

SIX NEW SPECIES OF *ACANTHOSCELIDES* FROM
NORTH AND CENTRAL AMERICA
(COLEOPTERA: BRUCHIDAE)

CLARENCE DAN JOHNSON

Department of Biological Sciences, Northern Arizona University,
Flagstaff, AZ 86011-5640, U.S.A.

ABSTRACT

The species *Acanthoscelides andrewsi* (Mexico), *A. aureoliaster* (Mexico), *A. comstocki* (Texas), *A. guatemala* (Guatemala, Mexico), *A. hespenheidei* (Costa Rica), and *A. zacatlan* (Mexico) are described as new. *Acanthoscelides comstocki* feeds in the seeds of the legume genus *Eysenhardtia*, *A. hespenheidei* feeds in the seeds of another legume genus, *Stryphnodendron*, and *A. guatemala* feeds in the seeds of the genus *Chiranthodendron* in the family Sterculiaceae.

Since the publication of the revision of the *Acanthoscelides* of southern Mexico and Central America (Johnson 1983), several new species of *Acanthoscelides* have been found from the United States to Costa Rica. Six of these new species are described here. Because the host plants of three of these are known, these host records will be of value in ecological, biogeographical and evolutionary studies.

Acanthoscelides andrewsi Johnson, **new species**
(Figs. 1-5)

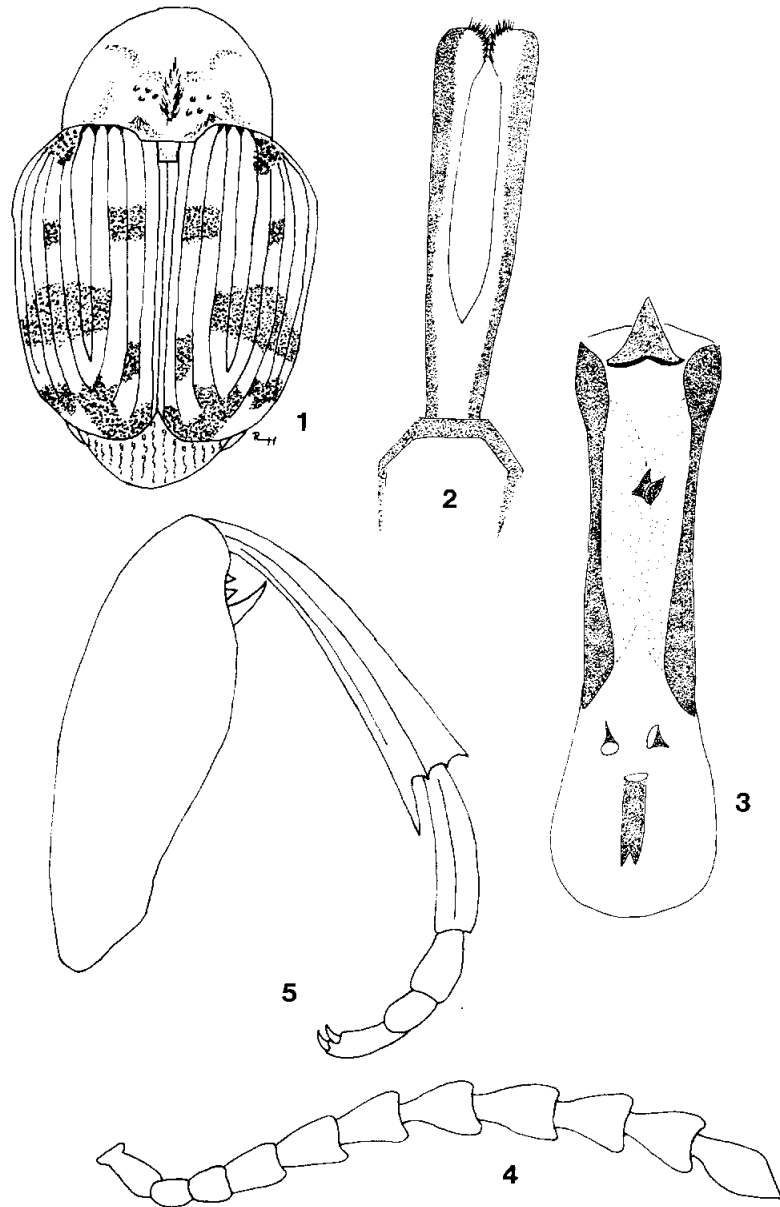
Length (pronotum-elytra) 2.3 mm. Width 1.5 mm. Maximum thoracic depth 1.2 mm.

MALE. *Integument color:* Head, pronotum and undersurfaces of thorax black; antennae, legs, pygidium and elytra red orange except base of each hind femur and mediolateral spot on each elytron black.

Vestiture: With recumbent white, golden, yellow and brown hairs as follows. Eye with medial fringe of white hairs; postocular lobe with short white hairs; postocular patch of dense white hairs; remainder of head with moderately dense white pubescence. Pronotum with dense yellow hairs interrupted on either side of midline with vague stripes of brown hairs. Elytron with dense yellow hairs interrupted by small patch of brown hairs about 0.25 distance from base between striae 1 and 4, a large patch of brown hairs about 0.5 distance from base between striae 4 and 10, a small patch of brown hairs 0.3 distance from apex between striae 2 and 3, apex almost covered with patches of brown hairs. Undersurfaces, pygidium and appendages covered with dense white hairs (Fig. 1).

Head: Moderately elongate, densely punctulate; frons with median, slightly raised, glabrous line extending from frontoclypeal suture to vertex; vague transverse sulcus between upper limits of eyes; width of eye slightly wider than width of frons; ocular sinus about 0.6 as long as eye; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded; distance from base of antenna to apex of labrum about 0.5 as long as distance from upper limit of eye to apex of labrum; antennal segments 1 and 3 filiform, 2 moniliform, 4-11 only slightly eccentric, about twice as long as broad, 11 subacute apically (Fig. 4); antenna extending to about 0.25 length of elytron.

Prothorax: Disk subcampanulate with many coarse punctures in no apparent pattern; cervical sulcus moderately deep, extending from near coxal cavity to about 0.6 distance



Figs. 1-5. *Acanthoscelides andrewsi*. 1, dorsal aspect. 2, lateral lobes, ventral view. 3, median lobe, ventral view. 4, antenna. 5, hind leg.

to pronotal midline; lateral prothoracic carina extending about 0.3 distance to coxal cavity; short median impressed line on median basal lobe obscured by pubescence; prosternum separating procoxae for about 0.7 their length; prothoracic legs unmodified.

