

Curculionoidea (Insecta: Coleoptera)
from the state of Guanajuato, Mexico

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Resumen. Este trabajo contribuye al conocimiento de las especies de curculionoideos presentes en el estado de Guanajuato, México. Se determinaron 73 géneros y 125 especies; se destacan, por el número de éstas, las subfamilias Baridinae, Curculioninae y Entiminae con 24, 24 y 23 especies, respectivamente. Los géneros con mayor cantidad de especies fueron *Geraeus* y *Anthonomus* con siete, y *Conotrachelus* con seis. Se obtuvieron 18 nuevos registros para la República Mexicana. El 53.7% de las especies de curculionoideos del estado de Guanajuato son de afinidad neotropical, el 26% son de afinidad neártica, el 18.4% son de distribución cosmopolita, y el resto (1.9%) antes solo se han registrado en las Antillas.

Summary. This study is a contribution to the knowledge of the weevil species present in the State of Guanajuato, Mexico. During this study, 73 genera and 125 species were identified. The subfamilies best represented were Baridinae, Curculioninae and Entiminae with 24, 24 and 23 species, respectively. The genera best represented were *Geraeus* and *Anthonomus* with seven species and *Conotrachelus* with six. Of the 125 species identified, 18 represent new country records. Of the weevil species found in Guanajuato, 53.7% are Neotropical, 26% are Nearctic, 18.4% are cosmopolitan, and the remainder (1.9%) previously were known only from the West Indies.

Introduction

The weevils are the family of living organisms with the largest number of species known. They can be found in all terrestrial habitats, and some species are aquatic. Larvae of many species feed on roots, stalks, branches, trunks, leaves, flowers, fruits and seeds of grasses, shrubs and trees; some feed on mosses, and others on fungi (Zimmerman, 1994).

O'Brien & Wibmer (1978) mentioned that through 1971 there were 4,237 genera and 44,883 species of Curculionidae *sensu lato* recognized as valid in the world. Also they pointed out that the Neotropical region contains the largest number of described species, with a total of 12,962. Luna

(1983) indicated that 36 of the then recognized 52 Neotropical subfamilies had been recorded for Mexico, which constituted 69.23% of the total number of subfamilies of Curculionoidea.

The endemism of the Mexican weevil genera is 6.5% and the endemism of the species is 40.5%. In the United States and Canada, endemism is much higher (31.2% of the genera and 76.6% of the species); this fact is due to the geographical location of Mexico in the center of the continent, which favors the faunal exchange with the northern and southern regions (Anderson & O'Brien, 1996). In the central area of Mexico, particularly in the State of Guanajuato, knowledge of the Curculionoidea is poor. This is the first study toward the contribution

to taxonomic knowledge of the superfamily Curculionoidea in Guanajuato.

Methods and materials

Location of the study area

This study was conducted in the State of Guanajuato, which is located near the center of Mexico, between 19° 55' 08" and 21° 52' 09" North latitude and between 99° 36' 06" and 102° 05' 07" West longitude.

Collection, preparation and identification of the material

Between January 1996 and December 1997, 20 collecting trips were carried out in different areas representative of the State. These areas correspond to an arid region in the northern municipalities, the mountainous country of central Guanajuato, an agricultural area of the Bajío, and the hotter and humid area of the south. Weevils were collected from trees by placing a mat underneath and shaking the foliage; a beating sheet was used for herbaceous and shrubby vegetation; some weevils with nocturnal habits were captured using an ultraviolet trap; some apterous species were obtained using pitfall traps; active fliers were captured using flight intercept traps in addition to yellow pan traps filled with water. Seeds and branches with larval damage were placed in rearing chambers in order to obtain adults.

The main reference used for the identification of the species was the *Biologia Centrali-Americana* (Champion, 1902-1909; Sharp, 1889-1911). The keys in Kissinger (1964), Hatch (1971), Dillon & Dillon (1972), Arnett (1973), Whitehead (1980), Arnett (1985), and Bright (1994) were used as well. The names and higher classification follow O'Brien & Wibmer (1982 & 1984), Wibmer & O'Brien (1986 & 1989) and Alonso-Zarazaga & Lyal (2000). Many species were identified through comparisons with specimens from the following collections: Charles W. O'Brien Collection (Tallahassee, Florida); National Insect Collection of INIFAP (Celaya, Guanajuato), and IFIT-CP Collection (Montecillos, Mexico). Reference material is deposited at the Entomological Collection "Leopoldo Tinoco Corona" of ICA-UGTO (Irapuato, Guanajuato).

Results and discussion

Weevil fauna

During this study, 1,787 specimens were collected, belonging to five families, 17 subfamilies, 42 tribes, 73 genera and 125 species. The subfamilies best represented are Baridinae (15 genera and 24 species), Curculioninae (10 genera and 24 species) and Entiminae (16 genera and 23 species). The genera represented by the most species are *Geraeus* and *Anthonomus* with seven each, and *Conotrachelus* with six. Eighteen of the species represent new country records (Table 1). Of special significance are *Sitona hispidulus* (Fabricius) (Entiminae) and *Hypera postica* (Gyllenhal) (Hyperinae), which were collected in large numbers in alfalfa fields and have been reported to be important pests of that crop in the United States and Europe.

Weevil species from the state of Guanajuato

Family APIONIDAE

Subfamily APIONINAE

Tribe APIONINI

Apion spp. Sierra de Lobos, León. 20/IX/95, 20/III/96, 20/VII/96. *Acacia* spp.; *Amaranthus* spp.; *Mimosa* spp.; *Quercus* spp. (10 specimens).

Apion nr. *tenuirostrum* Smith. 9 mi. N.E. Guadalupe Victoria 8000 feet, VIII/16/74, (3 specimens); 1 mi. N. Saucedo 7000 Feet, VI/29/1971. (1 specimen).

Apion nr. *varicorne* Smith. 1 mi. N. Saucedo 7000 Feet, VI/29/1971. (4 specimens)

Tribe PIEZOTRACHELINI

Chrysapion auctum (Sharp). El Copal, Irapuato. 4/VII/96. Maleza. (1 specimen).

Family ATTELABIDAE

Subfamily ATTELABINAE

Tribe ATTELABINI

Himatolabus umbosis Hamilton. 3 km S Xichú. 3/VIII/96. Maleza. (2 specimens).

