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CLARENCE DAN JOHNSON

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SYSTEMATICS OF THE GENUS STYLANTHEUS BRIDWELL (Coleoptera: Bruchidae)

CLARENCE DAN JOHNSON
Department of Biological Sciences, Northern Arizona University, Flagstaff, AZ 86001

ABSTRACT

The monotypic genus *Stylantheus* Bridwell and its type-species *S. macrocerus* (Horn) are redescribed and their synonymies given. *S. macrocerus* is similar in some characters to several species of *Acanthoscelides* Schilsky and the relationships between *S. macrocerus* and these species are discussed. *Stylosanthes biflora* (L.) B.S.P. (Leguminosae) is the only known host plant for *S. macrocerus*.

Stylantheus was described by Bridwell (1946) as one of 12 new genera of New World Bruchidae. Seven of these new genera have several to many species included in them and appear to represent natural groups. Of Bridwell's five monotypic genera, *Sparteus* was shown by Southgate (1963) to be congeneric with the Old World genus *Bruchidius*, and *Cercidiestes*, *Althaeus*, *Abutiloneus*, and *Stylantheus* remain monotypic genera. *Abutiloneus* was revised by Kingsolver (1965) and appears to be a natural group related to some species of *Acanthoscelides* whereas *Cercidiestes* and *Althaeus* are currently being studied.

After my revision of some of the *Acanthoscelides* of the United States (Johnson, 1970), it appeared to me that *Stylantheus macrocerus* (Horn) might be closely related to some species of *Acanthoscelides* and that a thorough study of *Stylantheus* was needed to determine its phylogenetic affinities. Because it is a monotypic genus related to *Acanthoscelides*, I thought that perhaps it was merely an unusual species of *Acanthoscelides*. I have studied the genus and the results of that study are presented here. Also, *Stylantheus macrocerus* has not been studied thoroughly since Horn described it in 1873 and after 103 years I believe it should be redescribed and its host plants reported.

Genus *Stylantheus* Bridwell

Stylantheus Bridwell, 1946: 54; Bradley, 1947: 40; Blackwelder and Blackwelder, 1948: 44; Johnson, 1968: 1271; Bottimer, 1968: 1028, 1039, 1041; Johnson, 1970: 28. Type-Species.—*Bruchus macrocerus* Horn, 1873, by original designation.

Because this is a monotypic genus, the following species description will serve as a generic description.

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Stylantheus macrocerus (Horn)
(Figs. 1–6)

Bruchus macrocerus Horn, 1873: 342 (District of Columbia and Tennessee); Schaeffer, 1907: 305, 306; Fall, 1910: 187, 188; Blatchley, 1910: 1238, 1241–1242.

Mylabris macrocerus: Leng, 1920: 306.

Acanthoscelides macrocerus: Bridwell, 1935: 186.

Stylantheus macrocerus: Bridwell, 1946: 54; Bradley, 1947: 40; Blackwelder and Blackwelder, 1948: 44; Johnson, 1968: 1271; Bottimer, 1968: 1028, 1039, 1041; Johnson, 1969: 55.

Length (pronotum-elytra) 1.7–2.2 mm. Width 1.0–1.3 mm. Maximum thoracic depth 0.6–1.1 mm.

MALE

INTEGUMENT COLOR

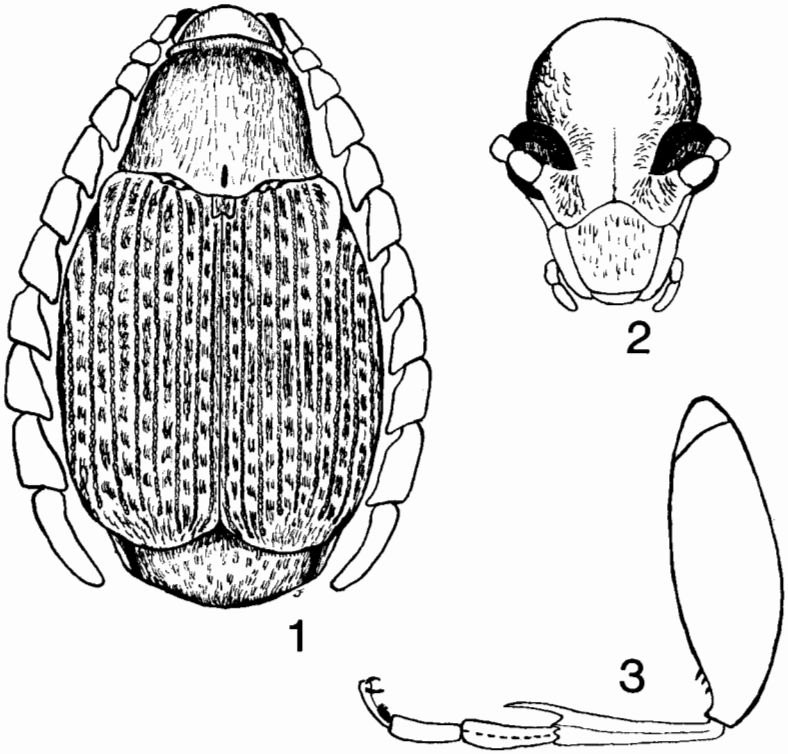
Body and appendages all black, occasionally dark brown.