Mesothorax and Metathorax: Scutellum small, bifurcate at apex, clothed with dense white pubescence to give quadrate appearance. Elytron about twice as long as broad; striae moderately impressed, punctate, striae intervals punctulate; striae 3 and 4 closer to each other at base than to adjacent striae, others subequal at base, striae 3 and 4 abbreviated at base by flattened acuminate spines (Fig. 1); humerus punctulate. Undersurfaces punctate, especially lateral margin of thorax. Mesothoracic legs unmodified; all of hind coxa punctate. Hind femur constricted apically and basally, expanded medially to slightly wider than width of coxa (Fig. 5); undersurface of femur with carina on inner margin; femur armed on inner edge with subapical acuminate spine about 1.4 times as long as width of tibial base, followed by 2 spines about 0.3 as long as first spine (Fig. 5). Hind tibia with ventral, lateral and dorsomesal glabrous longitudinal carinae, lateroventral carina vague; dorsal surface without fossa; corona with 4 spinules; mucro about 0.3 as long as tarsomere 1, with shallow sinus at base (Fig. 5). Hind tarsomere 1 with ventral, lateral, and vague mesal, glabrous longitudinal carinae.

Abdomen: Sterna not flattened medially; sternum 1 about 0.7 as long as abdomen, posterior margin straight; sterna 2-4 unmodified, 5 deeply emarginate. Pygidium punctate, convex in lateral view.

Genitalia (Figs. 2, 3): Median lobe moderately elongate; in ventral view, ventral valve acuminate at apex, triangular, sides straight, base of ventral valve about 0.6 as wide as apex of median lobe; arcuate in lateral view. Armature of internal sac with small forked spine near base, two small somewhat triangular spines and an elongate forked spine near apex (Fig. 3). Lateral lobes expanded slightly at apex, cleft to about 0.6 their length (Fig. 2).

FEMALE. None available.

HOST PLANT. Unknown.

TYPE SERIES. Holotype male: MEXICO. Nayarit: 12 mi. NW Tepic, VII-6-1982, Fred G. Andrews, collector.

Holotype deposited in the California Academy of Sciences on permanent loan from the California Department of Food and Agriculture.

DISCUSSION. *Acanthoscelides andrewsi* is in the Puellus species group (Johnson 1983). This species is distinguished from other species in the group by the following combination of characters: the antennae are all red orange, antennal segments 1 and 3 are filiform and 2 is moniliform, 4-11 are only slightly eccentric and they are about twice as long as broad, 11 is subacute apically.

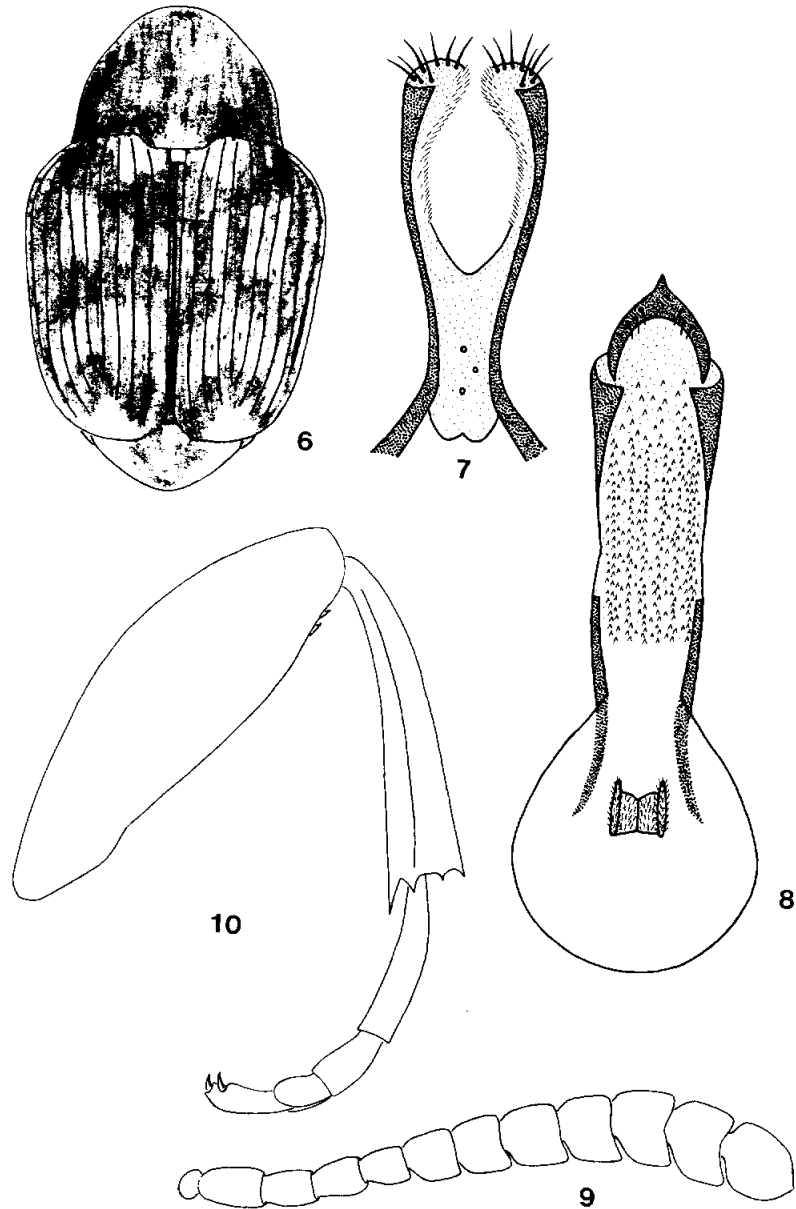
Acanthoscelides andrewsi can be distinguished from other members of the genus by the following combination of characters: the scutellum is small, is bifurcate at its apex, and it is covered with dense white pubescence to give it a quadrate appearance; elytral striae 3 and 4 are closer to each other at base than they are to adjacent striae (the other striae are subequal at their bases) and striae 3 and 4 are abbreviated at their bases by flattened acuminate spines; there are black mediolateral spots on the elytra; sternum 1 makes up about 0.7 the length of the abdomen; and the structures of the male genitalia are unique (Figs. 2, 3).

This species is named in honor of my friend Fred Andrews, the collector of the only specimen.

Acanthoscelides aureoliaster Johnson, new species

(Figs. 6-10)

Length (pronotum-elytra) 1.5-1.8 mm. Width 1.0-1.1 mm. Maximum thoracic depth 0.8-0.9 mm.



Figs. 6–10. *Acanthoscelides aureoliaster*. 6, dorsal aspect. 7, lateral lobes, ventral view. 8, median lobe, ventral view. 9, antenna. 10, hind leg.

MALE. *Integument color:* Usually head, apical 7 antennal segments, body and appendages black; basal 4 antennal segments red orange; sometimes appendages all black or legs dark brown.

Vestiture: With recumbent white, golden, yellow and brown hairs as follows. Eye with medial fringe of white hairs; postocular lobe with short white hairs; dense postocular patch of white hairs; remainder of head with sparse white pubescence. Pronotum with moderately dense intermixed white and golden hairs. Elytron (Fig. 6) with moderately dense white hairs; humerus black. Undersurfaces and appendages with moderately dense to dense white hairs; pygidium with dense white hairs at base, remainder with moderately dense white hairs.

Head: Short, densely punctulate; frons with median glabrous line or carina extending from frontoclypeal suture to vertex; usually with vague transverse sulcus between upper limits of eyes; width of eye about 1.1 times width of frons; ocular sinus about 0.7 as long as eye; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded; distance from base of antenna to apex of labrum about 0.5 as long as distance from upper limit of eye to apex of labrum, antennal segments 1-4 moniliform to filiform, 5-10 eccentric, 11 subacute apically, 5-11 slightly broader than long (Fig. 9); antenna extending to 0.3 length of elytron.

