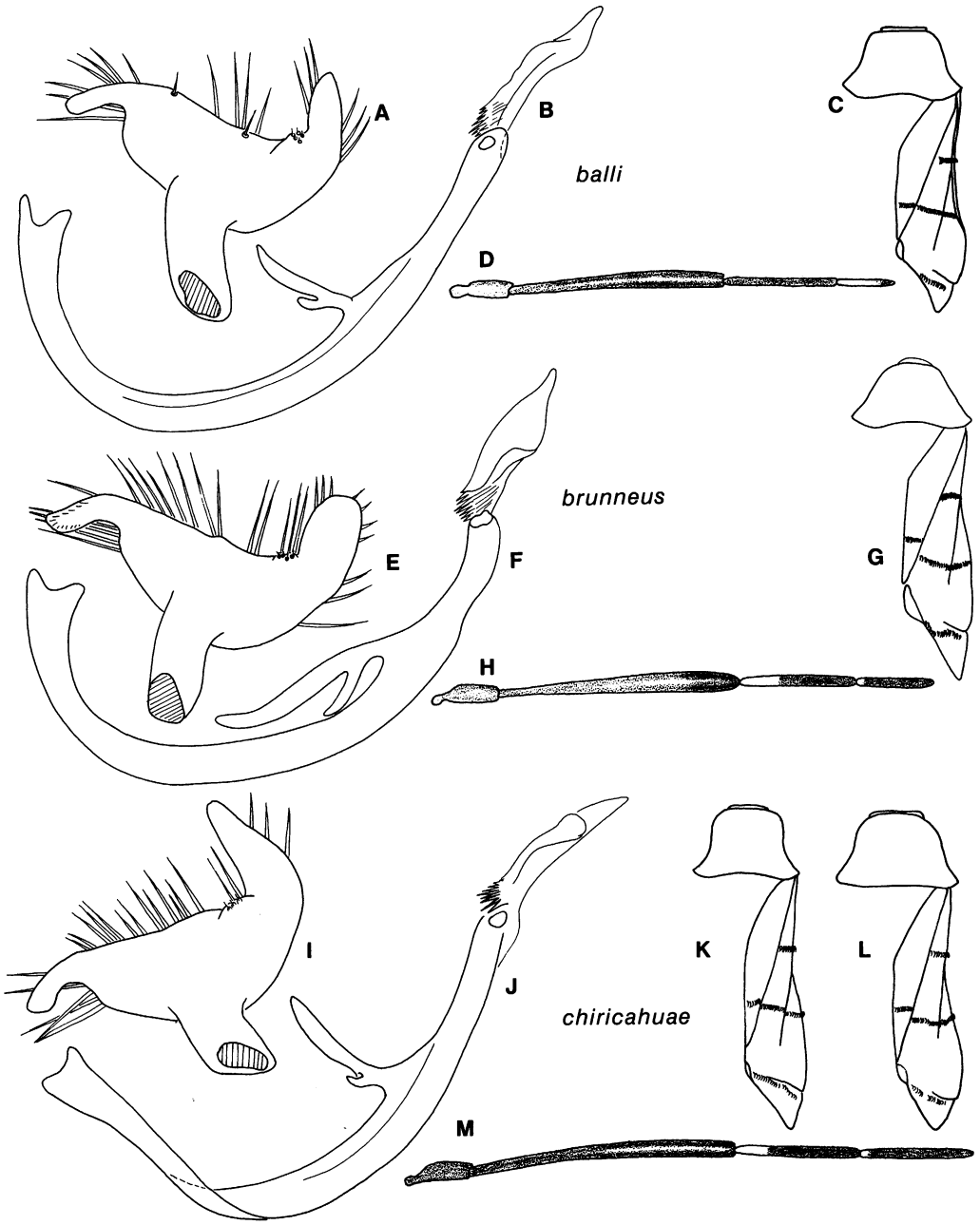

Fig. 22. A–D. *Pilophorus balli*. **A.** Left paramere, posterior view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus brunneus*. **E.** Left paramere, posterior view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna. I–M. *Pilophorus chiricahuae*. **I.** Left paramere, posterior view. **J.** Vesica. K, L. Pronotum and hemelytron, ♂. **K.** Cave Crk., Chiricahua Mts., Arizona. **L.** Herb Martyr Dam, Chiricahua Mts., Arizona. **M.** Antenna.

darker, hemelytra generally deep orange to orange brown, dark brown in nonmatte areas, antennal segment 1 dark on dorsal half and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal half and dark on distal

half, segment 4 white at extreme base with remainder castaneous, procoxae white, meso- and metacoxae white distally, meso- and metatrochanters white. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; posterior band of scalelike setae offset at claval suture with portion on clavus anterior to corial portion by a distance equal to at least width of the setal band (fig. 22G); large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in a single elongate transverse patch; dorsum with recumbent, pale, weakly shining setae. STRUCTURE: Face angulate below eyes in frontal view, genae appearing straight, not elevated or carinate in lateral view; gula very short; pronotum vaguely campaniform with anterior margin obscured by posterior margin of head and eyes, posterior lobe moderately swollen, lateral margins moderately to deeply concave; posterior tibiae nearly cylindrical and straight; vesica twisted, mesial process with subbasal thumblike process (fig. 22F).

HOSTS: *Acer platanoides*, *Berberis* sp., *Betula nigra*, *Carpinus caroliniana*, *Carya laciniosa*, *Carya* sp., *Corylus* sp., *Malus* sp., *Pyrus communis*, *Prunus pissardii*, *Salix longifolia*, *S. nigra*, cottonwood.

DISTRIBUTION: Eastern North America: north to Minnesota and Ontario, west to Minnesota and Iowa, and south to Mississippi and Louisiana.

SPECIMENS EXAMINED: 191 specimens collected between May 29 and August 29; deposited in: AMNH, CAS, CNC, KU, LSU, PDA, TAM, UCB, USNM. – CANADA: **Ontario:** Chippawa. USA: **District of Columbia. Illinois:** *Jodaviess Co.:* Galena. *Kankakee Co.:* Kankakee. *Ogle Co.:* Byron. **Indiana:** *Cass Co.:* 2 mi E of Walton. **Iowa:** *Boone Co.:* Ledges St. Pk. *Lee Co.:* Fort Madison. *Marshall Co.:* Marshalltown. *Story Co.:* Ames. **Louisiana:** *Assumption Par.:* Donaldsonville. *East Baton Rouge Par.:* LSU Campus. *Par. ?:* Greenwell Springs. **Maryland:** *Anne Arundel Co.:* Odenton. *Montgomery Co.:* Plummers Island. *Prince Georges Co.:* Oxon Hill; Branchville to Beltsville. **Massachusetts:** *Middlesex Co.:* Boston, Arnold Arboretum. **Minnesota:** *Winona Co.:* Kings Bluff. **Mississippi:** *Clay Co.:* West Point. *Sharkey Co.:* Anguilla; Catchings; Rolling Fork. **Missouri:** *Greene Co.:* Springfield. *Holt Co.:* Biglow. *McDonald Co.:* Langdon. *Randolph Co.:* 1 mi E of Moberly. *St. Louis Co.:* St. Louis. **New Jersey:** *Morris Co.:* Madison. **New York:** *Niagara Co.:* Niagara Falls. *Suffolk Co.:* Cold Spring Harbor. *Tompkins Co.:* Bigelow; McLean. *Westchester Co.:* White Plains; Lk. Waccabuc. **North Carolina:** *Mecklenburg Co.:* Rt 51, 1 mi W of Rt 16 near Matthews. *Mitchell Co.:* Red Hill. **North Dakota:** *Trail Co.* **Ohio:** *Franklin Co.:* Columbus. *Mongomery Co.:* I-70, 20 mi W of Springfield. **Pennsylvania:** *Adams Co.:* 1 mi W of Biglerville. *Blair Co.:* Altoona. Bradford *Co.:* Athens, Tioga Pt. Cemetery. *Butler Co.:* Butler. *Cambria Co.:* Johnstown; Portage. *Centre Co.:* Pennsylvania State University Campus. *Dauphin Co.:* Harrisburg; Harrisburg near Rockville; Paxton Twp.; Rt 3A at Manor Dr.; Susquehanna Twp along Elmerton Ave. *Erie Co.:* Corry, peat bog. *Juniata Co.:* Cross Keys. *Lebanon Co.:* 2 mi W of jct Rts 22 & 72. *Lycoming Co.:* Williamsport. *Montgomery Co.:* Maple Glen, Pike Nursery. *Northampton Co.:* Farmersville, St. John's Cemetery. *Philadelphia Co.:* Philadelphia, Morris Park. **Tennessee:** *Anderson Co.:* Oak Ridge. **Texas:** *Brazos Co.:* College Station. **Virginia:** *Arlington Co.:* Arlington. *County ?:* Stubblefield Falls. **Wisconsin:** *Douglas Co.:* Brule.

DISCUSSION: Poppius (1914a) described *brunneus* on the basis of three specimens. Contrary to his indication that specimens were deposited in the Helsinki Museum, all appear to be housed at the National Museum in Washington, D.C. We have designated the male from Prince Georges County, Maryland (incorrectly recorded as "B. George [collector]" by Poppius) as the lectotype and labeled the other two specimens from Washington, D.C., as paralectotypes.

Knight (1926a) described *australis* based on four specimens from Donaldsonville, Louisiana, collected on *Salix*. Comparison of this material with the lectotype and many additional specimens of *brunneus* indicates that the two nominal species are indistinguishable and we are therefore treating *australis* as a junior synonym.

Pilophorus chiricahuae Knight
Figures 22I–M

Pilophorus chiricahuae Knight, 1968: 172 (n. sp., desc., fig., key). – Knight, 1973: 141 (dist., key).

HOLOTYPE: ♀, Chiricahua Mts, Alt. 6200, Ariz., 20 June 1928, A. A. Nichol; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the usually strongly campaniform, posteriorly elevated pronotum (fig. 22K, L), the third antennal segment white proximally (fig. 22M), and the very sparse, neat, recumbent vestiture of the dorsum; very similar in appearance to *discretus* and *minutus*.

DESCRIPTION: As in *discretus*, except antennal segment 3 white on basal ⅓, antennal segment 4 white only at extreme base, meso- and metacoxae white, and metathoracic scent gland auricle colored as surrounding thoracic pleuron; length apex tylus–cuneal fracture 3.03 mm.

HOST: *Salix* sp.

DISTRIBUTION: Southern Arizona.

SPECIMENS EXAMINED: 12 specimens collected between May 27 and July 20; deposited in: AMNH, KU, UCB, UCR, USNM. – USA: **Arizona:** *Cochise Co.:* Chiricahua Mts., Herb Martyr Dam; Chiricahua Mts., Cave Crk. *Coconino Co.:* Oak Crk. Cyn. at Banjo Bill Camp Area. *Gila Co. Pima Co.:* Santa Cruz River; Rincon Mts., 3300 ft.

DISCUSSION: In some specimens the posterior band of setae is offset at the claval suture (fig. 22L).

Pilophorus clavatus Linnaeus
Figures 23A–D

Pilophorus clavatus Linnaeus, 1767: 729 (n. sp., desc.). – Knight, 1923: 544 (in part; desc., dist., host, key). – Knight, 1941: 124 (in part; desc., dist., host). – Knight, 1973: 143 (in part; dist., host, key). – Schuh, 1976: 10 (disc., SEM). – Kelton, 1980: 279 (in part ?; syn., diag., host, dist., map, key).

TYPE: Not examined.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the posterior band of scalelike setae not or only slightly offset at the claval suture, by the relatively large size, the erect, heavy vestiture of the dorsum, and the castaneous coloration.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 3.05–3.65 mm. COLORATION: Body generally castaneous and dull, appendages somewhat lighter, matte areas of hemelytra generally orange brown to castaneous, castaneous in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous, procoxae mostly pale or white mesially, meso- and metacoxae distally and meso- and metatrochanters pale or white. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band, posterior band of setae continuous and nearly straight across (fig. 23C); large angled patch of scalelike setae sublaterally on abdominal sternites 3–5; scalelike setae on cuneal area in one elongate transverse patch; dorsum with recumbent, brown, weakly shining setae, and hemelytra with moderately long, erect, brown, bristlelike setae. STRUCTURE: Face angulate below eyes in frontal view, genae not noticeably elevated or carinate in lateral view; gula short; pronotum with calli undemarcated, posterior lobe weakly swollen but distinctly elevated, lateral margins nearly straight, anterior margin obscured by posterior margin of head and eyes; metatibiae nearly cylindrical and straight; vesica twisted, mesial process with a subbasal thumblike process (fig. 23B).

HOSTS: *Quercus* sp., *Cornus* sp.

DISTRIBUTION: Scattered localities, mostly in northeastern North America.

SPECIMENS EXAMINED: 26 specimens from North America collected between June 11 and September 6; deposited in: AMNH, CAS, CNC, USNM. We also examined numerous specimens from Europe. – CANADA: **Manitoba:** Carberry. **Nova Scotia:** *Digby Co.* USA: **Colorado:** *Delta Co.:* Hotchkiss. *County ?:* McCoy. **Illinois:** *McHenry Co.:* Cary. **Minnesota:** *Hennepin Co.:* St. Anthony Park. *Ramsey Co.* **Montana:** *Broadwater Co.* **New**

York: *Oneida Co.:* Songerfield. *Queens Co.:* Flushing Meadow, Corona Park.

DISCUSSION: This European species has been recorded by Knight (1923, 1941, 1973) and Kelton (1980) from Britsh Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Nova Scotia, Colorado, Illinois, Iowa, Massachusetts, Michigan, Minnesota, New York, and North Dakota. We have not been able to confirm all of these records and consider those specimens not listed under Specimens Examined to be either *neoclavatus* or misidentifications of other species.

Pilophorus discretus Van Duzee
Figures 23E–H, 24

Pilophorus discretus Van Duzee, 1918: 290 (n. sp., desc.). – Knight, 1968: 168 (dist., key). – Knight, 1973: 142 (dist., key).

Pilophorus utahensis Knight, 1968: 175 (n. sp., desc., key). – Knight, 1973: 142 (dist., key). NEW SYNONYMY.

Pilophorus nicholi Knight, 1973: 139 (n. sp., desc., fig., key). NEW SYNONYMY.

HOLOTYPE: ♀, Colton, Cal., May 26–28, [19]17; E. P. Van Duzee Collector; deposited in the CAS.

HOLOTYPES OF SYNONYMS: *Pilophorus nicholi* Knight: ♀, Superior, Ariz., Alt. 2400 ft., 16 Apr., 1928, A. A. Nichol. *Pilophorus utahensis* Knight: ♂, Leeds, Utah, Oct. 12, 1932, E. W. Davis. Both deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the strongly campaniform, posteriorly elevated pronotum, the third antennal segment unicolorous dark, and the very sparse, neat, recumbent vestiture of the dorsum; distinguished from *minutus* by its generally larger size and from *chiricahuae* by the different coloration of the third antennal segment.

DESCRIPTION: Moderate-size slender species, length apex tylus–cuneal fracture 2.50–2.81 mm. COLORATION: General coloration varying from orange brown to castaneous, often in individual specimens, hemelytra orange, castaneous to nearly black in nonmatte areas, antennal segment 1 red or castaneous on dorsal surface and pale on ventral half, segments 2 and 3 castaneous, segment 4 white on basal half with remainder castaneous, procoxae mostly pale, metacoxae pale distally, metathoracic scent gland auricle pale. SURFACE AND VESTITURE: Body and appendages polished and shining, hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; posterior band of setae straight or nearly straight and at most slightly offset at the claval suture (figs. 23G, 24); dorsum with a few reclining golden recumbent setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–4; scalelike setae on cuneal area in the form of an elongate transverse patch; posterior margin of metepisternum with only a few scalelike setae. STRUCTURE: Face angulate below eyes in frontal view, genae appearing straight, smoothly rounded and not elevated in lateral view; gula distinct and nearly vertical; pronotum, smooth, shining, lobes confluent and not demarcated, posterior lobe swollen and conspicuously elevated, lateral margins distinctly concave; mesoscutum greatly elevated and very broadly exposed; metatibiae slightly flattened and weakly bent at about midpoint; vesica twisted, mesial process with subbasal thumblike process (fig. 23F).

HOSTS: *Ambrosia* sp., *Artemisia filifolia*, *Brickiella* sp., *Chrysothamnus nauseosus*, *Croton dioicus*, *Dalea* sp., *Gutierrezia sarothrae*, *Hymenoclea monogyra*, *Lepidospartum* sp., *Prunus illicifolia*, *Psorothamnus fremontii*.

DISTRIBUTION: Western North America: north to central Utah, south to central Baja California, and east to western Texas.

SPECIMENS EXAMINED: 361 specimens collected between April 13 and January 2; deposited in: AMNH, CAS, CNC, KU, OSU, TAM, UCB, UCR, USNM. – MEXICO: **Baja Calif. Sur:** 1 km N of Migrino. **Sonora:** Desemboque; Navajoa, Rio Mayo; 40 mi SW of Ciudad Obregon near San Jose Beach. USA: **Arizona:** *Cochise Co.:* Douglas; Chiricahua Mts. *Gila Co.:* Globe; San Carlos, Gila River Valley. *Mohave Co.:* Boulder Dam; near Kingman; Littlefield. *Pima Co.:* Tucson; 3 mi E of Tucson; Arivaca Crk. at Arivaca; Santa Rita Mts., 4500 ft. *Pinal Co.:* Superior, 2400 ft; 21 mi NE of Oracle Jct. *Santa Cruz Co.:*

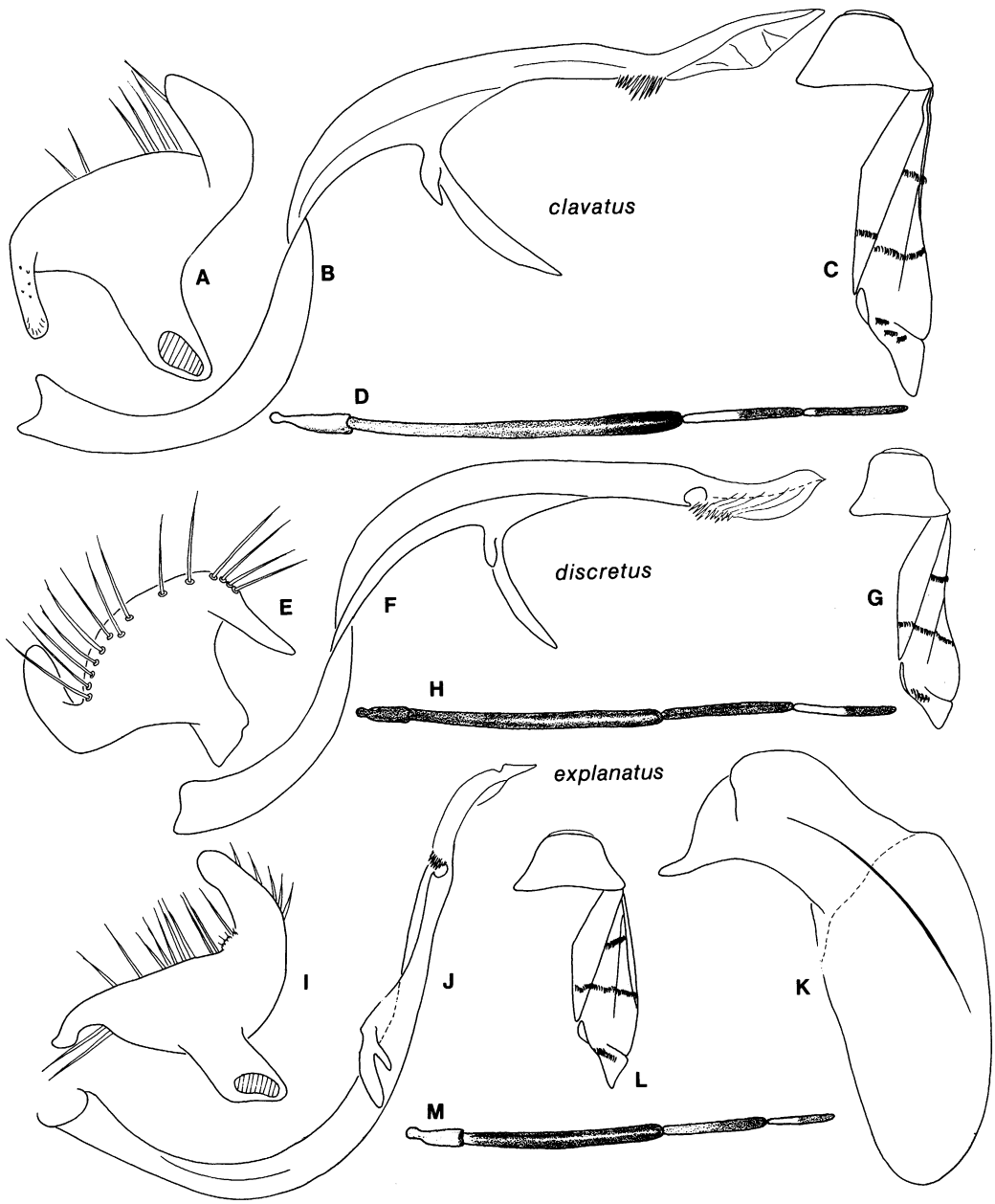

Fig. 23. A–D. *Pilophorus clavatus*. **A.** Left paramere, posterior view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus discretus*. **E.** Left paramere, anterior view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna. I–M. *Pilophorus explanatus*. **I.** Left paramere, posterior view. **J.** Vesica. **K.** Phallotheca. **L.** Pronotum and hemelytron, ♂. **M.** Antenna.

