INSECTA MUNDI

A Journal of World Insect Systematics

0093

Seed beetles (Coleoptera: Bruchidae) associated with *Acacia cornigera* (L.) Willd., with description of a new species of *Acanthoscelides* Schilsky

Jesus Romero Napoles and Aracely de la Cruz Perez
Instituto de Fitosanidad
Colegio de Postgraduados
Montecillo, Estado de Mexico, MEXICO

John M. Kingsolver
Florida State Collection of Arthropods
Florida Department of Agriculture and Consumer Services
Gainesville, Florida, USA

Date of Issue: September 25, 2009

CENTER FOR SYSTEMATIC ENTOMOLOGY, INC., Gainesville, FL

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Insecta Mundi 0093: 1-11

Published in 2009 by
Center for Systematic Entomology, Inc.
P. O. Box 141874
Gainesville, FL 32614-1874 U. S. A.
http://www.centerforsystematicentomology.org/

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Printed Copy ISSN 0749-6737
On-Line ISSN 1942-1354
CD-ROM ISSN 1942-1362

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Florida State Collection of Arthropods
Florida Department of Agriculture and Consumer Services
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Abstract. Presented herein is a key to identify species of Bruchidae associated with *Acacia cornigera* (L.). For each species, host records, distributions and bionomics are given. A **new species** of *Acanthoscelides* Schilsky is described and figured; *Acanthoscelides sauli* Romero, Cruz, and Kingsolver.

Introduction

According to Seigler and Ebinger (1995), and Janzen (1974) *Acacia cornigera* Linnaeus (Fabaceae) occurs in wet to relatively dry, mostly disturbed habitats at lower elevations from southern Mexico to Costa Rica. Probably it is the best known of the ant-acacias or swollen-thorn acacias. It is abundant in riparian and swamp habitats and is the common ant-acacia in fallow fields, pastures, roadsides, and other disturbed sites from sea level to about 1200 m elevation. A complete work on the relationship between *A. cornigera* and its inhabiting ant, *Pseudomyrmex ferruginea* Smith, is found in Janzen (1967). Janzen found few herbivores feeding on the plant when ants are present, among them some Bruchidae. Another study carried out by Janzen (1969) in lowland Veracruz, Tamaulipas, and Oaxaca showed the bruchids *Acanthoscelides oblongoguttatus* (Fahraeus), *Mimosestes* sp. and *Stator subaenus* (Schaeffer) achieved 20 to 80% destruction of *A. cornigera* seeds. This destruction is greater the closer other seed-bearing *A. cornigera* are, and the more similar the age of the general vegetation is to that in which seed-bearing *A. cornigera* are normally found. Under these conditions a single plant produces 60,000 seeds in its lifetime but it is doubtful that more than 600 escape from the parent tree.

To date, the following species of Bruchidae have been associated with *A. cornigera*: *Acanthoscelides oblongoguttatus* (Johnson and Kingsolver 1981; Johnson 1983a, 1989), *A. sousai* Johnson (Johnson 1989), *Mimosestes cinerifer* (Fahraeus) (Kingsolver and Johnson 1978; Johnson, 1983b), *M. mimosae* (Fabricius) (Kingsolver and Johnson 1978; Traveset 1992; Johnson and Siemens 1996), *M. nubigens* (Motschulsky) (Johnson and Kingsolver 1981; Johnson 1983b; Kingsolver and Johnson 1978; Johnson and Siemens 1996; Johnson 1981), *M. obscuriceps* (Sharp) (Kingsolver and Johnson 1978), *M. viduatus* (Sharp) (Kingsolver and Johnson 1978; Johnson 1983b), *Stator mexicanus* Bottimer (Johnson and Kingsolver 1976; Johnson 1984), and *S. subaeneus* (Johnson and Kingsolver 1976; Johnson et al. 1989).

Material and Methods

Many distribution and host records presented here are part of a database for the Bruchidae (BRUCOL) being compiled by C. D. Johnson (late) and author JRN. The full data contained in this database should be published in the near future. Inquiries about the database should be sent to JRN. Host plant names were checked in the website "Tropicos" of the Missouri Botanical Garden (http://www.tropicos.org/) for current nomenclature. The new species of *Acanthoscelides* was collected in southern Mexico during field trips between 2006 and 2008 by the authors.

To prepare genitalia we used the methods described by Kingsolver and Whitehead (1974) and Kingsolver (1970). For interpretation of genitalia we followed Romero and Johnson (1999). Unless noted, all speci-

mens studied are deposited at the Colección Entomológica del Instituto de Fitosanidad, Colegio de Postgraduados, Montecillo, Estado de México (**CEAM**). Other materials studied are deposited in the following institutions as indicated by their acronyms: Colección Nacional de Insectos, Instituto de Biología, Universidad Nacional Autónoma de México (**CNIN**); Florida State Collection of Arthropods, Gainesville, FL (**FSCA**); Texas A&M University, Department of Entomology (**TAMU**); National Museum of Natural History, Smithsonian Institution (**USNM**).