Prothorax: Disk campanulate because lateral margins near apex swollen, pronotum with many punctures in no apparent pattern; cervical sulcus moderately deep, extending from near coxal cavity to about 0.6 distance to pronotal midline; lateral prothoracic carina extending from base about 0.3 distance to coxal cavity; short median impressed line on median basal lobe; prosternum separating procoxae for about 0.7 their length; prothoracic legs unmodified.

Mesothorax and Metathorax: Scutellum small, bifurcate at apex, clothed with dense white pubescence to give quadrate appearance. Elytron about twice as long as broad; striae moderately impressed, punctate, strial intervals punctulate; striae subequal at base; humerus smooth. Undersurfaces punctulate, especially lateral margins of thorax. Mesothoracic legs unmodified; all of hind coxa punctate. Hind femur constricted basally and apically, expanded medially to about width of coxa (Fig. 10); undersurface of femur with vague carina on inner margin; femur armed on inner edge with 2 or 3 subapical acuminate spines about 0.5 as long as width of tibial base (Fig. 10). Hind tibia with vague ventral, lateral and dorsomesal glabrous longitudinal carinae, lateroventral carina absent; dorsal surface without fossa; corona with 3 spinules; mucro about 0.1 as long as tarsomere 1, without sinus at base. Hind tarsomere 1 with vague ventral glabrous longitudinal carina, lateral and mesal carinae absent.

Abdomen: Sternum 1 with slight medial depression covered with dense white hairs, elongated white hairs projecting posteriorly beyond apex of sternum, sternum 1 about 0.6 as long as abdomen; sterna 2-4 unmodified, 5 deeply emarginate. Pygidium punctulate, convex in lateral view.

Genitalia (Figs. 7, 8): Median lobe moderate in length; in ventral view, ventral valve acuminate at apex, sides straight to convex, base of ventral valve about 0.9 as wide as apex of median lobe; arcuate in lateral view. Armature of internal sac with many fine spicules lining sac from base to middle, paired slightly pubescent structure near apex (Fig. 8). Lateral lobes expanded at apex, cleft to about 0.6 their length (Fig. 7).

FEMALE. Similar to male except first abdominal sternum without depression and hairs; abdominal sternum 5 not emarginate at apex.

HOST PLANT. Unknown.

TYPE SERIES. Holotype male and three paratypes: MEXICO. Mexico: Atacomulco, 8,500', 18-VIII-1954, J. G. Chillcott, collector.

Holotype and one paratype deposited in the Canadian National Collection of Insects, Ottawa. One paratype each deposited in the United States National Museum of Natural History, Washington, D.C., and the C. D. Johnson Collection, Flagstaff, Arizona.

DISCUSSION. *Acanthoscelides aureoliaster* is in the *Pusillimus* species group (Johnson 1983). This species bears a superficial resemblance to *Acanthoscelides*

aureolus, hence the name. From other species in the genus it differs by having unique male genitalia (Figs. 7, 8) and the following combination of characters: antenna that extends to 0.3 the length of the elytron, the disk of the prothorax is campanulate because the lateral margins near the apex are swollen, the hind femur is armed on its inner edge with 2 or 3 subapical acuminate spines about 0.5 as long as the width of the tibial base (Fig. 10), the mucro is about 0.1 as long as the tarsomere 1 and it lacks a sinus at its base, abdominal sternum 1 has a slight medial depression which is covered with dense white hairs and there are elongated white hairs projecting posteriorly beyond the apex of the sternum.

The specific epithet *aureoliaster* is a noun in apposition to *Acanthoscelides*.

Acanthoscelides comstocki Johnson, **new species**

(Figs. 11–15)

Length (pronotum-elytra) 1.3–2.0 mm. Width 0.8–1.2 mm. Maximum thoracic depth 0.7–1.0 mm.

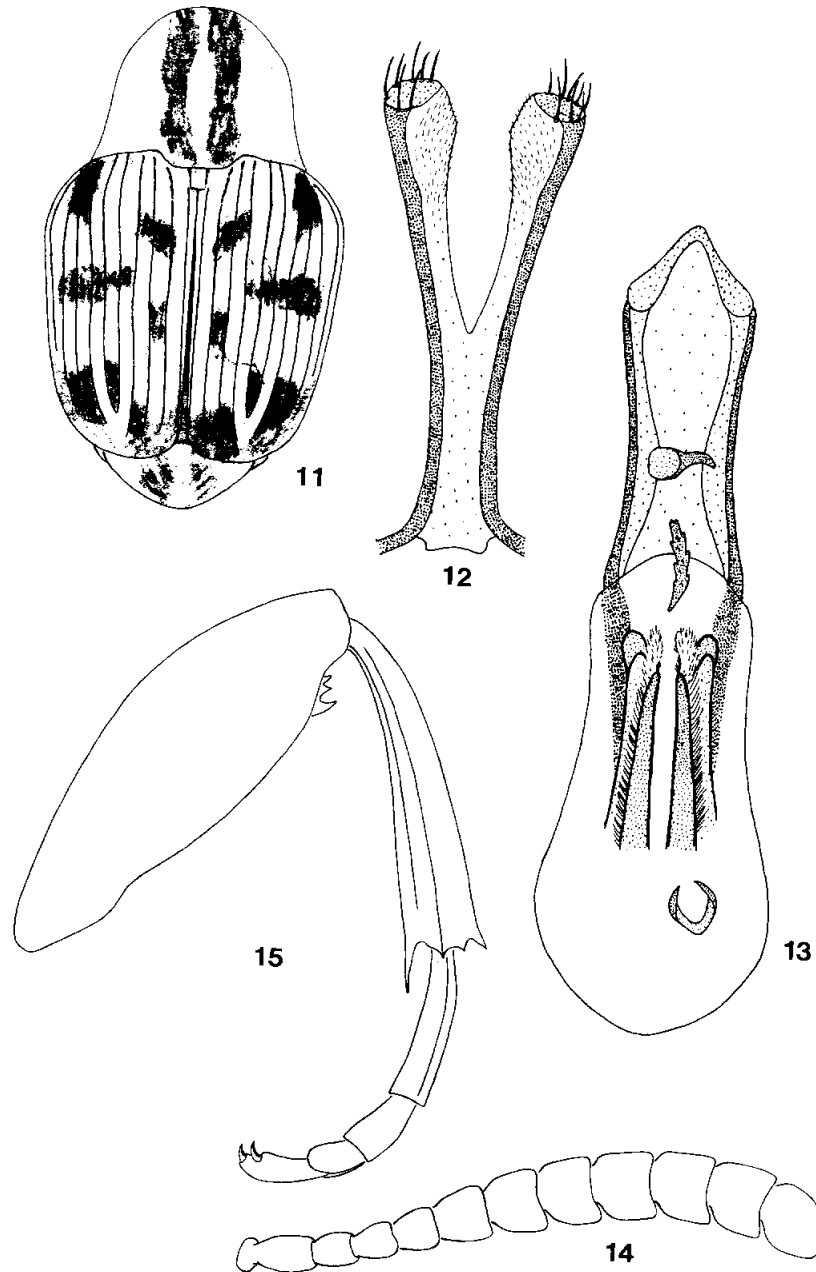
MALE. Integument color: Head black, basal 3 or 4 antennal segments red orange to dark brown, apical 7 or 8 black; prothorax and undersurfaces black; elytra red orange except humerus black; procoxae and sometimes hind tarsi and basal 0.1 of legs brown to black, usually legs all red orange except for procoxae.

