Valid name

Agra sp. 1

Synonymy/catalog

Texas *Agra* specimens represent two undescribed species (T. Erwin, pers. com., August 2008). Published citations of *Agra* from Texas include the following:
Agra oblongopunctata: Wickham, 1898:23
Agra oblongopunctata: Townsend, 1902:55
Agra oblongopunctata: Leng, 1920:65
Agra oblongopunctata: Csiki, 1932:1514 [in part]
Agra oblongopunctata: Blackwelder, 1944:64 [in part]
Agra oblongopunctata oblongopunctata: Erwin et al., 1977:66 [in part]
Agra oblongopunctata oblongopunctata: Bousquet & Larochelle, 1993:283
Agra oblongopunctata oblongopunctata: Bender et al., 2005:773

Classification

Family: Carabidae
Subfamily: Harpalinae
Tribe: Lebiini
Subtribe: Agrina
The classification of the genus *Agra* is unstable, as it has been treated as a separate tribe or even as a separate subfamily. Its tribe and subtribe placement here follows Ball & Bousquet (2001). In general, tribes within the family Carabidae are well established and stable. The grouping of tribes into taxa of higher rank, however, is far from settled, "... with virtually every classification of carabid beetles published during the past 40 years differing more or less substantially from one another"(Ball & Bousquet 2001). The Lebiini is here listed in the Harpalinae following Ball & Bousquet (2001) and Bousquet & Larochelle (1993). Higher classification within the Carabidae is reviewed by Ball et al. (1998).

Diagnostic remarks

As noted by Ball and Bousquet (2001), *Agra* is represented in the United States by not more than two species (both undescribed species, personal communication from T. Erwin to G. Ball cited in Ball & Bousquet 2001). Bousquet and Larochelle (1993) list *A. oblongopunctata* Chevrolat from Texas, as do earlier works (Blackwelder 1944, Leng 1920, Townsend 1902, Wickham 1898); however, the personal communication from Erwin to Ball cited above indicates that *A. oblongopunctata* is not found in Texas (the type locality for this species is Veracruz, Mexico). The species group of *Agra* that includes the two undescribed Texas species and *A. oblongopunctata* is under taxonomic revision by Erwin (T. L. Erwin, pers. comm., August 2008); therefore, species group names and diagnoses will not be available until this study is completed and published. For the present time, collection data for Texas *Agra* are grouped as "*Agra* sp. 1" and various occurrence records for *A. oblongopunctata* in Mexico are ignored.

Agra is easy to recognize and is arguably the most distinctive carabid genus found in Texas. The body is extremely elongate with the head and prothorax especially

elongated. The color is uniformly blackish, very shining, and with a faint metallic sheen that is strongest in the punctures of the elytra. The body length is ca. 15 mm, and the maximum width (at posterior third of elytra) is ca. 3.5 mm. The eyes are situated at mid-length of the head, leaving the occipital region posterior to eyes especially long. The prothorax is tubular and greatly narrowed anteriorly. The tarsal claws are strongly pectinate.

The genus is keyed in Ball and Bousquet (2001). Bates (1883) includes a color illustration of *A. oblongopunctata*, which for general purposes strongly resembles the Texas species. Color images of specimens are available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Agra.htm] (last accessed 12/10/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range: The range of *Agra* sp. 1 cannot be determined until the revision of this species group is completed and published. The known range in Texas is Cameron, Hidalgo, and Starr counties.

Biology, Host, Substrate, Habitat Data

1) From literature: Wickham (1898) mentions occasionally beating *A. oblongopunctata* from "... heavy thickets where the vines made their closest tangles ..." in the subtropical region about Brownsville, Texas. Townsend (1902) states … "Beaten from clematis in woods" and "Beaten from masses of clematis vines in palmetto thickets." The two northern-most occurring species of *Agra* (in Texas) are known from an area of palm forest (Erwin 1978).

2) From specimens: Single specimens carry each of the following biological notations: "UV" [= ultraviolet light], "beaten from *Celtis pallida* Torr." and "on Palm."

3) From interviews: Beaten during the daytime from tangles of vines that often included "balloon vine in bloom" at the Palm Grove and areas near the Palm Grove. "Balloon vine" thought to be *Serjania* – or something like that, but this could be wrong, as the plant was never formally identified (E. G. Riley, pers. observ., June 2008). Beaten from *Celtis* sp. in the vicinity of mats of various vines (B. Raber, pers. com., October 2008). The larva most certainly lives under dead bark, perhaps under the bark of *Celtis* since adults are associated with this tree (T. L. Erwin, pers. comm., August 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Adults of the genus *Agra* are adapted for arboreal life and are found in tropical forest canopies, but will follow the canopy down into the transition zone in ecotonal areas, such

as forest margins or downed trees (Erwin 1978). Adults are adapted for leaf-running (Erwin 1978). Arndt et al. (2001) studied the adult foraging behavior of several species in a Venezuelan forest canopy and in the laboratory. All specimens observed foraging in the canopy took liquid or masticated flower parts (nectar, pollen, and sometimes diverse components of the whole flower), or from extra-floral nectaries, or liquid from new leaf shoots. Based on study of larval morphology, Arndt et al. (2001) hypothesized that *Agra* larvae are predators living under bark.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (2), May (1), June (6), July (5), August (2), September (2), October (9).

2) Year of most recent known collection in Texas: 2004.

Literature Cited

Arndt, E., S. Kirmse, and T. L. Erwin. 2001. Arboreal beetles of Neotropical forests: Agra Fabricius, larval descriptions with notes on natural history and behaviour (Coleoptera, Carabidae, Lebiini, Agrina). The Coleopterists Bulletin 55(3): 297-311.

Ball, G. E. and Y. Bousquet. 2001. Carabidae Latreille, 1810, pp. 32-132, *in* Arnett, R. H. and M. C. Thomas (eds.). American Beetles. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. Volume 1. CRC Press. xv + 1-443 pp.

Bates, H. W. 1881-1884 (1883). Biologia Centrali-Americana. Insecta. Coleoptera. Vol. 1, Part 1. London. pp. 153-256, pls. vi-xii.

Ball, G. E., A. Casale, and A. Vigna Taglianti (eds.). 1998. Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Atti, Museo Regionale di Scienze Naturali, Torino, Italy. 543 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 1. United States National Museum Bulletin 185: xii + 1-188 pp.

Bousquet, Y. and A. Larochelle. 1993. Catalogue of the Geadephaga (Coleoptera: Trachypachidae, Rhysodidae, Carabidae including Cicindelini) of America north of Mexico. Memoirs of the Entomological Society of Canada No. 167: 1-397 pp.

Csiki, E. 1932. Carabidae: Harpalinae VII. (pars 124), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 3. Berlin, ‘s-Gravenhage. pp. 1279-1598.

Erwin, T. L. 1978. Systematic, natural history, and zoogeographic notes on the genus *Agra* Fabricius, with a description of a new species from Panama (Coleoptera: Carabidae: Lebiini). The Coleopterists Bulletin 32(4): 261-268.

Erwin, T. L., D. R. Whitehead and G. E. Ball. 1977. Family 4. Carabidae, the ground beetles, *in* Blackwelder, R. E., R. H. Arnett and associates (eds.). Checklist of the beetles of Canada, United States, Mexico, Central America, and the West Indies (yellow version). Part 1. The tiger beetles, ground beetles, water beetles, and related groups (families 1-9). World Digest Publications, Kinderhook, New York. 68 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Townsend, C. H. T. 1902. Contribution to a knowledge of the coleopterous fauna of the lower Rio Grande valley in Texas and Tamaulipas, with biological notes and special reference to geographical distribution. Transactions of the Texas Academy of Science 5: 51-101.

Wickham, H. F. 1898. Recollections of Old Collecting Grounds. II. - The Lower Rio Grande Valley. Entomological News 9: 22-24.

Valid name

Agrilus dollii Schaeffer

Synonymy/catalog
Agrilus dollii Schaeffer, 1904:210
Agrilus dolli: Leng, 1920:184
Agrilus dolli: Frost & Weiss, 1921:72
Agrilus dollii: Chamberlin, 1926:59
Agrilus dolli: Fisher, 1928:289; pl. 9, fig. 77
Agrilus Dolli: Obenberger, 1936:1173
Agrilus dolli: Vogt, 1949:200
Agrilus dolli: Bellamy & Nelson, 1990:290
Agrilus dolli: Bellamy, 1994:360
Agrilus dollii: MacRae & Nelson, 2003:61
Agrilus dollii: Bender et al., 2005:772
Agrilus dolli: Westcott & Hespenheide, 2006:12
Agrilus dolli: Nelson et al., 2008:158

Classification
Family: Buprestidae
Subfamily: Agrilinae
Tribe: Agrilini
The classification of the genus is not controversial. The patronymic species-group name is often misspelled with a single "i", as "*A. dolli*."