Tribe PILOLABINI

Pilolabus klugii (Gyllenhal). Manzanar, San Luis de la Paz. 3/VIII/96. Maleza. (1 specimen).

Family RHYNCHITIDAE

Subfamily RHYNCHITINAE

Tribe RHYNCHITINI

Eugnamptus spp. 1 km Rancho de Enmedio carretera Dolores-Guanajuato; Cuenca de la Esperanza, Guanajuato; km 22 carretera León-San Felipe; Manzanar, San Luis de la Paz, 4/VII/96, 6/VII/96, 3/VIII/96, 31/VIII/96, 28/VI/97, *Quercus* spp., maleza, (7 specimens).

Haplorhynchites mexicanus (Gyllenhal). El Copal, Irapuato; Las Antenas, Irapuato. 7/VII/98, 1/IX/98, 24/X/98. *Helianthus* spp.; maleza; *Simsia amplexicaulis* (Cav.) Pers. (31 specimens).

Haplorhynchites quadripennis (Fall). Las Antenas, Irapuato. 24/X/98. *Simsia amplexicaulis* (Cav.) Pers. (4 specimens).

Haplorhynchites subauratus (Sharp). Santa Rosalba, Romita. 8/IX/96. *Bidens pilosa* L. (1 specimen).

Involvulus mollis (Sharp). 1 km E Rancho de Enmedio, Guanajuato; km 22 carretera León-San Felipe. 16/VII/96, 28/VI/97. *Quercus* spp. (3 specimens).

Family CURCULIONIDAE

Subfamily BARIDINAE

Tribe BARIDINI

Baris corrusca (Boheman). El Copal, Irapuato. 2/II/91, 28/X/96. *Baccharis* spp. (3 specimens).

Baris strenua (LeConte). El Copal, Irapuato; Las Palomas, Guanajuato; carretera Moroleón-Morelia camino al Aguacate; Frías, Cd. Manuel Doblado; km 5 carretera Salamanca-Irapuato. 3/VIII/94, 5/VIII/94, 6/VII/95, 12/VII/95, 31/VII/95, 31/X/95, 9/VII/96, 3/VIII/96, 31/VIII/96, 8/IX/96, 15/IX/97, 7/VII/98, 27/VII/98, 1/IX/98. *Amaranthus* spp.; *Cosmos bipinnatus* Cov.; *Helianthus annuus* L.; *Prosopis* spp.; *Simsia amplexicaulis* (Cov.) Pers.; *Sorghum vulgare* (L.). (26 specimens).

Pseudobaris apicalis (Boheman). 1.5 km N La Saucedá; El Copal, Irapuato. 29/VI/71, 28/X/96. Maleza. (2 specimens).

Trepobaris perlonga Champion. Gervasio Mendoza, Salvatierra; El Copal, Irapuato; Cd. Manuel Doblado. 30/VIII/95, 31/VII/96, 8/IX/96, 11/IX/96, 28/VII/97. *Agenia taliscana* Wats.; *Baccharis* spp.; Gramineae; *Zea mays* L. (4 specimens).

Trichobaris championi Barber. 1.5 km N La Saucedá; Cd. Manuel Doblado; El Copal, Irapuato. 29/VI/71, 10/VIII/89, 3/IV/95, 10/VII/95, 25/IX/95, 25/IV/96, 4/VII/97, 25/IX/97. *Chenopodium* spp.; *Physalis* spp.; *Sorghum vulgare* (L.). (12 specimens).

Trichobaris major Barber. 1.5 km N La Saucedá, Guanajuato. 29/VI/71. (1 specimen).

Trichobaris pellicea (Boheman). km 11 carretera León-Ocampo. 28/VI/97. Maleza. (1 specimen).

Tribe MADARINI

Onychobaris ambigua Casey. 4 km S San Luis de la Paz. 13/VIII/98. Gramineae. (1 specimen).

Stictobaris ornatella Casey. San Pedro, Comonfort; 1.5 km N La Saucedá; El Copal, Irapuato; Las Antenas, Irapuato; km 5 carretera Salamanca-Irapuato. 20/VI/71, 20/VII/89, 10/IX/90, 5/VIII/94, 3/VIII/95, 20/VII/96; 23/VIII/96, 21/X/97, 31/III/98, 21/IV/98, 4/VII/98, 19/VII/98, 5/VIII/98. *Amaranthus* spp.; en trampa amarilla. (30 specimens).

Tribe MADOPTERINI

Apinocis angustus (Casey). Los Espárragos, Silao. 26/XI/96. *Cynodon dactylon* (L.). (4 specimens).

Barilepton quadricolle LeConte. El Copal, Irapuato. 12/XI/96, 13/III/97, 9/IV/97. Cyperaceae; Gramineae. (68 specimens).

Barinus spp. El Copal, Irapuato. 5/II/90. En trampa amarilla. (3 specimens).

Centrinopus mistus Champion. El Copal, Irapuato. 6/VII/95. *Artemisia* sp. (1 specimen).

Geraeus candidus Champion. El Copal, Irapuato. 8/VII/94, 28/VII/98. Asteraceae; *Mimosa* spp. (3 specimens).

Geraeus dugesi Champion. Tarandacuao; 16 km S Cd. Manuel Doblado. 17/VII/96; 9/VIII/98. *Baccharis* spp.; Gramineae. (3 specimens).

***Geraeus hospes* (Casey).** El Copal, Irapuato. 3/VIII/94, 4/IX/96, 10/VII/97, 25/IX/97. *Amaranthus* sp.; *Artemisia ludoviciana* Nutt.; *Coriandrum sativum* L.; *Prosopis* sp. (4 specimens).

***Geraeus perscitus* (Herbst).** El Copal, Irapuato. 14/VIII/90, 5/IX/94, 26/IX/95, 28/IX/95, 28/VI/96, 28/X/96, 13/III/97, 11/IX/97, 25/IX/97, 30/IX/97. *Amaranthus* spp.; *Coriandrum sativum* L.; Gramineae; *Malva parviflora* L. (14 specimens).

***Geraeus senilis* (Gyllenhal).** El Copal, Irapuato. 6/IX/90, 1/VII/93, 3/IX/93. *Zea mays* L. (4 specimens).

***Geraeus tonsus* Champion.** El Copal, Irapuato; Acámbaro; 15 km NE Dolores Hidalgo. 3/IX/93, 16/VIII/94, 17/VII/96. Maleza; *Zea mays* L. (2 specimens).