Atascosa Mts.; Nogales, Pena Blanca Lk.; Pena Blana Rec. Area, White Rock Cmpgrd.; Patagonia. *Yavapai Co.:* Peeples Valley; Hassayampa River, 0.5 mi N of Wickenburg. *County ?:* Rice. **California:** *Inyo Co.:* Independence; Olancha. *Kern Co.:* Mojave. *Los*

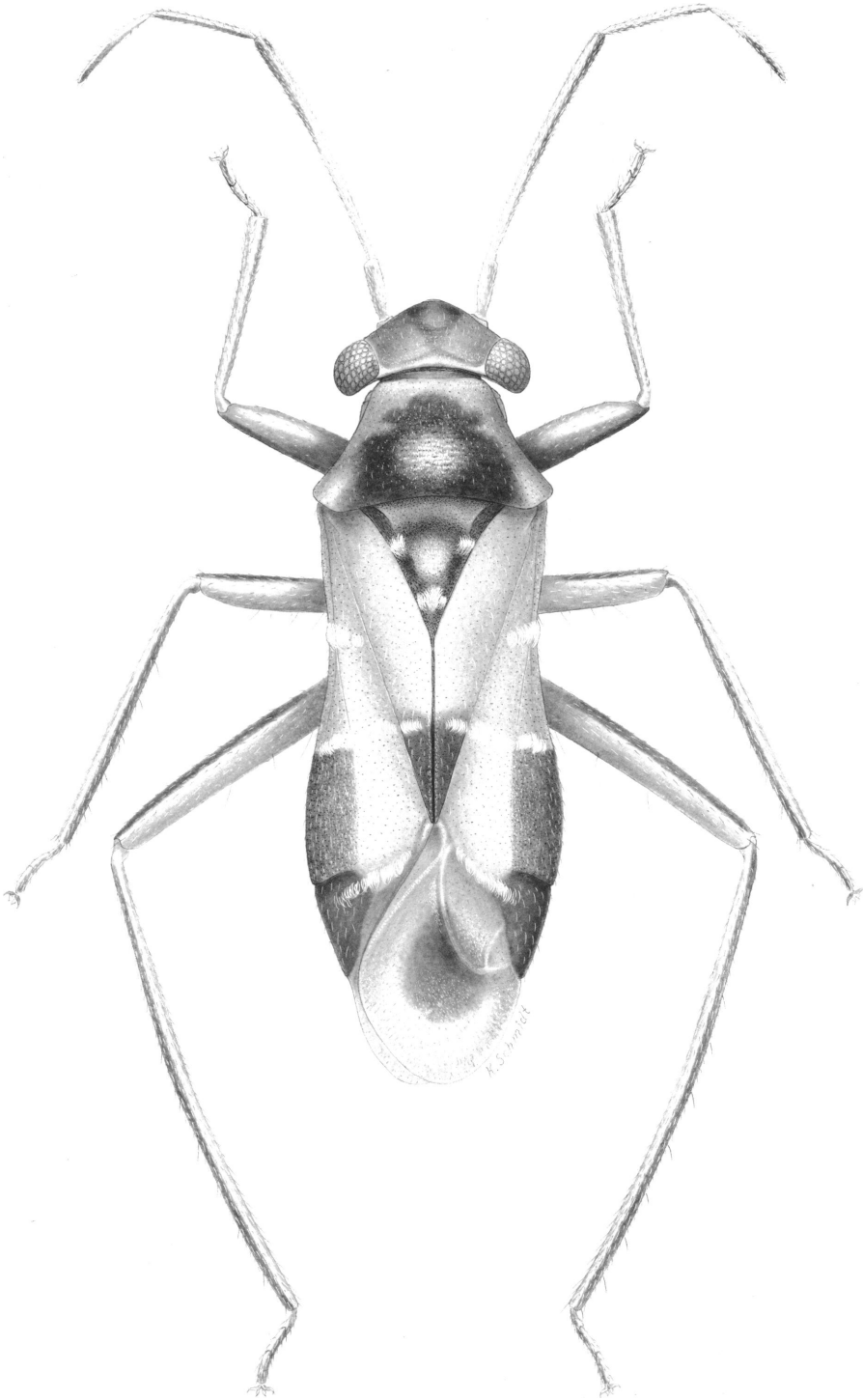

Fig. 24. *Pilophorus discretus*, dorsal habitus, ♂.

Angeles Co.: Pasadena. *Riverside Co.:* Buatista Cyn., ca. 8 mi SE of Hemet; San Jacinto Mts., San Jacinto River, 3000 ft; San Jacinto Mts., Piñon Flat. *San Bernardino Co.:* 2 mi E of Goffs, 845 m; 1.3 mi S of Goffs, 845 m; just E of Goffs; 3 mi S of Ivanpah; 1.5 mi W of Yucca Valley; Mill Crk. Cyn. *San Diego Co.:* San Felipe Valley; Palomar Mt., Cleveland Nat. For. *County ?:* Cushenburg Springs. **Colorado:** *Mesa Co.:* Grand Junction. **Nevada:** *Nye Co.:* Pahrump. **New Mexico:** *Beralillo Co.:* Barton. **Texas:** *Hudspeth Co.:* Ft. Hancock. **Utah:** *Garfield Co.:* jct Rts 95 & 276, 4900 ft. *Grand Co.:* Moab. *Iron Co.:* Enterprise. *Kane Co.:* Glendale. *Washington Co.:* Snow Cyn. St. Pk., T41S R16W, 4000 ft; 2 mi NW of Toquerville on St. Rt 17, 3800 ft; Leeds.

DISCUSSION: Knight (1968) described *utahensis* on the basis of specimens from Utah and Colorado. He later (Knight, 1973) described *nicholi* on the basis of two specimens from Arizona. Comparison of the types of both of these nominal species with the type of *discretus* and hundreds of additional specimens indicates that Knight's species are within the range of color and morphological variation of a single widespread species, and we are therefore treating all three as synonyms, *discretus* having priority.

A series of seven specimens from 1 km N of Migrino, Baja California Sur, has females with somewhat reduced hemelytra, a condition that might be called submacropterous.

Pilophorus explanatus, new species
Figures 23I–M

HOLOTYPE: ♂, Tucson, Ar., 1.5, HG Hubbard Collector; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the explanate corial margin, its small size, flattened, broad-bodied appearance, and the relatively wide posterior band of scalelike setae on the hemelytra.

DESCRIPTION: Small, short, broad-bodied species, length apex tylus–cuneal fracture 2.34–2.53 mm. COLORATION: General coloration orange brown to brown, hemelytra orange, brown in nonmatte areas, antennal segment 1 nearly unicolorous pale, segment 2 deep red, segments 3 and 4 light basally and darker distally, pro- and metacoxae and metatrochanters pale. SURFACE AND VESTITURE: Body and appendages polished and shining; hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; posterior band of setae straight or nearly straight and at most slightly offset at claval suture (fig. 23L); dorsum with a few reclining, golden, recumbent setae; a large angled patch of scalelike setae sublaterally on abdominal sternites 2–4; scalelike setae on cuneal area in the form of an elongate transverse patch; posterior margin of metepisternum with only a few scalelike setae. STRUCTURE: Face angulate below eyes in frontal view, genae nearly straight, smoothly rounded and not elevated in lateral view; bucculae very large and flaring, enclosing buccal cavity posteriorly; gula obsolete; pronotum smooth, shining, lobes confluent and not demarcated, swollen and moderately elevated near middle, lateral margins weakly concave; mesoscutum only normally elevated and rather narrowly exposed; lateral margin of hemelytra convex, embolium broad, exposed, and not reflexed ventrally; metatibiae weakly and uniformly flattened over entire length, straight; vesica twisted, mesial process with a subbasal thumblike process (fig. 23J).

ETYMOLOGY: Named for the explanate lateral corial margin.

HOSTS: None recorded.

DISTRIBUTION: Southern Arizona.

PARATYPES: USA: **Arizona:** *Pima Co.:* Hot Springs, 21.6, H. S. Barber Collector (USNM), 1♂; [?] mi [?] of Tucson, October 24, 1957, C. W. O'Brien (AMNH), 1♂; Tucson, May 1929, E. D. Ball (USNM), 1♀.

Pilophorus longisetosus Knight
Figures 1D, F, 25A–D

Pilophorus longisetosus Knight, 1968: 174 (n. sp., desc., key). – Knight, 1973: 142 (n. sp., key).
Pilophorus hirtus Knight, 1973: 140 (n. sp., desc., key). NEW SYNONYMY.

HOLOTYPE: ♀, Colo. Spgs., 8/2 [handwritten], July 1900; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus hirtus* Knight: ♀, Parma, Idaho, July 12, 1934, Alt.

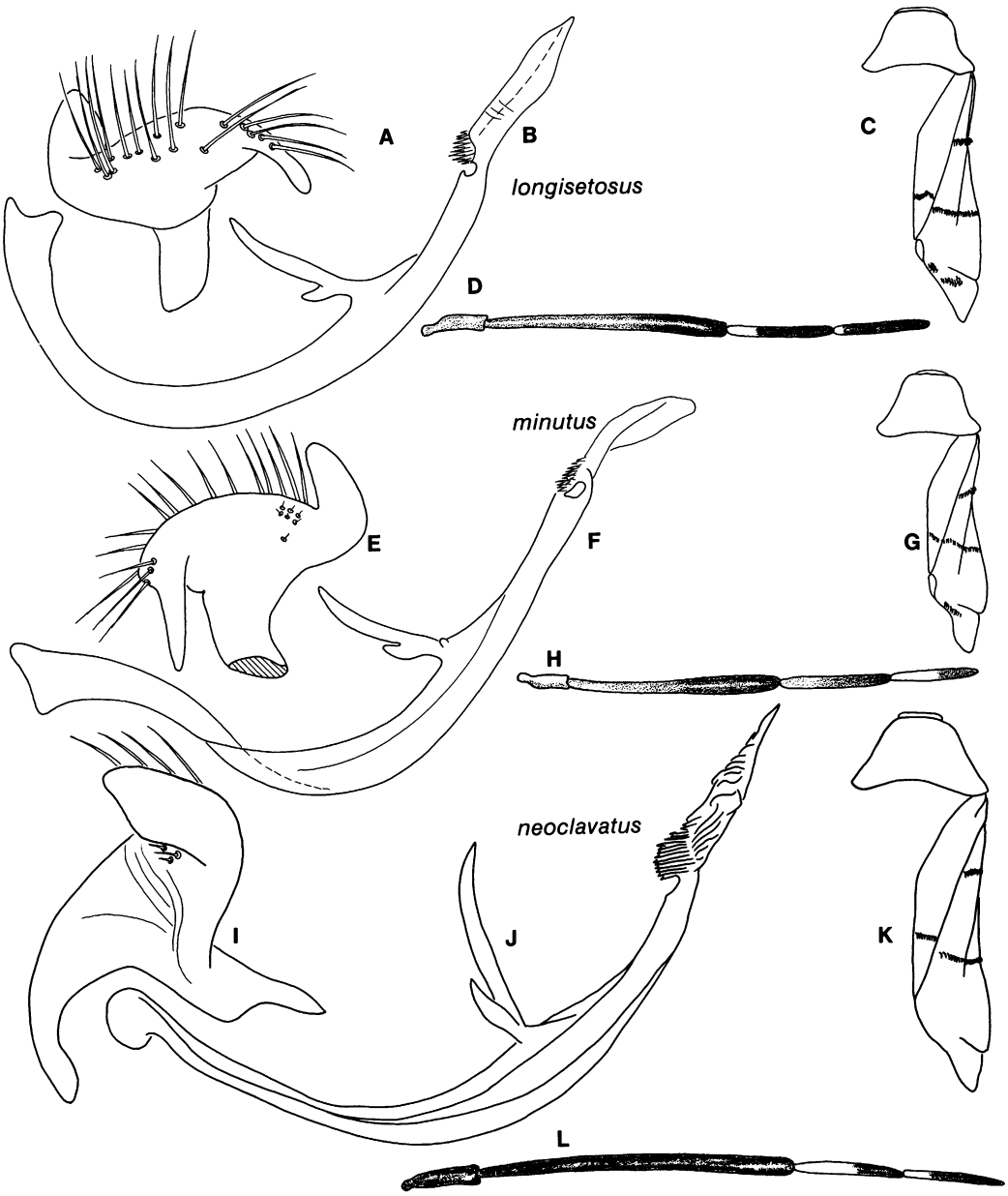

Fig. 25. A–D. *Pilophorus longisetosus*. **A.** Left paramere, frontal view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus minutus*. **E.** Left paramere, posterior view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna. I–L. *Pilophorus neoclavatus*. **I.** Left paramere, posterolateral view. **J.** Vesica. **K.** Pronotum and hemelytron, ♂. **L.** Antenna.

2231 ft.; E. L. Turner; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with mesially offset posterior band of scalelike setae on the hemelytra, by the long erect dorsal vestiture, including the head and pronotum; similar to *vicarius* in general appearance, but distinguished by the much longer and more generally distributed dorsal vestiture; distinguished from *setiger* by the offset posterior setal band.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.77–3.04 mm. COLORATION: Body usually nearly black, legs variably dark, hemelytra variably colored, usually with deep brown and blackish brown, occasionally lighter brown, nearly black in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous, procoxae white except proximally and distally, meso- and metacoxae pale distally, meso- and metatrochanters pale or white, pro- and mesotibiae and femora brown, metafemora and tibiae somewhat darker. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band (fig. 1F); posterior band of setae offset at claval suture with portion on clavus anterior to the corial portion by a distance equal to about the width of the setal band (fig. 25C); dorsum, including head, pronotum, and scutellum, with numerous erect, long, simple, brown setae, in addition to the normal recumbent, short, golden shining setae (fig. 1D); patch of scalelike setae on posterior margin of metepisternum consisting of a very few setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in three discrete patches. STRUCTURE: Face elongate and angled below eyes in frontal view, genae nearly straight, broadly rounded, not noticaebly elevated or carinate in lateral view; gula elongate; pronotum vaguely campaniform, with anterior margin obscured by posterior margin of head and eyes, posterior lobe conspicuously swollen and elevated, lateral margins moderately concave; metatibae nearly cylindrical and straight in lateral view, curved in dorsal view; vesica twisted, mesial process with subbasal thumblike process (fig. 25B).

HOSTS: *Quercus gambelli*, *Quercus* sp., scrub oak.

DISTRIBUTION: Colorado, Idaho.

SPECIMENS EXAMINED: 31 specimens collected between July 8 and August 20; deposited in: AMNH, CNC, JTP, USNM. – USA: **Colorado:** *Douglas Co.:* Chatfield St. Pk.; Perry Pk. *Jefferson Co.:* Deer Crk. Cyn. *Las Animas Co.:* Monument Pk., 8650 ft; Stonewall, 8200 ft. *Montrose Co.:* 18 mi SE of Maturita. *Routt Co.:* Steamboat Springs. *Montezuma Co.:* Mesa Verde Nat. Pk. *El Paso Co.:* Manitou.

DISCUSSION: Knight (1973) described *hirtus* from a single male specimen collected at Parma, Idaho. He noted that it was distinguished by the long erect setae on the dorsum but did not compare it with *longisetosus*. Although this specimen is much lighter in coloration than most of the specimens we have assigned to *longisetosus*, it appears to fall within the range of variation found in this species, and we are therefore treating *hirtus* as a junior synonym of *longisetosus*.

Pilophorus minutus Knight
Figures 25E–H

Pilophorus minutus Knight, 1973: 139 (n. sp., desc., key).

HOLOTYPE: ♀, 13 mi. n. Presidio, Tex., VIII–8–1966, C. L. Cole; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the campaniform, posteriorly moderately elevated pronotum (fig. 25G), the unicolorous dark third antennal segment (fig. 25H), and the sparse, recumbent vestiture of the dorsum; distinguished from *discretus* and *chiricahuae* by its smaller size and also from *chiricahuae* by the different coloration of the third antennal segment.

DESCRIPTION: As in *discretus*, except smaller, length apex tylus–cuneal fracture 2.54–2.57 mm; coloration of body and appendages completely golden, and metathoracic scent gland auricle unicolorous with surrounding thoracic pleuron.

HOSTS: None recorded.

DISTRIBUTION: Southern Arizona, New Mexico, and western Texas.

SPECIMENS EXAMINED: 9 specimens collected between April 20 and September 8; deposited in: AMNH, TAM, USNM. – USA: **Arizona:** *Pima Co.:* Santa Cruz River. **New Mexico:** *Valencia Co.:* Los Lunas. **Texas:**

Brazos Co.: College Station. *Brewster Co.:* Rio Grande. *Presidio Co.:* 13 mi N of Presidio.

Pilophorus neoclavatus, new species
Figures 25I–L

Pilophorus clavatus Knight, 1923: 544 (in part). – Knight, 1941: 124 (in part). – Knight, 1973: 143 (in part). – Kelton, 1980: 279 (in part ?).

HOLOTYPE: ♂, PA [Pennsylvania], Schuylkill Co., Rt 81, 5 mi S of Frackville, 8 July 1987, A. G. Wheeler, Jr.; taken on *Quercus ilicifolia*, instar V; deposited in the AMNH.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with mesially offset posterior band of scalelike setae on the hemelytra by its relatively large size, and the short, neat, recumbent vestiture on the dorsum, devoid of erect setae.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 2.97–3.46 mm. COLORATION: Body generally castaneous to nearly black and dull, appendages variably lighter, hemelytra generally castaneous along inner half of clavus, nearly black in nonmatte areas, antennal segment 1 dark on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous (fig. 25L), procoxae mostly white, meso- and metacoxae distally and meso- and metatrochanters pale or white. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band, posterior band of setae offset at claval suture with portion on clavus anterior to corial portion by a distance equal to at least width of setal band (fig. 25K), dorsum with only recumbent, shining, simple setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in two transverse patches. STRUCTURE: Face angulate and rounded below eyes in frontal view, the genae slightly elevated and broadly rounded in lateral view; gula short; pronotum with calli not demarcated, posterior lobe moderately swollen and distinctly elevated, lateral margins weakly concave, anterior margin obscured by posterior margin of head and eyes; metatibiae slightly flattened and distinctly curving; vesica twisted, mesial process with a subbasal thumblike process (fig. 25J).