Diagnostic remarks
In its general appearance, this is a very typical *Agrilus* species. As noted by Fisher (1928), this species superficially resembles the common *Celtis*-associated *A. lecontei* Saunders, except that the apices of the elytra are emarginate. *Agrilus dollii* is elongate, subparallel-sided at middle third and gradually tapered posteriorly. Its body length is ca. 4.5 mm., and its greatest width, at base of the elytra, is ca. 1.25 mm. Its coloration is blackish with a weak brownish-coppery reflection, strongest on head. The yellowish-white pubescence of the elytra forms a more-or-less irregular design (not discrete spots or vittae). The antenna is serrate beginning at the fifth segment. The pronotum has a distinct pre-humeral carina on each side. The tip of each elytron is narrowed to a small, crescent-shaped terminal emargination.

The genus *Agrilus* is keyed in Bellamy and Nelson (2002), and the species is keyed in Fisher (1928), both relative to other genera/species, respectively, found in America north of México. Fisher (1928) provides an illustration of the male genitalia.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron, Hidalgo, Jackson and Karnes counties) and Mexico (Yucatan). Arizona is listed as part of the range of this species by Chamberlain (1926), but this is likely an error, as this state-level record is not repeated in the Nelson et al. (2008) catalog.

Biology, Host, Substrate, Habitat Data

1) From literature: Frost & Weiss (1921) report that *A. dollii* was collected by Schaeffer on "*Acacia flexicaulis*" (=*Ebenopsis ebano* (Berland.) Barnbey & J. W. Grimes.). Fisher (1928) restated this information. MacRae and Nelson (2003) report the first record of a larval host for this species. They report that adults emerged from V-7 to V-31-1994 from dead *Diospyros texana* Scheele (Ebenaceae) collected on V-1-1994 in Jackson County, Texas. Nelson et al. (2008) state "larvae in *Diospyros texana* Scheele,"

2) From specimens: Specimens examined carry data such as "reared from *Diospyros texana*" and "emerged from *Diospyros texana* V-7-10-1994."

3) From communicated records: Reared from *Diospyros texana* (pers. comm., D. J. Heffern, July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

This species should have a general biology similar to those of other *Agrilus* species, which as larvae are wood borers is a wide range of woody plants, usually developing in the twigs and branches of their host species. Most species of *Agrilus* are very host specific, developing in a single plant species or in a few closely related plant species. (Craighead 1950, Nelson et al. 2008, Solomon 1995). Most species probably produce a single generation per year with the adult stage active for a rather short period, usually during the spring season.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (6), May (9), June (7), July (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1991.

Literature Cited

Bellamy, C. L. 1993 (1994). A list of the primary types of Buprestidae (Coleoptera) in the U. S. National Museum of Natural History. Giornale Italiano di Entomologia 6: 357-378.

Bellamy, C. L. and G. H. Nelson. 1989 (1990). Lectotype designations in the Buprestidae collections of the National Museum of Natural History (Coleoptera). Insecta Mundi 3(4): 289-297.

Bellamy, C. L. and G. H. Nelson. 2002. Buprestidae Leach, 1815, pp. 98-112, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles.

Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Chamberlin, W. J. 1926. The Buprestidae of North America exclusive of Mexico, a catalogue including synonomy, bibliography, distribution, type locality and hosts of each species. W. J. Chamberlin, Corvallis, Oregon. 291 pp.

Craighead, F. C. 1950. Insect enemies of eastern forests. U. S. Department of Agriculture, Miscellaneous Publication No. 657. ii + 679 pp.

Fisher, W. S. 1928. A revision of the North American species of buprestid beetles belonging to the genus *Agrilus*. United States National Museum Bulletin 145: pls. i-xi, 347 pp.

Frost, C. A. and H. B. Weiss 1921. Additions to *Agrilus* bibliography. The Canadian Entomologist 53: 72.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

MacRae, T. C., and G. H. Nelson. 2003. Distributional and biological notes on Buprestidae (Coleoptera) in North and Central America and the West Indies, with validation of one species. The Coleopterists Bulletin 57(1): 57-70.

Nelson, G. H., G. C. Walters, Jr., R. D. Haines, and C. L. Bellamy. 2008. A catalog and bibliography of the Buprestoidea of American north of Mexico. Coleopterists Society Special Publication no. 4: iv + 1 - 274 pp.

Obenberger, J. 1936. Buprestidae V. (pars 152), *in* Junk W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol 13. Berlin, ‘s-Gravenhage. pp. 935-1246.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Solomon, J. D. 1995. Guide to insect borers of North American broadleaf trees and shrubs. Agriculture Handbook 706. United States Department of Agriculture Forest Service, Washington, D. C. viii + 735 pp.

Vogt, G. B. 1949. A biologically annotated list of the Buprestidae of the Lower Rio Grande Valley, Texas. Annals of the Entomological Society of America 42(2): 191-202.

Westcott, R. L. and H. A. Hespenheide. 2006. The description of a new species of *Agrilus* Curtis, with distributional records, and taxonomic and biological notes for Agrilinae and Trachyinae (Coleoptera: Buprestidae) of Mexico and Central America. Zootaxa 1367: 1-35.

Valid name

Agrilus subtropicus Schaeffer

Synonymy/catalog
Agrilus subtropicus Schaeffer, 1905:131
Agrilus subtropicus: Frost & Weiss, 1921:72
Agrilus subtropicus: Chamberlin, 1926:83
Agrilus subtropicus: Fisher, 1928:22; pl. i, fig. 2
Agrilus subtropicus: Obenberger, 1936:1236
Agrilus subtropicus: Knull, 1937:41
Agrilus subtropicus: Vogt, 1949:199
Agrilus subtropicus: Bellamy & Nelson, 1990:291
Agrilus subtropicus: Westcott et al., 1990:219
Agrilus subtropicus: Bellamy, 1994:362
Agrilus subtropicus: Bender, at al., 2005:772
Agrilus subtropicus: Westcott & Hespenheide, 2006:24
Agrilus subtropicus: Nelson et al., 2008:177

Classification
Family: Buprestidae
Subfamily: Agrilinae
Tribe: Agrilini
The classification of *Agrilus* is not controversial.

Diagnostic Remarks
This is a somewhat atypical *Agrilus* species in that it is one of the few species found in America north of Mexico that has the tips of the elytra prolonged. This beetle is elongate, cuneiform, and flattened above. Body length 7.5-8.4 mm, and the greatest width is just behind elytral humeri at 1.75-2.0 mm. The body color is blackish with a distinct brassy or bluish green tinge and not especially shining. The elytra are more copper-colored towards the apex. The elytra are sparsely clothed with short yellowish white recumbent pubescence. Each elytron with four more-or-less denuded spots, one near base, one at basal third, a broader one behind the middle extending nearly to lateral margin, and an elongate one along the lateral margin near the apex. Tips of the elytra are feebly expanded and strongly serrate. The conjoint elytral apex is “broadly, arcuately emarginate at middle.”

The genus *Agrilus* is keyed in Bellamy and Nelson (2002), and the species is keyed in Fisher (1928), both relative to other genera or species, respectively, found in America north of Mexico. This species keys readily in Fisher (1928) because of the prolonged elytral apices. Fisher (1928) provides an illustration of the male genitalia.

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron and Hidalgo counties), Mexico (Nuevo Leon and Tamaulipas) and Honduras.

Biology, Host, Substrate, Habitat Data

1) summary from literature: Frost & Weiss (1921) report that *A. subtropicus* was collected by Schaeffer on "*Momisia pallida*" (=*Celtis ehrenbergiana* (Klot.) Liebm.). Fisher (1928) restated this information. Knull (1937) took adults of this species in the Brownsville area on widely separated trees of "*Bryodendron texanum* Sch." (=*Diospyros texana* Scheele, Ebenaceae), and he expressed the thought that this was probably the host for the species. As of yet, the larval host of this species has not been determined.

2) From specimens: None.

3) summary from interviews: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

This species should have a general biology similar to those of other *Agrilus* species, which as larvae are wood borers is a wide range of woody plants, usually developing in the twigs and branches of their host species. Most species of *Agrilus* are very host specific, developing in a single plant species or in a few closely related plant species. (Craighead 1950, Nelson et al. 2008, Solomon 1995). Most species probably produce a single generation per year with the adult stage active for a rather short period, usually during the spring season.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (1), May (7), June(1), July (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1979.

Literature Cited

Bellamy, C. L. 1993 (1994). A list of the primary types of Buprestidae (Coleoptera) in the U. S. National Museum of Natural History. Giornale Italiano di Entomologia 6: 357-378.