***Geraeus varius* Champion.** 3 km S San José Iturbide. 2/VIII/96. Maleza. (1 specimen).

***Limnobaris discreta* Champion.** Rancho de Enmedio, Guanajuato. 16/VII/96, 24/VI/97. *Quercus* spp. (2 specimens).

***Nicentrus femoralis* Champion.** El Copal, Irapuato. 7/VII/90, 27/VIII/90, 31/VIII/90, 14/IX/90, 19/X/90, 10/VIII/93, 26/VIII/93, 7/IX/93, 3/VII/95, 10/VIII/95, 23/VIII/95, 6/VIII/97, 12/VIII/97, 11/IX/97, 30/IX/97, 12/VIII/98. *Citrus sinensis* (L.) Osb.; *Medicago sativa* L.; *Sorghum vulgare* (L.); *Zea mays* L. (20 specimens).

***Pseudocentrinus ochraceus* (Boheman).** El Copal, Irapuato. 29/IX/94, 23/VIII/96, 27/VIII/96, 4/IX/96, 6/IX/96, 11/IX/96, 8/IX/98. *Baccharis salicifolia* (Ruíz & Pavón); Gramineae; *Marrubium vulgare* L. (32 specimens).

Tribe OPTATINI

***Optatus palmaris* (Pascoe).** Salamanca; Pénjamo. 30/VI/52, 8/VII/89. *Annona cherimola* Mill. (9 specimens).

Subfamily CEUTORHYNCHINAE

Tribe CEUTORHYNCHINI

***Ceutorhynchus truquii* (Champion).** El Puerto del Milagro, Xichú. 3/VII/96. *Brassica campestris* L., *B. rapa* L.; *Quercus* spp. (38 specimens).

Tribe CNEMOGONINI

***Auleutes asper* (LeConte).** El Copal, Irapuato; La Providencia, Abasolo; La Ordeña, Salaman-

ca. 5/VII/91, 13/X/93, 30/III/96, 15/V/96, 23/V/96, 31/V/96, 14/VI/96, 20/VI/96, 26/VI/96, 28/VI/96, 7/VII/96, 9/VII/96, 23/VIII/96, 28/II/98. Gramineae; *Medicago sativa* L.; *Parthenium hysterophorus* L. (19 specimens).

Tribe PHYTOBIINI

***Rhinoncus pyrrhopus* Boheman.** El Copal, Irapuato. 16/X/97. *Polygonum punctatum* Ell. (40 specimens).

Subfamily CONODERINAE (formerly ZYGOPINAE)

Tribe LECHRIOPINI

***Lechriops auritus* (Schönherr).** El Copal, Irapuato. 29/IX/95, 18/IX/96. *Marrubium vulgare* L. (3 specimens).

Tribe PIAZURINI

***Cratosomus punctulatus* Gyllenhal.** Irapuato; León. 2/VI/72, 18/VIII/91, 25/IX/91. Maleza; *Physalis* spp. (3 specimens).

Tribe ZYGOPINI

***Cylindrocopturus adpersus* (LeConte).** El Copal, Irapuato. 6/V/96, 10/VII/97. *Artemisia ludoviciana* Nutt. (4 specimens).

***Cylindrocopturus biradiatus* Champion.** El Copal, Irapuato; Salamanca. 8/III/98, 18/III/98, 31/III/98, 2/IV/98, 8/IV/98, 15/IV/98, 21/IV/98, 5/V/98, 7/VII/98. *Opuntia* spp. (34 specimens).

***Cylindrocopturus ganglbaueri* (Heller).** Márquez, Irapuato. 4/VII/98. *Opuntia* spp. (8 specimens).

Subfamily COSSONINAE

Tribe COSSONINI

***Cossonus convexirostris* Champion.** El Copal, Irapuato; Santiago Maravatío; León. 10/VII/94, 3/II/96, 7/VII/96, 31/VIII/96. Sobre suelo. (4 specimens).

Tribe DRYOTRIBINI (formerly
COTASTERINI)

Caulophilus oryzae (Gyllenhal). Irapuato. 30/VII/98. En semilla de *Persea americana* Mill. en suelo. (30 specimens).

Subfamily CRYPTORHYNCHINAE

Tribe CRYPTORHYNCHINI

Gerstaeckeria mutillaria (Gerstaecker). Victoria. 20/V/96. Larva alimentándose de *Mamillaria erythrosperma* Böed. (2 specimens).

Gerstaeckeria unicolor Fisher. Barro Colorado, San Luis de la Paz; Manzanar, San Luis de la Paz; 3 km N San José Iturbide. 2/VIII/96, 3/VIII/96, 13/VIII/98. *Cylindropuntia imbricata* (Haw.) Knuth. (37 specimens).

Maemactes punctatus Kissinger. El Copal, Irapuato. 8/X/96, 17/XI/98, 24/XI/98. En trampa pitfall. (5 specimens).

Pseudomopsis similis Champion. El Copal, Irapuato. 10/VII/97. *Acacia* sp. (1 specimen).

Subfamily CURCULIONINAE

Tribe ANTHONOMINI

Anthonomus deliquilus Clark & Burke. El Copal, Irapuato; 25 km N Santa Cruz de Juventino Rosas. 23/X/96, 17/VII/97. *Ipomoea* sp.; *Quercus* sp. (2 specimens).

Anthonomus eugenii Cano. El Copal, Irapuato; Gervasio Mendoza, Salvatierra; San Vicente, Salamanca; Granja Guadalupe, Irapuato. 4/VII/89, 15/X/90, 4/IX/93, 1/VII/94, 6/VII/95, 31/VIII/96, 25/IX/97, 30/IX/97. *Artemisia* spp.; *Capsicum annum* L.; *Medicago sativa* L.; *Pisum sativum* L.; *Solanum rostratum* Duval. (16 specimens).

Anthonomus mexicanus Boheman. Irapuato; Gervasio Mendoza, Salvatierra. 28/IX/95, 31/VIII/96, 10/IX/96, 11/IX/96, 18/IX/96, 8/X/96, 22/X/96, 25/X/96, 10/IX/97, 16/X/97. *Marrubium vulgare* L. (57 specimens).

Anthonomus squamans Champion. El Copal, Irapuato. 4/VII/96, 10/IX/97, 11/IX/97, 16/X/97. *Coniza canadiensis* (L.) Cronq.; *Cynodon dactylon* (L.); *Marrubium vulgare* L.; *Sphaeralcia angustifolia* (Cov.) G. Don. (9 specimens).