Key to Bruchidae associated with *Acacia cornigera* in the New World

1. Basitarsus of hind leg more than two times longer than second tarsal segment; antennae serrate or pectinate; pygidium exposed behind elytra. Family Bruchidae **2**
— Basitarsus of the hind leg less than two times longer than second tarsal segment, antennae filiform; pygidium usually not exposed ..... **Family Chrysomelidae**

2(1). Lateral pronotal margin with a distinct, arcuate carina. Genus *Stator* **3**
— Lateral pronotal margin lacking distinct carina **4**

3(2). Eyes flattened, nearly contiguous with lateral margin of head, posterior margins expanded and merging with lateral part of vertex ..... ***S. subaenus* (Schaeffer)**
— Eyes not flattened, posterior margins protruding laterally and well separated from vertex ..... ***S. mexicanus* Bottimer**

4(2). Males usually with a channel on ventral surface of hind femur; mucro short, usually not as long as lateral denticle; median lobe of male genitalia with ventral valve not articulated or absent. Genus *Mimosestes* **5**
— Males usually without a channel on ventral surface of hind femur; mucro usually longer than lateral denticle; median lobe of male genitalia with ventral valve articulated. Genus *Acanthoscelides* **9**

5(4). Prosternum separating procoxae for their entire length ..... ***M. obscuriceps* (Sharp)**
— Prosternum separating procoxae for less than their entire length **6**

6(5). Lateral margins near apex of prothorax swollen, with strong spines and pronounced hump ..... ***M. nubigens* (Motschulsky)**
— Lateral margins near apex of prothorax not swollen, without strong spines **7**

7(6). With uniform white or intermixed yellow and golden setae, without patterns; body usually reddish brown; internal sac of male genitalia with basal lagenoid sclerite .. ***M. cinerifer* (Fahraeus)**
— Pubescence uniform or with patterns **8**

8(7). With two patches of white to yellowish setae on either side of midline about halfway from bases of pronotum and pygidium; cervical sulcus not prominent behind eye ..... ***M. viduatus* (Sharp)**
— Without setal patches on pronotum and pygidium; cervical sulcus prominent behind eye ..... ***M. mimosae* (Fabricius)**

9(4). Lateral prothoracic carina extending from base half the distance to coxal cavity, lateral carina not expanding margins of prothorax; pronotum with inverted V-shaped stripe of dense yellow setae on midline flanked by narrow stripes of brown setae; eye 1.3-1.5 times as wide as width of frons ..... ***A. sousai* Johnson**
— Lateral prothoracic carina strong, extending from base 0.7 the distance to coxal cavity, carina on laterally expanded margins of prothorax; pronotum with uniform moderately dense golden setae; eye about two times wider than frons **10**

10(9). With long and straight mandibles, crossing at apex, bigger in females than males; mucro about one-sixth as long as first tarsomere; pattern of elytral pubescence not very contrasting; pygidium without V-shaped patch of dark setae ..... ***A. oblongoguttatus* (Fahraeus)**

— With small, curved mandibles, not crossing at apex, same size in both sexes; mucro about two-sixths as long as first tarsomere; pattern of elytral pubescence very contrasting; pygidium with V-shaped patch of dark setae ..... ***A. sauli*, new species**

***Acanthoscelides oblongoguttatus* (Fahraeus), 1839**
(Figure 2)

According to Johnson (1983a) this species is one of the largest in the genus, and it is the only one in the oblongoguttatus group. The V-shaped glabrous area on the vertex, the structure of the male genitalia, and its preference for seeds of *Acacia* ally this bruchid to species of *Mimosestes*. Our field observation showed that instead of producing a mass of eggs, *A. oblongoguttatus* oviposits individual eggs on pods as do many other bruchids.

Host plants. OLD RECORDS: *Acacia cornigera* (L.) Willd.; *Vachellia sphaerocephala* (Schltdl. and Cham.) Seigler and Ebinger. NEW RECORD: *Acacia collinsii* Saff., Carr. fed. al Ceibo, Tenosique, Tabasco, Mexico, 17/VII/2007, 12 m, De la Cruz P.A.

Distribution. OLD RECORDS: El Salvador, Guatemala, Honduras, Mexico (Campeche, Guerrero, Hidalgo, Oaxaca, San Luis Potosí, Tabasco, Tamaulipas, and Veracruz). NEW RECORDS: Belize; Rio Bravo Cons. Area, Orange Walk, 17/IV/1996, P. Kovarik & J. Shuey; Belmopan area, Cayo, 16/VII/2001, D.G. Hall & J.E. Eger (FSCA).

***Acanthoscelides sauli* Romero, Cruz, and Kingsolver, new species**
(Figure 1, 3-5)

Description. Male. Length (pronotum-elytra) 4.4-5.0 mm; width 2.2-3.1 mm; maximum thoracic depth 1.7-2.5 mm.