Bellamy, C. L. and G. H. Nelson. 1989 (1990). Lectotype designations in the Buprestidae collections of the National Museum of Natural History (Coleoptera). Insecta Mundi 3(4): 289-297.

Bellamy, C. L. and G. H. Nelson. 2002. Buprestidae Leach, 1815, pp. 98-112, in Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Chamberlin, W. J. 1926. The Buprestidae of North America exclusive of Mexico, a catalogue including synonomy, bibliography, distribution, type locality and hosts of each species. W. J. Chamberlin, Corvallis, Oregon. 291 pp.

Craighead, F. C. 1950. Insect enemies of eastern forests. U. S. Department of Agriculture, Miscellaneous Publication No. 657. ii + 679 pp.

Fisher, W. S. 1928. A revision of the North American species of buprestid beetles belonging to the genus *Agrilus*. United States National Museum Bulletin 145: pls. i-xi, 347 pp.

Frost, C. A. and H. B. Weiss 1921. Additions to *Agrilus* bibliography. The Canadian Entomologist 53: 72.

Knull, J. N. 1937. Notes on Coleoptera with descriptions of new species (Buprestidae and Cerambycidae). Entomological News 48: 15-17, 36-42.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Nelson, G. H., G. C. Walters, Jr., R. D. Haines, and C. L. Bellamy. 2008. A catalog and bibliography of the Buprestoidea of American north of Mexico. Coleopterists Society Special Publication no. 4: iv + 1 - 274 pp.

Obenberger, J. 1936. Buprestidae V. (pars 152), *in* Junk W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol 13. Berlin, ‘s-Gravenhage. pp. 935-1246.

Schaeffer, C. F. A. 1905. Additions to the Coleoptera of the United States with notes on some known species. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(6): 123-140.

Solomon, J. D. 1995. Guide to insect borers of North American broadleaf trees and shrubs. Agriculture Handbook 706. United States Department of Agriculture Forest Service, Washington, D. C. viii + 735 pp.

Vogt, G. B. 1949. A biologically annotated list of the Buprestidae of the Lower Rio Grande Valley, Texas. Annals of the Entomological Society of America 42(2): 191-202.

Westcott, R. L., T. H. Atkinson, H. A. Hespenheide, and G. H. Nelson. 1989 (1990). New country and state records, and other notes for Mexican Buprestidae (Coleoptera). Insecta Mundi 3(3): 217-232.

Westcott, R. L. and H. A. Hespenheide. 2006. The description of a new species of *Agrilus* Curtis, with distributional records, and taxonomic and biological notes for Agrilinae and Trachyinae (Coleoptera: Buprestidae) of Mexico and Central America. Zootaxa 1367: 1-35.

Valid name

Anchastus augusti (Candèze)

Synonymy/catalog
Monelasmus augusti Candèze, 1863:333
Anchastus augusti: Champion, 1882-1897 (1895):393; pl. xvii, fig. 18
Anchastus augusti: Blackwelder, 1944:301
Anchastus augusti: Heffern, 1991:192
Anchastus augusti: Bender et al., 2005:774

Classification
Family: Elateridae
Subfamily: Elaterinae
Tribe: Ampedini
Subtribe Physorhinina
The classification of the genus is not especially controversial; however, the higher classification and family-group nomenclature within the Elateridae has been quite unstable over the years.

Diagnostic remarks
This click beetle is quite distinct in general appearance and not likely to be confused with other species of the family found in the Lower Rio Grande Valley of Texas. Its body length is ca. 11-12 mm., and its greatest width is ca. 3.3 mm. across the middle of the pronotum. It is elongate and depressed in form with the lateral margins of the body gradually tapering posteriorly to a bluntly rounded apex. The pronotum is yellowish-orange with a broad black longitudinal band on either side leaving a narrow yellow median stripe connected to the yellow anterior border. Each elytron is margined laterally by a narrow yellowish band that does not quite reach the apex. Each elytron has a bright red basal spot occupying the area between the scutellum and the humerus. These coloration characters alone will distinguish this mid-sized click beetle from other members of the Elateridae found in the Lower Rio Grande Valley. Generic characters of importance include the simple tarsal claws that are without primary setae at their bases, the hind margin of hypomeron shallowly sinuate, and fourth tarsomere with a fleshy lobe (and only the fourth tarsomere with such a lobe). In other Texas *Anchastus*, the frontal margin of the head is complete and usually quite distinct; it projects over the plane of the labrum. In *A. augusti*, the frontal margin is not sharply defined and does not project over the plane of the labrum.

The genus is keyed in Johnson (2002), and *A. augusti* will run to couplet 30 without difficulty. At couplet 30, it will key out incorrectly as the genus *Hemicrepidius* because of the unusual frontal margin, which is atypical of *Anchastus*. Champion (1895) provides a color habitus illustration of this species. Color images of specimens are available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Anchastus.htm] (last accessed 12/10/2008).

Historic Texas Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.
2) From specimens examined: See "specimen records" on attached Excel spreadsheet.
3) From communicated records: None.

Known Range
Texas (Cameron County), Mexico, Belize, and Guatemala.

Biology, Host, Substrate, Habitat Data
1) From literature: "beaten from a small undetermined white-flowering tree around 4 pm" and "beaten from blooming lotebush, *Zizyphus obtusifolia* (Hook.) Weberb., around 1 pm" (Heffern 1991).
2) From specimens: None.
3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
None.

Adult Phenology in Texas
1) Summary of compiled Texas collecting events by month: May (1), August (1), October (2).
2) Year of most recent known collection in the lower Rio Grande valley: 1994.

Literature Cited
Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 2. United States National Museum Bulletin 185: iv + 189-341 pp.

Candèze, E. C. A. 1863. Monographie des élatérides, vol. 4. Mémoires de la Société royale des Sciences de Liége 17: 1-534, pls. i-vi.

Champion, G. C. 1882-1897 (1895). Biologia Centrali-Americana. Insecta. Coleoptera. Vol. III. Part 1. Serricornia, Elateridae-Dascillidae. London. pp. 297-440.

Heffern, D. J. 1991. First United States record for Anchastus augusti (Candèze) (Coleoptera: Elateridae). The Coleopterists Bulletin 45(2): 192.

Johnson, P. J. 2002. Elateridae Leach, 1815, pp. 160-173, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Valid name

Apenes sp. 1

Synonymy/catalog
Presently, this species is unidentified and therefore specific published accounts for *Apenes* cannot be assigned to *Apenes* sp. UASM 11.
Apenes sp. UASM 11: Bender et al., 2005:773

Classification
Family: Carabidae
Subfamily: Harpalinae
Tribe: Lebiini
Subtribe: Apenina
The tribe and subtribe placement used here follows Ball & Bousquet (2001). In general, tribes within the family Carabidae are well established and stable. The grouping of tribes into taxa of higher rank, however, is far from settled, "... with virtually every classification of carabid beetles published during the past 40 years differing more or less substantially from one another."(Ball & Bousquet 2001). The Lebiini is here listed in the Harpalinae following Ball & Bousquet (2001) and Bousquet & Larochelle (1993). Higher classification within the Carabidae is reviewed by Ball et al. (1998).

Diagnostic remarks
The members of this genus are best recognized by their general habitus. The genus is keyed by Ball & Bousquet (2001) who provide the technical characters for its identification among related genera. The genus *Apenes* is large and in need of taxonomic revision. There are at least four species that occur in the Lower Rio Grande Valley of Texas, only one of which can be clearly assigned to a particular species (*A. sinuatus* (Say), a wide-ranging species found in much of the eastern United States). Four other species present in the LRGV are represented in the TAMUIC and remain unidentified. One of these was given the designation "UASM sp.11" by G. E. Ball in 1994 and is the subject of this report. Because of the lack of modern taxonomy on the genus, the identification of *Apenes* species from Mexico is not attempted here. Such sorting and matching of the Texas *Apenes* to Mexican specimens will require a specialist on Carabidae with expertise on the genus.

The following key may be used to separate *A.* sp. 1 of this report from the four other species of *Apenes* known from the LRGV.

1. Pronotum distinctly punctate, punctures large and round not obscured by fine rugulose sculpturing; length ca. 6.5 mm. ..... *A. sinuatus*
   Pronotum impunctate to indistinctly punctate or, if punctures obvious then punctures mixed with dense rugulose sculpturing 2
2. Frons and occipital region of head smooth with scattered fine punctures, fine longitudinal rugulae few and confined to lateral areas; length 5.3-6.0 mm. ..... *A.* sp. EGR 1 & *A.* sp. EGR 3
   Frons and occipital region of head with distinct longitudinal rugulae on entire surface, punctures if present small and obscured by rugulae 3

3. Larger species, length 8.25 mm; pronotal disc with punctures evident .... *A.* sp. EGR 2
   Smaller species, length ca. 3.4-4.5 mm, width at elytral at mid-length ca. 2.4 mm; pronotal disc without apparent punctures ..... *A.* sp. 1 (this report)

Historic Occurrence Records

1) From literature: None.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

The range of *Apenes* sp. 1 cannot be determined until a taxonomic revision of *Apenes* is available. The known range in Texas is Cameron County.