VESTITURE

With recumbent white hairs as follows: eye with medial fringe of sparse white hairs; postocular lobe with short, white hairs; moderately dense postocular patch of white hairs; remainder of head with very sparse, short, white hairs; pronotum with sparse white hairs interrupted by moderately dense patches of white hairs in no apparent pattern, usually without patches along midline except dense hairs on median basal lobe; vestiture of elytron variable but in unrubbed specimens patches of dense white hairs on intervals between striae interrupted by glabrous areas (Fig. 1); sometimes patches less dense in 1 or 2 broad median bands across elytron; pygidium, undersurfaces and appendages with sparse to moderately dense pubescence, base of pygidium and lateral margins of thorax and abdomen usually with denser patches of hairs.

STRUCTURE

Head.—Elongate, densely punctulate (Fig. 2); frons usually with faint, median finely punctulate line extending from frontoclypeal suture to vertex; vague transverse sulcus between upper limits of eyes; width of eye about .25 wider than width of frons; ocular sinus broad, about .9 as long as width of eye; posterior margin of eye protruding from adjacent surfaces; postocular lobe rounded, not angulate; distance from base of antennae to apex of labrum about ½–⅝ as long as distance from upper limits of eyes to apex of labrum; antennal segment 1 filiform, 2 moniliform, 3 quadrate, remaining segments serrate,