Integument color. Head, body and appendages red-orange to reddish brown. Vestiture: With recumbent white, golden or brown setae as follows: eye with medial fringe of moderately dense white setae; postocular lobe with short white setae; postocular patch of dense white setae; remainder of head with moderately dense white or golden pubescence; pronotum with uniform moderately dense golden setae; elytron with uniform moderately dense white to golden setae, usually interrupted by small patches of brown setae as follows: patches between striae 2+3 about 0.25 from base and 0.3 from apex, between striae 4+5 about 0.5 from base, between striae 6+7 about 0.25 and 0.5 from base, between striae 8=9 about 0.25 and 0.5 from base, often the area at apex where striae 3 and 6 join forming a large V-shaped patch of dark setae; pygidium with moderately dense white setae, usually thin median stripe of dense white setae and inverted V-shaped patch of dark setae; undersurfaces and appendages with moderately dense mixed white and golden setae (Fig. 1a, 1b).

Structure. *Head*.- Moderate in length, densely punctulate; frons with median glabrous line or carina extending from frontoclypeal suture to vertex, line expanded on vertex into a densely punctulate glabrous area, usually 1 or 2 shallow pits on glabrous area; usually vague transverse sulcus between upper limits of eyes; eye 1.4 - 1.8 times as wide as width of frons; eye cleft to 0.5-0.6 its length by ocular sinus; posterior margin of eye protruding from adjacent surface; postocular lobe rounded; distance from base of antennae to apex of labrum about half as long as distance from upper limits of eyes to apex of labrum; antennal segments 1 - 4 moniliform to filiform; 5 - 10 eccentric, 11th subacute apically, 5 - 11 about as long as broad; antenna reaching to humerus or slightly beyond; mandibles short, lightly beyond labrum, not crossing apically (Fig. 1c). *Prothorax*.- Disk strongly campanulate; punctulate with many scattered coarser punctures; cervical sulcus shallow, short, extending from near coxal cavity to about 0.5 distance to pronotal midline; lateral prothoracic carina strong, extending from base to 0.7 distance to coxal cavity, carina on laterally expanded margins of prothorax; short median impressed sulcus on median basal lobe;