Anthonomus suturalis LeConte. El Copal, Irapuato. 6/VII/95, 20/IX/95, 7/VII/97. *Acacia* spp.;

Amaranthus spp.; *Medicago sativa* L. (8 specimens).

Anthonomus texanus Dietz. 1.6 km N La Saucedita, Guanajuato; El Copal, Irapuato; San Felipe. 29/VI/74, 28/IX/95, 22/IX/96, 16/X/97. *Sphaeralcia angustifolia* (Cov.) G. Don. (9 specimens).

Anthonomus thyasocnemoides Hustache. El Copal, Irapuato. 2/X/95, 7/III/96, 8/X/96, 7/VII/97, 10/IX/97. *Acacia* spp.; *Artemisia* spp.; *Marrubium vulgare* L. (16 specimens).

Pseudanthonomus gluon Clark. El Copal, Irapuato. 28/IX/95, 25/X/96, 28/X/96. *Ipomoea* spp. (8 specimens).

Smicraulax tuberculatus Pierce. El Copal, Irapuato. 28/IX/95. *Psittacanthus calyculatus* G. Don. (1 specimen).

Tribe CURCULIONINI

Curculio ortegai Gibson. 1 km E de Rancho de Enmedio, Guanajuato. 16/VII/96. *Quercus* spp. (1 specimen).

Tribe DERELOMINI

Phyllotrox suturalis (Boheman). La Providencia, Abasolo; Las Palomas, Guanajuato; El Copal, Irapuato. 20/I/96, 30/III/96, 6/IV/96. *Acacia* spp.; *Baccharis* spp.; *Medicago sativa* L. (9 specimens).

Tribe OTIDOCEPHALINI

Myrmex spp. 1 km S Atarjea; 25 km N Juventino Rosas. 11/X/96, 17/VII/97. Maleza; *Quercus* sp. (2 specimens).

Tribe PRIONOBRACHIINI

Prionobrachium schoenherri Faust. San Antonio, Salvatierra; El Copal, Irapuato. 17/VII/96, 23/X/96, 3/IV/97, 24/VI/97, 28/VII/97. *Agenia taliscana* Wats; Malvaceae. (9 specimens).

Tribe SMICRONYCHINI

Smicronyx albonotatus Anderson. Km 23 carretera Dolores-Guanajuato; km 56 carretera León-Ocampo. 4/VIII/96, 28/VI/97. Maleza. (3 specimens).

Smicronyx corniculatus (Fåhraeus). El Copal, Irapuato; 8 km S San Luis de la Paz; Apaseo El

Grande. 26/IV/96, 16/VII/97, 16/VIII/97, 13/VIII/98. *Acacia* spp.; *Artemisia ludoviciana* Nutt. (56 specimens).

***Smicronyx quadriker* Casey.** El Copal, Irapuato. 20/III/96. *Acacia* sp. (1 specimen).

***Smicronyx spretus* Dietz.** Km 39 carretera León-Ocampo. 28/VI/97. *Quercus* sp. (1 specimen).

***Smicronyx tenuirostris* Champion.** El Copal, Irapuato. 9/VI/98. Maleza. (1 specimen).

Tribe TYCHIINI

***Sibinia aulacis* Clark.** Las Palomas, Guanajuato. 2/XI/98. *Mimosa* spp. (47 specimens).

***Sibinia candidata* Champion.** El Copal, Irapuato. 6/VII/90, 9/VII/96, 5/VI/97, 30/VI/98. *Sorghum vulgare* (L.). (8 specimens).

***Sibinia inermis* (Casey).** Carretera Juventino Rosas-Guanajuato; El Copal, Irapuato; km 3 carretera San José Iturbide-Guanajuato; San Felipe; El Milagro, carretera Guanajuato-Juventino Rosas. 9/XI/94, 22/III/95, 9/XI/95, 29/I/96, 31/I/96, 7/III/96, 11/III/96, 12/III/96, 20/III/96, 27/III/96, 1/IV/96, 22/IV/96, 9/V/96, 16/VII/96, 2/VIII/96, 7/IX/96, 9/V/97, 7/VII/97. *Acacia* spp.; *Bougainvillea* spp.; *Sorghum vulgare* (L.). (123 specimens).

***Sibinia setosa* (LeConte).** 30 km NE Dolores Hidalgo; El Copal, Irapuato; La Aldea, Silao. 16/VIII/71, 3/VIII/94, 5/X/94, 1/II/95, 22/II/95, 10/V/95, 17/V/95, 24/V/95, 31/V/95, 7/VI/95, 31/III/96, 26/IV/96. *Acacia* spp.; *Prosopis* spp. (56 specimens).

***Sibinia suturalis* (Schaeffer).** El Copal, Irapuato; Manzanar, San Luis de la Paz; Camino a la Garrida, Irapuato. 28/II/94, 20/VII/94, 3/VIII/94, 31/VIII/94, 14/IX/94, 7/VI/95, 22/VI/95, 31/VIII/96, 7/VII/97, 10/VII/97, 3/VIII/98, 29/VIII/98. *Acacia* spp.; *Artemisia ludoviciana* Nutt.; *Mimosa* spp.; *Prosopis* spp. (34 specimens).

Incertae sedis

***Macrorhoptus sphaeralciae* Pierce.** El Copal, Irapuato. 8/X/96. *Marrubium vulgare* L. (3 specimens).

Subfamily CYCLOMINAE (formerly RHYTIRRHININAE)

Tribe RHYTIRRHININI (formerly LISTRODERINI)

***Listronotus grypidioides* (Dietz).** Cruce Río Laja y carretera San Felipe-Guanajuato. 16/VII/96. Maleza. (2 specimens).

***Listronotus punctiger* LeConte.** El Copal, Irapuato. 18/IX/98. Maleza. (1 specimen).

Subfamily ENTIMINAE

Tribe BRACHYDERINI

***Ameladus inornatus* Sharp.** El Copal, Irapuato. 29/IX/95. Maleza. (1 specimen).

***Chaetopantus* sp.** Km 13 carretera J. Rosas-Celaya; 8 km E San Luis de la Paz; Santa Catarina. 2/VIII/96, 16/VIII/97, 13/VIII/98. Gramineae. (3 specimens).