Vestiture: With recumbent white, golden, light brown or intermixed white and golden hairs as follows. Eye with medial fringe of sparse white hairs; postocular lobe with short white setae; postocular patch of dense white hairs, remainder of head with moderately dense white or golden pubescence. Pronotum usually with vague medial line of dense white hairs flanked on either side by vague stripes of light brown hairs, remainder of pronotum with dense white hairs, sometimes intermixed white and light brown hairs on dorsal surface (Fig. 11). Elytron clothed with dense white pubescence interrupted by broad bands of light brown hairs about 0.25 and 0.5 distance from base and at apex (Fig. 11). Undersurfaces and pygidium clothed with dense white pubescence; lateral 0.2–0.25 of hind coxa with very dense white pubescence; legs with sparse white pubescence.

Head: Short and broad, densely punctulate; frons with median glabrous elevated line extending from frontoclypeal suture to vertex; usually vague transverse sulcus between upper limits of eyes; distance between eyes about 0.5 as wide as eye width; eye cleft to 0.6 its length by ocular sinus; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded; distance from base of antenna to apex of labrum about 0.5 as long as distance from upper limit of eye to apex of labrum; antennal segment 1 filiform, 2 and 3 moniliform to filiform, 4–10 usually eccentric, 11 subacute apically; 4 about as long as broad, 5–10 slightly broader than long, 11 longer than broad (Fig. 14); antenna extending to humerus or slightly beyond.

Prothorax: Disk campanulate, punctulate with many scattered coarser punctures; narrow punctulate fringe at apex; cervical sulcus moderately deep, extending from near coxal cavity to about 0.6 distance to pronotal midline; lateral prothoracic carina extending from base to 0.4 distance to coxal cavity; short median impressed line on median basal lobe usually obscured by pubescence; prosternum separating procoxae for about 0.7 their length; prothoracic legs unmodified.

Mesothorax and Metathorax: Scutellum black, small, slightly longer than broad, bifurcate at posterior margin, clothed with moderately dense to dense recumbent white pubescence. Elytron about twice as long as broad; striae deep, punctate, strial intervals punctulate; striae 3 and 4 closer to one another at base than to adjacent striae, other striae subequal at base; humerus punctulate, glabrous, shiny black. Undersurfaces and all of hind coxa punctulate, metepisternum with some coarser punctures. Mesothoracic legs unmodified. Hind femur constricted basally and apically, expanded medially to about width of coxa (Fig. 15); inner ventral surface with vague carina; femur armed on inner edge with subapical acuminate spine about as long as width of tibial base and followed by 2 acuminate spines about 0.5 as long as first spine. Hind tibia with ventral,



Figs. 11–15. *Acanthoscelides comstocki*. 11, dorsal aspect. 12, lateral lobes, ventral view. 13, median lobe, ventral view. 14, antenna. 15, hind leg.

lateroventral, lateral and dorsomesal glabrous longitudinal carinae; dorsal surface without fossa; corona with 3 or 4 spinules, dorsal spine with slight sinus at base; mucro about 0.3 as long as tarsomere 1 (Fig. 15); without sinus at base. Hind tarsomere 1 with ventral, lateral and mesal glabrous longitudinal carinae.

Abdomen: Sternum 1 slightly flattened medially, about as long as remaining sterna, with dense round patch of white hairs on midline near base; posterior margin straight; sterna 2–4 unmodified, 5 emarginate. Pygidium punctate, convex in lateral view.

Genitalia (Figs. 12, 13): Median lobe moderate in length; in ventral view, ventral valve acuminate at apex, sides concave, base of ventral valve about 0.8 as wide as apex of median lobe; arcuate in lateral view. Middle of internal sac with round spine with an acuminate projection on one side; an elongate spine with many fine spines about 0.66 from base; apex with large, paired, slightly pubescent structure (Fig. 13). Lateral lobes expanded at apex, cleft to about 0.6 their length (Fig. 12).

FEMALE. Similar to male but first abdominal sternum without dense patch of white hairs on midline near base; last sternum subemarginate at apex.

HOST PLANT. *Eysenhardtia texana* Scheele (Leguminosae). Also see under Type Series below.

TYPE SERIES. Holotype male, allotype female and many paratypes: UNITED STATES. Texas: Comstock, V-21-1957 (L. J. Bottimer #100E), *Eysenhardtia texana* Scheele.

Holotype, allotype and many paratypes deposited in the Canadian National Collection of Insects, Ottawa. Other paratypes deposited in the United States National Museum of Natural History, Washington, D.C., and the C. D. Johnson Collection, Flagstaff, Arizona.

DISCUSSION. *Acanthoscelides comstocki* is in the Puellus species group (Johnson 1983). This species most closely resembles *Acanthoscelides pallidipennis* (Motschulsky) in its external features, but has a mucro that is about 0.3 as long as the tarsomere 1 instead of 0.25 as long. The male genitalia are distinctly different because *A. comstocki* has 2 distinct spines in the internal sac in addition to the large paired structure. Its host preferences also separate it because this is the first verified record of a New World species of bruchid that feeds in the seeds of a species of *Eysenhardtia*.

The specific epithet *comstocki* is derived from type locality, a town in Texas.