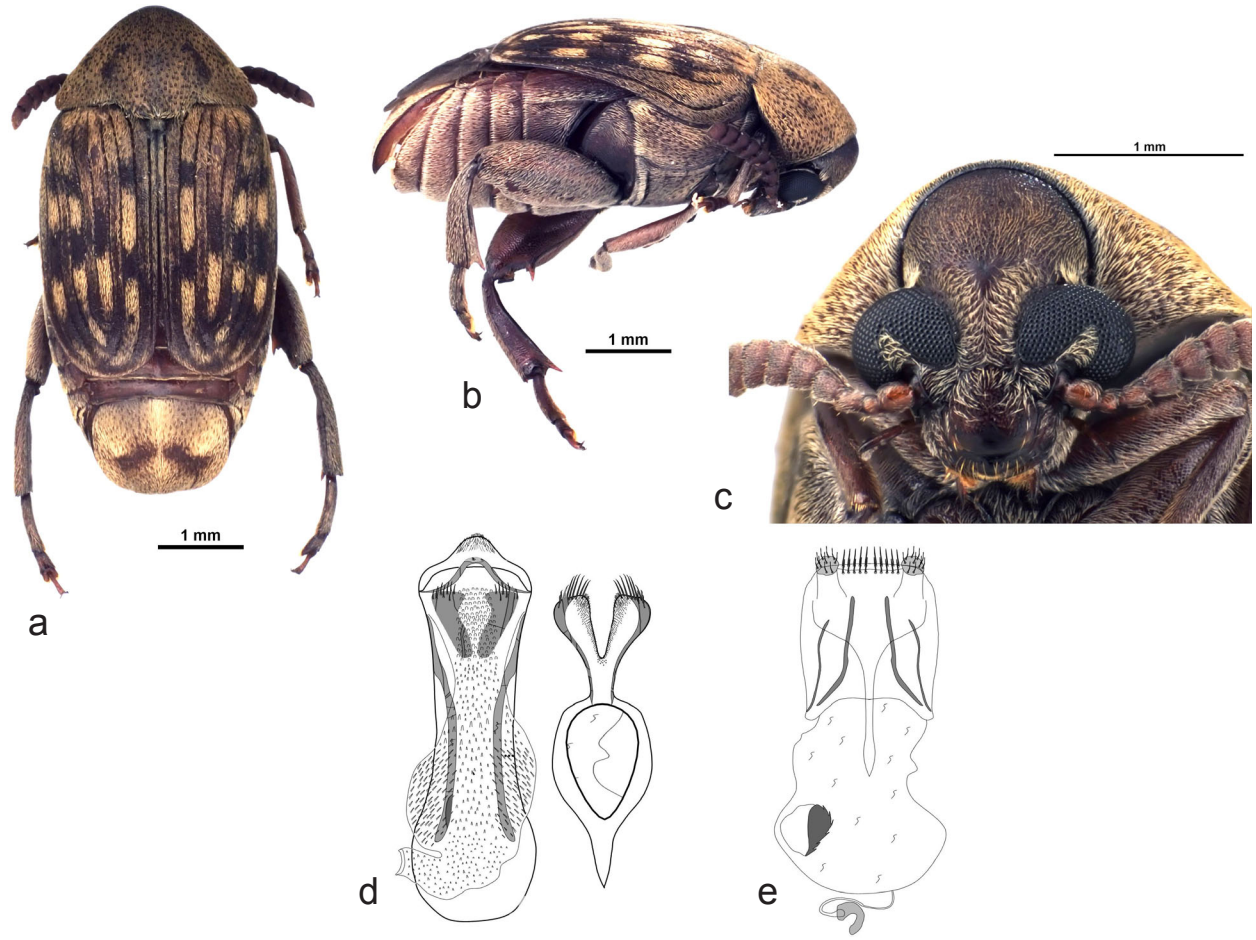

Figure 1. *Acanthoscelides sauli*. **a)** Male dorsal view. **b)** Male lateral view. **c)** Female head. **d)** Male genitalia. **e)** Female genitalia.

prosternum separating procoxae for about 0.7 their length. *Mesothorax and Metathorax*.- Scutellum small, bifurcate at posterior margin, clothed with dense white pubescence, transverse; elytron about twice as long as broad; striae deep, punctate, strial intervals punctulate; striae 3 and 4 closer at base than to adjacent striae, others subequal at base; humerus punctulate, red-orange; undersurfaces and all of hind coxa punctulate, lateral margins of thorax with some coarser punctures; hind femur constricted basally and apically, expanded medially to slightly more than width of coxa; ventral surface with carina on inner edge; femur armed with subapical acuminate spine 1.6 times as long as width of tibial base followed by 2 or 3 spines about 0.3 as long as first spine; tibia with ventral, lateral and dorsomesal glabrous longitudinal carinae, lateroventral carina only evident at base of tibia; dorsal surface of tibia without fossa; tibial corona with 3 - 4 spinules; mucro about two-sixth as long as first tarsomere; without sinus at base of mucro; first tarsomere with ventral, lateral and mesal glabrous longitudinal carinae. *Abdomen*.- First sternum slightly flattened medially, about 0.8 as long as remaining sterna; sterna 2 to 4 unmodified, fifth emarginate; pygidium punctulate, convex in lateral view.

Genitalia. Median lobe short, broad; in ventral view ventral valve with apex rounded, sides concave, 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 scales lining sac from apex to about 0.3 its length, remainder of the sac lined by fine spicules. Lateral lobes expanded at apex, cleft to about 0.6 their length (Fig. 1d).

Female. Measurements: Length (pronotum-elytra) 4.3-4.8 mm. Width 2.7-3.0 mm. Maximum thoracic depth 2.2-2.3 mm. Similar to male but last abdominal sternum not emarginate at apex.

Genitalia. The modified IX abdominal segment with normal size of the four sclerotized baculi; bursa copulatrix with an elliptic folded sclerite with 4-5 small teeth (Fig. 1e).