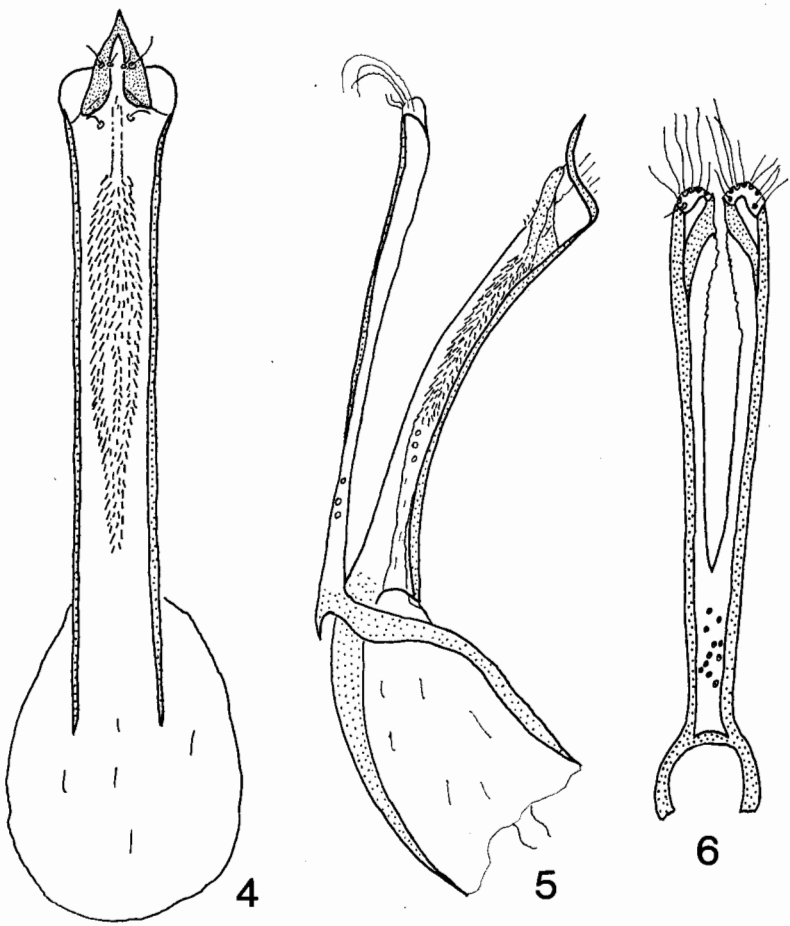


FIGS. 1–3. *Stylantheus macrocerus*. 1. Dorsal aspect, male. 2. Head. 3. Hind leg.

each about twice as long as broad, antennae extending to slightly beyond apex of abdomen, about 2.5 times as long as hind femur.

Prothorax.—Disk conical (Fig. 1), with many coarse punctures in no apparent pattern; cervical sulcus deep, extending from near coxal cavity almost to pronotal midline; lateral prothoracic carina developed only at base of prothorax; short median impressed line on median basal lobe; prosternum separating procoxae for about .5 their length.

Mesothorax and Metathorax.—Scutellum small, quadrate to slightly elongate with lateral posterior teeth, usually clothed with dense recumbent white hairs; elytron about twice as long as broad; striae deep, punctulate, strial intervals rugulose; striae 2, 3 and 4 usually closer to one another at base than to adjacent striae, usually abbreviated at base by an elevated rectangular area (Fig. 1); small spines usually at base of striae 3 and 4; humerus rugulose, usually glabrous; undersurfaces punctulate; all of hind coxa punctate; hind femur con-



FIGS. 4–6. *Stylantheus macrocerus*, male genitalia. 4. Median lobe, ventral view. 5. Median lobe and lateral lobes, lateral view. 6. Lateral lobes, ventral view.

stricted basally and apically, usually expanded medially to about width of coxa, sometimes slightly narrower than width of coxa (Fig. 3); femur extending beyond apex of abdomen, ventral surface of femur without channel or longitudinal carinae; femur armed on inner, ventral surface with 3 subapical spines about ½ to ¾ as long as width of tibial base, middle spine often shorter than others, 1st spine often longer than others; tibia with ventral, lateral and dorsomesal glabrous longitudinal carinae; lateroventral carina absent; dorsal surface with-

out fossa; tibial corona with about 3 spinules, mucro about .5 as long as 1st tarsomere; with deep sinus at base of mucro; 1st tarsomere with faint ventral, lateral and mesal glabrous carinae.

Abdomen.—1st sternum flattened medially, about ⅝ as long as abdomen, posterior margin straight; sterna 2–5 about ⅝ as long as abdomen, 2–4 unmodified, 5 emarginate to receive broadly rounded apex of pygidium; pygidium punctulate, vertical, convex in lateral view.

Genitalia.—Figs. 4, 5, 6. Median lobe elongate, slightly arched in lateral view, without dorsal hood at apex; in ventral view, ventral valve elongate, pointed, sides convex, not heavily sclerotized, base about ½ as wide as apex of median lobe, slightly arcuate and almost perpendicular to apex of median lobe in lateral view; without hinge sclerites; armature of internal sac consisting of an elongate cluster of many fine spinules basomedially. Lateral lobes elongate, expanded at apex, cleft to almost .75 their length (Fig. 6).

FEMALE

Similar to male except antennae shorter, extending only to middle or apex of elytra, about 1.5 times as long as hind femur; hind femur not reaching apex of abdomen; 5th abdominal sternum not emarginate, pygidium more oblique.