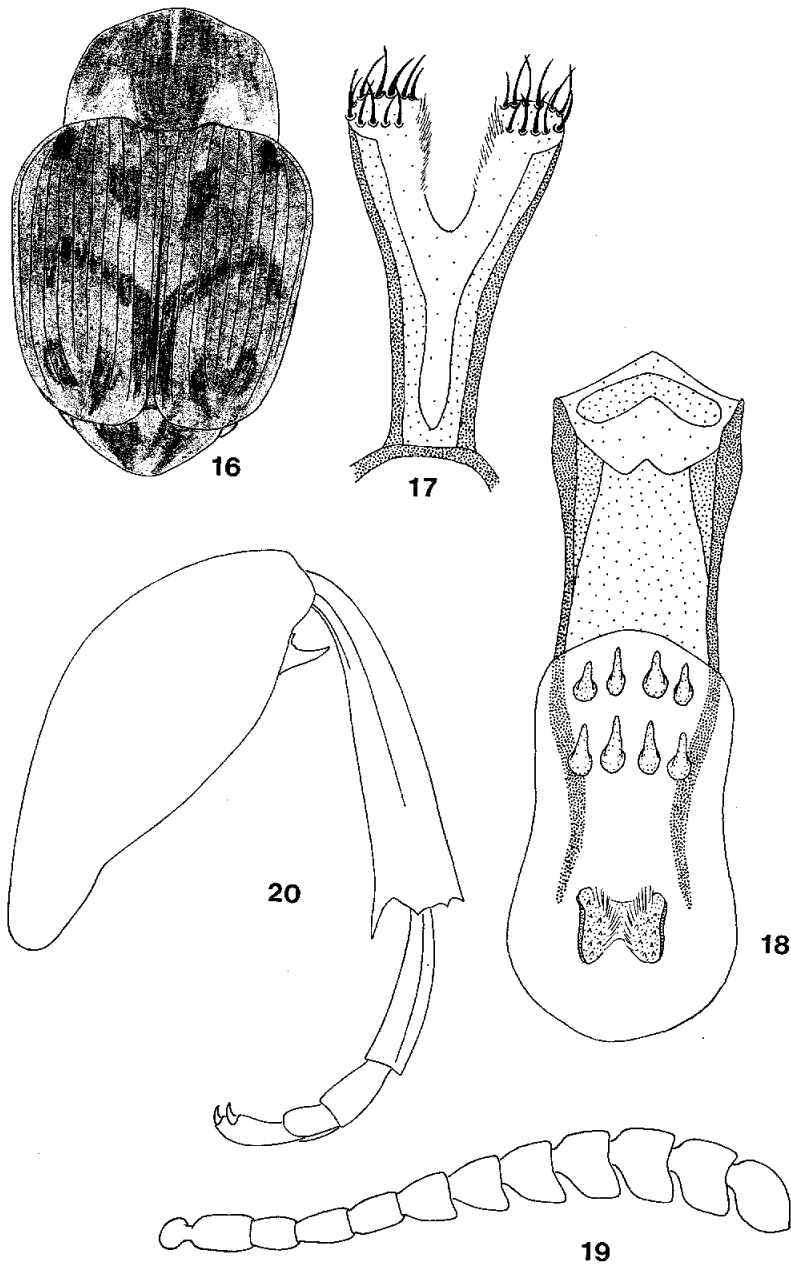
This species was referred to as *Acanthoscelides* sp. #9 by Johnson (1979: 69).

Acanthoscelides guatemala Johnson, **new species**
(Figs. 16–20)

Length (pronotum-elytra) 2.7–2.8 mm. Width 1.7–1.9 mm. Maximum thoracic depth 1.3–1.4 mm.

MALE. Integument color: Head black, elytra dark chocolate brown; pronotum varying from mostly all red orange with small chocolate brown spots to mostly chocolate brown with small red orange spots; antennae varying from all red orange to basal 4 segments red orange and apical 7 light brown; undersurfaces of thorax chocolate brown; abdomen and legs red orange, sometimes base of hind femur dark brown; pygidium dark brown.

Vestiture: With recumbent white and brown hairs as follows. Eye with medial fringe of white hairs; postocular lobe with short white hairs; postocular patch of white hairs; remainder of head with sparse intermixed white and brown hairs. Pronotum with moderately dense patches of white and brown hairs in no discernible pattern (Fig. 16). Elytron with moderately dense brown hairs interrupted by patches of white hairs near base between striae 4–6, a small patch of white hairs between striae 2–3 about 0.4 distance from base, and a vague band of white hairs about 0.3 distance from apex (Fig. 16). Antennae, legs and undersurfaces with moderately dense to dense white hairs; pygidium with moderately dense white and brown hairs.



Figs. 16–20. *Acanthoscelides guatemala*. 16, dorsal aspect. 17, lateral lobes, ventral view. 18, median lobe, ventral view. 19, antenna. 20, hind leg.

Head: Moderate in length, densely punctulate; frons with median glabrous carina extending from frontoclypeal suture to vertex; vague transverse sulcus between upper limits of eyes; width of eye slightly wider than width of frons; ocular sinus about 0.5 as long as eye; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded; distance from base of antenna to apex of labrum about 0.5 as long as distance from upper limits of eyes to apex of labrum; antennal segments 1-4 filiform to moniliform, 5-10 eccentric, 11 subacute apically and longer than broad, 6-10 about as broad as long (Fig. 19); antenna reaching to base of elytron or slightly beyond.

Prothorax: Disk campanulate, almost rectangular because lateral margins near apex swollen, with many punctuations in no apparent pattern; cervical sulcus shallow, extending from near coxal cavity to about 0.6 distance to pronotal midline; lateral prothoracic carina vague, extending from base to about 0.6 distance to coxal cavity; short median impressed line on median basal lobe; prosternum separating procoxae for about 0.8 their length; prothoracic legs unmodified.

Mesothorax and Metathorax: Scutellum small, bifurcate at apex, quadrate, with dense white hairs. Elytron about twice as long as broad; striae moderately impressed, punctate, stria intervals punctulate; striae subequal at base, without spines at bases of striae (Fig. 16); humerus black, punctate. Undersurfaces with uniform fine punctulations. Mesothoracic legs unmodified; all of hind coxa punctate. Hind femur constricted basally and apically, expanded medially to about width of coxa (Fig. 20); undersurface of femur with carina on inner margin; femur armed on inner edge with subapical acuminate spine slightly longer than width of tibial base, without additional spines (Fig. 20). Hind tibia with ventral, lateral and dorsomesal glabrous longitudinal carinae, lateroventral carina vague; dorsal surface without fossa; corona with 3 spinules; mucro about 0.25 as long as tarsomere 1, without sinus at base. Hind tarsomere 1 with ventral, lateral and mesal glabrous longitudinal carinae.

Abdomen: Sterna slightly flattened medially; sternum 1 about 0.5 as long as abdomen, posterior margin straight; sterna 2-4 unmodified, 5 emarginate. Pygidium punctulate, convex in lateral view.

Genitalia (Figs. 17, 18): Median lobe moderate in length; in ventral view, ventral valve slightly acuminate at apex, sides slightly concave, base of ventral valve about 0.8 as wide as apex of median lobe; slightly arcuate in lateral view. Armature of internal sac with 8 spines near middle (Fig. 18) and a paired slightly pubescent structure at apex. Lateral lobes expanded at apex, cleft to about 0.4 their length (Fig. 17).

FEMALE. Similar to male except abdominal sternum 5 only slightly emarginate.

HOST PLANTS. *Chiranthodendron pentadactyla* Larréategui, *C. platanoides* Humb. & Bonpl. and *Chiranthodendron* sp. (Sterculiaceae). Also see under Type Series below.

TYPE SERIES. Holotype male, allotype female, and many paratypes: GUATEMALA. Volcan de Agua, Quarantine, D.C., 27 March 1920. F.H.B. #29973. H.Y. Gouldman, W. Popenoc. Reared seeds *Chiranthodendron pentadactyla*. Other paratypes listed below.

Guatemala: Volcan de Agua, intercepted In Quarantine, D.C., 27 March 1920. F.H.B. #29973. H.Y. Gouldman, W. Popenoc. *Chiranthodendron pentadactyla* Larréategui.

Mexico: Intercepted N.Y. 80696, 3-14-39. *C. pentadactylon* (sic) Larréategui.