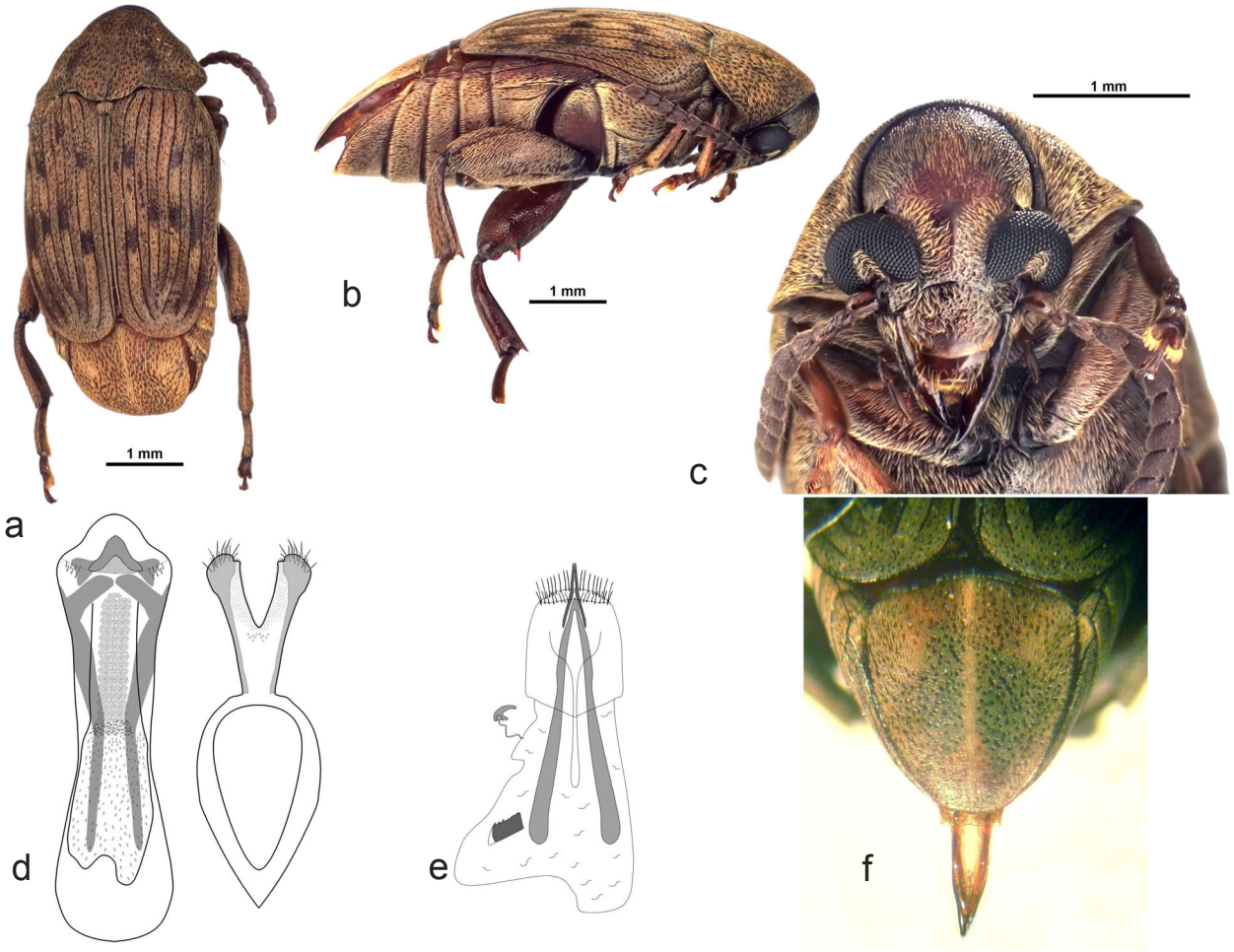

Figure 2. *Acanthoscelides oblongoguttatus*. **a)** Male dorsal view. **b)** Male lateral view. **c)** Female head. **d)** Male genitalia. **e)** Female genitalia. **f)** Stylets of female genitalia.

Distribution. Guatemala, Mexico (Chiapas, Tabasco, and Veracruz).

Host plants. *Acacia collinsii* Saff. and *Acacia cornigera* (L.) Willd.

Etymology. The specific epithet refers to the first name of Dr. Saúl Sánchez Soto, who collected the new species.

Type series. Holotype, allotype, and nine paratypes: Cardenas, Tabasco, Mexico, 21/V/2006, Saul S. Soto, reared seed *Acacia cornigera* (L.) Willd. Paratypes: 3 mi. N Escuintla, Guatemala, 29/III/1979, reared seed 1026-79 *Acacia cornigera* (L.) Willd., leg. C.D. Johnson (3 ex.); Microondas, km 161 carr. fed. Catemaco-Acayucan, Veracruz, Mexico, 22/IX/2007, 684 m, reared seed JRN # 453/2007 *Acacia cornigera* (L.) Willd., Romero N.J., 18°18'47.4"N, 95°05'50"W (2 ex.); Km 155 aut. Mexico-Tuxtla Gtz., vic. Reserva El Ocote, 24/IX/2007, 242 m, reared seed JRN # 456/2007 *Acacia cornigera* (L.) Willd., Romero N.J., 17°02'22.4" N, 93°33'01.5" W (9 ex.); Km 21 carr. fed. Cardenas-Coatzacoalcos, Campo exp. COLPOS, 23/IX72007 , 10 m, reared seed *Acacia cornigera* (L.) Willd., De la Cruz P.A., 17°59'10"N, 91°35'11"W (12 ex.); Carr. fed. al Ceibo, Tenosique, Tabasco, Mexico, 17/VII/2007, 12 m, reared seed *Acacia collinsii* Saff., De la Cruz P.A., 17°16'34" N, 91°03'53"W.

Holotype, allotype, and five paratypes deposited in the FSCA. Paratypes are deposited as follows TAMU- 5 specimens, USNM- 5 specimens, CNIN- 5 specimens, and CEAM- 31 specimens.

Diagnosis. *Acanthoscelides sauli* is the second species in the oblongoguttatus group. It can be separated from the latter using the following characters: mandibles short, extending lightly beyond labrum, not crossing apically; mucro about two-sixths as long as first tarsomere; pygidium with V-shaped patch of dark setae; male and female genitalia with different sclerites and structures.