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Apenes* sp. 1 was located in the literature.

2) From specimens: "Berlese rotten log and Celtis leaf litter" and "UV" [=ultraviolet light].

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

In east-central Texas, *A. sinuatus* (Say) has been taken in pit-fall traps and at light (E. G. Riley, pers. obser., July 2008). Ball & Bousquet, 2001 state that *Apenes* is "geophilous, ranging from xerophilous to mesophilous."

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: October (2).

2) Year of most recent known collection in Texas: 1995.

Literature Cited

Ball, G. E., A. Casale, and A. Vigna Taglianti (eds.). 1998. Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Atti, Museo Regionale di Scienze Naturali, Torino, Italy. 543 pp.

Ball, G. E. and Y. Bousquet. 2001. Carabidae Latreille, 1810, pp. 32-132, *in* Arnett, R. H. and M. C. Thomas (eds.). American Beetles. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. Volume 1. CRC Press. xv + 1-443 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Bousquet, Y. and A. Larochelle. 1993. Catalogue of the Geadephaga (Coleoptera: Trachypachidae, Rhysodidae, Carabidae including Cicindelini) of America north of Mexico. Memoirs of the Entomological Society of Canada No. 167: 1-397 pp.

Valid name

Calleida fimbriata Bates

Synonymy/catalog
Calleida fimbriata Bates, 1881-1884 (1883):212
Callida fimbriata: Csiki, 1932:1444
Callida fimbriata: Blackwelder, 1944:59
Callida fimbriata: Erwin et al., 1977:60
Calleida fimbriata: Bousquet & Larochelle, 1993:281, 334
Calleida fimbriata: Bender et al., 2005:773

Classification
Family: Carabidae
Subfamily: Harpalinae
Tribe: Lebiini
Subtribe: Calleidina
The subfamily, tribe and subtribe placement used here follows Bousquet & Larochelle (1993) and Ball & Bousquet (2001). In general, tribes within the family Carabidae are well established and stable. The grouping of tribes into taxa of higher rank, however, is far from settled, "... with virtually every classification of carabid beetles published during the past 40 years differing more or less substantially from one another."(Ball & Bousquet 2001). In early literature, the genus name is sometimes misspelled as "*Callida*."

Diagnostic remarks
A typical, moderate-sized, lebiine carabid with dorsal color of dark reddish-brown with a narrow band of metallic greenish coloration extended from just inside the elytral humerus posteriorly along lateral margin to point nearly reaching the sutural angle. The body length is ca. 6.0-9.5 mm, and the maximum width (just behind middle of elytra) is ca. 3.1-3.5 mm. It is a member of the nominotypical subgenus, and as such has the fourth tarsal segment bilobed.

Calleida fimbriata can be tricky to sight identify in the field with certainty. It may be confused with the superficially similar *C. planulata* LeConte, which also occurs in the Lower Rio Grande Valley of Texas. *Calleida fimbriata* may also be confused in the field with other co-occurring lebiine genera, *Euproctinus* and *Cymindis*. Specimens can be readily identified in the laboratory. *Calleida planulata* can be distinguished by slight differences in body size, shape of the head and pronotum, and dorsal coloration. The head lacking suborbital setae below the eye will separate *Calleida* from *Euproctinus*, and the dorsomedially longitudinally sulcate tarsal segments (although this character is rather faintly developed) will separate *Calleida* from *Cymindis*.

Calleida is keyed in Ball and Bousquet (2001). The genus *Calleida* is presently undergoing taxonomic revision by A. Casale (Italy).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.
3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range
Texas (Cameron and Kenedy counties) and Mexico (Veracruz).

Biology, Host, Substrate, Habitat Data
1) From literature: Nothing specific on the biology of *Calleida fimbriata* was located in the literature.
2) summary from specimens: Four specimens collected by G. H. Nelson are labeled as taken on *Pithecolobium flexicaule*. This is an out-dated name for *Ebenopsis ebano* (Berl.) Barneby & Grimes (Fabaceae).
3) From communicated records: Most specimens collected by E. G. Riley were taken using a beating sheet at the Palm Grove (E. G. Riley, pers. obser., June 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Species of *Calleida* (*s. str.)* are "vegetation-associated, adults being found primarily on trees, or on herbaceous vegetation" (Ball & Bousquet 2001). Braun et al. (1990) report that both adults and larvae of *C. viridipennis* (Say), a wide-ranging eastern North American species, are important arboreal predators of the fruit tree leafroller (*Archips argyrospila* (Walker): Lepidoptera: Tortricidae). Zhou and Goyer (1993) fed larvae of *A. argyrospila* to both adult and larval *C. viridipennis* to successfully produce lab-reared third instar larvae from wild-collected adults.

Adult Phenology in Texas
1) Number of compiled Texas collecting events by month: May (1), June (1), October (2).
2) Year of most recent known collection in Texas: 2002.

Literature Cited
Ball, G. E. and Y. Bousquet. 2001. Carabidae Latreille, 1810, pp. 32-132, *in* Arnett, R. H. and M. C. Thomas (eds.). American Beetles. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. Volume 1. CRC Press. xv + 1-443 pp.

Bates, H. W. 1881-1884 (1883). Biologia Centrali-Americana. Insecta. Coleoptera. Vol. 1, Part 1. London. pp. 153-256, pls. vi-xii.

Ball, G. E., A. Casale, and A. Vigna Taglianti (eds.). 1998. Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Atti, Museo Regionale di Scienze Naturali, Torino, Italy. 543 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 1. United States National Museum Bulletin 185: xii + 1-188 pp.

Bousquet, Y. and A. Larochelle. 1993. Catalogue of the Geadephaga (Coleoptera: Trachypachidae, Rhysodidae, Carabidae including Cicindelini) of America north of Mexico. Memoirs of the Entomological Society of Canada No. 167: 1-397 pp.

Braun, D. M., R. A. Goyer, and G. J. Lenhard. 1990. Biology and mortality agents of the fruittree leafroller (Lepidoptera: Tortricidae), on baldcypress in Louisiana. Journal of Entomological Science 25(1): 176-184.

Csiki, E. 1932. Carabidae: Harpalinae VII. (pars 124), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 3. Berlin, ‘s-Gravenhage. pp. 1279-1598.

Erwin, T. L., D. R. Whitehead and G. E. Ball. 1977. Family 4. Carabidae, the ground beetles, *in* Blackwelder, R. E., R. H. Arnett and associates (eds.). Checklist of the beetles of Canada, United States, Mexico, Central America, and the West Indies (yellow version). Part 1. The tiger beetles, ground beetles, water beetles, and related groups (families 1-9). World Digest Publications, Kinderhook, New York. 68 pp.

Zhou, J. and R. A. Goyer. 1993. Descriptions of the immature stages of *Calleida viridipennis* (Say) and *Plochionus timidus* Haldeman (Coleoptera: Carabidae: Lebiini). The Coleopterists Bulletin 47(3): 233-242.

Valid name

Cenophengus pallidus Schaeffer

Synonymy/catalog

Cenophengus (?) *pallidus* Schaeffer, 1904:213 [note: original questionable generic placement]
Cenophengus pallidus: Leng, 1920:142
Cenophengus pallidus: Wittmer, 1976:449
Cenophengus pallidus: Caballero, 1984:312
Cenophengus pallidus: Bender et al., 2005:775

Classification

Family: Phengodidae
Subfamily: Phengodinae
Tribe: Mastinocerini
The classification of the genus has more-or-less been stable. *Cenophengus* has always been closely associated with the Neotropical genus *Mastinocerus* Solier. Wittmer (1976) revised the Phengodidae s. str. (New World) and recognized three tribes, the Mastinocerini being the largest. The family Phengodidae has at times consisted of two subfamilies, depending on the status afforded the Old World Rhagophthalminae. Here we follow Lawrence and Newton (1995) and O'Keefe (2002) in recognizing two subfamilies.

Diagnostic remarks

Cenophengus pallidus is easy to recognize. The females are unknown for this species, but as a member of the Phengodidae they will be larviform. The male is a small soft and delicate beetle, 4-5 mm. in length, and of a uniform, very pale yellowish color. In addition, these beetles have short dehiscent elytra that do not fully cover the abdomen and leave the hind wings broadly exposed. The antennae are bipectinate, with the ramus of each segment approximately as long as the segment itself. The pronotum is wider than long and rectangular in shape. The head and pronotum are coarsely punctate.