Specimens examined.—100, from the following localities: TEXAS. Fred, 16–23 May 1960 (L. J. Bottimer #91v); 5 mi N Montgomery, 8 April 1972, on *Astragalus distortus* (W. E. Clark); Longview, 1933 (Wickham); 8 mi W New Waverly, 3 May 1970 (V. V. Board); College Station, 1 May 1960 (H. R. Burke); IND. T. So. McAlester, June 11 (Wickham). OKLAHOMA. 5 mi W Madill, 300′, 7 June 1965 (L. & C. W. O'Brien). ARKANSAS. De Queen, 16 June 1948 (B. T. McDermott); Ola, 8 June 1954 (L. J. Bottimer #94b). LOUISIANA. Greensburg, 3 June 1954 (L. J. Bottimer #93y); Bienville, 30 July 1964 (C. Cushner); Shreveport, 22 May 1891 (F. W. Mally). MISSISSIPPI. Lawrence, 30 June 1954 (L. J. Bottimer #94f). ALABAMA. 2 mi N Loachapoke, 24 July 1964 (E. U. Balsbaugh, Jr.). GEORGIA. Satolah, 2500′, 5 July 1957 (W. J. Brown); Warwoman Cr., 1500′, Rabun Co., 26 July 1957 (collector unknown). TENNESSEE. Waynesboro, 4 August 1948 (H. W. Crowder). MISSOURI. "Mo". ILLINOIS. Southern Illinois, 6 June 1890 (H. Soltau); Fountain Bluff, S of Gorham, 16 August 1950 (L. J. Stannard). SOUTH CAROLINA. Mountain Rest, 6 & 14 June 1957 (W. J. Brown); Newry, 900′, Oconee Co., 7 August 1957 (J. G. Chillcott); Calhoun F., 30 July 1905 (E. S. G. Titus). NORTH CAROLINA. Raleigh, 15 June 1957 (D. A. Young); Highlands, Whiteside Cove, 11 August 1957 (collector unknown); Morrow Mtn. State Park, 21 July 1959 (D. M. Weisman); Rural Hall, 7 June 1954 (D. M. Weisman); Moncure, 18 June 1928 (L. J. Bottimer #54z2). VIRGINIA. Barcroft, 24 July 1927, 14 June 1939,

10 August 1939, and 11 June 1940 (all L. J. Bottimer); Falls Church, 23 June (Banks Collection). MARYLAND. "Md." (O. Lugger); Beltsville, 8 & 12 June 1940, 9 June 1942 (L. J. Bottimer). WASHINGTON, D.C. "D.C."; 27 June (collector unknown); "D. Col.", 7 June 1909 (collector unknown); Hamilton Hill, 26 June 1925 (H. S. Barber).

HOST PLANTS

Old Records—None

New Records

Stylosanthes sp.: Barcroft, Virginia, 14 August 1938 (L. J. Bottimer #78w).

Stylosanthes biflora (L.) B.S.P.: Barcroft, Virginia, 10 August 1939 (L. J. Bottimer #80p).

LOCATION OF TYPE

Museum of Comparative Zoology, Harvard University, Cambridge, Mass.

(Academy of Natural Sciences, Philadelphia, Lectotype 3897 designated by Johnson, 1968: 1271).

DISTRIBUTION

Texas. Oklahoma. Arkansas. Louisiana. Mississippi. Alabama. Georgia. Missouri. Illinois. Tennessee. South Carolina. North Carolina. Virginia. Maryland. Washington, D.C.

DISCUSSION

Of the characters used by Bridwell (1946) when he described *Stylantheus*, only the very elongate antennae of *Stylantheus* separated *Stylantheus* from all species of *Acanthoscelides*. The other characters he listed are possessed by some species of *Acanthoscelides*, either one in a species or several in a species. This study was stimulated because of the close relationships between these 2 genera and the uncertainty of the status of *Stylantheus*.

Stylantheus is a unique genus quite closely related to *Acanthoscelides* Schilsky, having several characters in common with *Acanthoscelides*. They are especially close in elytral strial patterns, structures of the hind leg and overall body form. *Stylantheus* is distinct from *Acanthoscelides* in that it has an ocular sinus that divides the eye for about .9 its width, extremely long, broad antennae (Fig. 1) and the almost uniform shape of the 3 spines at the apex of the hind femur (Fig. 3). Its male genitalia are more elongate than most *Acanthoscelides* and have a pattern distinct from any *Acanthoscelides* known to me. Its host, *Stylosanthes*, is in the leguminous subfamily, Papilionoideae, the

subfamily most used by species of *Acanthoscelides* (Johnson 1970), another suggestion of its close affinities to that genus. Its distribution from central Texas to Georgia and north to Maryland probably parallels that of its host and suggests a specialized population that is probably an offshoot of *Acanthoscelides*, that is confined to a species or genus of host plants, and has become highly adapted to a niche in the seeds of *Stylosanthes*.