Discussion. *Acanthoscelides oblongoguttatus* was redescribed by Johnson (1983a), whose samples contained the cryptic species described here. An unusual form of oviposition on pods of *A. cornigera* collected by Saúl Sánchez Soto attracted our attention. Upon examining genitalia of the adults, we determined there was *A. oblongoguttatus* and one undescribed species. After separating adults based on genitalia, we found external morphological characters, such as mandibles length, size of mucro on hind tibia, and pubescence on pygidium to be diagnostic also. In addition to diagnostic male genitalia and external morphology (compare Fig. 1-2), we found that female genitalia were useful to separate the species. Two characters were important: in *A. oblongoguttatus* the *bursa copulatrix* account with a rectangular folded sclerite with 6-7 small teeth (Fig. 2e); in *A. sauli* there is an elliptic folded sclerite with 4-5 small teeth (Fig. 1e). The second character involves the modified IX abdominal segment: in *A. oblongoguttatus* the two ventral *baculi* are unusually and sharply sclerotized as two strong long stylets; in *A. sauli* both the ventral and dorsal *baculi* are of the same consistency.

According to Johnson and Siemens (1997) the species that lay eggs in mass is *Merobruchus major* which oviposits clumps of 5-10 eggs on pods of *Ebenopsis ebano* (Berland.) Barneby and J. W. Grimes. In the same paper, Johnson and Siemens (1997) observed that *A. oblongoguttatus* oviposited 10-20 eggs onto fruits of *A. cornigera.* However, now we know it was not *A. oblongoguttatus* but *A. sauli* (Fig. 4). The third species showing this behavior is *Stator beali* Johnson, for which Nilsson and Johnson (1993) stated that the clumps are formed by 5-10 eggs and the bruchid used as host *Ebenopsis ebano.* There is one more species with this ovipositional behavior: according to Teran (1962) and Yus et al. (2007) *Pseudopachymerina spinipes* (Erichson) laid a mass of 4-10 eggs on pods of *Vachellia caven* (Mol.) Seig, and Eb. from Argentina and *Acacia farnesiana* (L.) Willd. from Spain, respectively.

Our field observations showed that only one larva from an egg mass makes the entrance hole on the pod, then the rest of larvae use the same hole to reach the seeds (Figure 5). Similarly, with the exit hole, the first adult to mature makes the hole, then the remainder usually use the same hole to exit (Fig. 3).

Acanthoscelides sousai Johnson, 1983

This species is easy to recognize by its characteristic pattern of pubescence. In collections it is poorly represented, because it is difficult to collect. A reason may be high competition for host plants. In *A. cornigera*, there is a complex of nine competing bruchid species. For example, in a sample of pods from this host collected at Campo Exp. Colegio de Postgraduados, km 21 carr. Cárdenas-Coatzacoalcos, Tabasco, Mexico, 23/X/2007, we found 33 specimens of *A. oblongoguttatus* and only one specimen of *A. sousai*. In its second host plant (*A. gentlei*) there are two species of *Mimosestes* (*M. brevicornis* and *M. viduatus*) also in competition with *A. sousai*.

Host plants. OLD RECORDS: *Acacia cornigera* (L.) Willd., *Acacia gentlei* Standley, and *Mimosa dormiens* Humb. and Bonpl. ex Willd.

Distribution. OLD RECORDS: Costa Rica, Guatemala, and Mexico (Chiapas, Tabasco, Veracruz).

Mimosestes cinerifer (Fahraeus), 1839

Mimosestes cinerifer is usually found associated with *A. oblongoguttatus* in seeds of *A. cornigera*. However, in our collection of *A. cornigera* pods from Laguna Colorada, Balancan, Tabasco, Mexico, 8/II/2007, we found three bruchids: *A. oblongoguttatus* (81.5%, n = 75), *M. cinerifer* (9.8%, n =9), and *S. subaeneus* (8.7%, n = 8). *Mimosestes cinerifer* is easy to separate using the characters given in the key.