Guatemala: In Quarantine, intercepted in West Los Angeles, CA, Feb. 20, 1948, Cal. Dept. Agr. No. 480333, Caldwell, collector. *C. platanoides* Humb. & Bonpl. In Quarantine, intercepted in Los Angeles, CA, Feb. 20, 1948, Cal. Dept. Agr. No. 48B267, Caldwell, collector. *C. platanoides* Humb. & Bonpl.

Mexico: Oaxaca. Intercepted Laredo, Tex., 13-IV-53, No. 53-7354, Lewis, collector. *Chiranthodendron* sp.

Holotype, allotype and many paratypes deposited in the United States National Museum of Natural History. Several paratypes deposited in the collec-

tion of the California Department of Agriculture, Sacramento, and in the C. D. Johnson Collection, Flagstaff, Arizona.

DISCUSSION. *Acanthoscelides guatemala* is in the *Albopygus* species group (Johnson 1983).

The hosts are in the family Sterculiaceae, a known host of bruchids, but not a common one. The only other species in this family that has been reliably reported to be a host for bruchids is *Guazuma ulmifolia* Lam. (Johnson 1983). *Chiranthodendron pentadactyla* (as *pentadactylon*, Mabberley 1987) presumably is a senior synonym of *C. platanoides*. According to the labels on the insects, the common name of the plant is "Tayuy."

Acanthoscelides guatemala is distinguished from its near relatives in the *Albopygus* group by having the following combination of characters: unique male genitalia; pronotum varying from mostly all red orange with small chocolate brown spots to mostly chocolate brown with small red orange spots; disk of prothorax campanulate, almost rectangular because the lateral margins near the apex are swollen; the scutellum is small, quadrate and covered with dense white hairs; and the hind femur is armed on its inner edge with one subapical acuminate spine that is slightly longer than the width of the tibial base (Fig. 20) and the mucro is about 0.25 as long as the tarsomere 1 and without a sinus at the base. In its external coloration structures it is near *Acanthoscelides elevatus* (Sharp).

The specific epithet *guatemala* is a noun in apposition to *Acanthoscelides*.

Acanthoscelides hespenheidei Johnson, **new species**
(Figs. 21–25)

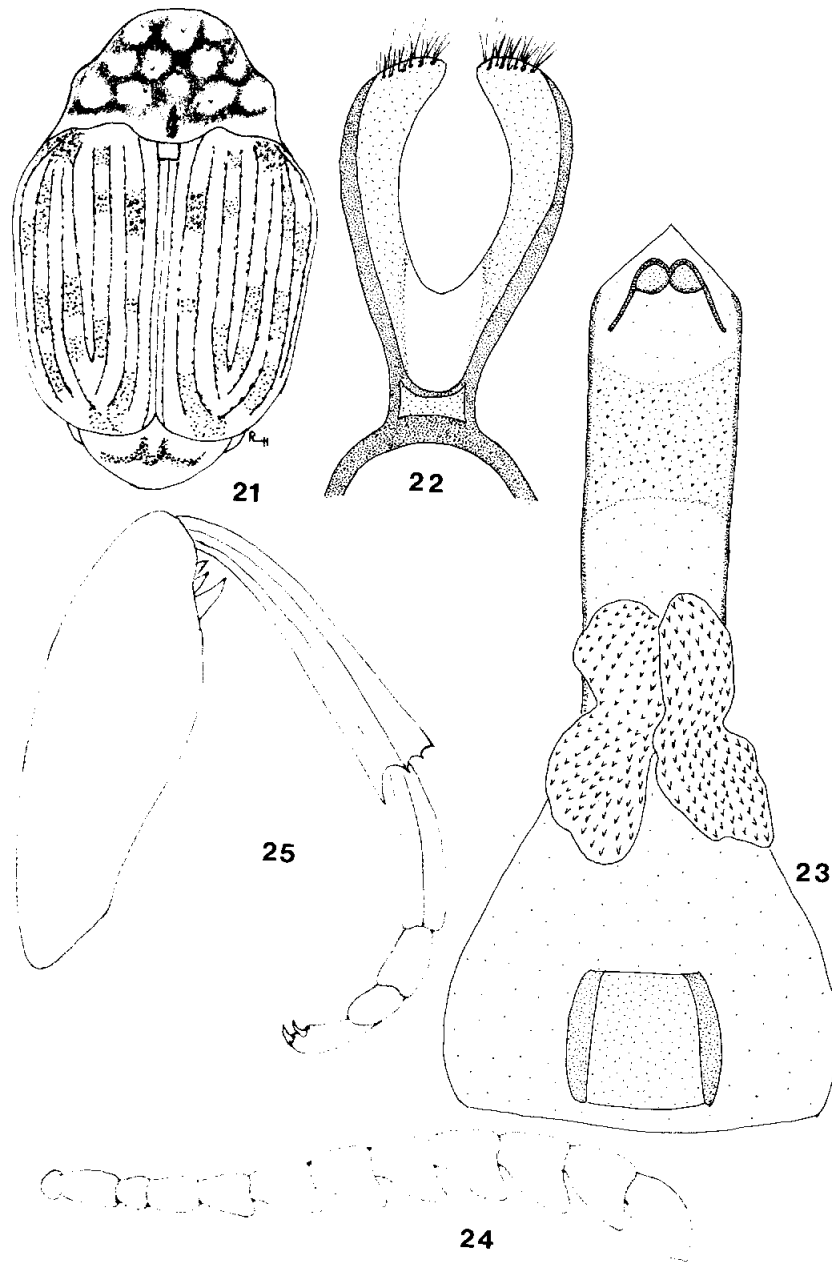
Length (pronotum-elytra) 2.9–3.3 mm. Width 2.0–2.3 mm. Maximum thoracic depth 1.6–1.7 mm.

MALE. Integument color: Head, body and appendages varying from all red orange to dark brown with legs light brown with red orange maculations, antennae all red orange except segments 8–10 brown; pygidium red orange.

Vestiture: With recumbent white, golden, yellow and brown hairs as follows. Eye with medial fringe of white or golden hairs; postocular lobe with short white hairs; dense postocular patch of white to yellow hairs; remainder of head with dense white or golden hairs. Pronotum with dense yellow hairs interrupted on either side of midline by glabrous spots about 0.25 and 0.5 distance from apex and one each opposite bases of striae 2 and 4 (Fig. 21). Elytron with dense white, yellow and dark brown hairs in the following pattern: basal 0.25 with dense yellow hairs; strial intervals between striae 1 and 2, 3 and 4, 5 and 6, 7 and 8 with dense yellow hairs; intervals between striae 2 and 3, 4 and 5, 6 and 7, and 8 and 9 with dark brown hairs interrupted by dense patches of white hairs forming vague bands about 0.3, 0.5 and 0.7 distance from base. Antennae, legs and undersurfaces with moderately dense to dense white or yellow hairs; pygidium with dense white to yellow hairs interrupted by a medial patch of brown hairs (Fig. 21).