The genus is keyed in O'Keefe (2002) and in Wittmer (1976). Wittmer (1976) provides a key to the then-known eight species of *Cenophengus* where *C. pallidus* is recognized as the only species with a uniform pale yellowish coloration. At least four additional species have since been described from Mexico (Caballero 1886, 1988, 1991), but in all of these the coloration of the body is different.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.
2) From specimens examined: See "specimen records" on attached Excel spreadsheet.
3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron, La Salle, Live Oak, and Zapata counties).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of this species was located in the literature.

2) From specimens: All specimens examined are males. Many examined specimens representing several collecting events are labeled as having been collected at light. One specimen from Refugio, Texas, is labeled as "luminous on ceiling," which indicates that perhaps males are at times luminescent.

3) From communicated records: Collected off light sheets operated in the understory of the palm grove, and once in Live Oak County in the understory of an anacua mott (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Larvae and larviform females of Phengodidae are predaceous, feeding on millipedes, but these observations seem to be based only on the larger species of Phengodini. Nothing specific on the food of *Cenophengus* was located in the literature.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: February (1), March (4), April (1), May (2), June(6), July (5), September (1), October (5).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2007.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Caballero, S. Z. 1984. Catálogo de la familia Phengodidae (Coleóptera). Anales del Instituto de Biologia de la Universidad Nacional Autónoma de México 55(1): 307-324.

Caballero, S. Z. 1986. Descripción de dos especies nuevas de *Cenophengus* LeConte (Coleoptera: Phengodidae; Mastinocerini). Anales del Instituto de Biologia de la Universidad Nacional Autónoma de México 56(3): 933-938.

Caballero, S. Z. 1988. Una especie nueva de *Cenophengus* de Mexico (Coleoptera: Phengodidae; Mastinocerini). Anales del Instituto de Biologia de la Universidad Nacional Autónoma de México 58(2): 651-654.

Caballero, S. Z. 1991. Descripción de una especie nueva de *Cenophengus* (Coleoptera: Phengodidae; Mastinocerini) de Iguala, Guerrero, México. Anales del Instituto de Biologia de la Universidad Nacional Autónoma de México 62(1): 109-114.

Lawrence, J. F. and A. F. Newton. 1995. Families and subfamilies of Coleoptera (with selected genera, notes, references and data on family-group names) pp. 779-1006, *in* Pakaluk, J. and S. A. Slipinski (eds.). Biology, Phylogeny, and Classification of Coleoptera. Papers Celebrating the 80th Birthday of Roy A. Crowson.. Museum i Instytut Zoologii PAN, Warszawa.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

O'Keefe, S. T. 2002. Phengodidae LeConte, 1861, pp. 181-186, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Wittmer, W. 1976. Arbeiten zu einer revision der familie Phengodidae (Coleoptera). Entomologische Arbeiten aus dem Museum G. Frey 27: 415-524.

Valid name

Dacoderus steineri Aalbu, Andrews & Pollock

Synonymy/catalog
Dacoderus n. sp.: Bender et al., 2005:775
Dacoderus steineri Aalbu, Andrews, & Pollock, 2006:29, figs. 5, 13, 21, 29, 37, 45, 53, 61, 65, 73, 85, 92, 97

Classification
Family: Salpingidae
Subfamily: Dacoderinae
The classification of the genus has been problematic. A detailed discussion is provided in Aalbu et al. (2006). At various times, *Dacoderus* has been placed in Tretothoracidae, Tenebrionidae, Dacoderidae, and Zopheridae. Lawrence (1982) placed the genus in the Salpingidae-Dacoderinae, where it was recently treated (Pollock 2002, Aalbu et al. 2006).

Diagnostic remarks
Members of the genus *Dacoderus* (and the related genus *Myrmecoderus*) are very distinctive. They are elongate flattened and parallel-sided and uniformly dark reddish brown in color. At first glace these beetles resemble members of the family Rhysodidae. Their antennae are moniliform and 10-segmented, and the pronotal disc is highly modified with a deep median sulcus or pit with short transverse sulci extending from the median pit to the lateral margin. In *Dacoderus steineri*, the eye facets are reduced in number, from 20 to 30 facets, and the eye rests upon a broad plate-like extension of the gena and is not visible from below. These beetles are flightless, as their hind wings are absent. Their tarsal formula is 5-5-4. Aalbu et al. (2006) provide several detailed SEM images.

Aalbu et al. (2006) treated the taxonomy of the Dacoderinae and keyed *D. steineri* relative to other known genera and species. *Dacoderus steineri* is the only dacoderine known from the Lower Rio Grande Valley. One other species occurs in Texas, *Myrmecoderus laevipennis* (Horn), which is known from Kerr County and Mexico (Tamaulipas). It is readily distinguished from *D. steineri* by its principal generic character, the lack of the plate-like platform below the eye allowing the eye to be seen from below.

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
Texas (Cameron, Hidalgo, and San Patricio counties).

Biology, Host, Substrate, Habitat Data

1) From literature: This species is taken mostly on the soil surface. Data cited include: "pit fall trap in wooded area, pit fall trap in clay soil brushland, Berlese rotten log and Celtis leaf litter." (Aalbu et al. 2006).

2) From specimens: "Berlese rotten log and Celtis leaf litter, berlese rotten wood / forest litter, pit fall trap, pit fall trap in clay soil brushland, pit fall trap in wooded area

3) From communicated records: One specimen hand-collected at night at the Sabal Palm Grove was found crawling on a palm trunk that was used to edge the parking lot (E. G. Riley, pers. obser., July, 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Little is known about the biology of the Dacoderinae. A more common species of the southwestern United States, *D. striaticeps* LeConte, has been collected in "overnight pit-fall traps" confirming that adults move about on the soil surface at night. The morphology of the prothorax and other general characters of the adult exoskeleton suggest that these beetles may be myrmecophiles. The single Australian representative of the subfamily, *Tretothorax cleistostoma* Lea, has been collected in the nests of ponerine ants of the genera *Odontomachus* and *Leptogenys* (Aalbu et al. 2006).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: March (1), June(1), July (2), August (1), September (3), October (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1995.

Literature Cited

Aalbu, R. L., F. G. Andrews, and D. A. Pollock. 2005 (2006). Revision of Western Hemisphere Dacoderinae with a phylogenetic analysis of world taxa (Coleoptera: Salpingidae). Coleopterists Society Monograph 4: 1-40.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Lawrence, J. F. 1982. Coleoptera. pp. 482-553, 1106-1107. *in* Parker, S. P. (ed.). Synopsis and classification of living organisms. McGraw-Hill, New York.

Pollock, D. A. 2002. Salpingidae Leach, 1815, pp. 544-548, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861.

Valid name

Deltochilum scabriusculum scabriusculum Bates

Synonymy/catalog
Deltochilum scabriusculum Bates, 1886-1890 (1887):38; pl. ii, fig. 16
Deltochilum scabriusculum: Schaeffer, 1905:157
Deltochilum scabriusculum: Gillet, 1911:36
Deltochilum scabriusculum: Leng, 1920:248
Deltochilum scabriusculum: Hinton & Ancona, 1935:308
Deltochilum scabriusculum: Blackwelder, 1944:203
Deltochilum scabriusculum: Halffter & Matthews, 1966:28, 51, 52, 74, 186, 191
Deltochilum scabriusculum scabriusculum: Howden, 1966:734; figs. 6-9, 21
Deltochilum scabriusculum: Riley & Wolfe, 2003:18
Deltochilum scabriusculum scabriusculum: Halffter, 2003:27; pl. 2.1, fig. c
Deltochilum scabriusculum scabriusculum: Bender et al., 2005:774

Classification
Order: Coleoptera
Family: Scarabaeidae
Subfamily: Scarabaeinae
Tribe: Canthonini
The classification of the genus *Deltochilum* as a member of the tribe Canthonini of the subfamily Scarabaeinae is not controversial; however, a recent phylogenetic study indicates that the tribe "Canthonini" is not a monophyletic group (Philips et al. 2004).

Diagnostic remarks
Deltochilum scabriusculum scabriusculum is a large, bulky beetle, 20-24 mm long, and 15.5 mm wide, with a typical canthon-like dung beetle habitus. It is moderately shining to dull blackish, the elytra have well-defined striae with most of the interstrial surface irregularly and coarsely rugose. The head and pronotum are not sexually dimorphic and lack horns or other modifications. The hind tibia is long, strongly curved, and only weakly expanded apically, characters that are typical of dung beetle species that are classic dung-ball rollers (Philips et al. 2004). In *Deltochilum* the scutellum is concealed as it is in most other genera of the tribe, but *Deltochilum* lacks the tarsi of the anterior legs, and the elytral disc has a distinct humeral carina and small apical tubercles. This is a large and conspicuous dung beetle, easily distinguished from related species occurring in southern Texas. It is also the only species of the genus found in extreme southern Texas.