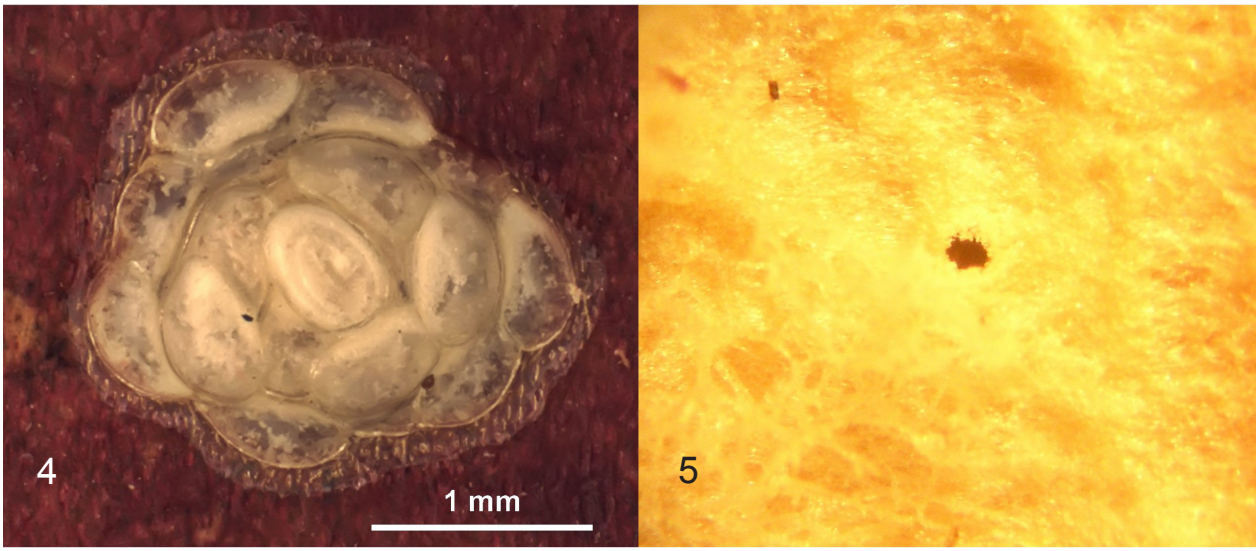

Figure 3-5. *Acanthoscelides sauli* and host pod. **3)** Pod with a clump of *Acanthoscelides sauli* eggs and exit hole for adult. **4)** Magnified egg clump of *Acanthoscelides sauli*. **5)** Inside wall of the pod, showing the entrance hole for the larvae.

Host plants. OLD RECORDS: *Acacia cornigera* (L.) Willd. and *Acacia macracantha* Humb. and Bonpl. ex Willd. NEW RECORD: *Acacia collinsii* Saff.: Carr. fed. al Ceibo, Tenosique, Tabasco, Mexico, 17/VII/2007, 12 m, De la Cruz P.A.

Distribution. OLD RECORDS: Guatemala and Mexico (Campeche, Chiapas, Guerrero, Oaxaca, Puebla, Tabasco, Tamaulipas, and Veracruz).

Mimosestes mimosae (Fabricius), 1781

The only record of *M. mimosae* reared from *A. cornigera* seeds is based on two specimens collected by C.D. Johnson at 3 miles N Escuintla, Guatemala, 29/III/1979. This information suggests *A. cornigera* is only an incidental host. Nevertheless, we included it in the key.

Host plants. OLD RECORDS: *Acacia bilimekii* Macbr., *A. cochliacantha* Humb. and Bonpl., *A. collinsii* Saff., *A. cornigera* (L.) Willd., *A. dealbata* Link, *A. farnesiana* (L.) Willd., *A. gaumeri* Blake, *A. globulifera* Saff., *A. hindsii* Benth., *A. hirtipes* Saff., *A. macracantha* Humb. and Bonpl. ex Willd.C.D., *A. pennatula* (Schldl. and Cham.) Benth., *A. tortuosa* (L.) Willd., *Caesalpinia coriaria* (Jacq.) Willd., *C. sclerocarpa* Standl., *Ceratonia siliqua* L., *Conzattia multiflora* (B.L. Rob.) Standl., *Parkinsonia aculeata* L., *Prosopis chilensis* (Molina) Stuntz, *P. juliflora* (SW.) DC. NEW RECORDS. *Bauhinia variegata* L.; Reserva de la

Biósfera Sierra de Huautla, Huautla, Morelos, Mexico, 4/X/1996, 1080 m, Romero N.J. *Caesalpinia velutina* (Britton and Rose) Standley; 22 km NW Puerto Escondido, Oaxaca, Mexico, 5/I/1980, Johnson C.D.

Distribution. OLD RECORDS: Argentina, Brazil, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, El Salvador, Guatemala, Guyana, Haiti, Hispaniola, Honduras, Jamaica, Mexico, Nicaragua, Panama, Puerto Rico, Trinidad, USA, and Venezuela. However this bruchid has become established in Algeria, Aruba, Azores, Egypt, France, Germany, Italy, Turkey, and Spain.

Mimosestes nubigens (Motschulsky), 1874

Mimosestes nubigens is a very common species and can be recognized easily because it has strong spines on anterior lateral margins of the prothorax.

Host plants. OLD RECORDS: *Acacia amentacea* DC., *A. cochliacantha* Humb. and Bonpl., *A. cornigera* (L.) Willd., *A. farnesiana* (L.) Willd., *A. globulifera* Saff., *A. schaffneri* (S. Watson) F.J. Herm., *A. tortuosa* (L.) Willd., *Cercidium floridum* subsp. *peninsulare* (Rose) Carter, *Prosopis chilensis* (Molina) Stuntz, *P. juliflora* (SW.) DC., and *P. pallida* (Humb. and Bonpl. ex Willd.) Kunth.