ETYMOLOGY: Named for *Pilophorus clavatus* with which it has been mistaken.

HOSTS: *Alnus rugosa, Quercus ilicifolia, Q. palustris, Q. stellata, Salix longifolia.*

DISTRIBUTION: Eastern North America: west to Iowa and Minnesota, north to Manitoba and Quebec, and south to North Carolina.

PARATYPES: CANADA: **Manitoba:** Russell, August 1, 1937, R. H. Beamer (KU), 2♀; 5 mi SW of Shilo, August 2, 1958, J. G. Chilcott, floodplain community near tamarak bog (CNC), 1♂. **Ontario:** Fergus, July 24, 1962, Kelton and Thorpe (CNC), 1♂; Grimsby, August 24, 1961, Kelton and Brumpton (CNC), 1♂; Guelph, July 19, 1961, G. Brumpton (CNC), 1♂; Magog, August 2, 1961, G. Brumpton (CNC), 1♀; Ottawa, Britannia, July 27, September 9, 1913, W. Metcalfe, light (USNM), 1♂; Ottawa, Black Rapids, September 9, 1913, W. Metcalfe (USNM), 1♂; Tillsonburg, July 18, 1962, Kelton and Thorpe, *Salix* (CNC), 1♀; Vienna, July 18, 1962, Kelton and Thorpe (CNC), 1♀; Woodstock, July 10, 1962, Kelton and Thorpe, *Salix* (CNC), 1♀. **Quebec:** Knowlton, August 8, 1929, G. S. Walley (CNC), 1♀; Laniel, July 18–19, 1968, W. Gagne, Alnus (CNC), 1♀; Lacolle, July, N. Banks (AMNH), 2♀. **Saskatchewan:** Lumsden, August 7, 1954, Brooks-Wallis (CNC), 1♀; Prince Albert, November 2, 1954, Brooks-Wallis (CNC), 1♀. USA: **District of Columbia:** Eastern Branch near Bennings, August 17, 1918, W. L. McAtee (USNM), 1♀. **Indiana:** *Porter Co.:* 2–3 mi W of Michigan City near LaPorte Co. line, July 6, 1983, T. J. Henry (TJH), 4♂, 1♀. *County ?:* Collection C. F. Baker (USNM), 1♂, 1♀. **Iowa:** *Storey Co.:* Ames, Expt. Sta., August 15, 1898 (USNM), 1♂. *Wapello Co.:* Ottumwa, July 15, 1927, Harris and Johnston (USNM), 1♂. **Maine:** *Cumberland Co.:* Peaks Island, July 25, 1918, G. A. Moore (CAS), 1♀. **Massachusetts:** *Essex Co.:* Ipswich, July 22, 1909, E. P. Van Duzee (CAS), 1♀. *Hampden Co.:* Chester, August 8 (CAS), 1♀. *Middlesex Co.:* Cambridge, July 31 ;(AMNH), 1♂; Framingham, September 11, 1910, Ca. A. Frost (CAS), 1♀. **Mich-**

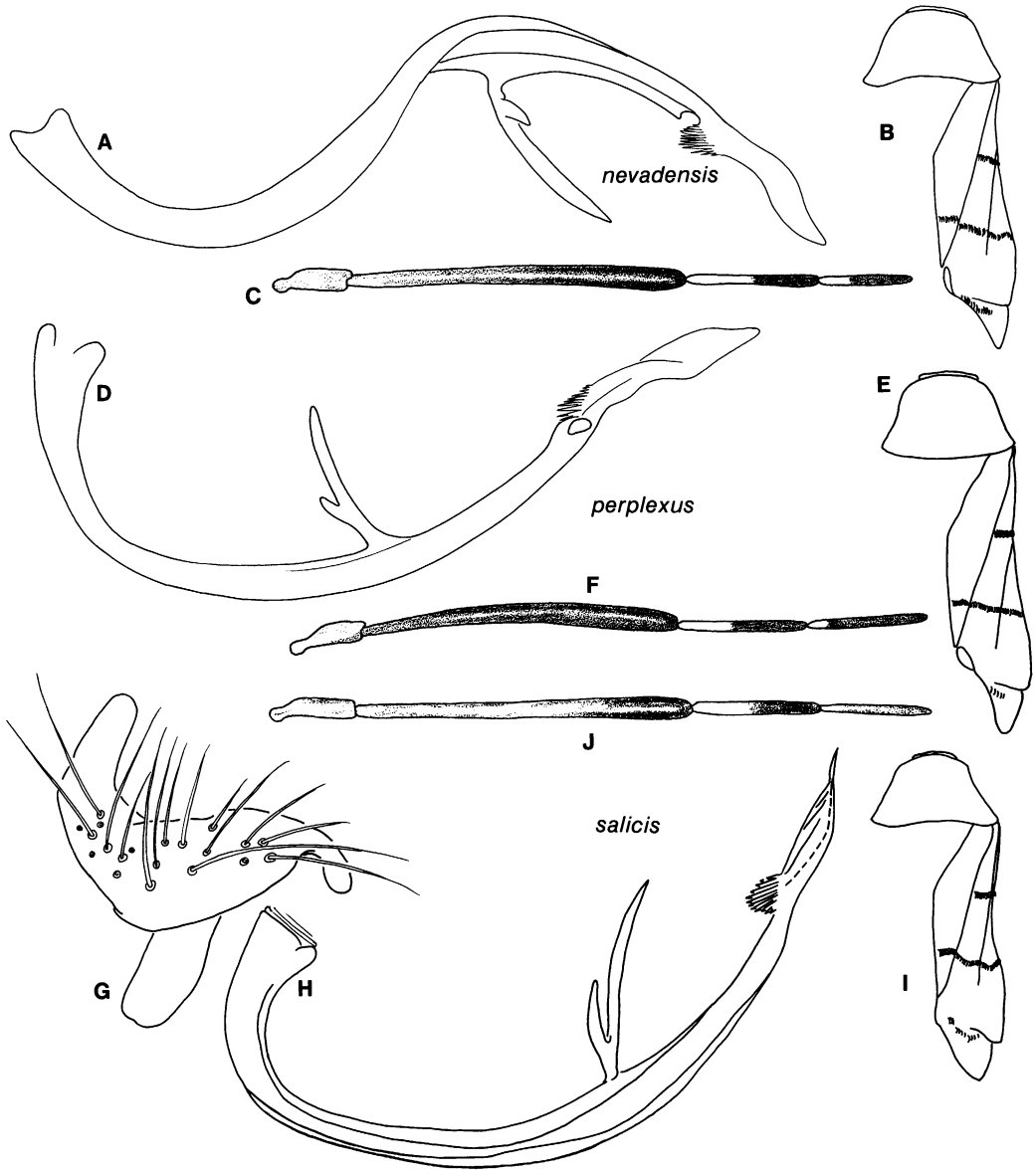

Fig. 26. A–C. *Pilophorus nevadensis*. **A.** Vesica. **B.** Pronotum and hemelytron, ♂. **C.** Antenna. D–F. *Pilophorus perplexus*. **D.** Vesica. **E.** Pronotum and hemelytron, ♂. **F.** Antenna. G–J. *Pilophorus salicis*. **G.** Left paramere, frontal view. **H.** Vesica. **I.** Pronotum and hemelytron, ♂. **J.** Antenna.

igan: *Charlevoix Co.:* Boyne City, July 8, 1923, T. H. Hubbell (UM), 1♂. *Cheboygan Co.:* September 7, 1941, R. Sailer (KU), 1♂; Douglas Lk., July 24, 1927, August 4, 1924, H. B. Hungerford (KU), 2♀; Colonial Point, Burt Lk., August 5, 1924, H. B. Hungerford (KU), 1♂. *Gogebic Co.:* July 28, 1919, August 8, 1919, T. H. Hubbell (UM, USNM), 1♂, 1♀. *Mackinac Co.:* Naubinway, July 14, 1921 S. Moore (UM), 1♂; St. Ignace, July 24, 1921, T. H. Hubbell (UM), 1♀. *Marquette Co.:* Marquette, August 30, 1888, P. R. Collection (USNM), 1♀; Marquette, August 28, 1888 (CU), 1♂. *Oceana Co.:* Pentwater, July 23, 1928, E. Liljeblad (USNM), 1♀. *Ontonagon Co.:* Porcupine Mts., August 24, 1937, H. H.

Ross (USNM), 1♂. *Otsego Co.:* July 3, 1923, T. H. Hubbell (UM), 1♂. *Washtenaw Co.:* Ann Arbor, Rock Crk. Dr., July 4, 1953, R. F. Hussey (UM), 1♂. *County ?:* Block Lk., July 21, 1938, H. B. Hungerford (KU), 1♂. **Minnesota:** *Becker Co.:* 6 mi SW of Detroit Lks., July 8, 1981, M. Moher (UCB), 1♀. *Hennepin Co.:* July 12, 1919, H. H. Knight (USNM), 3♂, 1♀; St. Anthony Park, August 2, 1924, H. H. Knight (USNM), 1♂, 3♀. *Ramsey Co.:* July 11, 1923, H. H. Knight, *Salix longifolia* (USNM), 2♂, 2♀; White Bear, July 10, 1921, W. E. Hoffmann (USNM), 1♀. *County ?:* Gray Cloud Island, July 20, 1920, H. H. Knight (USNM), 1♀. **North Carolina:** *Mecklenburg Co.:* Rt 51, 1 mi W of Rt 16, near Matthews, July 5, 1975, A. G. Wheeler, Jr., *Quercus stellata* (PDA), 1♀. **North Dakota:** *Bottineau Co.:* Bottineau, August 1, 1920, T. H. Hubbell (UM), 1♀. **New Hampshire:** *Grafton Co.:* Franconia (USNM), 1♂. *Merrimac Co.:* West Hopkinton, July 21, 1954, J. A. Slater (AMNH), 1♀. **New Jersey:** *Bergen Co.:* Bear Swamp, Ramapo Mts., July 25, 1911 (USNM), 3♀. **New York:** *Cataraugus Co.:* Gowanda, August 2, 1907, Van Duzee (CAS, JTP), 2♂; Salamanca, July 21, 1911, E. P. Van Duzee (CAS), 2♂, 3♀. *Columbia Co.:* Saugerties, July 25, 1909 (USNM), 1♀. *Erie Co.:* Hamburg, July 3, 1904, Van Duzee (CAS), 1♀; Boston, August 1, 1909, Van Duzee (CAS), 1♂; Lancaster, August 4, 1906, Van Duzee (CAS), 1♂, 1♀. *Genessee Co.:* Batavia, July 25, 1913, August 26, 1914, July 8, 1916, July 10, 1916, August 4, 1916, July 4, 1924, H. H. Knight (USNM), 5♂, 8♀. *Niagara Co.:* Niagara Falls, August 17, 1907, E. P. Van Duzee (JTP), 1♂, 1♀. *St. Lawrence Co.:* Cranberry Lk., August 7, 1924, E. A. Hartley (USNM), 1♀; Cranberry Lk., July 26, 1917, C. J. Drake (USNM), 1♂; Cranberry Lk., August 7, 1919, C. J. Drake, *Populus tremuloides* (USNM), 1♀; Cranberrry Lk., July 24, 1920, C. J. Drake, *Salix* (USNM), 1♂. *Suffolk Co.:* Bayshore, July 4–7, 1915, C. E. Olson (USNM), 1♀. *Tompkins Co.:* McLean, July 27, 1916, H. H. Knight, alder (USNM), 5♂, 1♀; McLean Bogs, July 3, 1920, H. H. Knight, *Alnus rugosa* (USNM), 5♂, 2♀. *Washington Co.:* Salem, July 27, 1924, E. D. Ball (USNM), 1♀. *Westchester Co.:* New Rochelle, July 25, 1918, L. Lacey (AMNH), 1♂; White Plains, August 7, 1915 (USNM), 1♂; White Plains, July 4, 1919, Torre-Bueno, aspen (USNM), 1♂, 1♀; White Plains, June 29, 1918, C. E. Olson (USNM), 1♂; Lk. Waccabuc, August 21, 1931, Torre-Bueno (KU), 1♀. *County ?:* Colden, July 1885, E. P. Van Duzee (CU), 1♀. **Ohio:** *Cuyahoga Co.:* Cleveland, September 3, 1905, Van Duzee (CAS), 1♀. **Pennsylvania:** *Blair Co.:* Altoona, July 10, 1973, A. G. Wheeler, Jr., *Quercus palustris* (PDA), 1♂. *Centre Co.:* Bellefonte, September 12, 1973, A. G. Wheeler, Jr., *Quercus palustris* (PDA), 2♀. *Dauphin Co.:* Conewago Twp., Rt 743, 4 mi S of Hershey, July 14, 1973, T. J. Henry and A. G. Wheeler (PDA), 1♂. *Pike Co.:* near Rowland, July 13, 1987, J. G. Fetter, *Quercus ilicifolia* (PDA), 1♂. *Schuylkill Co.:* Rt 81, 4 mi S of Frackville, and 4.5 mi S of Frackville, August 9, 1984, August 1, 1985, A. G. Wheeler, Jr., *Quercus ilicifolia* (PDA), 1♂, 2♀; Rt 81, 5 mi S of Frackville, July 24, 1987, July 8, 1987, July 15, 1987, A. G. Wheeler, Jr., *Quercus ilicifolia* (AMNH, PDA), 2♂, 5♀; Rt 81, 5 mi S of Frackville, July 8, 1987, July 15, 1987, July 24, 1987, A. G. Wheeler, Jr., *Quercus ilicifolia* (AMNH, PDA), 2♂, 5♀; I-81, 4 mi N of Rt 209, August 11, 1973, A. G. Wheeler, Jr., *Quercus ilicifolia* (PDA), 1♀. *County ?:* Collection C. F. Baker (USNM), 1♀; P. R. Uhler Collection (USNM), 1♀. **Wisconsin:** *Walworth Co.:* East Troy, August 10, 1935, P. B. Lawson (KU), 1♂. **West Virginia:** *Tucker Co.:* near Laneville, June 26, 1977, A. G. Wheeler, Jr., *Salix* sp. (PDA), 1♀; Thomas, July 26, 1977, A. G. Wheeler, Jr., *Salix* sp. (PDA), 1♀.

DISCUSSION: This species has been mistaken for *clavatus*, which is introduced from Europe and known from only a few localities, mostly in northeastern North America. Many records for *clavatus* clearly pertain to *neoclavatus*, although some almost certainly represent misidentifications of other species.

Pilophorus nevadensis Knight
Figures 26A–C

Pilophorus nevadensis Knight, 1968: 172 (n. sp., desc., host, key). – Knight, 1973: 142 (dist., host, key).

HOLOTYPE: ♂, Wells (15 mi. E), NEV., VII–12–1965, H. H. Knight; deposited in the USNM.

DIAGNOSIS: Distinguished from other

species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the erect, bristlelike setae on the hemelytra, the noncampaniform pronotum, and the meso- and metafemoral trochanters infuscate and unicolorous with the femora.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 2.90–3.29 mm. COLORATION: General coloration golden brown, hemelytra orange brown, brown to castaneous in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segments 3 white on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous (fig. 26C), procoxae mostly pale or white, meso- and metacoxae distally and meso- and metatrochanters pale or white. SURFACE AND VESTITURE: Body and appendages dull; hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; posterior band of setae straight or nearly straight and at most slightly offset at the claval suture (fig. 26B); dorsum with recumbent shining setae and erect, brown, medium-length, bristlelike setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in the form of an elongate transverse patch. STRUCTURE: Face angulate below eyes in frontal view, genae weakly elevated and very broadly rounded in lateral view; gula relatively long and nearly vertical; pronotum broad, distinctly rugulose, lobes confluent and not demarcated, posterior lobe swollen and rather strongly elevated, lateral margins nearly straight, anterior margin obscured by posterior margin of head and eyes; metatibiae slightly flattened and straight; vesica twisted, mesial process with a subbasal thumblike process (fig. 26A).

HOSTS: *Artemisia tridentata, Chrysothamnus viscidiflorus, Ribes velutinum.*

DISTRIBUTION: Western United States: west to eastern California, north to southern Idaho and Wyoming, east to western Colorado, and south to central Nevada.

SPECIMENS EXAMINED: 139 specimens collected between June 9 and August 26; deposited in: AMNH, CAS, KU, OSU, UID, UCB, USNM. – USA: **California:** *Lassen Co.:* Sage Hen; Madeline. *Mono Co.:* Tom's Place; Bridgeport; Mono Lk., Hwy 395, 7000 ft. *Siskiyou Co.:* 1 mi N of Tule Lk. Nat. Wdlf. Rfg. Hdqt., 1255 m; 2 mi N of Tule Lk. Nat. Wdlf. Rfg. Hdqt., 4050 ft; 5 mi S of Tule Lk. Nat. Wdlf. Rfg. Hdqt., 1250 m. *County ?:* Litchfield. **Colorado:** *Moffat Co.:* Maybell; 5 mi S of Boggs Wyoming of Rt 13. **Idaho:** *Blaine Co.:* Big Wood River, 20 mi N of Shoshone; 2 mi W of Carey. **Nevada:** *Elko Co.:* 15 mi E of Wells; 8 mi S of Wells; 30 mi SE of I-80 on Hwy 229, 6260 ft. *Lander Co.:* Austin. *Washoe Co.:* Reno. *White Pine Co.:* Wheeler Peak Drive, 7,000–10,000 ft; 2.3 mi N of Hwy 50 on Steptoe Crk. Rd, 6800 ft. **Oregon:** *Baker Co.:* Wallowa-Whitman Nat. For. *Harney Co.:* Van Horn Crk., 5 mi N of Denio, Nevada, 4500 ft. *Klamath Co.:* 4 mi W of Worden on Rd to Keno. **Utah:** *Box Elder Co.:* Raft River Mts., 5 mi SW of Clear Crk. Cmpgrd. *Emery Co.:* Emery. *Wasatch Co.:* Uinta Nat. For., Buckboard Crk. at Rt 35. *County ?:* Bush; Wanship. **Wyoming:** *Sweetwater Co.:* 11.5 mi S of Eden.

Pilophorus perplexus Douglas and Scott
Figures 26D–F

Pilophorus perplexus Douglas and Scott, 1875: 101 (n. sp., desc.). – Knight, 1923: 544 (desc., dist., host, key). – Blatchley, 1926: 815 (desc., dist., host, key). – Knight, 1941: 121 (dist., key). – Akingbohungbe et al., 1972: 12 (dist., host). – Knight, 1973: 138 (dist., key). – Akingbohungbe, 1974: 252 (chromosome number). – Akingbohungbe, 1983: 39 (testis follicle number).

TYPE: Not examined.

DIAGNOSIS: Distinguished from other species in the *clavatus* group by the perfectly straight posterior setal band, the relatively large size, and the short, neat, recumbent vestiture on the dorsum.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 3.01–3.34 mm. COLORATION: Body generally castaneous to nearly black and dull, appendages somewhat lighter, hemelytra varying from orange brown to nearly castaneous, castaneous to black in nonmatte areas, antennal segment 1 pale, segment 2 reddish proximally

and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous (fig. 26F), procoxae mostly pale or white, meso- and metacoxae distally and meso- and metatrochanters pale or white. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; the posterior band of setae straight or nearly straight and at most slightly offset at the claval suture, sometimes angled anteriad of clavus (fig. 26E); dorsum with only very short, sparse, neat, recumbent vestiture; posterior margin of metepisternum with only a very few scalelike setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in one small patch at anteromesial corner of cuneus. STRUCTURE: Face angulate below eyes in frontal view, the genae weakly elevated and in the form of a very broadly rounded carina in lateral view; gula long and nearly vertical; pronotal lobes confluent and not demarcated, posterior lobe swollen and rather strongly elevated, lateral margins very weakly concave, anterior margin obscured by posterior margin of head and eyes; metatibiae nearly cylindrical and straight; vesica twisted, mesial process with subbasal thumblike process (fig. 26D).