Head: Slightly elongate, densely punctulate; frons with median glabrous carina extending from frontoclypeal suture to vertex with glabrous, sometimes triangular, area at termination of carina; vague transverse sulcus between upper limits of eyes; width of eye about 1.2 wider than frons; ocular sinus about 0.5 as long as eye; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded; distance from base of antenna to apex of labrum about 0.5 as long as distance from upper limit of eye to apex of labrum; antennal segments 1–4 filiform to moniliform, 5–10 eccentric, 11 subacute apically and longer than broad, 6–10 broader than long (Fig. 24); antenna reaching to base of elytron or slightly beyond.

Prothorax: Disk subcampanulate with many coarse punctuations in no apparent pattern; with deep U-shaped sulcus, arms at apex and bottom of U about 0.6 distance from apex (Fig. 21); four large, glabrous, impunctate gibbosities at base across from elytral striae 2 and 4 (Fig. 21); cervical sulcus moderately deep, extending from near



Figs. 21–25. *Acanthoscelides hespenheidei*. 21, dorsal aspect. 22, lateral lobes, ventral view. 23, median lobe, ventral view. 24, antenna. 25, hind leg.

coxal cavity to about 0.6 distance to pronotal midline; lateral prothoracic carina extending from base to about 0.3 distance to coxal cavity; short median impressed line on median basal lobe; prosternum separating procoxae for their entire length; prothoracic legs unmodified.

Mesothorax and Metathorax: Scutellum large, broad, bifurcate at apex, quadrate, with dense white or yellow hairs. Elytron about 2.0 as long as broad; striae deeply impressed, punctate, striae intervals punctulate; striae subequal at base, striae 4 and 5 abbreviated at base by a flattened area, small spine at base of stria 3 (Fig. 21); humerus red orange to black, punctulate. Undersurfaces punctulate to punctate. Mesothoracic legs unmodified; all of hind coxa punctate. Hind femur constricted basally and apically, expanded medially to slightly wider than width of coxa (Fig. 25); undersurface of femur with carina on inner margin, carina usually with 2 small spinules; femur armed on inner edge with subapical acuminate spine about as long as width of tibial base, followed by a gap and then 2 spines about 0.5 as long as first spine (Fig. 25). Hind tibia with ventral, lateroventral, lateral and dorsomesal glabrous longitudinal carinae; dorsal surface without fossa; corona with 4 spinules; mucro about 0.25 as long as tarsomere 1, without sinus at base. Hind tarsomere 1 with ventral, lateral and mesal glabrous longitudinal carinae.

Abdomen: Sterna vaguely flattened medially; sternum 1 about 0.6 as long as abdomen, posterior margin straight; sterna 2-4 unmodified, 5 emarginate. Pygidium punctulate, convex in lateral view.

Genitalia (Figs. 22, 23): Median lobe moderate in length; in ventral view, ventral valve with shallow cleft at apex, sides concave, base of ventral valve about 0.8 as wide as apex of median lobe, with dorsal hood extending slightly beyond apex of ventral valve, arcuate in lateral view. Armature of internal sac with vague rectangular mass of spinules extending from near base to near middle (Fig. 23), 2 lobes of fine spicules and 2 vague, elongate spines at apex. Lateral lobes expanded at apex, cleft to about 0.8 their length (Fig. 22).

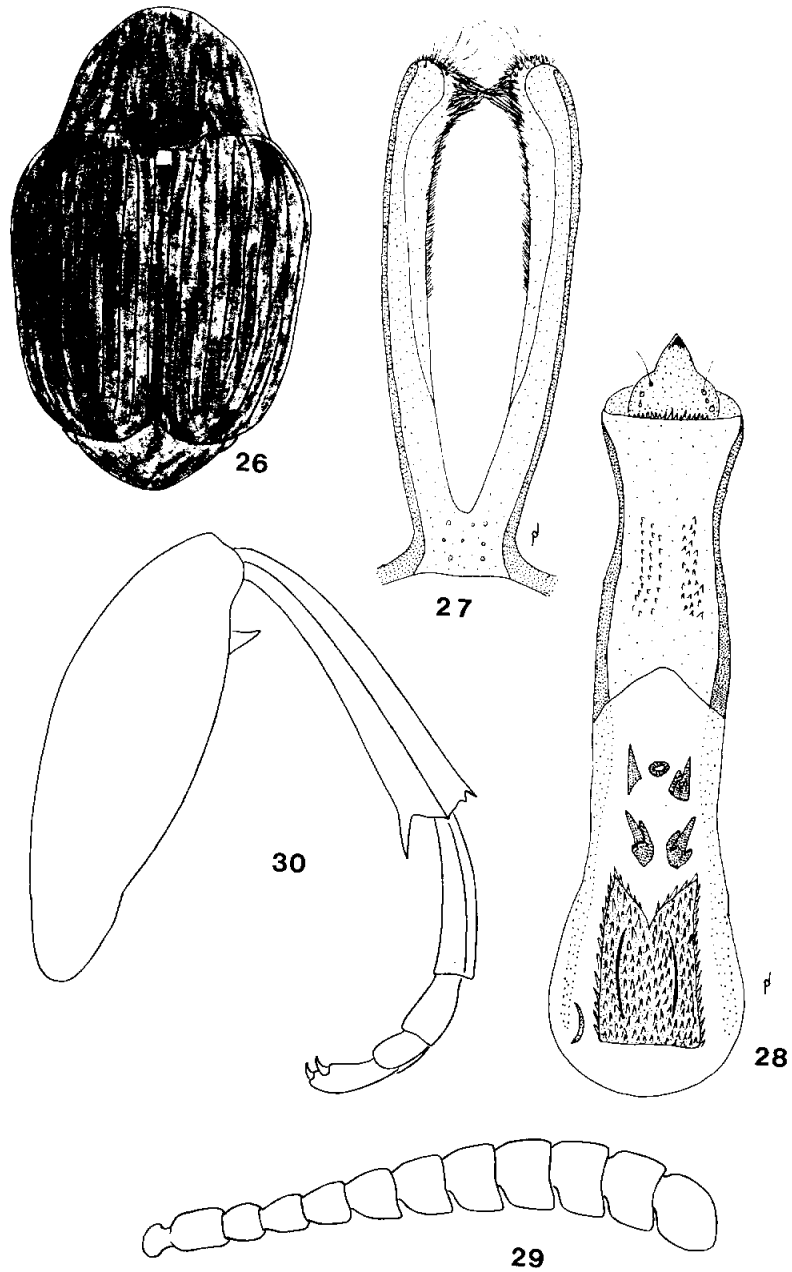
FEMALE. Similar to male except abdominal sternum 1 about 0.5 as long as remaining sterna, sternum 5 only slightly emarginate; sometimes inner carina on hind femur with 3 or 4 spinules.

HOST PLANT. *Stryphnodendron* sp. (Leguminosae). Also see under Type Series below.

TYPE SERIES. Holotype male, allotype female and 29 paratypes: COSTA RICA. Prov. Heredia, F. La Selva, 3 km S. Pto. Viejo, 10°26'N, 84°01'W, emerged 7-16-IV-84, H. A. Hespenheide, collector, *Stryphnodendron* sp.