Distribution. OLD RECORDS: Brazil, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, (Aguascalientes, Baja California, Campeche, Chiapas, Chihuahua, Coahuila, Colima, Durango, Estado de México, Guanajuato, Guerrero, Hidalgo, Jalisco, Michoacán, Morelos, Nayarit, Nuevo León, Oaxaca, Puebla, Querétaro, San Luis Potosí, Sinaloa, Sonora, Tamaulipas, Veracruz, and Zacatecas), New Caledonia, Nicaragua, Panama, Philippine Islands, USA.

Mimosestes obscuriceps (Sharp), 1885

This species is one of the largest in the genus and similar in appearance to *Acanthoscelides*. However, both genera can be separated by characters given in the key. It is difficult to collect specimens of *M. obscuriceps* in the field, due to the complex of species that feed on *A. cornigera*, and because of its low number of host plants. Yet, in a sample of five *A. cornigera* pods collected at Microondas, km 161 carr. fed. Catemaco-Acayucan, Veracruz, Mexico, 22/IX/2007, we found 13 specimens of *M. obscuriceps* and only two specimens of *A. sauli*. The determination of *M. obscuriceps* was easy because the prosternum separates procoxae for their entire length and the pattern of pubescence is typical.

Host plants. OLD RECORDS: *Acacia cornigera* (L.) Willd. and *Vachellia sphaerocephala* (Schltdl. and Cham.) Seigler and Ebinger. NEW RECORDS: *Acacia collinsii* Saff.; Carr. fed. al Ceibo, Tenosique, Tabasco, Mexico, 17/VII/2007, 12 m, De la Cruz P.A.

Distribution. OLD RECORDS: Honduras and Mexico (Chiapas, Tamaulipas, Tabasco, and Veracruz).

Mimosestes viduatus (Sharp), 1885

According to Kingsolver and Johnson (1978) this species has various hosts in the genus *Acacia* but is not abundant in any particular species. Its distribution suggests a preference for swollen-thorn acacias.

Host plants. OLD RECORDS: *Acacia chiapensis* Saff., *A. cochliacantha* Humb. and Bonpl., *A. collinsii* Saff., *A. cornigera* (L.) Willd., *A. gentlei* Standley, *A. globulifera* Saff., and *A. hindsii* Benth.

Distribution. OLD RECORDS: Costa Rica, Guatemala, Honduras, Mexico (Campeche, Jalisco, Oaxaca, Quintana Roo, Sinaloa, Yucatán), Nicaragua, and Panama.

***Stator mexicanus* Bottimer, 1973**

This species is rare in collections. According to Johnson and Kingsolver (1976) the primary reason is that it breeds in seeds after they have fallen to the ground, a habit also reported by Bottimer (1973). However, another reason may be because many bruchids use the same resource and exhibit the oviposition guild A (bruchids that only oviposit in fruits on the plant), and by the time that seeds are available for *S. mexicanus* (guild C, bruchids that only oviposit on seeds once they are exposed on the ground) very few are left.

Host plants. OLD RECORDS: *Acacia cornigera* (L.) Willd.

Distribution. OLD RECORDS: Guatemala and Mexico (Campeche, Chiapas, Oaxaca,San Luis Potosí, and Veracruz).

***Stator subaeneus* (Schaeffer), 1907**

This species is in the same oviposition guild as *S. mexicanus*. However, we have found more specimens of *S. subaeneus* in the field than *S. mexicanus*. A simple explanation for this is that it has more host plants.

Host plants. OLD RECORDS: *Acacia collinsii* Saff., *Acacia cornigera* (L.) Willd., and *Acacia farnesiana* (L.) Willd.

Distribution.OLD RECORDS: Honduras, Mexico (Chiapas, Oaxaca, Puebla, San Luis Potosí, Tabasco,Tamaulipas, Veracruz, and Yucatán), USA.

General discussion

The country with the maximum number of bruchids associated with *Acacia cornigera* is Mexico, where there are ten species in three genera. There are few papers listing bruchids associated with any particular wild plant that includes keys and illustrations to those bruchids. For example, Kingsolver (1985) stated that in eleven species of *Parkia* he found eight species of bruchids representing two genera. Another very complete work is Johnson (1983c) who studied the seed beetles associated with 32 species of *Prosopis*. He found that the most complex plant-beetle relationship involved *P. juliflora,* with eight bruchid species in six genera, and *P. nigra* with eight bruchids in three genera. However, we know today that there are many more species of bruchids associated with these plants. Of course, the plant-insect relationship is limited by time, space, parasitoids, and other competitors. In other words it is difficult to find a host with all the associated bruchids at the same time and place. Usually we found no more than five species of bruchids in one host at the same time.

Acknowledgments

We thank Richard L. Westcott, Oregon Department of Agriculture, Salem, Oregon, and Paul E. Skelley, Florida Department of Agriculture and Consumer Services, Gainesville, Florida for reviewing the manuscript.

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Received May 7, 2009; Accepted August 24, 2009.