The genus is keyed in Gill (2002) and Halffter & Martinez (1977). Howden (1966) treats the two subspecies of *D. scabriusculum* and also provides a key to the North and Central American species of the genus. Color images of specimens are available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Deltochilum.htm] (last accessed 12/10/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.
3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range
Texas (Cameron County), Mexico (Chiapas, Chihuahua, Morelos, Nayarit, Nuevo Leon, Sonora, Tamaulipas, and Veracruz), Guatemala, and Costa Rica.

Biology, Host, Substrate, Habitat Data
1) From literature: Howden (1966) provides some biological information based on observations on the subspecies *D. s. montanum* Howden. His observations were made during a dry period in late May near Yecora, México (Sonora) at an altitude of 7-8000 ft. He and colleagues discovered pupal cells by turning over rocks 1-2 feet in diameter along the margin of an open area surrounded by a relatively open oak-pine forest. Earthen cells contained an inner spherical ball of dung, which was noted to be in contrast with the widespread *D. gibbosum* complex that utilizes fur and feathers as larval food. Later visits to the site in July found adult beetles active around horse dung but not around cattle dung. Halffter & Matthews (1966; p. 28) also noted this preference for dung as apposed to carrion. Hinton and Ancona (1935) reported collecting 22 specimens of *D. scabriusculum* in the debris piles of *Atta exdens* (L.) in Mexico. Halffter & Matthews (1966) note the collection in a dung trap of a single specimen at night.
2) From specimens: One Texas specimen is labeled as having been taken at light. Multiple Texas collections are labeled as having been taken in pig-dung baited pit-fall traps. Mexican species carry the following labels: "pitfall trap baited with human feces, dung trap, ex. carrion trap, dung pit-fall, swine feces pit-fall."
3) From communicated records: C. S. Wolfe and E. G. Riley used swine feces-baited pit-fall traps to capture this species near Laguna Atascosa National Wildlife Refuge, and E. G. Riley captured this species in Tamaulipas state of Mexico in lowland forest using human feces-baited pit-fall traps (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Deltochilum species appear to be general scavengers of dung and carrion (Halffter & Matthews 1966).

Adult Phenology in Texas
1) Number of compiled Texas collecting events by month: June (1), September (7), October (3).
2) Year of most recent known collection in Texas: 1996.

Literature Cited
Bates, H. W. 1886-1890 (1887). Biología Centrali Americana. Insecta. Coleoptera. Pectinicornia and Lamellicornia. vol. 2. part 2. London. pp. 25-160, pls. ii-viii.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 2. United States National Museum Bulletin 185: iv + 189-341 pp.

Gill, B. D. 2002. Scarabaeinae Latreille, 1802, pp. 39-81, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861.

Gillet, J. J. E. 1911. Scarabaeidae: Coprinae I. (pars 38), *in* Junk , W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 19. Berlin, 's-Gravenhage. pp. 1-100.

Halffter, G. 2003. Tribu Scarabaeini, pp. 21-43, *in* Morón, M. A. (ed.). Atlas de los escarabajos de México. Coleoptera: Lamellicornia. Vol. II Familias Scarabaeidae, Trogidae, Passalidae y Lucanidae. Argania editio, S. C. P., Barcelona. 227 pp.

Halffter, G. and A. Martínez. 1977. Revisión monográfica de los Canthonina Americanos, IV Parte. Clave para generos y subgeneros. Folia Entomologica Mexicana 38: 29-107.

Halffter, G. and E. G. Matthews 1966. The natural history of dung beetles of the subfamily Scarabaeinae (Coleoptera, Scarabaeidae). Folia Entomologica Mexicana 12-14: 1 - 312.

Hinton, H. E., and L. Ancona H. 1935. Fauna de Coleopteros en nidos de hormigas (*Atta*), en Mexico y Centro-America. Anales del Instituto de Biologia de la Universidad Nacional Autónoma de México 6: 307-316.

Howden, H. F. 1966. Notes on Canthonini of the "Biologia Centrali-Americana" and descriptions of new species (Coleoptera: Scarabaeidae). The Canadian Entomologist 98: 725-741.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Philips, T. K., E. Pretorius, and C. H. Scholtz. 2004. A phylogenetic analysis of dung beetles (Scarabaeinae: Scarabaeidae): unrolling an evolutionary history. Invertebrate Systematics 18: 53-88.

Riley, E. G. and C. S. Wolfe. 2003. An Annotated Checklist of the Scarabaeoidea of Texas (Coleoptera). Southwestern Entomologist, Supplement (26): 37 pp.

Schaeffer, C. F. A. 1905. Some additional new genera and species of Coleoptera found within the limit of the United States. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(7): 141-179.

Valid name

Diomus pseudotaedatus Gordon

Synonymy/catalog
Diomus pseudotaedatus Gordon, 1976:333; figs. 547, 548
Diomus pseudotaedatus: Gordon, 1985:329; fig. 268a, b
Diomus pseudotaedatus: Bender et al., 2005:774

Classification
Order: Coleoptera
Family: Coccinellidae
Subfamily: Scymninae
Tribe: Scymnini
The classification of the genus *Diomus* is not controversial (Gordon 1985).

Diagnostic remarks
This is a small beetle, 1.44 mm long, 1.05 mm wide, weakly convex and dorsally covered with short appressed hairs. The ground color of the pronotum is pale yellowish and that of the elytra is dark brown. The pronotum has a broad dark parabolic basal spot that does not reach the anterior margin of the pronotum. Each elytron has two feebly connected yellow spots. The male genitalia are also diagnostic (Gordon 1976). It is similar in general appearance to some other members of the tribe Scymnini, but the generic characters for *Diomus* will easily separate it from those species. Gordon (1976, 1985) provides a habitus illustration.

Gordon (1976) revised previous taxonomic works on the *Diomus* species occurring in America north of Mexico, and this work was largely repeated in 1985. Those works provide a key to *Diomus* species found in America north of Mexico. There is no modern taxonomic treatment of the *Diomus* species of Mexico. Gordon placed *D. pseudotaedatus* with seven other species in the "floridanus group" of North American *Diomus* based on the male genitalia having the sipho long and coiled and with a c-shaped base. The most similar species is *D. taedatus* Fall from California, a species that differs in color and male genitalia characters.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
The known range of *Diomus pseudotaedatus* is Brownsville, Texas. The only published information available on this species is the taxonomic treatments by Gordon (1976, 1985), both of which are apparently based on a single male specimen.

Biology, Host, Substrate, Habitat Data

1) From literature: No data on the biology of this species were found in the literature.

2) From specimens: None.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

This species, like other members of the genus for which biological data are known, may be a predator of mealybugs (Homoptera: Pseudococcidae), aphids (Homoptera: Aphididae), or possibly scale insects (Homoptera: Coccoidea) (Gordon 1976).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: October (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2002.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Gordon, R. D. 1976. The Scymnini (Coleoptera: Coccinellidae) of the United States and Canada: key to genera and revision of *Scymnus*, *Nephus* and *Diomus*. Bulletin of the Buffalo Society of Natural History 28: [4] + 1-362 pp.

Gordon, R. D. 1985. The Coccinellidae (Coleoptera) of America north of Mexico. Journal of the New York Entomological Society 93(1): iv + 1-912 pp.

Valid name

Galerita aequinoctialis Chaudoir

Synonymy/catalog

Galerita aeguinoctialis Chaudoir, 1852:37 [should read "aequinoctialis", see Bousquet & Larochelle 1993, p. 285]
Galerita elegans Chaudoir, 1861:553
Galerita aequinoctialis: Csiki, 1932:1555
Galerita aequinoctialis: Blackwelder, 1944:68
Galerita aequinoctialis, var. elegans: Blackwelder, 1944:68
Galerita aequinoctialis: Reichardt, H., 1967:88, fig. 72
Galerita aequinoctialis: Erwin et al., 1977:65
Galerita aequinoctialis: Bousquet & Larochelle, 1993:285
Galerita aequinoctialis: Ball & Bousquet, 2001:116
Galerita aequinoctialis: Bender et al., 2005:773

Classification

Family: Carabidae
Subfamily: Harpalinae
Tribe: Galeritini
The classification of the genus *Galerita* as a member of the tribe Galeritini is not controversial. In general, tribes within the family Carabidae are well established and stable. The grouping of tribes into taxa of higher rank, however, is far from settled, "... with virtually every classification of carabid beetles published during the past 40 years differing more or less substantially from one another."(Ball & Bousquet 2001). The Galeritini is here listed in the Harpalinae following Ball & Bousquet (2001) and Bousquet & Larochelle (1993). Higher classification within the Carabidae is reviewed by Ball et al. (1998).