HOSTS: *Aralia spinosa*, *Carya laciniosa*, *Corylus cornutus*, *Gleditsia triacanthos*, *Malus* sp., *Prunus cerasipera*, *Prunus communis*, *Pyrus malus*, *Quercus alba*, *Rosa* spp., *Tilia platyphyllum*, red cedar.

DISTRIBUTION: Scattered localities in northwestern and northeastern North America.

SPECIMENS EXAMINED: 88 specimens collected between June 26 and September 22; deposited in: AMNH, CAS, CNC, KU, PDA, UCB, USNM. – CANADA: **British Columbia:** Esquimalt; Smitty's Cove. **Nova Scotia:** Grand Pre; Kentville. **Ontario:** Hamilton; Guelph; Niagara Falls; Oakland; Simcoe. **Prince Edward Island:** Cavendish. USA: **Connecticut:** *New Haven Co.:* New Haven. *Tolland Co.:* Storrs. **New Jersey:** *Essex Co.:* Newark. **New York:** *Albany Co.:* Rensselaerville. *Genessee Co.:* Batavia. *Suffolk Co.:* Calverton. *Westchester Co.:* White Plains. **Oregon:** *Benton Co.:* Corvallis. *Klamath Co.:* Klamath Falls, black light. **Pennsylvania:** *Blair Co.:* Altoona. *Bradford Co.:* E of Athens; 4 mi N of Burlington. *Butler Co.:* Butler. *Clearfield Co.:* Janesville. *Dauphin Co.:* Conewago Twp., Rt 743, 4 mi S of Hershey; Rt 22, Lower Paxton Twp. *Centre Co.:* Boalsburg. *Erie Co.:* Fairview. *Indiana Co.:* 3 mi W of Strongstown. *Somerset Co.:* Davidsville. *Sullivan Co.:* Rt 220, 1 mi S of Dushore. **Washington:** *King Co.:* Seattle; Univ. of Washington Arboretum, E Seattle. *Lewis Co.:* Chehalis, 110 Urquart Rd; Vadar. *Thurston Co.:* Rochester. *Whatcom Co.:* Bellingham.

DISCUSSION: This European species was first recorded in North America by Knight (1923) in New York and Connecticut. Knight (1941, 1973) later added Ontario and Nova Scotia to his list of known localities. As indicated above, we have examined specimens which indicate that the species is more widespread than previously reported, also occurring at several scattered localities in northwestern North America.

Pilophorus salicis Knight
Figures 26G–J

Pilophorus salicis Knight, 1968: 173 (n. sp., desc., host, key). – Knight, 1973: 142 (dist., host, key). – Kelton, 1980: 277 (diag., host, dist., map, key).
Pilophorus tanneri Knight, 1968: 173 (n. sp., desc., key). – Knight, 1973: 142 (dist., host, key). NEW SYNONYMY.

HOLOTYPE: ♂, Las Animas, Colo., Aug. 6, 1925, H. H. Knight; *Salix*; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus tanneri* Knight: ♂, Richfield, Utah, Aug. 15, 1929, Light Trap; 2129; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the erect, pale, simple setae on the hemelytra, the noncampaniform pronotum, and the pale meso- and metafemoral trochanters contrasting with the darker femora.

DESCRIPTION: Moderately large species, length apex tylus–cuneal fracture 2.94–3.32 mm. COLORATION: General coloration varying from golden to castaneous, hemely-

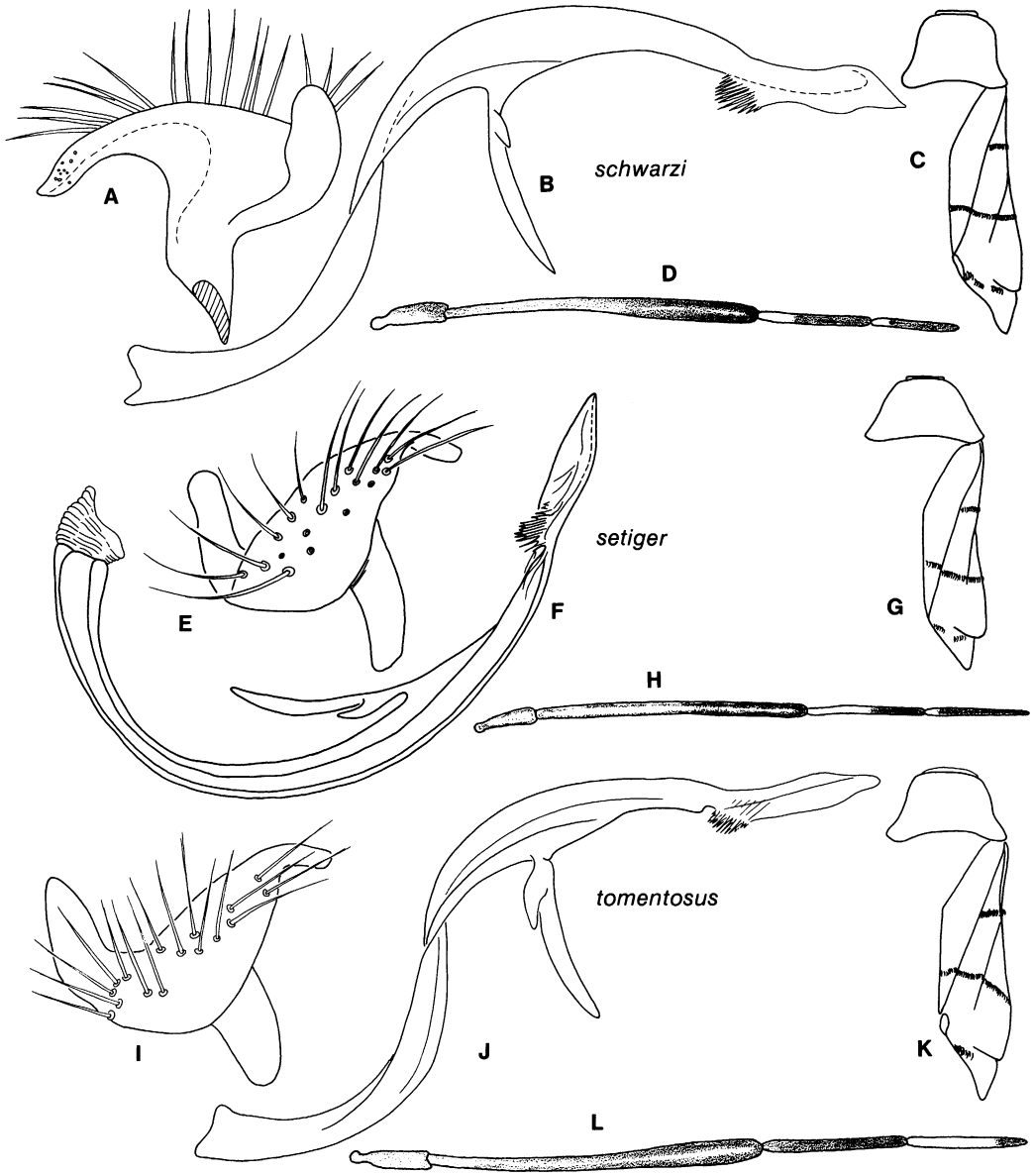

Fig. 27. A–D. *Pilophorus schwarzi*. **A.** Left paramere, posterolateral view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus setiger*. **E.** Left paramere, frontal view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna. I–L. *Pilophorus tomentosus*. **I.** Left paramere, frontal view. **J.** Vescia. **K.** Pronotum and hemelytron, ♂. **L.** Antenna.

tra varying from golden to brown, orange brown to castaneous in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral half, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4 white basally with remainder castaneous (fig. 26J), procoxae mostly pale or white, meso- and metacoxae distally and meso- and metatrochanters pale or white; posterior tibiae very slightly flattened and nearly straight. SURFACE AND VESTITURE: Body and appendages generally polished, pronotum smooth, weakly shining,

vaguely rugulose; hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with a matte texture mesad of radial vein as anteriad of setal band; posterior band of setae straight or nearly straight and at most slightly offset at claval suture (fig. 26I); dorsum with recumbent, pale, shining setae and semierect, pale, bristlelike setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in the form of an elongate transverse patch. STRUCTURE: Face angulate below eyes in frontal view, genae weakly elevated and very broadly rounded carina in lateral view; gula relatively long and nearly vertical; pronotum with lobes confluent and not demarcated, posterior lobe somewhat swollen and moderately elevated, lateral margins slightly concave, anterior margin obscured by posterior margin of head and eyes; metatibiae nearly straight and cylindrical; vesica twisted, mesial process with subbasal thumblike process (fig. 26H).

HOSTS: *Salix interior*, *Salix* sp., sage willow.

DISTRIBUTION: Western North America, including the northern Rocky Mountain system, the Canadian Plains, and northeastern Oregon.

SPECIMENS EXAMINED: 110 specimens collected between May 10 and September 27; deposited in: AMNH, CAS, CNC, JTP, KU, TAM, UCB, USNM. – CANADA: **Alberta:** Manyberries. **Manitoba:** Carberry. **Saskatchewan:** Beaver Crk.; Elbow; Great Sand Hills. USA: **Colorado:** *Bent Co.:* Las Animas. *Chaffee Co.:* Salida. *Douglas Co.:* Chatfield St. Pk.; Waterton. *El Paso Co.:* Manitou. *Larimer Co.:* Fort Collins, Dixon's Cyn.; Fort Collins. *Mesa Co.:* De Beque Cyn. *Otero Co.:* Rocky Ford. *Pitkin Co.?:* Avalanche, White River Nat. For. *Yuma Co.:* Wray. **Idaho:** *Bannock Co.:* 3 mi E of McCammon. *Jefferson Co.:* Rigby. **Montana:** *Missoula Co.:* Missoula. **Oregon:** *Union Co.:* LaGrande. **Utah:** *Cache Co.:* Logan. *Emery Co.:* Price River, Woodside. *Garfield Co.:* 14.3 mi S of Rt 95 on Rt 276, 5000 ft, at light. *Iron Co.:* Parowan. *San Juan Co.:* 25 mi N of Monticello on Rt 191. *Utah Co.:* Provo.

DISCUSSION: Knight (1968) described *tanneri* on the basis of two specimens from Utah; he compared it to *longisetosus*. Our comparison of the holotype, allotype, and additional specimens of *tanneri* with the holotype and many additional specimens of *salicis* indicates that *tanneri* is a junior synonym of *salicis*.

Pilophorus schwarzi Reuter
Figures 3E, 27A–D

Pilophorus schwarzi Reuter, 1909: 74 (n. sp., desc.). – Van Duzee, 1918: 295 (key). – Knight, 1968: 167 (dist., key). – Knight, 1973: 134 (dist., key).

HOLOTYPE: ♀, Fresno, Cal., 3. 5; E. A. Schwarz Collector; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra by the campanulate and distinctly rugulose pronotum, the elongate gula, and the erect bristlelike setae on the hemelytra.

DESCRIPTION: Medium-size species, length apex tylus–cuneal fracture 2.92–3.31 mm. COLORATION: Body dark brown, appendages somewhat lighter, hemelytra golden brown to brown, dark brown in nonmatte areas, antennal segment 1 dark on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal third and dark on distal ⅔, segment 4 white at extreme base with remainder castaneous (fig. 27D), procoxae mostly pale or white, meso- and metacoxae distally and meso- and metatrochanters pale or white. SURFACE AND VESTITURE: Body and appendages dull, pronotum distinctly rugulose; hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; the posterior band of setae straight or nearly straight and at most slightly offset at claval suture (fig. 27C); dorsum with recumbent shining setae and hemelytra with scattered, erect, brown, bristlelike setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in the form of 3 small discrete patches. STRUCTURE: Face angulate below eyes and very long in frontal view, genae weakly elevated and in the form of a very broadly rounded carina in lateral

view; gula relatively long and nearly vertical; general form of pronotum campanulate, swollen and elevated near middle, lobes confluent and not demarcated, lateral margins sinuous, anterior margin obscured by posterior margin of head and eyes; metatibiae nearly cylindrical and straight or slightly bent; vesica twisted, mesial process with subbasal thumblike process (fig. 27B).

HOSTS: *Baccharis pilularis, Castanopsis chrysophylla, Populus trichocarpa, Populus* sp., *Ribes cereum, Ribes velutinum, Salix* sp., peach, pear, sycamore, willow.

DISTRIBUTION: Western United States including California, Oregon, Washington, and adjacent Idaho and Nevada.

SPECIMENS EXAMINED: 209 specimens collected between April 21 and September 26; deposited in: AMNH, CAS, CNC, KU, OSU, UCB, UCR, USNM. – USA: **California:** *El Dorado Co.:* Lk. Tahoe, lower end. *Humboldt Co.:* Shively; Dyerville. *Inyo Co.:* Big Pine; Bishop; Independence; 3 mi N of Lone Pine; Lone Pine; 8 mi SW of Deep Springs, Antelope Springs. *Kern Co.:* Onyx. *Lassen Co.:* Martins Springs; 1 km W of Hallelujah Jct., 1509 m. *Madera Co.:* Madera; Biledo Meadow. *Merced Co.:* Dos Palos. *Modoc Co.:* Cedar Pass Cmpgrd., 1800 m; 1 mi S of Lava Beds Nat. Mon. on Hill Rd. *Mono Co.:* Round Valley. *Monterey Co.:* Paraiso Springs; Salinas River at King City. *Napa Co.:* Pope Valley; Spanish Flat, 3 mi W of Cappell Crk. *Nevada Co.:* 1 mi W of Hobart Mills, Prosser Crk., 5800 ft. *Sacramento Co.:* Brannan Island St. Rec. Area. *Santa Barbara Co.:* Lompoc. *San Bernardino Co.:* Big Bear Lk.; Arrowbear Lk., San Bernardino Mts., 6400 ft; 5 mi E of Arrowbear, 6900 ft. *Santa Clara Co.:* San Jose. *Shasta Co.:* Millville. *Siskiyou Co.:* 2 mi S of Tule Lk. Nat. Wdlf. Rfg. Hdqt., 1250 m; 9 mi SW of Tulelake; Hornbrook; just NW of McCloud; 2.5 mi N of Medicine Lk. on Medicine Lk. Rd; 6.9 mi S of Medicine Lk. on Powder Hill Rd; Yreka. *Sonoma Co.:* Guernewood Pk. *Stanislaus Co.:* Turlock; Del Puerto Cyn. at N Fork Del Puerto Crk., 900–1200 ft. *Sutter Co.:* Nicolaus. *Trinity Co.:* Hayford Ranger Sta. *Tulare Co.:* Lemon Cove, 500 ft. *Yolo Co.:* Davis. **Idaho:** *Cassia Co.:* Burley. *Latah Co.:* Moscow, 2560 ft. **Nevada:** *Carson City Co.:* Carson City. *Washoe Co.:* Sparks; Verdi. **Oregon:** *Harney Co.* *Jackson Co.:* Jacksonville; Medford. *Josephine Co.:* Grants Pass. **Washington:** *Whitman Co.:* Pullman.

Pilophorus setiger Knight
Figures 27E–H

Pilophorus setiger Knight, 1941: 124 (n. sp., desc., key). – Knight, 1973: 141 (dist., key). – Kelton, 1980: 278 (diag., dist., map, key).

HOLOTYPE: ♂, Winona Co., Minn., Kings Bluff, June 30, 1922, H. H. Knight; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group without mesially offset posterior band of scalelike setae on the hemelytra by the long erect vestiture covering the entire dorsum, and by the generally dark coloration of the head and pronotum.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.84–3.04 mm. COLORATION: Body brown black, appendages generally medium brown, hemelytra generally rust colored, brown black in nonmatte areas, antennal segment 1 dark on dorsal surface and pale on ventral surface, segment 2 tan or light brown proximally and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous (fig. 27H), procoxae white mesially, meso- and metacoxae pale distally, meso- and metatrochanters white. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; posterior band of scalelike setae complete and uninterrupted although somewhat sinuous (fig. 27G); dorsum, including head, pronotum, and scutellum, with recumbent, shining setae and long, erect, brown, bristlelike setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in two discrete patches. STRUCTURE: Face elongate and angulate below eyes in frontal view, genae appearing straight, not elevated or carinate in lateral view; gula very short; pronotum with calli weakly defined, anterior margin obscured by posterior margin of head and eyes, posterior

lobe moderately elevated and swollen, lateral margins moderately to deeply concave; metatibiae nearly cylindrical and straight; vesica twisted, mesial process with subbasal thumblike process (fig. 27F).

HOSTS: *Corylus* sp., *Quercus ilicifolia.*

DISTRIBUTION: Northeastern United States: west and north to North Dakota, east to Massachusetts, and south to southern Pennsylvania.

SPECIMENS EXAMINED: 36 specimens collected between June 30 and September 14; deposited in: AMNH, CAS, PDA, USNM. – USA: **Illinois:** *Jodaviess Co.:* Galena. *County ?:* Willow Springs. **Indiana:** *County ?:* Mineral Springs. **Massachusetts:** *Hampshire Co.:* Hadley. **Minnesota:** *Winona Co.:* Kings Bluff. **Nebraska:** *County ?:* West Point. **New Jersey:** *Sussex Co.:* Lk. Hopatkong. *County ?:* Greenwood Lk. **New York:** *Columbia Co.:* Hudson. **North Dakota:** *Trail Co.* **Pennsylvania:** *Monroe Co.:* Long Pond. *Schuylkill Co.:* I-81, 4 mi S of Frackville.

DISCUSSION: We have not been able to confirm Kelton's (1980) records of *setiger* from Canada.

Pilophorus tomentosus Van Duzee
Figures 27I–L

Pilophorus tomentosus Van Duzee, 1918: 291 (n. sp., desc., host). – Knight, 1968: 168 (dist., key). – Knight, 1973: 142 (dist., key).

HOLOTYPE: ♂, San Diego Co., Cal., 6-24-[19]14, EP Van Duzee; EP Van Duzee Collection; deposited in the CAS.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with the straight posterior band of scalelike setae on the hemelytra, by the rather dense covering of long, erect, pale simple setae on the entire dorsum giving a shaggy appearance, and the dull and/or pruinose texture of the dorsum.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.65–3.23 mm. COLORATION: General coloration golden brown, hemelytra golden brown, brown in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral half, segment 2 reddish proximally and castaneous distally, segment 3 reddish proximally, castaneous distally, segment 4 white on basal half and castaneous apically (fig. 27L), procoxae mostly pale or white, meso- and metacoxae distally and meso- and metatrochanters pale or white. SURFACE AND VESTITURE: Body and appendages dull; hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; posterior band of setae straight or nearly straight and at most slightly offset at the claval suture (fig. 27K); entire dorsum with long, erect, rather dense, pale, bristlelike setae, pronotum with dense, woolly, recumbent vestiture, and hemelytra also with recumbent shining setae; large angled patch of scalelike setae sublaterally on abdominal sternites 1–5, portion on segment 1 consisting of a small discrete patch of a few setae; scalelike setae on cuneal area in the form of an elongate transverse patch. STRUCTURE: Face angulate below eyes in frontal view, genae weakly elevated and very broadly rounded in lateral view; gula relatively long and nearly vertical; pronotum broad, distinctly rugulose, lobes confluent and not demarcated, posterior lobe swollen and rather strongly elevated, lateral margins distinctly concave, anterior margin obscured by posterior margin of head and eyes; metatibiae distinctly flattened, ovoid in cross section, nearly straight or weakly sinuous; vesica twisted, mesial process with subbasal thumblike process (fig. 27J).

HOSTS: *Baccharis pilularis, Chrysothamnus* sp., *Salix lasiolepis, Salix nigra,* willow, wormwood.

DISTRIBUTION: Southern California and northern Baja California.