***Mitostylus setosus* (Sharp).** Km 70 carretera Guanajuato-Querétaro; Arandas, Irapuato; km 56 carretera León-Ocampo; El Bobo, San Luis de la Paz; Santa Catarina; Camino a la Garrida, Irapuato; El Copal, Irapuato. 10/IX/82, 10/VII/94, 12/VII/95, 6/VII/96, 2/VIII/96, 6/IX/96, 28/VI/97, 7/VII/98, 27/VII/98, 28/VII/98, 13/VIII/98, 29/VIII/98, 1/IX/98. *Amaranthus* spp.; *Artemisia ludoviciana* Nutt.; *Capsicum annum* L.; *Cucumis sativus* L.; Gramineae; *Medicago sativa* L.; *Mimosa* spp.; *Verbesina virgata* Cov. (46 specimens).

Tribe GEONEMINI

***Bradyrhynchoides rugicollis* (Sharp).** Las Antenas, Irapuato. 7/VII/98, 9/VII/98, 27/VII/98. *Amaranthus* spp.; Polygonaceae. (6 specimens).

***Epicaerus costatus* Sharp.** El Cubilete, Silao. 3/II/86. Maleza. (1 specimen).

***Epicaerus squalidus* Sharp.** Santa Catarina. 2/VIII/96. Maleza. (2 specimens).

***Naupactopsis delumbis* Champion.** Rancho de Enmedio, Guanajuato. 16/VII/96. *Quercus* sp. (1 specimen).

Tribe NAUPACTINI

***Megalostylus albicans* (Lacordaire).** El Carmen, San Francisco del Rincón. 8/IX/96. Maleza. (1 specimen).

***Pantomorus albosignatus* Boheman.** 9 km N Dolores Hidalgo; Santa Catarina; El Principe, San Diego de la Unión; Manzanar, San Luis de la Paz; San Jerónimo, Comonfort; cruce Río Lajas y carretera San Felipe; km 25 carretera Dolores Hidalgo-Guanajuato; 3 km S San José

Iturbide; Chamácuaro, Celaya; El Copal, Irapuato; Río Blanco, Atarjea. 16/VIII/71, 8/VII/94, 28/VII/94, 10/VIII/94, 7/VI/95, 25/VI/95, 12/VII/95, 2/VII/96, 16/VII/96, 17/VII/96, 20/VII/96, 2/VIII/96, 3/VIII/96, 4/VIII/96, 24/VI/97, 25/VI/97, 3/VII/97. *Acacia* spp.; *Cylindropuntia imbricata* (Haw.) Knuth.; *Mimosa* spp.; *Prosopis* spp.; *Schinus molle* L.; *Sorghum vulgare* (L.). (93 specimens).

***Pantomorus cervinus* (Boheman).** El Copal, Irapuato. 15/IX/97. En follaje de *Persea americana* Mill. (5 specimens).

***Pantomorus uniformis* Sharp.** 14 km N León; El Copal, Irapuato; Camino a la Garrida, Irapuato. 16/VIII/74, 8/X/96, 11/IX/97, 29/VIII/98. *Marrubium vulgare* L.; *Zaluzania augusta* (Lay) Sch. (3 specimens).

Tribe OPHRYASTINI

***Ophryastes cinereus* Fähræus.** El Copal, Irapuato. 28/II/94, 19/X/94, 8/X/96, 28/X/96. *Ipomoea heredaceae* Sessé & Moc.; *Malva parviflora* L.; *Mimosa* sp.; *Prosopis* sp. (4 specimens).

***Ophryastes sordidus* LeConte.** El Copal, Irapuato. 24/XI/98, 2/XII/98, 17/XII/98. Trampa pitfall en pastizal. (13 specimens).

Tribe POLYDRUSINI

***Pythis amplicollis* Champion.** El Copal, Irapuato. 15/V/97. *Medicago sativa* L. (1 specimen).

Tribe SITONINI

***Sitona hispidulus* (Fabricius).** Apaseo el Grande; Arandas, Irapuato; El Copal, Irapuato. 6/VII/96, 16/VIII/97. Gramineae; *Medicago sativa* L. (5 specimens).

Tribe TANYMECINI

***Isodacrys geminatum* Howden.** Ojo de Calvillo, Dolores Hidalgo. 16/VII/96. Gramineae. (1 specimen).

***Isodrusus debilis* Sharp.** 25 km NE Guanajuato; Santa Rosa, Guanajuato; Rancho de Enmedio Guanajuato; Las Palomas, Guanajuato; 22 km N de Guanajuato. 16/VIII/74, 16/VII/96, 12/X/96, 3/VIII/97, 2/XI/98. *Quercus* spp. (21 specimens).

***Pandeleiteius subcancer* Howden.** 30 km NE Dolores Hidalgo. 16/VIII/74. (2 specimens).

***Pandeleiteius ciliatipennis* Champion.** Rancho de Enmedio, Guanajuato; 25 km N Juventino Rosas. 16/VII/96, 17/VII/97. *Quercus* spp. (4 specimens).

***Pandeleiteius tibialis* Boheman.** Rancho de Enmedio, Guanajuato; 29 km N Juventino Rosas; Santa Rosa, Guanajuato; 25 km N León; Cuenca de la Esperanza, Guanajuato. 16/VII/96, 4/VIII/96, 12/X/96, 28/VI/97, 7/VII/97, 17/VII/97. *Arbutus* spp.; *Quercus* spp. (21 specimens).

***Pandeleiteius viridiventris* Champion.** El Durazno, Atarjea. 14/V/94. *Pinus cembroides* Zucc. (1 specimen).

***Pandeleiteius vitticollis* Champion.** Santa Rosa, Guanajuato. 12/X/96. *Quercus* spp. (2 specimens).

***Tanymecus confusus* Say.** El Copal, Irapuato; Las Antenas, Irapuato. 22/VII/93, 1/VIII/93, 10/VII/95, 12/VII/95, 4/IX/96, 25/IX/97. *Amaranthus* spp.; *Asparagus officinalis* L.; *Chenopodium* spp.; *Sorghum vulgare* (L.). (9 specimens).

Subfamily ERIRHININAE

Tribe TANYSPHYRINI

***Tanyspyryrus lemnae* (Fabricius).** El Copal, Irapuato. 28/IX/90. En follaje de *Zea mays* L. (1 specimen).

Subfamily HYPERINAE

Tribe HYPERINI

***Hypera postica* (Gyllenhal).** El Copal, Irapuato. 12/III/96, 13/III/96, 4/IX/96, 7/III/97, 18/IV/97, 2/V/97, 15/V/97, 11/IX/97, 30/IX/97, 27/VII/98. *Medicago sativa* L. (57 specimens).