Diagnostic remarks

This carabid beetle is easily recognized as a member of the distinctive and widespread tribe Galeritini. It is the only member of the subgenus *Galerita* found in America north of Mexico. As such, it is separated from other *Galerita* species of the region by having the elytra obviously carinate. The other *Galerita* species occurring in America north of Mexico belong to the subgenus *Progaleritina*, and these possess smooth, punctate-striate elytra. *Galerita aequinoctialis* is further distinguished from other *Galerita* (*s. str*.) of Mexico and Central America by its uniformly dark dorsal coloration, the head lacking reddish spots between the eyes, the head length and width roughly equal, the small eyes that leave the occiput at least as long as the diameter of an eye, the elytra with two carinulae (little carinae) between each adjacent pair of carinae, and the well developed metathoracic wings. The body length is 14.5-18.0 mm and the maximum width is 4.4-6.05 mm (Reichardt 1967).
Color images of specimens are available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Galerita.htm] (last accessed 12/10/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron County), Mexico (Chiapas, Durango, Guerrero, San Luis Potosí, Sinaloa, Tamaulipas, Veracruz, and Yucatán), Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. Bousquet and Larochelle (1993) list "AR, TX" as recorded states for this species, but the Arkansas record must be considered at error.

Biology, Host, Substrate, Habitat Data

1) From literature: Very little is known about the life history and habits of American Galeritini (Reichardt 1967, Ball & Bousquet 2001) and nothing specifically on *G. aequinoctialis*.

2) From specimens: Two specimens from Texas are labeled as taken in carrion baited pit-fall traps. A record from Mexico was taken at light.

3) From communicated records: One specimen found running on ground at night in the palm grove (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Ball and Bousquet (2001) state that members of *Galerita* (*s. str*.) in the Western Hemisphere " ... are forest inhabitants in both tropical lowlands and highlands." Described larvae of both subgenera of *Galerita* are known and these possess a striking modification of the frontal region of the head. The females of *G.* (*Progaleritina*) *bicolor* (eastern USA) encapsulate their eggs in mud cells that they attach to the undersurfaces of leaves (King 1919). These two features suggest an unusual way of life (Ball & Bousquet 2001).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (1), October (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1994.

Literature Cited

Ball, G. E., A. Casale, and A. Vigna Taglianti (eds.). 1998. Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Atti, Museo Regionale di Scienze Naturali, Torino, Italy. 543 pp.

Ball, G. E. and Y. Bousquet. 2001. Carabidae Latreille, 1810, pp. 32-132, *in* Arnett, R. H. and M. C. Thomas (eds.). American Beetles. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. Volume 1. CRC Press. xv + 1-443 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 1. United States National Museum Bulletin 185: xii + 1-188 pp.

Bousquet, Y. and A. Larochelle. 1993. Catalogue of the Geadephaga (Coleoptera: Trachypachidae, Rhysodidae, Carabidae including Cicindelini) of America north of Mexico. Memoirs of the Entomological Society of Canada No. 167: 1-397 pp.

Chaudoir, M. de. 1852. Mémoire sur la famille des carabiques. 3-e partie. Bulletin de la Société Impériale des Naturalistes de Moscou 25(1): 3-104. [literature not seen]

Chaudoir, M. de. 1861. Matériaux pour servir à l'étude des cicindélètes et des carabiques. (continuation). Bulletin de la Société Impériale des Naturalistes de Moscou 34(2): 491-576. [literature not seen]

Csiki, E. 1932. Carabidae: Harpalinae VII. (pars 124), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 3. Berlin, 's-Gravenhage. pp. 1279-1598.

Erwin, T., D. R. Whitehead and G. E. Ball. 1977. Family 4. Carabidae, the ground beetles, *in* Blackwelder, R. E., R. H. Arnett and associates (eds.). Checklist of the beetles of Canada, United States, Mexico, Central America, and the West Indies (yellow version). Part 1. The tiger beetles, ground beetles, water beetles, and related groups (families 1-9). World Digest Publications, Kinderhook, New York. 68 pp.

King, J. L. 1919. Notes on the biology of the carabid genera *Brachynus*, *Galerita*, and *Chlaenius*. Annals of the Entomological Society of America 12: 382-387, pl. xxx, figs.1-4, pl. xxxi, figs. 1-4.

Reichardt, H. 1967. A monographic revision of the American Galeritini (Coleoptera: Carabidae). Arquivos de Zoologia 15(1-2): 1-176.

Valid name

Hapalips texanus Schaeffer

Synonymy/catalog
Hapalips texanus Schaeffer, 1910:210
Hapalips texanus: Leng, 1920:201
Hapalips texanus: Lawrence & Vaurie, 1983:2
Hapalips texanus: Bender et al., 2005:775

Classification
Family: Languriidae
Subfamily: Xenoscelidae
Tribe: Xenoscelini
The genus *Hapalips* was first proposed in the family Rhizophagidae [Monotomidae] (Reitter 1877). *Hapalips* and various other genera that are now assigned to different cucujoid beetle families were often treated in the family Cryptophagidae in early beetle literature. During the 1960s, Sen Gupta and Sen Gupta and Crowson transferred most of the genera constituting the non-Languriinae Languriidae to the Languriidae (Sen Gupta & Crowson 1971). Gorham (1898) treated the genus with the Erotylidae, inclusive of the Languriidae. The status of Languriidae as a family separate from Erotylidae is in question (Leschen & Wegrzynowicz 1998).

Diagnostic remarks
This beetle is elongate and parallel-sided, length 3.6-4.7 mm, width at elytral mid-length 1.2-1.6 mm. It is uniformly reddish-brown and dorsally covered with sparse short pubescence. Dense punctures cover the disc of the pronotum, and the elytral are punctuate-striate. Schaeffer (1910) noted what he believed to be sexual dimorphism in the pronotal shape. On what he presumed to be the male, the pronotal disc is longitudinally elevated anteriorly and the anterior margin is obliquely angled to each side. The longitudinal elevation is lacking and the anterior pronotal margin is straight from side to side in what he believed to be the female.

The genus is keyed in Leschen & Skelley (2002). This is a large genus of many species, tropical, and is essentially world-wide in distribution. Bruce (1952) provides a key to 52 species but did not include *H. texana*. A species level revision of the entire genus is probably needed. Although only one species has been formally recognized in the United States, two undetermined species are found in southern Florida (Leschen & Skelley 2002). Schaeffer (1910) with his original description compared *H. texanus* to *H. parallelus* Gorham from Mexico.

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: See “communicated records” on attached Excel spreadsheet.

Known Range
Texas (Cameron County).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Hapalips texanus* was located in the literature.

2) From specimens: One Texas specimen is labeled "at UV lights."

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Leschen & Skelley (2002) state that *Hapalips* has been collected in palm sheaths, and the elongate and flattened body form suggests a microhabitat between closely appressed surfaces. Lawrence and Vaurie (1983) state that most Xenoscelinae "… probably feed on decaying vegetation and fungal hyphae …", and " Larvae of *Hapalips* and other loberines have been taken by plant quarantine inspectors from banana leaves and other plant material, but the gut of at least one of these species contained numerous hyphae in addition to leaf cells."

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (1), August (1), October (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1994.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Bruce, v. N. 1952. Revision der im Deutschen Entomologischen Institut befindlichen *Hapalips*-Arten (Coleoptera: Cryptophagidae). Beiträge zur Entomologie 2: 461-473.

Gorham, H. S. 1887-1899 (1898). Biologia Centrali-Americana. Insecta. Coleoptera. Erotylidae, Endomychidae, and Coccinellidae. Vol. VII. Supplement. London. pp. 241-256.

Lawrence, J. F. and P. Vaurie. 1983. A catalog of the Coleoptera of America north of Mexico. Family Languriidae. United States Department of Agriculture Handbook no. 529-92: x + 1-12 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Leschen, R. A. B. and P. E. Skelley. 2002. Languriidae Wiedeman, 1823, pp. 343-347, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Leschen, R. A. B. and P. Wegrzynowicz. 1998. Generic catalogue and taxonomic status of Languriidae (Cucujoidea). Annales Zoologici 48(3/4): 221-243.

Reitter, E. 1877. *Hapalips*, neue Gattung der Rhizophagidae. Verhandlungen des naturforschenden Vereines in Bruenn. 15:122-128.