SPECIMENS EXAMINED: 84 specimens collected between May 15 and September 22; deposited in: AMNH, CAS, CNC, JTP, KU, UCR, USNM. – MEXICO: **Baja California Norte:** Tecate, 6.3 mi S of El Condor, 4000 ft; Hamilton Ranch. USA: **California:** *Inyo Co.:* Olancha. *Kern Co.:* Tehachapi Mts., Antelope Cyn., 4800–5200 ft. *Los Angeles Co.:* Wrightwood. *Madera Co.:* Fresno. *Orange Co.:* Lower Santa Ana Cyn., Green River Camp. *Riverside Co.:* Riverside. *San Bernardino Co.:* Mill Crk. Cyn. *San Diego Co.:* Lk. Henshaw Dam. *San Luis Obispo Co.:* 6 mi E of Santa Maria on Rt 166, 220 m.

Pilophorus vicarius Poppius
Figures 1A, B, 3A, B, 28, 29A–D

Pilophorus vicarius Poppius, 1914a: 245 (n. sp., desc.). – Knight, 1968: 168 (dist., key). – Knight, 1973: 141 (dist., key).
Pilophorus opacus Knight, 1926a: 24. – Knight, 1968: 168 (dist., host, key). – Knight, 1973: 141 (dist., host, key). NEW SYNONYMY.

HOLOTYPE: ♀, Williams, Ar., 27.7; Barber and Schwarz Col.; deposited in the USNM.

HOLOTYPE OF SYNONYM: *Pilophorus opacus* Knight: ♂, Gunnison, Colo., Aug. 17, 1925, H. H. Knight, *Chrysothamnus*; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with a mesially offset posterior band of scalelike setae on the hemelytra by the generally dark coloration, with the head, pronotum, and scutellum nearly black, and the hemelytra usually with conspicuous, erect, bristlelike setae.

DESCRIPTION: Moderate-size species, length apex tylus–cuneal fracture 2.94–3.41 mm. COLORATION: Body nearly black, legs also generally dark, hemelytra variably colored, usually with deep brown and blackish brown, sometimes lighter brown, nearly black in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 pale on proximal half and dark on distal half, segment 4 white at extreme base with remainder castaneous (fig. 29D), procoxae mostly white, meso- and metacoxae pale distally, meso- and metatrochanters pale or white, pro- and mesotibiae and femora brown, metafemora and tibiae somewhat darker. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; the posterior band of setae generally offset at claval suture with the portion on clavus anterior to corial portion by a distance equal to at least width of the setal band (fig. 29C); dorsum with recumbent, short, golden shining setae and hemelytra with erect or semierect, pale or brown, bristles of moderate length (fig. 1B); patch of scalelike setae on posterior margin of metepisternum consisting of a very few setae; large angled patch of scalelike setae sublaterally on abdominal sternites 2–5, portion on segment 2 discrete; scalelike setae on cuneal area in three more or less discrete patches or as a single elongate patch. STRUCTURE: Face elongate and angled below eyes in frontal view, genae nearly straight, not noticeably elevated or carinate in lateral view; gula short; pronotum with posterior lobe conspicuously swollen and elevated, lateral margins moderately concave, anterior margin obscured by posterior margin of head and eyes; metatibiae slightly flattened and weakly curving or bent; vesica twisted, mesial process with subbasal thumblike process (figs. 3A, B, 29B).

HOSTS: *Alnus rhombifolia*, *Artemisia* sp., large sagebrush, sage forb, *Chrysothamnus* sp., *Populus tremuloides*, *Quercus gambelli*, *Salix interior*, *Symphoricarpos oreophilus*, wild currant, and probably nonbreeding records from *Abies* sp. and *Pinus ponderosa*.

DISTRIBUTION: Western United States, including Rocky Mountain system from British Columbia to New Mexico and much of Oregon.

SPECIMENS EXAMINED: 508 specimens collected between June 18 and October 7; deposited in: AMNH, CAS, CNC, JTP, KU, OSU, UCB, UCR, USNM. – CANADA: **British Columbia:** Olivier; Merritt; Penticton. USA: **Arizona:** *Apache Co.:* Alpine; Eagar, Apache Nat. For. *Cochise Co.:* 5 mi W of Portal, Southwestern Res. Sta. *Coconino Co. Graham Co.:* Bonita, Gowdy Crk. Cyn. *Pima Co.:* Mt. Lemon, Santa Catalina Mts., 9000 ft. **California:** *Inyo Co.:* Lone Pine. *Los Angeles Co.:* Pacific. *Placer Co.:* Tahoe, G. Alpine Crk. **Colorado:** *Archuleta Co.:* Pagosa Springs. *Boulder Co.:* Ward. *Chaffee Co.:* E of Buena Vista, Old Midland Dr.; Poncha Springs. *Conejos Co.:* Antonito. *Custer Co.:* Wetmore. *Douglas Co.:* Chatfield St. Pk.; Perry Pk.; Waterton. *Eagle Co.:* Water Wheel Ranch near Bond; State bridge near Bond, 7000 ft. *Fremont Co.:* 6 mi NE of Florence. *Garfield Co.:* Rifle; West Salt Crk. near Atchee on Rt 45, 7000 ft. *Gunnison Co.:* 10 mi W of Gunnison; Gunnison; Maysville. *Jackson Co.:* state line N of Cowdry on Rt 125, 8000 ft; Cowdrey, 8000 ft. *Jefferson Co.:* Waterton, Platte River. *Larimer Co.:* Pingree Pk.

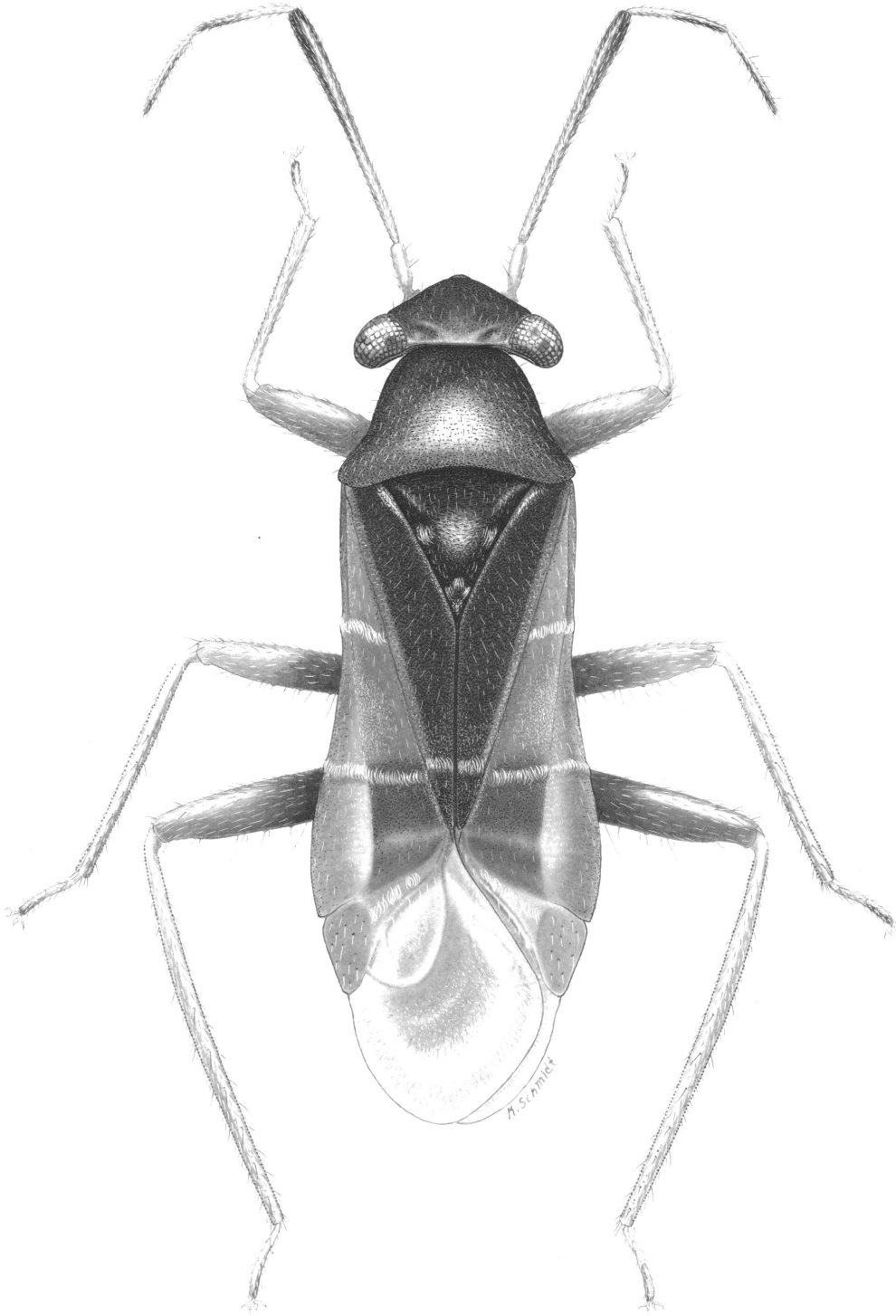

Fig. 28. *Pilophorus vicarius*, dorsal habitus, ♂.

Las Animas Co.: Stonewall near Trinidad; Stonewall, 8200 ft. *Montezuma Co.:* Mesa Verde Nat. Pk., 7000 ft; Dolores. *Ouray Co.:* Ridgeway. *Pitkin Co.:* Avalanche, White River Nat. For. *Rio Blanco Co.:* 10 mi S of Buford, Hill Crk. Cmpgrd.; 30 mi N of Rifle on Rt 13. *Saguache Co.:* 7 mi W of Cochetopa; 23 mi E of Gunnison on Rt 50. *County ?:* Macedonia. **Idaho:** *Bear Lake Co.:* St. Charles Cyn. *Boise Co.:* Grimes Crk., 3 mi S of Centerville. *Caribou Co.:* 8 mi E of Wayan, 6000 ft. *Idaho Co.:* Castle Crk. Cmpgrd. on Hwy 14; Wilderness Access Cmpgrd., E of Lowell (milepost 123); Lochsa River Valley E of Lowell (milepost 127). *Latah Co.:* Moscow Mt.; 2 mi W of Deary. **Montana:** *Gallatin Co.:* 15 mi S of Big Sky, Teepee Crk. *Granite Co.:* 6 mi E of Drummond on Rt 10A. *Park Co.:* Colter Cmpgrd., 2 mi E of Cooke City on Rt 212. **New Mexico:** *Bernalillo Co.:* Albequerque. *Catron Co.:* Sawmill Cyn., Apache Nat. For. *Otero Co.:* Cloudcroft. *San Miguel Co.:* Sapello. *Santa Fe Co.:* 8 mi N of Santa Fe. *Taos Co.:* Taos; 6 mi SE of Taos. **Oregon:** *Benton Co.:* Coffin Butte, 10 mi N of Corvallis; Corvallis, behind Crystal Lk. Cemetery. *Clatsop Co.:* Sunset Wayside, 8 mi E of Elsie. *Crook Co.:* 3 mi E of Prineville. *Curry Co.:* Alfred A. Loeb St. Pk.; Humbug St. Pk. Picnic Area. *Douglas Co.:* Jump Off Joe Crk. *Harney Co.:* 8 mi S of Manns Lk. *Jackson Co.:* 1 mi S of Hyatt Reservoir; Jacksonville. *Klamath Co.:* 16 mi W of Klamath Falls. *Morrow Co.:* Boardman. *Multnomah Co.:* Portland. *Union Co.:* 4.5 mi E of Tollgate, Woodland Cmpgrd. *Wallowa Co.:* 19 mi S of Lostine. **Utah:** *Box Elder Co.:* Devil's Gate. *Emery Co.:* Emery. *Salt Lake Co.:* Salt Lake City; Wasatch Mts., Little Cottonwood Cyn. *San Juan Co.:* Monticello. *Sevier Co.:* 24.7 mi N of Hwy 24 on Hwy 72, 7960 ft; Richfield. *Summit Co.:* 8.6 mi E of Kamas on Rt 150, Beaver Crk. Cmpgrd.; 20.2 mi E of Kamas on Rt 150; Weber Cmpgrd., 4.5 mi E of Oakley. *Utah Co.:* Mapleton. *Wasatch Co.:* Dock Flat, 1 mi NE of Rt 40, 8000 ft; Uinta Nat. For., Buckboard Crk. at Rt 35; Uinta Nat. For., Lodgepole Cmpgrd. *County ?:* Soldier. **Wyoming:** *Fremont Co.:* Popoagie Cmpgrd., Wind River Mts. on Rt 131; 26 mi SW of Shoshone Nat. For. boundary on Rt 131.

DISCUSSION: Knight (1926a) described *opacus* from Gunnison, Dolores, and Ridgeway, Colorado. He noted that in Poppius' (1914a) key his specimens ran to *walshii*. Our examination of the types indicates that *opacus* is actually a junior synonym of *vicarius*.

This widespread species shows substantial variation over its range, not only in the body proportions (some specimens being very elongate and others much broader), but also in the dorsal vestiture, with some specimens from the northern Rockies of British Columbia and Idaho having few if any erect setae on the hemelytra.

Pilophorus walshii Uhler
Figures 1C, 29E–H

Pilophorus walshii Uhler, 1887: 30 (n. sp., desc.). – Poppius, 1914a: 239 (key). – Van Duzee, 1918: 295 (key). – Knight, 1926a: 20 (disc., measurements, host). – Blatchley, 1926: 815 (desc., dist., key). – Knight, 1927: 40 (dist., host). – Knight, 1941: 141 (desc., dist., host, key). – Akingbohungbe et al., 1972: 12 (dist., host). – Akingbohungbe et al., 1973: 12 (desc. of nymph). – Knight, 1973: 141 (dist., host, key). – Akingbohungbe, 1974: 252 (chromosome number). – Wheeler and Henry, 1976: 1096 (host, biol. desc., fig., disc., dist.). – Henry and Smith, 1979: 215 (dist.). – Wheeler, 1979: 32 (disc., dist.). – Akingbohungbe, 1983: 39 (testis follicle number). – Wheeler et al., 1983: 143 (dist., host).

LECTOTYPE: sex ?, Ill.,; P. R. Uhler collection; *Pilophorus walshii* Uhler, LECTOTYPE, det. R. T. Schuh and M. D. Schwartz; deposited in the USNM.

DIAGNOSIS: Distinguished from other species in the *clavatus* group with mesially offset posterior band of scalelike setae on the hemelytra by the recumbent vestiture on the dorsum, and the labium just reaching the posterior margin of the mesosternum; most easily confused with *brunneus*.

DESCRIPTION: Small species, length apex tylus–cuneal fracture 2.50–2.72 mm. COLORATION: Body and appendages generally orange brown to near castaneous with substantial variation in individual specimens, hemelytra generally deep orange, orange brown in nonmatte areas, antennal segment 1 red on dorsal surface and pale on ventral surface, segment 2 reddish proximally and castaneous distally, segment 3 white on proximal half and dark on distal half, segment 4

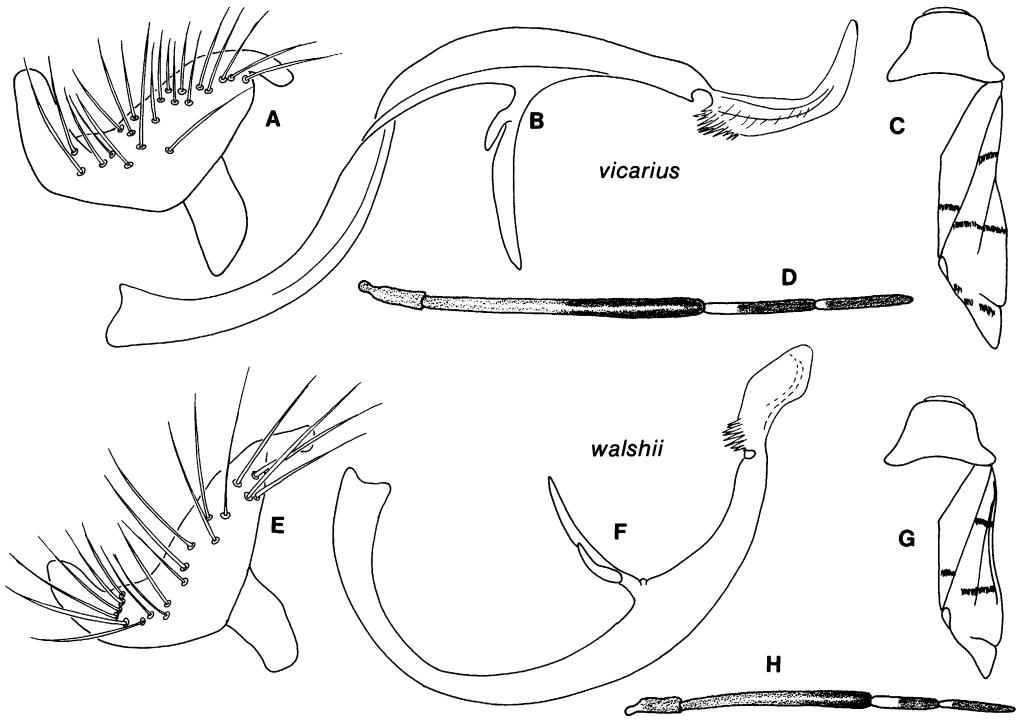

Fig. 29. A–D. *Pilophorus vicarius.* **A.** Left paramere, frontal view. **B.** Vesica. **C.** Pronotum and hemelytron, ♂. **D.** Antenna. E–H. *Pilophorus walshii.* **E.** Left paramere, frontal view. **F.** Vesica. **G.** Pronotum and hemelytron, ♂. **H.** Antenna.

white at extreme base with remainder castaneous (fig. 29H), all coxae and trochanters pale or white, pro- and mesotibiae and femora reddish brown, metafemora and tibiae somewhat darker. SURFACE AND VESTITURE: Hemelytra posteriad of posterior band of setae smooth, polished and weakly shining laterad of radial vein and with matte texture mesad of radial vein as anteriad of setal band; the posterior band of setae offset at the claval suture with the portion on the clavus anterior to the corial portion by a distance equal to at least the width of the setal band (fig. 29G); dorsum with recumbent, short, golden setae (fig. 1C); patch of scalelike setae on posterior margin of metepisternum consisting of a very few setae; large angled patch of scalelike setae sublaterally on abdominal sternites 1–5, portions on segments 1 and 2 discrete; scalelike setae on cuneal area in two discrete patches. STRUCTURE: Face rounded below eyes in frontal view, genae not noticeably elevated or carinate in lateral view; gula obsolete; labium just reaching posterior margin of mesosternum; pronotum vaguely campaniform, posterior lobe moderately swollen, lateral margins moderately to deeply concave, anterior margin obscured by posterior margin of head and eyes; metatibiae cylindrical and straight; vesica twisted, mesial spine with subbasal thumblike process (fig. 29F).

HOST: *Gleditsia triacanthos.*

DISTRIBUTION: Eastern North America: west to eastern Kansas, north to New York and Ontario, and south to South Carolina and Louisiana.