Subfamily LIXINAE (formerly CLEONINAE)

Tribe LIXINI

***Lixus inermis* Champion.** San Antonio, Salvatierra. 17/VII/96. Maleza. (8 specimens).

***Lixus merula* Suffrian.** El Copal, Irapuato. 16/X/97. *Polygonum punctatum* Ell. (1 specimen).

***Microlarinus lypriformis* (Wollaston).** El Copal, Irapuato. 28/IX/96, 22/X/96, 18/IV/97, 15/V/97, 17/XII/98, 19/I/99, 22/I/99, 2/II/99. *Baccharis* sp.; *Hyptis mutabilis* (Rich.) Briq.; *Med-*

icago sativa L.; trampa pitfall en pastizal. (14 specimens).

**Subfamily MESOPTILIINAE (formerly
MAGDALIDINAE)**

Tribe LAEMOSACCINI

***Laemosaccus exsculptus* Champion.** Cruce Río Laja y carretera San Felipe-Guanajuato. 16/VII/96. Maleza. (1 specimen).

***Laemosaccus ruficornis* Champion.** Sierra de Lobos, León. 20/VII/96. *Quercus* sp. (1 specimen).

Subfamily MOLYTINAE

Tribe CLEOGONINI

***Rhyssomatus nigerrimus* Fähræus.** El Copal, Irapuato; Camino a la Garrida, Irapuato; Manzanar, San Luis de la Paz; km 15 carretera Victoria-Xichú; San Jesús del Monte, San Francisco del Rincón; Cuenca de la Esperanza, Guanajuato; El Carmen, Purísima del Rincón. 15/VI/91, 20/VII/91, 4/IX/91, 8/VII/94, 18/VII/94, 20/VII/94, 29/VII/94, 3/VIII/94, 10/VIII/94, 17/VIII/94, 23/VIII/94, 31/VIII/94, 7/IX/94, 14/IX/94, 5/X/94, 2/IX/95, 3/VIII/96, 4/VIII/96, 23/VIII/96, 31/VIII/96, 8/IX/96, 11/IX/96, 18/X/96, 10/VII/97, 27/VII/98, 28/VII/98, 29/VIII/98. *Acacia* spp.; *Amaranthus* spp.; *Baccharis salicifolia* (Ruíz & Pavón); *Ficus* spp.; Gramineae; *Ipomoea* spp., *I. heredaceae* Sessé & Moc.; *Mimosa* spp.; *Prosopis* spp.; *Prunus persicae* L. (88 specimens).

***Rhyssomatus sculpturatus* Champion.** Valle de Santiago; El Copal, Irapuato. 14/X/90, 4/IX/91, 22/VII/93, 27/IX/95, 28/IX/95, 2/X/95, 8/X/95, 4/IX/96, 11/IX/96, 18/IX/96, 8/X/96, 22/XI/96. *Baccharis* spp.; *Bidens* spp.; *Cupressus* spp.; *Ipomoea* spp., *I. heredacea* Sessé & Moc.; *Marrubium vulgare* L. (37 specimens).

Tribe CONOTRACHELINI

***Conotrachelus aguacatae* Barber.** Las Antenas, Irapuato. 15/IX/97. En follaje de *Persea americana* Mill. (21 specimens).

***Conotrachelus cinerascens* Champion.** Las Antenas, Irapuato. 29/IX/97. En flor de *Tithonia tubaeformis* (Jacq.) Cass. (1 specimen).

***Conotrachelus dimidiatus* Champion.** Xichú. 3/VIII/96. En follaje de *Mangifera indica* L. (2 specimens).

***Conotrachelus flavangulus* Champion.** El Copal, Irapuato. 4/IX/92, 4/VII/96, 18/IV/97, 5/VI/97, 11/VII/97. Trampa de luz. (5 specimens).

***Conotrachelus leucophaeatus* Fähræus.** El Copal, Irapuato. 2/VI/93, 3/VII/95, 1/VII/96, 8/V/97, 29/V/97, 5/VI/97, 4/VII/97, 11/VII/97. Asteraceae; *Rosa* spp.; en trampa de luz. (15 specimens).

***Conotrachelus lobatus* Champion.** Irapuato. 19/VII/93. Trampa de luz. (1 specimen).

***Pheloconus rubicundulus* (Boheman).** El Copal, Irapuato. 28/IX/95, 9/VII/96, 8/X/96, 22/X/96, 25/X/96, 10/IX/97, 11/IX/97. Gramineae; *Malva parviflora* L.; *Marrubium vulgare* L. (98 specimens).

Family DRYOPHTHORIDAE

Subfamily RHYNCHOPHORINAE

Tribe LITOSOMINI (formerly SITOPHILINI)

***Sitophilus granarius* (Linnaeus).** El Copal, Irapuato. 23/I/96. *Zea mays* L. (1 specimen).

***Sitophilus linearis* (Herbst).** León. 3/VII/95. Sobre suelo. (1 specimen).

***Sitophilus oryzae* (Linnaeus).** El Copal, Irapuato. 7/VII/89, 12/X/95, 7/VII/97. Gramineae; *Parthenium hysterophorus* L.; *Zea mays* L. (5 specimens).

***Sitophilus zeamais* Motschulsky.** El Copal, Irapuato. *Zea mays* L. (22 specimens).

Tribe SPHENOPHORINI

***Metamasius spinolae* (Gyllenhal).** 1 km E de Rancho de Enmedio, Guanajuato; El Copal, Irapuato; San Antonio el Rico, Irapuato; km 39 carretera León-Ocampo; La Garrida, Irapuato; Manzanar, San Luis de la Paz. 18/VI/90, 20/VIII/90, 9/VIII/94, 5/VII/95, 11/VII/95, 28/VI/96, 1/VIII/96, 3/VIII/96, 23/VI/97, 28/VI/97, 8/VII/97, 28/VII/98, 29/VII/98. *Opuntia* spp.; *Quercus* spp. (38 specimens).