S. macrocerus is related to several species of *Acanthoscelides*, probably most closely to *A. compressicornis* (Schaeffer). The two species share similar coloration, long antennae and mucro, and elongate male genitalia. The much longer antennae of *S. macrocerus*, a distinctly different pattern in the male genitalia, patterns of elytral vestiture (*A. compressicornis* has uniform elytral vestiture), and generic characters readily separate these 2 species. Johnson (1974) discussed similarities between *A. baboquivari* Johnson and *S. macrocerus*. After a thorough study of *S. macrocerus* I believe these 2 species to be only superficially similar to one another. *Acanthoscelides alboscutellatus* (Horn) resembles *S. macrocerus*, but only in its pattern of elytral vestiture.

Acanthoscelides biustulus (Fall), *A. pugiunculus* (Fall), *A. longistilus* (Horn), and *A. pulloides* (Fall), all resemble *S. macrocerus* in having elongate mucros. The male genitalia of the 4 species and color patterns of *A. biustulus*, *A. pugiunculus*, and *A. longistilus* are quite different from those of *S. macrocerus*.

I know of no Mexican species, described or undescribed, that are closely related to *macrocerus*.

It seems, then, that *Stylantheus macrocerus* is a unique species in a monotypic genus that should stand. Further research on New World Acanthoscelidine bruchids, however, may discover more species of *Stylantheus* or demonstrate that the genus is congeneric with *Acanthoscelides*.

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LITERATURE CITED

Blackwelder, R. E., and R. M. Blackwelder. 1948. Fifth supplement to the Leng Catalogue of Coleoptera of America, north of Mexico. John D. Sherman, Jr., Mt. Vernon, N.Y. 87 pp.

Blatchley, W. S. 1910. An illustrated and descriptive catalogue of the Coleoptera or beetles known to occur in Indiana. Bull. Indiana Dept. Geol. and Natur. Resources, Indianapolis. 1385 pp.

Bottimer, L. J. 1968. Notes on Bruchidae of America north of Mexico with a list of world genera. Can. Entomol. 100:1009–1049.

Bradley, J. C. 1947. Contributions to our knowledge of the Mylabridae, seu Bruchidae (Coleoptera) with especial reference to the fauna of Northeastern America. Psyche (1946), 53(3–4):33–42.

Bridwell, J. C. 1935. Scientific note. Proc. Entomol. Soc. Wash. 37:185–186.

———. 1946. The genera of beetles of the family Bruchidae in America north of Mexico. Jour. Wash. Acad. Sci. 36:52–57.

Fall, H. C. 1910. Miscellaneous notes and descriptions of North American Coleoptera. Trans. Amer. Entomol. Soc. 36:89–197.

Horn, G. H. 1873. Revision of the Bruchidae of the U.S. Trans. Amer. Entomol. Soc. 4:311–342.

Johnson, C. D. 1968. Bruchidae type-specimens deposited in United States museums, with lectotype designations. Ann. Entomol. Soc. Amer. 61: 1266–1272.

———. 1969. Horn's Bruchidae type-material in the Ulke collection (Coleoptera). Pan-Pac. Entomol. 45:54–56.

———. 1970. Biosystematics of the Arizona, California, and Oregon species of the seed beetle genus *Acanthoscelides* Schilsky (Coleoptera:Bruchidae). Univ. Calif. Publ. Entomol. 59:1–116.

———. 1974. Ecology of two *Acanthoscelides* from *Indigofera*, with a description of a new species (Coleoptera:Bruchidae). Jour. Kans. Entomol. Soc. 47:268–278.

Kingsolver, J. M. 1965. On the genus *Abutiloneus* Bridwell (Coleoptera: Bruchidae). Coleopterists Bull. 19:125–128.

Leng, C. W. 1920. Catalogue of the Coleoptera of America North of Mexico. New York. 470 pp.

Schaeffer, C. F. A. 1907. New Bruchidae with notes on known species and list of species known to occur at Brownsville, Texas, and in the Huachuca Mountains, Arizona. Mus. Brooklyn Inst. Arts and Sci., Sci. Bull. 1 (10): 291–306.

Southgate, B. J. 1963. The true identity of the broom bruchid (Coleoptera) and synonymic notes on the other species of *Bruchidius*. Ann. Entomol. Soc. Amer. 56:795–798.