SPECIMENS EXAMINED: 135 specimens collected between June 14 and September 28; deposited in: AMNH, CAS, CNC, JTP, LSU, PDA, TAM, UCB, USNM. – CANADA: **Ontario:** Cayuga; Dundas; Effingham. USA: **District of Columbia. Illinois:** *Champaign Co.:* Urbana. *Warren Co.:* Swan Township. **Indiana:** *Howard Co.:* NW Howard Co. *Marion Co.* **Iowa:** *Clay Co.:* Peterson. *Lee Co.:* Donnelson. *Page Co.:* Braddyville. *Storey Co.:* Ames. **Kansas:** *Greenwood Co.* **Louisiana:**

East Baton Rouge Par.: LSU Campus. **Missouri:** *Randolph Co.:* 1 mi E of Moberly. **Nebraska:** *Nemaha Co.:* 2.5 mi S of Brock. **New York:** *Erie Co.:* Buffalo. *Nassua Co.:* East Meadow near Rt 25 on Bluebird Rd. *Tompkins Co.:* Ithaca. **Pennsylvania:** *Blair Co.:* Martinsburg, Central H. S. *Bradford Co.:* Athens, Tioga Pt. Cemetery. *Dauphin Co.:* Harrisburg, East Harrisburg Cemetery; College Park. *Erie Co.:* Fairview. *Forest Co.:* Tionesta, Tionesta Dam. *Lebanon Co.:* Rt 22, ½ mi E of Rt 72 near Lickdale. *Lycoming Co.:* Williamsport. *Westmoreland Co.:* Armbrust. *York Co.:* near Dover. **South Carolina:** *Oconee Co.:* Clemson, light trap. **Tennessee:** *Knox Co.:* Univ. of Tennessee. **Virginia:** *Suffolk Co.*

DISCUSSION: Uhler (1887) noted that he based his description of *walshii* on several specimens sent to him from "the neighborhood of Rock Island, Illinois." No lectotype had ever been designated for this species, so we searched the collections of the National Museum for possible candidates. We found one specimen, among several with PR Uhler Collection labels, which bears the additional label "Ill." It is the only known specimen which seems to conform to the original description, and we have therefore designated it as the lectotype. Unfortunately, it is in poor condition, with the left antenna, both hind legs, the entire abdomen, and the left forewing missing.

Pilophorus walshii is very similar in size and appearance to *brunneus*. Many specimens can be separated easily by the length of the labium, which does not surpass the posterior margin of the mesosternum in *walshii*. There exist, however, populations with the labium of a length intermediate between *walshii* and *brunneus*. It is our opinion that one widespread species may be involved. For the meantime, however, we have identified all specimens with a short labium, most of which appear to have been collected on *Gleditsia triacanthos*, as *walshii*; all others have been identified as *brunneus*.

SPECIES INCERTAE SEDIS

Pilophorus buenoi Poppius

Pilophorus buenoi Poppius, 1914a: 243 (n. sp., desc.). – Blatchley, 1926: 810 (desc., disc., key). – Knight, 1973: 137 (dist., key).

HOLOTYPE: ♀, Southern Pines, N. C., A. H. Manes; deposited in the USNM.

DISCUSSION: The holotype and only known specimen of *buenoi* has no antennae or legs and is otherwise in very poor condition. The corium has a uniform texture posteriad of the posterior band of setae and with the anterior margin uneven. The small size (length apex tylus–cuneal fracture 2.51 mm) and the weakly swollen scutellum suggest a possible association with *nasicus*, but the structure of the head differs from that species; Blatchley (1926: 810) related *buenoi* to *laetus*. We have not been able to associate this name with any other known specimens.

STHENARIDEA REUTER

Type species: *Sthenaridea pusilla* Reuter, a synonym of *Deraeocoris piceoniger* Motschulsky

Sthenaridea Reuter, 1884: 197 (n. gen., desc.). – Distant, 1904: 474 (desc., disc.). – Carvalho, 1955: 67 (key).

Cephalocapsus Poppius, 1914b: 88 (n. gen., desc.; type species: *Cephalocapsus clypealis* Poppius). – Carvalho, 1955: 46 (key). (syn. by Schuh, 1974: 210).

Cephalocapsidea Poppius, 1915: 71 (n. gen., desc.; type species: *Cephalocapsidea obscurata* Knight). – Carvalho, 1955: 77 (key). (syn. by Schuh, 1984: 37).

Orthotylellus Knight, 1935: 207 (n. gen., desc.; type species: *Orthotylellus samoanus* Knight). – Carvalho, 1955: 46 (key). (syn. by Wagner, 1970: 3).

Paramixia Reuter, 1900: 264 (n. gen., desc.; type species: *Paramixia suturalis* Reuter). – Carvalho, 1955: 52 (key). – Wagner, 1970: 1 (syn., disc.). – Schuh, 1974: 210 (syns., disc.). – Schuh, 1984: 37 (syn., disc.). NEW SYNONYMY.

Schroederiella Poppius, 1914b: 88 (n. gen., desc.; type species: *Schroederiella nigra* Poppius). – Carvalho, 1955: 46 (key). (syn. by Wagner, 1970: 3).

Troitskiella Poppius, 1914b: 81 (n. gen., desc.; type species: *Troitskiella minuta* Poppius). – Carvalho, 1960: 194 (cat.). (Carvalho, 1952: 75, incorrectly synonymized *Troitskiella* with *Amixia* Reuter; syn. with *Paramixia* by Schuh, 1974: 210; see also Linnavuori, 1975: 89).

DIAGNOSIS: Recognized by the lamellate convergent parempodia, the presence of flattened, shining, scalelike setae on the thoracic pleuron and sometimes on the dorsum and abdominal venter, and the phyline-type male

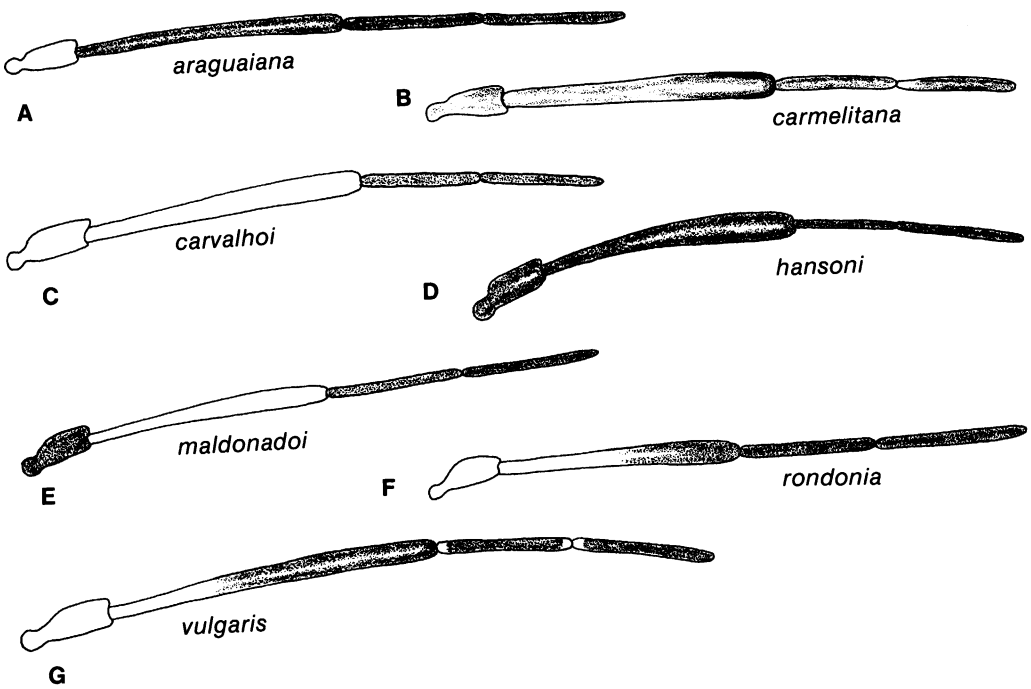

Fig. 30. *Sthenaridea* spp. antennae. **A.** *araguaiana.* **B.** *carmelitana.* **C.** *carvalhoi.* **D.** *hansoni.* **E.** *maldonadoi.* **F.** *rondonia.* **G.** *vulgaris.*

genitalia with the vesica in the form of a simple tube, with no obvious secondary gonopore.

DISCUSSION: Reuter (1884) described the genus *Sthenaridea* with *pusilla* as the type. Later Bergroth (1921) synonymized *pusilla* with *Deraeocoris piceoniger* Motschulsky. Kerzhner and Jansson (1985) in a review of the Motschulsky Heteroptera types could not find the six specimens on which Bergroth based his synonymy.

Reuter's description of *S. pusilla* was founded on two female specimens from "Bengalen." We have located two specimens with these data in the University Zoological Museum, Copenhagen, and designate one of them the lectotype; it bears the additional label, "*Sthenaridea pusilla* Reuter n. g. et sp. Typ." The other is designated as a paralectotype.

Our examination indicates that *pusilla* is the senior synonym of *Psallus* (= *Paramixia*) *singalensis* Distant (NEW SYNONYMY), and that *Paramixia* Reuter, 1900, therefore is a junior synonym of *Sthenaridea* Reuter, 1884.

Distant (1904: 475) redescribed *Sthenaridea pusilla*, saying "By the kindness of Dr. Meinert I have been enabled to figure the type of this species." In reality Distant's figure 306 is that of a *Halticus* species. In the collection of the University Zoological Museum in Helsinki RTS found two *Halticus* specimens in the box labeled *Sthenaridea pusilla.* Meinert apparently sent one of these to Distant.

In addition to the specimens listed below we examined an additional 46 males and 137 females of *Sthenaridea* which we could not determine positively to species, because of their poor condition.

KEY TO THE NEW WORLD *STHENARIDEA* SPECIES

1. Entire body and appendages pale light yellow-brown; male genitalia as in figures 32A, B ..... *carvalhoi*
– Body dark colored, usually castaneous, appendages light or dark 2
2. Entire body and appendages uniformly dark, cantaneous; male genitalia as in figures 32C–E ..... *hansoni*
– Body mostly castaneous; appendages at least

in part pale and contrasting with general coloration of body 3

3. First and second antennal segments with contrasting coloration—either segment 1 completely dark and 2 light, or 2 castaneous to nearly black with segment 1 entirely pale; at least some portion of femora dark; metatibiae usually dark 4
- Antennal segments 1 and 2 never with contrasting both segments usually pale, never entirely black, sometimes slightly darkened distally; femora completely pale to partly dark; metatibiae usually pale 5

4. Antennal segment 1 dark, segment 2 pale (see also Discussion); apices of coxae, trochanters, and bases of femora pale; male genitalia as in figures 34A–C ..... *maldonadoi*
- Antennal segment 1 pale, segment 2 completely dark; apices of coxae, trochanters, and bases of femora dark; male genitalia as in figures 31A–C ..... *araguaiana*

5. Head and appendages tinged orange, much lighter than remainder of body; male genitalia as in figures 34D, E ..... *rondonia*
- Head unicolorous with remainder of body, coloration of appendages mostly lighter than that of head 6

6. Width of frons from 0.35–0.38 mm; male with C-shaped vesica as in figures 31D, E; southern Brazil and Paraguay ..... *carmelitana*
- Width of frons from 0.30–0.33 mm; male with small or large, L-shaped vesica as in figures 34A–C and 35A–C 7

7. Apices of coxae, trochanters and bases of femora pale; male with small, sharply L-shaped vesica as in figures 34A–C; distributed in Para, Brazil ..... *maldonadoi*
- Coxae dark, trochanters pale, femora usually pale (sometimes castaneous); male with large, subapically broad, L-shaped vesica, as in figures 35A–C; widely distributed in the Caribbean and northern South America ..... *vulgaris*

Sthenaridea arguaiana (Carvalho), new combination
Figures 30A, 31A–C

Rhinacloa araguaiana Carvalho, 1948: 11 (n. sp., desc., figs.).

Paramixia araguaiana Carvalho, 1984: 180 (n. comb.). – Schuh and Schwartz, 1985: 431 (n. comb.).

HOLOTYPE: Not examined; deposited in the MNRJ (Carvalho and Froeschner, 1987: 208).

DIAGNOSIS: Recognized by the castaneous coloration of the body, the pale first antennal segment in contrast to the dark or nearly black second antennal segment (fig. 30A), the dark coxae, trochanters and mostly dark femora, the dark metatibiae, and the form of the male genitalia (figs. 31A–C).

DESCRIPTION: Small species, length apex tylus–cuneal fracture 1.42–1.74 mm. COLORATION: Body castaneous; antennal segment 1 pale, segments 2, 3, and 4 dark and often black, pro- and mesotibiae pale, golden, metatibiae usually dark and contrasting with pro- and mesotibiae; femora at least partly dark, always so at base and more or less concolorous with trochanters and apices of coxae. SURFACE AND VESTITURE: Dorsum and abdominal venter smooth, polished and conspicuously shining, covered with relatively long, decumbent, pale, simple setae; thoracic pleuron with a few scattered, appressed, scalelike, shining setae. STRUCTURE: Head declivent and only weakly projecting in front of eyes; lateral corial margins nearly straight, body form elongate and nearly parallel-sided; vesica more or less C-shaped, broad-bodied, and with broad apex (fig. 31C); posterior lobe of left paramere broad and moderately elevated (fig. 31B).

HOST: None recorded.

DISTRIBUTION: Widespread from Central Mexico and the Greater and Lesser Antilles south to Peru.

SPECIMENS EXAMINED: 51 males and 37 females; deposited in: AMNH, BM(NH), CARP, CU, JCMC, JM, USNM. – COLOMBIA: **Cundinamarca:** Guayabetal. **Meta:** Villavicencio. COSTA RICA: **Limon:** Amubri (Talamanca). **San Jose Prov.:** Parque Nac. Braulio Carillo, 1000 m. DOMINICA: S Chiltern; Layou River, Brookhill Estate; Pont Casse; Roseau; Tiperie; Wooten Waven. GRENADA: L. Grand Etang; Mirabeau Est. (windward side). HAITI: Mountains near Port au Prince, up to 2000 ft. JAMAICA: **Par.?:** Blue Mts., Yallahs Valley. MEXICO: **San Luis Potosi:** 5 mi E of Xilitla. **Veracruz:** B. de Metlac. PANAMA: **Canal Zone:** Summit. **Prov. ?:** Juan Mina Plantation. PERU: **Huanuco Dept:** Monzon Valley, Tingo Maria. **Junin Dept:** San Ramon de Pangoa, 40 km SE of Satipo, 750 m; San Emiliano de Cachingareni, 55 km SE of Satipo, 1000 m. **Pasco Dept.:** Puerto Bermudez, Rio Pichis.

DISCUSSION: We indentified this species by

comparing Carvalho's original description with available specimens. See discussion under *maldonadoi*.

Sthenaridea carmelitana (Carvalho), new combination
Figures 30B, 31D, E

Rhinacloa carmelitana Carvalho, 1948: 8 (n. sp., desc., figs.).
Orthotylellus carmelitanus Carvalho, 1955: 227 (n. comb.).

HOLOTYPE: Not examined; deposited in: MNRJ (Carvalho and Froeschner, 1987: 208).

DIAGNOSIS: Recognized by the mostly castaneous coloration of the body, the pale metatibiae, and the form of the male genitalia (figs. 31D, E).

DESCRIPTION: Relatively large species, length apex tylus–cuneal fracture 1.65–1.85 mm. COLORATION: Body mostly dark brown or castaneous; antennal segments 1 and 2, all coxae, trochanters, and all tibiae pale or golden, to dark brown, antennal segment 2 sometimes darkened distally, segments 3 and 4 generally darkened; femora varying from pale to largely deep brown, usually dark basally; metathoracic scent gland evaporatory area pale except dorsad of opening. SURFACE AND VESTITURE: Dorsum and abdominal venter smooth, polished and weakly shining, covered with relatively long, decumbent, pale, simple setae; thoracic pleuron with a few scattered appressed scalelike shining setae. STRUCTURE: Head declivent and only weakly projecting in front of eyes; lateral corial margins weakly convex, body form ovoid; vesica more or less C-shaped, slightly twisted, and with narrow apex (fig. 31E); posterior lobe of left paramere moderately elevated and elongate (fig. 31D).

HOST: None recorded.

DISTRIBUTION: Nicaragua, Columbia, northeastern and southern Brazil.

SPECIMENS EXAMINED: 14 male and 23 female specimens; deposited in: JCMC, JM, USNM. – BRAZIL: **Alagoas:** São Miguel dos Campos. **Minas Gerais:** Carmo do Rio Claro. **Rio de Janeiro:** Distrito Federal, Tijuca. COLOMBIA: **Cundinamarca:** Sasaima. NICARAGUA: Puerto Cabezas.

DISCUSSION: This species appears to be positively separable from *vulgaris* only by the form of the male genitalia.

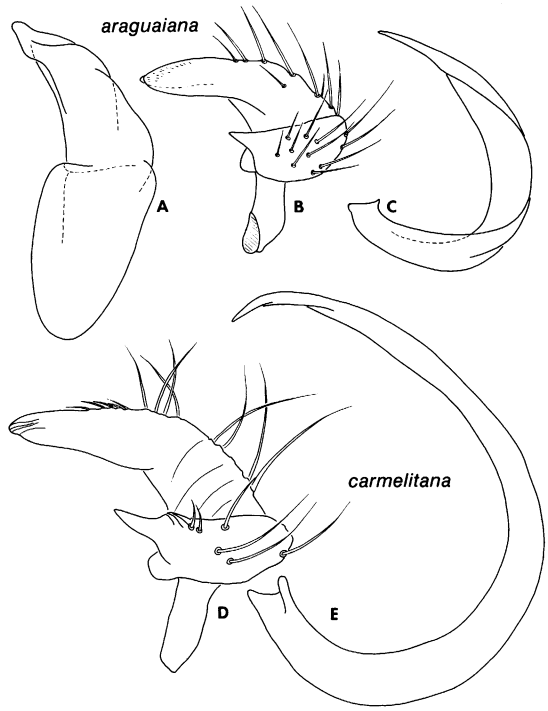

Fig. 31. A–C. *Sthenaridea araguaiana*. **A.** Phallotheca. **B.** Left paramere, lateral view. **C.** Vesica. D, E. *Sthenaridea carmelitana*. **D.** Left paramere, lateral view. **E.** Vesica.

Sthenaridea carvalhoi, new species
Figures 30C, 32A, B

HOLOTYPE: ♂, Puerto Bermudez, Rio Pichis, PERU [Pasco Dept.], 12–19 July 1920; Cornell U., Lot 569, Sub 251; deposited in CU.

DIAGNOSIS: Recognized by the entirely pale golden coloration of the body and appendages and the form of the male genitalia (figs. 32A, B).

DESCRIPTION: Moderate size species, length apex tylus–cuneal fracture 1.33–1.71 mm. COLORATION: Entire body and appendages pale golden; compound eyes very deep reddish; antennal segments 3 and 4 somewhat darkened. SURFACE AND VESTITURE: Dorsum and abdominal venter smooth, polished and weakly shining, covered with relatively long, decumbent, pale, simple setae; thoracic pleuron with a few scat-

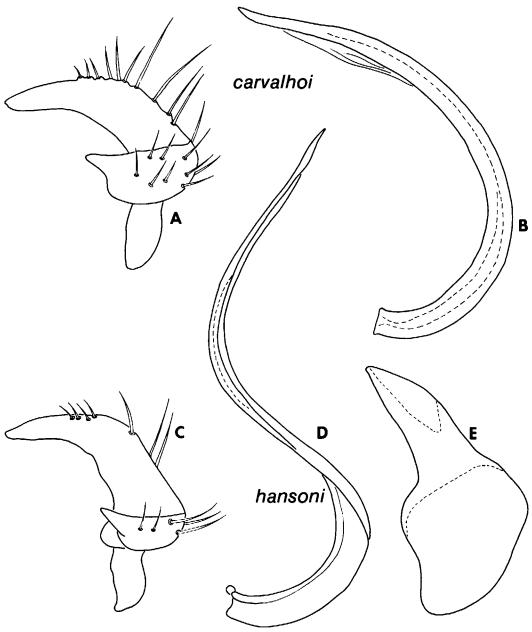

Fig. 32. A, B. *Sthenaridea carvalhoi.* **A.** Left paramere, lateral view. **B.** Vesica. C–E. *Sthenaridea hansoni.* **C.** Left paramere, lateral view. **D.** Vesica. **E.** Phallotheca.

tered appressed scalelike shining setae. STRUCTURE: Head declivent and only weakly projecting in front of eyes; lateral corial margins weakly convex, body form very elongate oval; vesica C-shaped (fig. 32B); posterior lobe of left paramere broad and strongly elevated (fig. 32A).

ETYMOLOGY: Named in honor of José C. M. Carvalho.

HOST: *Fimbristylis spadicea* (L.) Vahl.