***Rhodoaenus auctus* Chevrolat.** Las Antenas, Irapuato; El Copal, Irapuato. 9/VII/90, 16/XI/91, 11/XI/92, 22/VII/93, 6/VII/95, 12/VII/95, 9/VII/96, 24/X/96, 4/VII/97. *Amaranthus* spp.; *Asparagus officinalis* L.; Gramineae; *Physalis pubescens* L.; *Populus* spp.; *Sorghum halap-*

ense (L.) Pers.; *Tithonia tubaeformis* (Jacq.) Cass.; *Triticum aestivum* L. (11 specimens).

***Rhodoabaenus mundus* (Champion)**. San Antonio, Salvatierra. 17/VII/96. Maleza. (1 specimen).

***Scyphophorus acupunctatus* Gyllenhal**. Puenteillas, Guanajuato; Hacienda Silva, Romita. 12/IV/00, 12/V/00. *Agave* spp. (12 specimens).

***Sphenophorus cicatristriatus* Fähræus**. Vilagrán. 10/XI/92. Maleza. (1 specimen).

***Sphenophorus phoeniciensis* Chittenden**. El Dorado, Irapuato. 12/XII/93, 16/IX/97, 13/VI/98. *Cynodon dactylon* (L.). (4 specimens).

***Sphenophorus venatus* (Say)**. El Dorado, Irapuato. 10/IV/97. *Cynodon dactylon* (L.). (1 specimen).

Faunal distribution

The State of Guanajuato has 2.6% of the weevil genera and 0.68% of the weevil species recorded for the American Continent, and 15.8% of the genera and 5.2% of the species recorded for Mexico.

The geographic location of Central America, including Mexico, allows an extensive faunal exchange, evidenced by the low endemism at the generic level. Only 29 genera of Curculionoidea are endemic to Mexico and 57 to Central America; in addition, most endemic genera are monotypic (25 of the 29 genera present in Mexico and 49 of the 57 genera present in Central America), which suggests that they are members of a highly evolved taxon (Anderson & O'Brien, 1996). It is probable that the number of species listed in this work represents less than half of the species present in Guanajuato, since the irregular nature of the terrain provides various microhabitats that favor isolation of populations leading to speciation.

A comparison of the weevil fauna of Guanajuato with the weevil fauna of other regions shows that 53.7% of the species (*e.g.*, *Pandeleiteius* and *Conotrachelus*) are Neotropical, 26% (*e.g.*, *Smicronyx*) are Nearctic, 18.4% (*e.g.*, *Sitophilus*) are cosmopolitan, and 1.9% previously were known only from the West Indies. Most of the Nearctic species are distributed in the southwestern United States, and it is possible that the corridor between the Sierra Madre Oriental and the Rocky Mountains has contributed to their spread. Some species are present in the southern United States, because the Mexican Plateau is an extension of the Chihuahuan desert. Three subfamilies (Baridinae, Entiminae and Molytinae) are primarily Neotropical. O'Brien & Wibmer (1978) record 411 genera and 2,968

species of Baridinae. During this study, 15 genera and 24 species of this subfamily were identified. The subfamily Entiminae is also one of the largest, with 107 genera and 899 species; 16 genera and 23 species were identified in the material collected in Guanajuato. The subfamily Tychiinae, which is predominantly Nearctic, contains eight genera and 58 species in the United States; five species of *Sibinia* were identified in this study.

Conclusions

Only a handful of major publications deal with Mexican Curculionoidea; to date, the only taxonomic reference work for all groups of Mexican weevils is the *Biologia Centrali-Americana* (Sharp, 1889-1911; Champion, 1902-1909). There are some studies corresponding to limited areas, such as Kissinger (1962) for the Yucatan Peninsula, as well as some taxonomic revisions including Mexican species (*e.g.*, Barber, 1935; Clark, 1982, 1983; Clark & Burke, 1985, 1986, 1987; O'Brien, 1977, 1984, 1989; Vaurie, 1951, 1954, 1967, 1970, 1981). The present study contributes to knowledge of the distribution of Mexican weevils and we believe that the 125 species identified represent less than half of the species present in the State of Guanajuato.

The subfamilies Baridinae, Curculioninae and Entiminae are represented by the largest number of genera. The former is one of the largest weevil subfamilies but it is in need of revision. Many species were collected that could not be identified.

Eighteen percent of the species collected during this study are known to be pests of crops. This percentage may increase later given the large number of weevil species able to feed on cultivated plants.

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Table 1. Families, subfamilies, tribes, genera and species of Curculionoidea from the State of Guanajuato, Mexico

FAMILIES	SUBFAMILIES	TRIBES	SPECIES (* = new for Mexico)
Apionidae	Apioninae	Apionini	<i>Apion</i> spp. <i>Apion</i> nr. <i>tenuirostrum</i> Smith <i>Apion</i> nr. <i>varicorne</i> Smith
Attelabidae	Attelabinae	Piezotrachelini Attelabini	<i>Chrysapion auctum</i> (Sharp) <i>Himatolabus umbosis</i> Hamilton
Rhynchitidae	Rhynchitinae	Pilolabini Rhynchitini	<i>Pilolabus klugii</i> (Gyllenhal) <i>Eugnamptus</i> spp. <i>Haplorhynchites mexicanus</i> (Gyllenhal) * <i>Haplorhynchites quadripennis</i> (Fall) <i>Haplorhynchites subauratus</i> (Sharp)
Curculionidae	Baridinae	Baridini	<i>Involvulus mollis</i> (Sharp) <i>Baris corrusca</i> (Boheman) <i>Baris strenua</i> (LeConte) <i>Pseudobaris apicalis</i> (Boheman) <i>Trepobaris perlonga</i> Champion <i>Trichobaris championi</i> Barber <i>Trichobaris major</i> Barber <i>Trichobaris pellicea</i> (Boheman)
		Madarini	* <i>Onychobaris ambigua</i> Casey <i>Stictobaris ornatella</i> Casey
		Madopterini	* <i>Apinocis angustus</i> (Casey) * <i>Barilepton quadricolle</i> LeConte <i>Barinus</i> spp. <i>Centrinopus mistus</i> Champion <i>Geraeus candidus</i> Champion <i>Geraeus dugesi</i> Champion <i>Geraeus hospes</i> (Casey) <i>Geraeus perscitus</i> (Herbst) <i>Geraeus senilis</i> (Gyllenhal) <i>Geraeus tonsus</i> Champion <i>Geraeus varius</i> Champion <i>Limnobaris discreta</i> Champion * <i>Nicentrus femoralis</i> Champion <i>Pseudocentrinus ochraceus</i> (Boheman) <i>Optatus palmaris</i> (Pascoe)
	Ceutorhynchinae	Ceutorhynchini Cnemogonini Phytobiini	<i>Ceutorhynchus truquii</i> (Champion) * <i>Auleutes asper</i> (LeConte) * <i>Rhinoncus pyrrhopus</i> Boheman
	Conoderinae	Lechriopini Piazurini Zygopini	<i>Lechriops auritus</i> (Schönherr) <i>Cratosomus punctulatus</i> Gyllenhal <i>Cylindrocopturus adspersus</i> (LeConte) <i>Cylindrocopturus biradiatus</i> Champion <i>Cylindrocopturus ganglbaueri</i> (Heller)
	Cossoninae	Cossonini	<i>Cossonus convexirostris</i> Champion
	Cryptorhynchinae	Dryotribini Cryptorhynchini	<i>Caulophilus oryzae</i> (Gyllenhal) <i>Gerstaeckeria mutillaria</i> (Gerstaecker) <i>Gerstaeckeria unicolor</i> Fisher <i>Maemactes punctatus</i> Kissinger <i>Pseudomopsis similis</i> Champion
	Curculioninae	Anthonomini	<i>Anthonomus deliquulus</i> Clark & Burke <i>Anthonomus eugenii</i> Cano