Holotype, allotype and several paratypes deposited in the United States National Museum of Natural History. Several paratypes deposited in the H. A. Hespenheide Collection, University of California, Los Angeles, and the C. D. Johnson Collection, Flagstaff, Arizona.

DISCUSSION. *Acanthoscelides hespenheidei* is in the *Albopygus* species group (Johnson 1983). It differs from *A. albopygus* and other members of that group by the following combination of characters: it feeds in the seeds of a species of *Stryphnodendron* in Costa Rica; the antennae are all red orange except segments 8-10 are brown (the all red orange apical segment is very noticeable); the pronotum has a deep, U-shaped sulcus, whose arms begin at the apex of the pronotum and the bottom of the U is about 0.6 distance from the apex and the pronotum has 4 large, glabrous, impunctate gibbosities at the base across from elytral striae 2 and 4 (Fig. 21); the prosternum separates the procoxae for their entire length; the elytral striae are subequal at their bases, but striae 4 and 5 are abbreviated at their bases by a flattened area, and there is a small spine at base of stria 3 (Fig. 21); the ventral valve of the male genitalia is unique in its structure, but the most visible difference is the shallow cleft at its apex; and the genitalia have a dorsal hood extending to slightly beyond the apex of the ventral valve.



Figs. 26-30. *Acanthoscelides zacatlan*. 26, dorsal aspect. 27, lateral lobes, ventral view. 28, median lobe, ventral view. 29, antenna. 30, hind leg.

This species is named in honor of my friend Henry Hespenheide, the only person yet to collect individuals of this species.

Acanthoscelides zacatlan Johnson, **new species**
(Figs. 26–30)

Length (pronotum-elytra) 1.6 mm. Width 1.0 mm. Maximum thoracic depth 0.9 mm.

MALE. Integument color: Head, body and hind legs black; antennae and first 2 pairs of legs dark brown; eyes light brown.

Vestiture: With recumbent white hairs as follows. Eye with faint medial fringe of white; postocular lobe with short white hairs; with faint postocular patch of hairs; remainder of head with very sparse pubescence. Body, elytra, pronotum, pygidium and appendages with sparse white hairs. Undersurface of thorax with moderately dense white hairs.

Head: Slightly elongate, densely punctulate; frons with median, slightly raised, glabrous line extending from frontoclypeal suture to vertex; vague transverse sulcus between upper limits of eyes; width of eye slightly wider than frons; ocular sinus about 0.7 as long as eye; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded; distance from bases of antennae to apex of labrum about 0.5 as long as distance from upper limits of eyes to apex of labrum; antennal segments 1–4 filiform to moniliform, 5–10 eccentric, 11 subacute apically, 5–10 broader than long, 11 longer than broad (Fig. 29); antenna extending to about 0.3 length of elytron.

Prothorax: Disk subcampanulate with many coarse punctures in no apparent pattern; cervical sulcus moderately deep, extending from near coxal cavity to about 0.6 distance to pronotal midline; lateral prothoracic carina extending from base to about 0.5 distance to coxal cavity; without short median impressed line on median basal lobe; prosternum separating procoxae for about 0.7 their length; prothoracic legs unmodified.

Mesothorax and Metathorax: Scutellum moderate in size, bifurcate at apex, clothed with dense white pubescence to give elongate appearance. Elytron about 2.0 as long as broad; striae moderately impressed, not punctulate, striae intervals smooth; striae 2 and 3 joined at base, others subequal at base, without spines at bases of striae nor are striae abbreviated at base (Fig. 26); humerus punctulate. Undersurfaces punctate, especially lateral margin of thorax; mesothoracic legs unmodified; all of hind coxa punctate. Hind femur constricted apically and basally, expanded medially to slightly wider than width of coxa (Fig. 30); undersurface of femur with vague carina on inner margin; femur armed on inner edge with subapical acuminate spine about 1.5 times as long as width of tibial base, without additional spines (Fig. 30). Hind tibia with ventral glabrous longitudinal carina, and vague lateroventral, lateral and dorsomesal glabrous longitudinal carinae; dorsal surface without fossa; corona with 3 spinules; mucro about 0.3 as long as tarsomere 1, with slight sinus at base of mucro (Fig. 30). Hind tarsomere 1 with ventral, lateral and mesal glabrous longitudinal carinae.

Abdomen: Sterna slightly flattened medially; sternum 1 about 0.4 as long as abdomen, posterior margin straight; sterna 2–4 unmodified, 5 slightly emarginate. Pygidium punctate, convex in lateral view.

Genitalia (Figs. 27, 28): Median lobe moderate in length, broad; in ventral view, ventral valve gently rounded at apex, sides slightly concave, base of ventral valve about 0.7 as wide as apex of median lobe, arcuate in lateral view. Armature of internal sac with many fine spinules basally, cluster of 5 spines slightly beyond middle consisting of 2 pairs surrounding a central spine, apex with a paired pubescent structure (Fig. 28). Lateral lobes expanded slightly at apex, cleft to about 0.9 their length (Fig. 27).

FEMALE. None available.

HOST PLANTS. Unknown.

TYPE SERIES. Holotype male: MEXICO. Puebla: 11 mi. N. Zacatlan, VIII-27-1965, Paul J. Spangler.

Holotype deposited in the United States National Museum of Natural History, Washington, D.C.

DISCUSSION. *Acanthoscelides zacatlan* is in the Puellus species group (Johnson 1983). This species differs from other *Acanthoscelides* because of the following combination of characters: unique male genitalia (as in Figs. 27, 28); its head, body and hind legs are black in combination with antennae and the first two pairs of legs that are dark brown; the antenna extends to about 0.3 the length of the elytron; the lateral prothoracic carina extends from the base of the prothorax to about 0.5 the distance to the coxal cavity and there is no short median impressed line on the median basal lobe of the prothorax; the scutellum is moderate in size and is elongate; striae 2 and 3 are joined at their bases, the striae are moderately impressed, not punctulate, and the strial intervals are smooth; the femur has only one spine on its inner edge and the spine is about 1.5 times as long as the width of the tibial base (Fig. 30).

The specific epithet *zacatlan* is a noun in apposition to *Acanthoscelides*.

ACKNOWLEDGMENTS

I am grateful to John M. Kingsolver for advice, for help, for lending specimens to me, and for being my good friend. I am also grateful to my wife, Margaret Elkins Johnson, for assistance in the field and in the laboratory and for National Science Foundation Grants BSR82-11763 and BSR88-05861 for partial financial support for this research. I thank Gary Pfaffenberger for reviewing the manuscript.

LITERATURE CITED

- JOHNSON, C. D. 1979. New host records for *Acanthoscelides* (Coleoptera: Bruchidae). Pan-Pac. Entomol. 55:61-71.
- . 1983. Ecosystematics of *Acanthoscelides* (Coleoptera: Bruchidae) of southern Mexico and Central America. Misc. Publ. Entomol. Soc. Amer. 56:1-370.
- MABBERLEY, D. J. 1987. The plant-book. A portable dictionary of the higher plants. Cambridge University Press.

(Received 9 December 1988; accepted 7 September 1989)