DISTRIBUTION: Widespread from tropical Mexico and the Greater Antilles south to the southern Brazil.

PARATYPES: BELIZE: **Belize:** Haulover Rd NW of Belize City, July 8–10, 1978, P. S. Broomfield (BM[NH]), 1♀. BRAZIL: **Amazonas:** Estirão do Equador, October 1979, Alvarenga (JCMC), 20♂, 25♀; Reserva Ducke, 25 km NNE of Manaus, 120 m, July 26, 1973, R. T. Schuh (AMNH, MNRJ), 38♀. **Rio de Janeiro:** Distrito Federal, Tijuca, January 1946, Carvalho (JCMC), 1♀. COSTA RICA: **Limon:** Km 40 Pt. Limon, Siquirres, February 23, 1982, E. Barrera (UNAM), 3♂, 16♀. CUBA: Havana, Baker (HM), 1♀. DOMINICA: Roseau, 0–100 m, July 1976, N. L. H. Krauss (AMNH), 1♂. GUADELOUPE: Monre-O-l'Eau, June 25, 1971, Slater et al. (AMNH), 3♂, 1♀; Guadeloupe (JCMC), 1♂, 1♀; Sofaia, June 27, 1971, Slater et al. (AMNH), 1♀; near Houstique, June 27, 1971, Slater et al. (AMNH), 1♀. GUYANA: **Essequibo:** Kartabo, July 3–12, 1982, K. and R. Schmidt, sweeping low vegetation in sunny areas along trail, 1♀ (AMNH). JAMAICA: **St. Ann Par.:** Runaway Bay, July 3, 1971, Slater et al., adults and nymphs on *Fimbristylis spadicea* (L.) Vahl (AMNH), 4♂, 9♀. MEXICO: **Quintana Roo:** Km 46 Carretera Chetumal, Cancun, May 13, 1982, V. Melendez (UNAM), 1♀. PERU: **Lima Dept.:** Callao, June 20–22, 1911, R. Paessler (HM), 1♀. **Loreto Dept.:** Km 3 Tournavista Rd, 34 km W Pucallpa, 300 m, December 31, 1971, R. T. and J. C. Schuh (AMNH), 1♀. **Pasco Dept.:** Puerto Bermudez, Rio Pichis, July 12–19, 1920 (CU), 6♂, 11♀. SURINAM: Paramaribo, November 1907, J. Michaelis (HM), 2♀. TRINIDAD AND TABAGO: 3 mi E of Cumuto, August 23, 1969, H. and A. Howden (CNC), 1♂.

DISCUSSION: Some of Maldonado's (1969) records of *carmelitana* from Puerto Rico may represent specimens of *maldonadoi.*

Sthenaridea hansoni, new species
Figures 30D, 32C–E

HOLOTYPE: ♂, COSTA RICA – Lim., Amubria (Talamanca), 26 Jul 1975, W. J. Hanson; deposited in the AMNH.

DIAGNOSIS: Recognized by the completely castaneous coloration of the entire body and all appendages, the thickened antennal segment 2 (fig. 30D), and the form of the male genitalia (figs. 32C–E).

DESCRIPTION: Small species, length apex tylus–cuneal fracture 1.25–1.56 mm. COLORATION: Entire body and all appendages castaneous. SURFACE AND VESTITURE: Body surface smooth, generally dull, covered with decumbent, pale, simple setae and scattered appressed scalelike shining setae, shining setae more regularly placed on pleuron and venter than on dorsum; metathoracic scent gland evaporatory area pale except dorsad of opening. STRUCTURE: Head angled anteroventrally and distinctly projecting in front of eyes; lateral corial margins weakly convex, body form elongate oval; vesica

elongate, slender and somewhat sinuous (fig. 32D); posterior lobe of left paramere very strongly elevated (fig. 32C).

ETYMOLOGY: Named in honor of Wilford J. Hanson.

HOST: None recorded.

DISTRIBUTION: Central America south to Ecuador with records in the Antilles from the British Virgin Islands and Guadeloupe.

PARATYPES: BRITISH VIRGIN ISLANDS: Mt. Sage, 400 m, July 13, 1979, N. L. H. Krauss (WAG), 1♂. COLOMBIA: **Cundinamarca:** Melgar, November 11, 1965, J. A. Ramos (JM), 1 ♀. COSTA RICA: **Heredia:** La Lola, January 31, 1965, Slater and Davis (AMNH), 3♂, 7♀; La Selva Res. Sta. June 11–17, 1986, W. Hanson, G. Bohart (USU), 1♂. **Limon:** Amubri (Talamanca), July 26, 1975, W. J. Hanson (USU), 5♂, 6♀; Siquirres, 60 m, July 26, 1981, W. R. Dolling, premontane wet forests on ruderal vegetation (BM[NH]), 1♂, 1♀. **Puntarenas:** Rincon de Osa, Osa Peninsula, July 14–26, 1969, T. Schuh (AMNH), 1♀. ECUADOR: Santo Domingo de los Colorados, March 6, 1973, M. A. Deyrup (AMNH), 1♂, 1♀. GUADELOUPE: Sofaia, July 27, 1971, Slater et al. (AMNH), 6♂, 1♀. GUYANA: **Essequibo:** Kartabo, July 3–12, 1982, K. and R. Schmidt, sweeping low vegetation in sunny areas along trail, 13♂, 7♀ (AMNH); Kartabo, Aug. 14, 1983 1♀ (AMNH). MEXICO: **Colima:** 9 mi NE of Comala, July 17–18, 1983, Schaffner et al. (TAM), 1♀. PANAMA: **Canal Zone:** Barro Colorado, February 6–10, 1939, C. J. Drake (JCMC), 1♂, 2♀; Barro Colorado Island, August 26, 1977, R. B. and L. S. Kimsey (UCD), 1♂; Paraiso, January 16, 1911, Busck (USNM), 1♀. TRINIDAD AND TABAGO: Asa Wright Nat. Center, January 15, 1981, G. E. Bohart (USU), 1♂; Port of Spain, Brooks (AMNH), 1♀; D'Abadie, October 15, 1918, H. Morrison (USNM), 1♀. VENEZUELA: **Zulia:** San Vicente, August 71, J. Maldonado C. (JM), 1♂, 6♀; El Tucuco, 45 km SW of Machiques, June 5–6, 1976, A. S. Menke and D. Vincent (USNM), 3♀.

Sthenaridea maldonadoi, new species

Figures 30E, 33, 34A–C

HOLOTYPE: ♂, MEXICO: Oaxaca: 11 mi. n. Matias Romero, July 6, 1971, Clark, Murray, Hart, Schaffner; deposited in the AMNH.

DIAGNOSIS: Recognized by the deep brown to castaneous coloration of the body, the dark to nearly black first antennal segment in contrast to the mostly pale second antennal segment (figs. 30E, 33), the apically pale coxae, pale trochanters and basally pale femora, the dark metatibiae, and the form of the male genitalia (figs. 34A–C).

DESCRIPTION: Small species, length apex tylus–cuneal fracture 1.45–1.69 mm. COLORATION: Body castaneous; antennal segment 1 dark, nearly black, segment 2 light (sometimes segment 1 light, segment 2 dark), pro- and mesotibiae pale, golden, metatibiae dark and contrasting with pro- and mesotibiae; femora light basally and apically and otherwise darkened, light areas concolorous with trochanters and apices of coxae; metathoracic scent gland evaporatory area pale except dorsad of opening. SURFACE AND VESTITURE: Dorsum and abdominal venter smooth and weakly shining, covered with relatively long, decumbent, pale, simple setae and dorsum and thoracic pleuron with scattered appressed scalelike shining setae. STRUCTURE: Head only weakly declivent, not strongly projecting in front of eyes; lateral corial margins nearly straight, body form elongate and nearly parallel-sided; vesica more or less L-shaped, sharply bent sub-basally, terminal portion straight and tapering (fig. 34B, C); posterior lobe of left paramere broad and moderately elevated (fig. 34A).

ETYMOLOGY: Named in honor of Jenaro Maldonado Capriles.

HOST: None recorded.

DISTRIBUTION: Widespread from Central Mexico and the Greater Antilles south to central Brazil.

PARATYPES: COLOMBIA: **Cordoba:** Monteria, October 10–11, 1971, R. T. and J. C. Schuh, sweeping roadside vegetation (AMNH), 3♀. COSTA RICA: **Puntarenas:** Puntarenas, October 1953, N. L. H. Krauss (AMNH). 4♀. CUBA: Soledad near Cienfuegos, 6-20-VIII, N. Banks (AMNH), 1♂, 1♀. DOMINICA: Pointe Michel, June 23, 1971, Slater et al. (AMNH), 1♂. HONDURAS: La Ceiba, March 6, 1977, G. V. Manley (TAM), 1♀; La Ceiba, Atlantida, March 6, 1977, G. V. Manley (TAM), 2♀; Lancetilla, November 17, 1932, Stadelmann (AMNH), 3♀. MEXICO: **Campeche:** Escarcega, April 23, 1962, F.

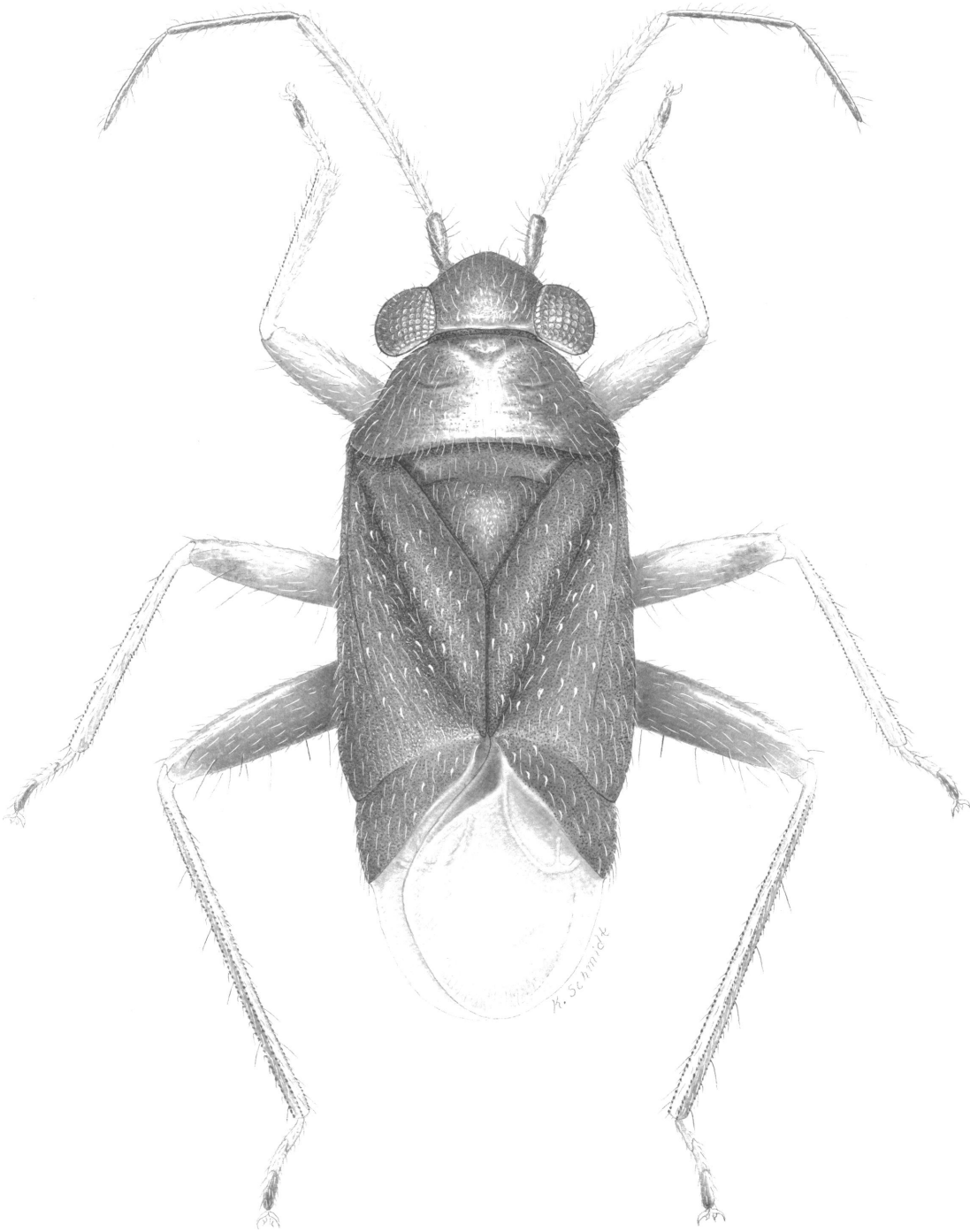

Fig. 33. *Sthenaridea maldonadoi*, dorsal habitus, ♂.

Islas S., light trap (USNM), 1♀. **Chiapas:** 29 mi SW of Cintalapa, July 7, 1971, Schaffner et al., at light (TAM), 1♀. **Oaxaca:** 11 mi N of Matias Romero, July 6, 1971, Schaffner et

al. (AMNH, TAM), 17♂, 58♀. **San Luis Potosi:** Tamuin, August 1975 (JCMC), 1♀. **Tamaulipas:** 8 mi W of El Limon, July 20, 1970, Schaffner et al., at light (TAM), 1♂. **Vera Cruz:** 32 mi SW of Acuyacan, August 11, 1974, O'Brien and Marshall, on Pistia stratiotes (CAS), 1♀; 36 mi S of Acuyacan, July 5, 1971, Schaffner et al., at light (TAM), 5♀; Catemaco, September 6, 1974, Hanson and Bohart (USU), 1♀; Tampico, September 1965, N. L. H. Krauss (USNM), 1♂, 1♀. PANAMA: **Canal Zone:** Barro Colorado Island, August 26, 1977, R. B. and L. S. Kimsey (UCD), 2♂, 6♀; Ft. Sherman, January 11, 1974, Slater and Harrington (AMNH), 1♀; Flamenco Island, October 1946, N. L. H. Krauss (USNM), 1♀. **Prov. ?:** 2 mi S of Chepo, January 8, 1974, Slater, Harrington (AMNH), 1♂; Garachine, February 17, 1953, F. S. Blanton (USNM), 1♂. PUERTO RICO: Mayaguez, June 1962, J. Maldonado C. (USNM), 1♀. TRINIDAD AND TABAGO: La Brea, October 18, 1918, H. Morrison, from vegetation on surface of pitch lake (USNM), 5♂, 2♀. USA: **Texas:** *Cameron Co.:* Brownsville, June 29, 1938, R. H. Beamer (KU), 3♂, 4♀. *Hidalgo Co.:* San Juan, June 28, 1938, L. W. Hepner (KU), 2♀. VENEZUELA: **Carabobo:** Pateremo Beach, July 11–12, 1968, J. Maldonado C. (JM), 4♀.

ADDITIONAL SPECIMENS EXAMINED: BELIZE: **Orange Walk Dist.:** Hondo River, San Antonio, October 9–14, 1975, D. E. Puleston (USNM), 2♀. BRAZIL: **Amazonas:** Estirão do Equador, October 1979, Alvarenga (JCMC), 7♀; Fonte Boa, December, 1975, F. M. Oliveira (CARP), 6♂, 2♀. **Minas Gerais:** Carmo do Rio Claro, January 1958, Carvalho and Becker (JCMC), 2♂, 1♀. **Para:** 14 km S of Vijia, June 19, 1973, R. T. and J. C. Schuh (AMNH), 11♂, 26♀; 8 km E of Belem, Ananindeua, May 2–June 19, 1973, R. T. Schuh, at light (AMNH), 1♂, 15♀; Belem, Rio Guama, August 28, 1973, R. T. Schuh (AMNH), 3♀. COLOMBIA: **Cundinamarca:** Alban, September 10, 1965, J. A. Ramos (JM), 2♀. **Valle:** Cali, 1000 m, October 15, 1971, R. T. and J. C. Schuh (AMNH), 5♂. COSTA RICA: **Cartago:** Turrialba, 600–700 m, August 12, 1975, N. L. H. Krauss (AMNH), 1♀; Turrialba, January 29, 1965, Slater and Davis (AMNH), 1♀; Turrialba, July 3–8, 1981, W. R. Dolling, at light (BM[NH]), 1♀. **Heredia:** La Lola, January 29–31, 1965, Slater and Davis (AMNH), 1♂, 3♀. **Limon:** Amubri (Talamanca), July 26, 1975, W. J. Hanson (USU), 4♂; Siquirres, 60 m, July 26, 1981, W. R. Dolling (BM[NH]), 1♀. **Prov. ?:** San Isidro, 700–800 m, August 1980, N. L. H. Krauss (WAG), 1♀. CUBA: Havana, Baker (HM), 1♂. ECUADOR: Santo Domingo de los Colorados, March 5–6, 1973, M. A. Deyrup (AMNH), 3♀. GUATEMALA: Tikal, Peten, November 1959, N. L. H. Krauss (USNM), 1♂; Tikal, February 13, 1979, G. E. Bohart (USU), 1♀; Los Amates, Kellerman (AMNH), 1♂, 1♀. GUAYANA: Rockstone, July 9, 1911 (AMNH), 1♂, 1♀. HONDURAS: La Ceiba, February 25, 1979, G. E. Bohart (USU), 1♂, 1♀. JAMAICA: **St. Andrew Par.:** Irishtown, July 6, 1971, Slater et al. (AMNH), 1♀. **St. Ann Par.:** 5 mi S of St. Ann's Bay, Slater et al. (AMNH), December 11, 1970, 3♀, July 5, 1971, 4♂, 3♀; Moneague, January, W. S. Brooks (AMNH), 1♀; 1 mi S of Moneaque, July 4, 1971, Slater et al. (AMNH), 1♂, 1♀. **St. Catherine Par.:** 4.4 mi ENE of Worthy Pk., December 8, 1970, Slater and Baranowski (AMNH), 11♂. **St. James Par.:** 6 mi S of Montego Bay near Mocho Cave, 300 m, December 12, 1975, G. F. Hevel (USNM), 1♀. **Kings House Dist.:** St. Andrew, 600 ft, September 4, 1920 (AMNH), 1♀. MEXICO: **San Luis Potosi:** 3 mi E of Terrazas, March 15, 1977, Scaffner et al. (TAM), 1♀. **Tabasco:** Cardenas, September 8, 1974, W. Hanson and G. Bohart (USU), 1♂, 1♀. PANAMA: **Canal Zone:** Barro Colorado Island, December 1963, L. J. Bottimer (CNC), 1♂, 1♀; Galeta Island, January 15, 1974, Slater and Harrington (AMNH), 1♂, 3♀; 10 mi [on] Pipiline Rd, July 30, 1977, R. B. and L. S. Kimsey (UCD), 3♂; Paraiso, January 29, 1911, Busck (USNM), 1♀; Tabernilla, April 27, 1907, Busck (USNM), 1♀. **Panama Prov.:** Cerro Jefe, September 13, 1976, R. B. and L. S. Kimsey (UCD), 1♀; El Valle, December 20, 1963, L. J. Bottimer (CNC), 1♀. **Prov. ?:** 2 mi S of Chepo, January 8, 1974, Slater, Harrington (AMNH), 1♂; Flat Rock, 1 mi above Juan Mina, Chilibre River, August 24, 1918, H. Morrison (USNM), 7♂; Juan Mina Platation, August 24, 1918, H. F. Dietz, J. Zetek (USNM), 3♂.

DISCUSSION: This species can be most easily confused with *araguaiana* when specimens are not heavily pigmented, and/or when

specimens have antennal segment 1 light and segment 2 black; in these cases the distinctive genitalia should make separation of the males unproblematic. In most specimens of *maldonadoi* the pro- and mesofemora are pale or largely so; in more heavily pigmented specimens the pro- and mesofemora may be mostly dark, but the bases of the femora are always pale, as are the trochanters and the apicies of the coxae; only in the most heavily pigmented specimens are the bases of the femora dark, but they always contrast with the light trochanters. In *araguaiana*, all of the femora are usually dark pigmented, the dark coloration running right to the base of the segment; in contrast to *maldonadoi*, the trochanters and the apices of the coxae in *araguaiana* are not in strong contrast with the dark femora.