Table 1. Continued.

FAMILIES	SUBFAMILIES	TRIBES	SPECIES (* = new for Mexico)
			<i>Anthonomus mexicanus</i> Boheman
			<i>Anthonomus squamans</i> Champion
			* <i>Anthonomus suturalis</i> LeConte
			<i>Anthonomus texanus</i> Dietz
			* <i>Anthonomus thyasocnemoides</i> Hustache
			<i>Pseudanthonomus gluon</i> Clark
			* <i>Smicraulax tuberculatus</i> Pierce
		Curculionini	<i>Curculio ortegai</i> Gibson
		Derelomini	<i>Phyllotrox suturalis</i> (Boheman)
		Otidocephalini	<i>Myrmex</i> spp.
		Prionobrachiini	<i>Prionobrachium schoenherri</i> Faust
		Smicronychini	* <i>Smicronyx albonotatus</i> Anderson
			* <i>Smicronyx corniculatus</i> (Fåhraeus)
			* <i>Smicronyx quadrifer</i> Casey
			* <i>Smicronyx spretus</i> Dietz
			<i>Smicronyx tenuirostris</i> Champion
		Tychiini	<i>Sibinia aulacis</i> Clark
			<i>Sibinia candidata</i> Champion
			<i>Sibinia inermis</i> (Casey)
			<i>Sibinia setosa</i> (LeConte)
			<i>Sibinia suturalis</i> (Schaeffer)
		(<i>Incertae sedis</i>)	<i>Macrorhoptus sphaeralciae</i> Pierce
	Cyclominae	Rhytirrhinini	<i>Listronotus grypidioides</i> (Dietz)
			<i>Listronotus punctiger</i> LeConte
	Entiminae	Brachyderini	<i>Ameladus inornatus</i> Sharp
			<i>Chaetopantus</i> sp.
			<i>Mitostylus setosus</i> (Sharp)
		Geonemini	<i>Bradyrhynchoides rugicollis</i> (Sharp)
			<i>Epicaerus costatus</i> Sharp
			<i>Epicaerus squalidus</i> Sharp
		Naupactini	<i>Naupactopsis delumbis</i> Champion
			<i>Megalostylus albicans</i> (Lacordaire)
			<i>Pantomorus albosignatus</i> Boheman
			<i>Pantomorus cervinus</i> (Boheman)
			<i>Pantomorus uniformis</i> Sharp
		Ophryastini	<i>Ophryastes cinereus</i> Fåhraeus
			<i>Ophryastes sordidus</i> LeConte
		Polydrusini	<i>Pythis amplicollis</i> Champion
		Sitonini	* <i>Sitona hispidulus</i> (Fabricius)
		Tanymecini	<i>Isodacrys geminatum</i> Howden
			<i>Isodrusus debilis</i> Sharp
			<i>Pandeteleius subcancer</i> Howden
			<i>Pandeteleius ciliatipennis</i> Champion
			<i>Pandeteleius tibialis</i> Boheman
			<i>Pandeteleius viridiventris</i> Champion
			<i>Pandeteleius vitticollis</i> Champion
			<i>Tanymecus confusus</i> Say
	Eriirrhinae	Tanysphyrini	* <i>Tanysphyrus lemnae</i> (Fabricius)
	Hyperinae	Hyperini	* <i>Hypera postica</i> (Gyllenhal)
	Lixinae	Lixini	<i>Lixus inermis</i> Champion
			* <i>Lixus merula</i> Suffrian

Table 1. Continued.

FAMILIES	SUBFAMILIES	TRIBES	SPECIES (* = new for Mexico)
			* <i>Microlarinus lypriformis</i> (Wollaston)
	Mesoptiliinae	Laemosaccini	<i>Laemosaccus exsculptus</i> Champion <i>Laemosaccus ruficornis</i> Champion
	Molytinae	Cleogonini	<i>Rhyssomatus nigerrimus</i> Fåhraeus <i>Rhyssomatus sculpturatus</i> Champion
		Conotrachelini	<i>Conotrachelus aguacatae</i> Barber <i>Conotrachelus cinerascens</i> Champion <i>Conotrachelus dimidiatus</i> Champion <i>Conotrachelus flavangulus</i> Champion <i>Conotrachelus leucophaeatus</i> Fåhraeus <i>Conotrachelus lobatus</i> Champion <i>Pheloconus rubicundulus</i> (Boheman)
Dryophthoridae	Rhynchophorinae	Litosomini	<i>Sitophilus granarius</i> (Linnaeus) <i>Sitophilus linearis</i> (Herbst) <i>Sitophilus oryzae</i> (Linnaeus) <i>Sitophilus zeamais</i> Motschulsky
		Sphenophorini	<i>Metamasius spinolae</i> (Gyllenhal) <i>Rhodobaenus auctus</i> Chevrolat <i>Rhodobaenus mundus</i> (Champion) <i>Scyphophorus acupunctatus</i> Gyllenhal <i>Sphenophorus cicatristriatus</i> Fåhraeus <i>Sphenophorus phoeniciensis</i> Chittenden <i>Sphenophorus venatus</i> (Say)