Sthenaridea rondonia, new species
Figures 30F, 34D, E

HOLOTYPE: ♂, Vilhena, 20-2-1961; Brasil, RO [Rondonia], J. & B. Bechyné; deposited in the MNRJ.

DIAGNOSIS: Recognized by the castaneous coloration of the body in contrast to the much lighter orange-tinged head and appendages and the form of the male genitalia (figs. 34D, E).

DESCRIPTION: Relatively small species, length apex tylus–cuneal fracture 1.74–1.89 mm. COLORATION: Body, excluding head, castaneous, appendages, including entire coxae and labium much lighter, contrasting, and with an orange tinge; metathoracic scent gland evaporatory surface white. SURFACE AND VESTITURE: Body surface smooth, generally dull, covered with long, decumbent, pale, simple setae; thoracic pleuron with a few scattered, shining, scalelike setae. STRUCTURE: Head angled anteroventrally and distinctly projecting in front of eyes, frons weakly tumid; lateral corial margins distinctly convex, body form elongate ovoid; vesica more or less C-shaped, slightly twisted (fig. 34E); posterior lobe of left paramere moderately elevated and broad (fig. 34D).

ETYMOLOGY: Named for the Brazilian state of Rondonia; a noun in apposition.

HOST: None recorded.

DISTRIBUTION: Known only from the type locality.

PARATYPES: 1♂, 4♀, same data as holotype, but also 22-2-61 and 25-2-61 (AMNH, MNRJ).

Sthenaridea vulgaris (Distant), new combination
Figures 30G, 35A–C

Jornandes vulgaris Distant, 1893: 448 (n. sp., desc., fig.).

Orandes [sic] *vulgaris*: Carvalho and Dolling, 1976: 810 (misspelling of *Jornandes*; lectotype designation).

Orthotyllelus carmelitanus: Carvalho and Rosas, 1965: 210 (misidentification ?). – Maldonado, 1969: 65 (in part ?; misidentification; desc., figs.).

Paramixia carmelitana: Carvalho and Afonso, 1977: 8 (misidentification ?). – Henry and Wheeler, 1982: 236 (misidentification).

Psallus politus Uhler, 1894: 195 (n. sp., desc.). NEW SYNONYMY.

Paramixia politus: Henry, 1985: 1127 (n. syn., disc., lectotype designation, dist.).

Sthenarus plebejus Reuter, 1907: 26 (n. sp., desc.). – Van Duzee, 1907: 28 (note). – Knight, 1926b: 256 (redesc.). – Blatchley, 1926: 922 (desc.). REVISED SYNONYMY.

LECTOTYPE: ♀, Teapa, Tabasco [Mexico], March, H. H. Smith; deposited in the BM(NH).

DIAGNOSIS: Recognized by the mostly castaneous coloration of the body, the mostly pale appendages including the pale metatibiae, and the form of the male genitalia (figs. 35A–C).

DESCRIPTION: Relatively large species, length apex tylus–cuneal fracture 1.43–1.98 mm. COLORATION: Body mostly castaneous; antennal segments 1 and 2, all trochanters, and all tibiae pale, golden, segment 2 sometimes extensively darkened distally, antennal segments 3 and 4 generally darkened; femora varying from pale to mostly dark; metathoracic scent gland evaporatory area mostly dark, without obvious pale area. SURFACE AND VESTITURE: Dorsum and abdominal venter smooth, polished and weakly shining, covered with relatively long, decumbent, pale, simple setae; thoracic pleuron with a few scattered appressed scalelike shining setae. STRUCTURE: Head declivent and only weakly projecting in front of eyes; lateral corial margins very weakly convex, body nearly straight sided, weakly ovoid; vesica more or less L-shaped, with a sharp curve

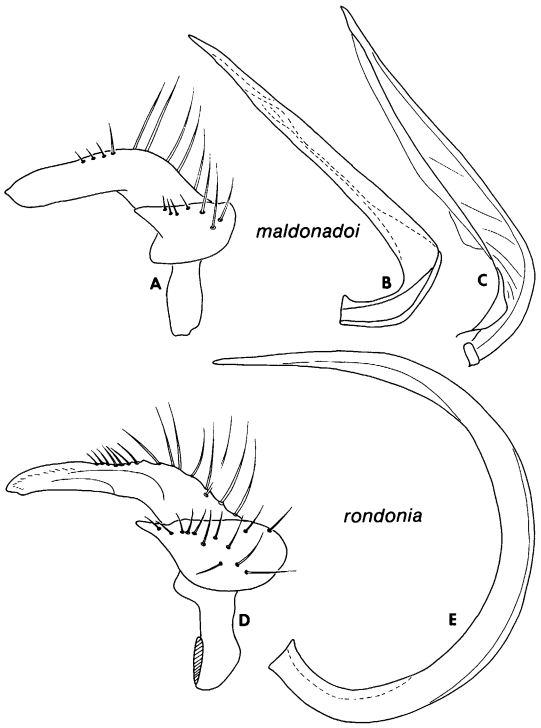

Fig. 34. A–C. *Sthenaridea maldonadoi.* **A.** Left paramere, lateral view. B, C. Vesica. **B.** Parish of St. Ann, Jamaica. **C.** La Brea, Trinidad. D, E. *Sthenaridea rondonia.* **D.** Left paramere, lateral view. **E.** Vesica.

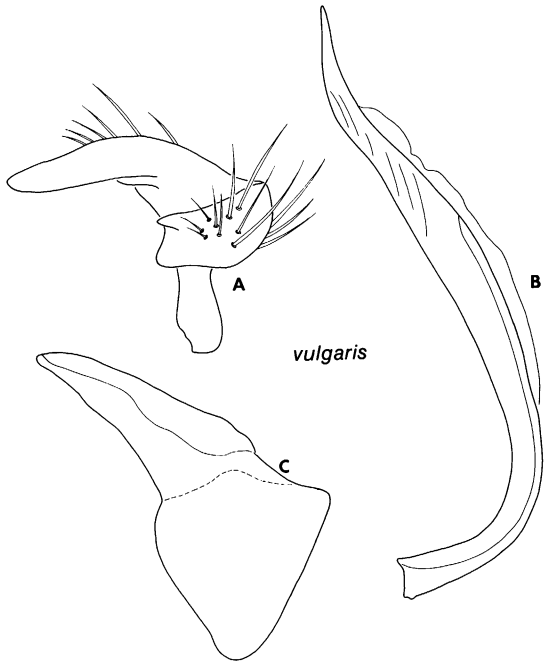

Fig. 35. *Sthenaridea vulgaris.* **A.** Left paramere, lateral view. **B.** Vesica. **C.** Phallotheca.

sub-basally (fig. 35B); posterior lobe of left paramere moderately elevated and elongate (fig. 35A).

HOST: *Cyperus luzulae* Rotth.

DISTRIBUTION: Widespread from southern Florida and Texas, throughout the Caribbean, south to Bolivia and southern Brazil.

SPECIMENS EXAMINED: 330 males and 477 females; deposited in: AMNH, BM(NH), CAS, CNC, JCMC, JM, TAM, UCB, UNAM, USNM, USU, WAG. – ARGENTINA: **Misiones:** Parque Nac. Iguazu. **Tucuman:** Hocomolle. BOLIVIA: **La Paz:** Chulumani. BRAZIL: **Espirito Santo:** Linhares, Parque Sooretama. **Goias:** Arafurcos. **Mato Grosso:** Corumba; SINOP, 12°31′S, 55°37′W, BR 163, km 500 a 600, 350 m. **Minas Gerais:** Carmo do Rio Claro; Vicosa; R. Casea. **Roraima:** Boa Vista, 140 m. **Rio de Janeiro:** Paineiras; Petropolis; Rio Grande. **Santa Catarina:** Nova Teutonia. **São Paulo:** São Paulo. COLOMBIA: **Cundinamarca Prov.:** La Vega; La Aquadita, 50 km SW of Bogota; Sasaima, 1800 m; Alban. **Meta:** Villavicencio. COSTA RICA: **Cartago:** Turrialba, 600–700 m. **Puntarenas Prov.:** Golfito. CUBA: Caimito; Hoya Colorado; Havana, swept on maize; Pinar del Rio, La Palma; 8 mi N of Santiago; 4 km N of Vinales; Soledad near Cienfuegos; Herradura; San Louis; Santiago de Cuba; Cayamas; Zaza d. Media. **Isle of Pines.** DESECHEO ISLAND. DOMINICA: Bernard Estate, near Portsmouth; Layou River mouth; Clarke Hall Est.; 0.4 mi E of Point Casse; Roseau. DOMINICAN REPUBLIC: **La Vega Prov.:** Valle del Rio. **Duarte Prov.:** 3 mi N of Azucay. **Samana Prov.:** 5 mi W of Sanchez. **San Cristobal Prov.:** 4 mi NW of Cambita Garbitos; Haina. **Prov.:** Santo Domingo, at black light; San Pedro de Macoris. ECUADOR: Guayaquil. EL SALVADOR: 7 mi S of Santa Ana. GRENADA: Mirabeau Est. (windward side); Santeurs; Mt. Gay Est. (leeward side); St. Georges. GUADELOUPE: Sofaia; Point a Pitro. GUATEMALA: Yepocapa, Finca Conchita; Reunion, Sac.; Nueva Concepcion; Tikal; Alta Vera Paz, Tres Aguas. GUYANA: **Demerara:** Georgetown, New Providence, sweeping along canal and UV light. HON-

TABLE 1
Six Measurements of New World Pilophorini

Taxon	N	Apex tylus–cuneal fracture	Width head	Interocular space	Width pronotum	Length antennal segment 2
A. heidemanni	7	2.70–2.92	1.01–1.07	0.52–0.55	1.18–1.24	1.23–1.36
P. furvus	6	2.35–2.89	0.91–1.01	0.40–0.46	1.03–1.21	0.97–1.08
P. heidemanni	6	2.09–2.32	0.78–0.90	0.38–0.43	1.04–1.10	0.63–0.79
P. nasicus	3	2.05–2.30	0.80–0.91	0.31–0.34	0.92–1.12	0.67–0.72
P. juniperi	10	2.28–2.77	0.78–0.91	0.43–0.51	0.86–1.09	0.94–1.14
P. laetus	10	2.61–2.93	0.93–1.03	0.45–0.49	0.95–1.12	1.23–1.45
P. amoenus	10	3.35–3.83	1.14–1.30	0.58–0.71	1.17–1.43	1.52–1.91
P. piceicola	10	2.97–3.27	0.96–1.06	0.45–0.52	1.14–1.33	1.31–1.53
P. strobicola	10	3.27–3.63	1.00–1.10	0.43–0.47	1.22–1.36	1.71–2.09
P. crassipes	10	3.56–4.29	1.13–1.31	0.57–0.69	1.32–1.51	1.88–2.44
P. henryi	3	3.04–3.27	1.04–1.08	0.50–0.57	1.29–1.49	1.26–1.38
P. taxodii	5	2.44–3.04	0.88–1.07	0.46–0.55	1.08–1.16	1.02–1.45
P. tibialis	26	2.83–4.62	0.94–1.31	0.47–0.63	1.13–1.67	1.37–2.24
P. americanus	15	3.39–4.25	1.05–1.20	0.49–0.60	1.21–1.58	1.60–2.10
P. concolor	6	3.27–3.63	1.17–1.28	0.56–0.61	1.14–1.32	1.49–1.73
P. diffusus	10	3.16–3.56	0.97–1.11	0.47–0.57	1.20–1.41	1.53–1.79
P. uhleri	10	3.50–3.90	1.12–1.19	0.47–0.54	1.35–1.51	1.56–1.81
P. cembroides	10	2.49–2.60	0.82–0.91	0.40–0.46	0.87–0.95	1.01–1.16
P. clavicornis	14	2.36–3.05	0.82–1.01	0.37–0.50	0.77–1.04	1.18–1.45
P. dislocatus	12	2.75–3.09	0.89–0.98	0.46–0.51	1.06–1.20	1.13–1.33
P. exiguus	10	2.09–2.46	0.70–0.76	0.30–0.35	0.74–0.84	0.83–0.97
P. floridanus	6	2.41–2.66	0.86–0.89	0.44–0.47	1.06–1.09	0.81–0.91
P. fuscipennis	10	2.13–2.44	0.80–0.86	0.40–0.43	0.90–1.03	0.91–0.99
P. geminus	6	2.47–2.63	0.80–0.90	0.38–0.44	0.80–0.92	0.87–1.23
P. gracilis	10	2.56–3.14	0.90–1.06	0.42–0.54	0.92–1.18	0.84–1.17
P. schaffneri	1	2.58	0.83	0.42	1.05	1.13
P. stonedahli	16	2.63–3.05	0.89–1.02	0.45–0.52	0.90–1.24	1.12–1.35
P. balli	3	2.54–2.70	0.84–0.88	0.49–0.51	1.10–1.16	1.05–1.06
P. brunneus	29	2.35–2.94	0.80–0.95	0.36–0.45	0.98–1.25	0.95–1.42
P. chiricahuae	4	2.87–3.13	0.87–0.92	0.40–0.44	0.97–1.16	1.20–1.39
P. clavatus	14	3.05–3.65	1.01–1.13	0.48–0.55	1.24–1.52	1.68–1.85
P. discretus	10	2.50–2.81	0.81–0.89	0.40–0.47	0.88–1.02	1.13–1.32
P. explanatus	3	2.34–2.53	0.80–0.87	0.45–0.48	1.01–1.12	0.98–1.04
P. longisetosus	10	2.77–3.04	0.88–0.98	0.45–0.47	1.06–1.18	1.12–1.29
P. minutus	2	2.54–2.57	0.80–0.81	0.41	0.96–0.98	1.05–1.07
P. neoclavatus	10	2.97–3.46	0.92–1.04	0.42–0.48	1.22–1.40	1.47–1.74
P. nevadensis	11	2.90–3.29	1.05–1.14	0.55–0.58	1.18–1.31	1.34–1.65
P. perplexus	10	3.01–3.34	0.99–1.08	0.47–0.54	1.16–1.37	1.39–1.64
P. salicis	11	2.94–3.32	0.98–1.11	0.46–0.55	1.14–1.36	1.45–1.84
P. schwarzi	10	2.92–3.31	0.95–1.06	0.46–0.52	1.00–1.30	1.28–1.63
P. setiger	8	2.84–3.04	0.85–0.92	0.41–0.46	1.12–1.24	1.22–1.39
P. tomentosus	10	2.65–3.23	1.02–1.10	0.54–0.59	0.99–1.27	1.28–1.68
P. vicarius	11	2.94–3.41	0.92–1.13	0.42–0.59	1.09–1.23	1.27–1.54
P. walshii	20	2.50–2.72	0.79–0.89	0.40–0.46	1.00–1.25	0.92–1.19
S. araguaiana	10	1.42–1.74	0.51–0.66	0.29–0.35	0.71–0.92	0.50–0.74
S. carmelitana	8	1.65–1.85	0.67–0.71	0.36–0.41	0.85–0.93	0.66–0.75
S. carvalhoi	6	1.33–1.71	0.51–0.66	0.28–0.36	0.66–0.86	0.53–0.70
S. hansoni	7	1.25–1.56	0.56–0.63	0.31–0.36	0.72–0.80	0.57–0.64

TABLE 1—(*Continued*)

Taxon	N	Apex tylus–cuneal fracture	Width head	Interocular space	Width pronotum	Length antennal segment 2
S. maldonadoi	10	1.45–1.69	0.58–0.65	0.30–0.32	0.71–0.77	0.60–0.74
S. rondonia	2	1.74–1.89	0.69	0.39–0.40	0.81–0.85	0.61–0.65
S. vulgaris	10	1.43–1.98	0.54–0.74	0.31–0.37	0.71–0.99	0.54–0.89

DURAS: La Ceiba. JAMAICA: **St. Ann's Par.:** Roaring River Falls; Moneaque; 1 mi S of Moneaque. **St. Catharine Par.:** 4.4 mi ENE of Worthy Pk. **Par. ?:** Mandeville; Montego Bay; Blue Mountains, Yallahs Valley; St. Andrew, Hope Botanical Garden; Sharp's Grove near Chapelton; Kingston; Try., Duncans; Hardwar Gap; Good Hope. MARTINIQUE: Font-Marie-Reine, La Riviere Capot; 6 mi W of Vauclin. MEXICO: **Chiapas:** 4 mi SW of Simojovel. **Colima. Guerrero:** Acahuizotla; Chilpancingo. **Nayarit:** Compostela. **Oaxaca:** 3 mi NE of Putla, at light. **San Luis Potosi:** 2 km E of Xolol; 1 km E of Xolol between Ciudad Valles and Tamazunchale; El Bonito, 7 mi S of Ciudad Valles, 300 ft; 3 mi E of Terrazas; 1 mi W of Tamazunchale; 6 mi S of Tamazunchale; Xilitla, 1800 ft. **Vera Cruz:** 3 mi E of Papantla; Fortin de las Flores; Los Tuxtlas; 1 mi W of Papantla; Cordoba; 11 mi S of Misantla; Catemaco, 7 mi SE of Veracruz; Lk. Catemaco. **State ?:** Isla Mujeres. NETHERLANDS ANTILLES: **Curaçao:** Groot St. Joris. **Saba:** Rendez-vouz; Hellsgate; Windwardside. NICARAGUA: Puerto Cabezas; Santo Maria de Ostuma. PANAMA: Chiriqui, Boquete Trail. PERU: **Cuzco:** Machu Picchu. **Herrera:** Ocu. **Huanuco:** 40 mi S of Tingo Mario, Carpish Mts.; Tingo Maria, Monzon Valley; 10 mi SW of Las Palmas. **Ica Dept:** Ica and Canete. **Junin Dept.:** San Ramon, Estancia Naranjal; Anapati, 50 km SE of Satipo, 800–900 m; San Ramon de Pangoa, 40 km SE of Satipo; 40–55 km SE of Satipo. **Lima Dept.:** Lima; Bella Vista, Callao; Huacho. **Loreto Dept:** 10 km NW of Pucallpa, Yarinacocha. **San Martin:** Tarapoto. **Dept.?:** Chancay. PUERTO RICO: Rio Piedras; Arecibo; Mayaguez; Bayamon, Stanwood Grove; Maricao; Naguabo; Aibonito; Coamo Springs. ST. VINCENT: Leeward side. TRINIDAD AND TABAGO: Port of Spain; Friendship Estate; La Brea. USA: **Florida:** *Broward Co.:* 1.3 mi N of Lake Worth Rd on Rt 441. *Dade Co.:* Everglades, Oasis; Homestead; Miami Springs. *Highlands Co.:* Lake Placid. *County ?:* Royal Palm Pk. **Texas:** *Cameron Co.:* Brownsville. VENEZUELA: **Aragua:** Rancho Grande, 20 km NW of Maracay, 1100 m. **Carabobo:** Pataremo Beach; Las Veultas, Mariara. VIRGIN ISLANDS: **St. Croix:** Hamilton Field; Christiansted. **St. Thomas:** Magens Bay.

DISCUSSION: Distant (1893) described *Jornandes vulgaris* on the basis of five specimens from Guatemala and Mexico. Carvalho and Dolling (1976: 810) designated a lectotype for *vulgaris*. Carvalho (1952: 17) synonymized *vulgaris* (which was not the type of *Jornandes*) with *Chlamydatus associatus* (Uhler). Our examination of the lectotype and other specimens examined by Distant indicates that *vulgaris* is actually a *Sthenaridea* species. Comparison with other *Sthenaridea* species from the New World shows that *vulgaris* is the senior synonym of *Psallus politus* Uhler, which was treated as the senior synonym of *Sthenarus plebejus* Reuter, 1907, by Henry (1985: 1127).

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