Sen Gupta, T. and R. A. Crowson. 1971. A review of the classification of the family Languriidae (Coleoptera: Clavicornia) and the place of Languriidae in the natural system of Clavicornia. Memoirs of the Zoological Survey of India 15(2): 1-42.

Schaeffer, C. F. A. 1910. New clavicorn Coleoptera. Journal of the New York Entomological Society 18: 210-216.

Valid name

Heterobrenthus texana Schaeffer

Synonymy/catalog
Heterobrenthus texanus Schaeffer, 1915:51, fig.
Heterobrenthus texanus: Leng, 1920:306
Heterobrenthus texanus: Anderson & Kissinger, 2002:717, fig. 14.129
Heterobrenthus texanus: Sforzi & Bartolozzi, 2004:225
Heterobrenthus texanus: Bender et al., 2005:772

Classification
Family: Brentidae
Subfamily: Brentinae
Tribe: Arrhenodini
The classification of *Heterobrenthus* is not controversial.

Diagnostic remarks
As a member of the "true brentids", e.g. the subfamily Brentinae, this is a distinctive and easily recognized beetle. It is elongate with a strongly drawn-out rostrum, narrowly tapering subcylindrical pronotum and elongate subparallel-sided elytra. Total length is ca. 8.0-10.25 mm. (Schaeffer 1915). The cuticle is very shining. In color, it is very dark reddish-brown (piceous) except for a pattern on the elytra as follows: "a spot at base on the third and fourth intervals and on each of the third, fourth and seventh intervals a little before the middle and on the third, fourth and fifth about apical third reddish yellow" (Schaeffer 1915). The rostrum of the head is as long as the prothorax and, as is typical in Brentinae, sexually dimorphic. The male rostrum is shorter and broader with the apex slightly dilated; in the female the rostrum is slightly longer and narrower than in the male and not dilated at apex. The inner margin of the anterior femur possesses a large broad tooth in the male, small in the female. The inner apical margin of the protibia possesses a short tooth in both sexes.

This is the only species of the genus found in America north of Mexico (Anderson & Kissinger 2002) and it is not likely to be confused with any other beetle found in the Lower Rio Grande Valley since it is the only species of Brentinae known from the region. The genus was most recently keyed in Anderson and Kissinger (2002). Both Schaeffer (1915) and Anderson and Kissinger (2002) provide a line illustration of what is purported to be a male of this species.

Historic Texas Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
Brownsville area of Texas.

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Heterobrenthus texana* was located in the literature.

2) From specimens: None.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Where known, species of the subfamily Brentinae develop in living, dying or recently felled hardwood trees where larvae bore deep into the heartwood (Anderson & Kissinger 2002). Adults of Brentinae are sometimes found under bark or attracted to lights.

Adult Phenology in Texas

1) Summary of compiled Texas collecting events by month: May (1).

2) Year of most recent known collection in the Lower Rio Grande Valley: Pre-1915. The only known year of collection is 1904.

This species is apparently known from only two specimens (Robert Anderson, pers. comm. August, 2008), both cited by Schaeffer (1915). Schaeffer almost always did not report dates of collection for specimens cited with his original descriptions. Schaeffer cites a specimen collected by Ottomar Dietz from "Texas" and another from "Los Borregos near Brownsville" collected by H. S. Barber. Barber made one trip to the Brownsville area in 1904. His specimen at the United States National Museum of Natural History (Washington, DC) was examined as part of the present study and is labeled May 24, 1904. The probable date of collection for the Dietz specimen is not presently known.

Literature Cited

Anderson, R. S. and D. G. Kissinger. 2002. Brentidae Billberg, 1820, pp. 711-719, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Schaeffer, C. F. A. 1915. New Coleoptera and miscellaneous notes. Journal of the New York Entomological Society 23: 47-55.

Sforzi, A. and L. Bartolozzi (eds.). 2004. Brentidae of the World (Coleoptera, Curculionoidea). Monografie XXXIX. Museo Regionale di Scienze Naturali, Torino, Italy. 976 pp.

Valid name

Hyperaspis rotunda Casey

Synonymy/catalog
Hyperaspis rotunda Casey, 1899:123
Hyperaspis rotunda: Leng, 1920:211
Hyperaspis rotundata: Korschefsky, 1931:195 [incorrect subsequent spelling]
Hyperaspis rotunda: Dobzhansky, 1941:26; pl. ii, fig. 66; pl. iv, fig. 113; pl. vi, fig. 166
Hyperaspis rotunda: Gordon, 1985:475; figs. 388a-e
Hyperaspis rotunda: Bender et al., 2005:774

Classification
Order: Coleoptera
Family: Coccinellidae
Subfamily: Scymninae
Tribe: Hyperaspini
The classification of the genus *Hyperaspis* is not controversial (Gordon 1985).

Diagnostic remarks
Gordon (1985) revised previous taxonomic works on the *Hyperaspis* species occurring in America north of Mexico. He adopted two major divisions within the genus based on the number of antennal segments (11 vs. 10), a grouping that he felt represented a valid division. He further defined species groups within each division based "... mainly on the type of genitalia and somewhat on the body shape and color pattern." *Hyperaspis rotunda* falls into division I, those species possessing 10-segmented antennae (although this character is quite difficult to see in all but clean and properly prepared specimens), and it is further grouped with two additional species in his "connectens group." *Hyperaspis rotunda* is distinctive in possessing a highly globular body shape length and in its color pattern. Males have pale yellowish heads and females have brownish heads as is typical of most members of the genus. Both males and females have a black pronotum with a broad pale lateral band; the elytron is black with two pale yellowish spots, a round median spot and an elongate lateral spot located beyond middle that does not extend to the suture. Length 2.2-2.8 mm; width 1.8-2.0 mm. The most closely related species is *H. dobzhanskyi* Gordon, a species established by Gordon (1985) for the Arizona specimens that Dobzhansky (1941) had previously grouped with Casey's *H. rotunda*. Gordon (1985) provides a habitus illustration of this species.
Color images of specimens are available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Hyperaspis.htm] (last accessed 12/10/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas, Brownville are (Cameron County). The distribution map in Gordon (1985) shows two points in southern Arizona for *H. rotunda,* however he provides no Arizona localities in the text. This is likely an error related to the broader taxonomic interpretation of *H. rotunda* by Dobzhansky (1941).

Biology, Host, Substrate, Habitat Data

1) From literature: There are no published data available on the biology of *H. rotunda*.

2) From specimens: None.

3) From communicated records: Taken by random beating of vegetation (E. G. Riley, pers. obser., May 2008)

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

By inference, this species, like other members of the genus for which biological data are known (Gordon 1985), will likely be a predator on scale insects (Homoptera).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: March (4), April (2) May (5), June(4), July (3), August (2), September (1), October (6).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1994.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Casey, T. L. 1899. A revision of the American Coccinellidae. Journal of the New York Entomological Society 7(2): 71-169.

Dobzhansky, T. 1941. Beetles of the genus *Hyperaspis* inhabiting the United States. Smithsonian Miscellaneous Collections 101(6): 1- 94; pls. i-vi.

Gordon, R. D. 1985. The Coccinellidae (Coleoptera) of America north of Mexico. Journal of the New York Entomological Society 93(1): iv + 1-912 pp.

Korschefsky, R. 1931. Coccinellidae I. (pars 118), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 16. Berlin, ‘s-Gravenhage. pp. 1-224.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Valid name

Lachnodactyla texana Schaeffer

Synonymy/catalog
Lachnodactyla texana Schaeffer, 1906:114
Lachnodactyla texana: Leng, 1920:188
Lachnodactyla texana: Bender et al., 2005:775

Classification
Family: Ptilodactylidae
Subfamily: Ptilodactylinae
The classification of the genus is not especially controversial. *Lachnodactyla* is quite close in all general features to *Ptilodactyla* Illiger, which is a very large and widespread genus. The composition of the family Ptilodactylidae has been somewhat variable, but seems to approaching a high degree of finality (Ivie 2002).

Diagnostic remarks
In general features of color, size, and body shape, *Lachnodactyla texana* is essentially identical to the United States species of *Ptilodactyla* that belong to the *P. serricollis* group (Johnson & Freytag 1982). The clear difference is in the form of the terminal maxillary palpomeres of the male, which are membranous and elongate in *Lachnodactyla*. In dried specimens, this segment appears as deflated and floppy with clear indications that it has shriveled upon desiccation. In males of *Ptilodactyla* species, this segment is not membranous, much shorter, and it does not "deflate" upon desiccation. The median lobe of the male genitalia (often exposed in dried specimens of both genera) also differs. In *L. texana*, it is uniformly narrowed to a needle-like tip. In *Ptilodactyla* species of the *P. serricollis* group, the tip of the median lobe is expanded preapically to form lobes of different shapes among the different species (Johnson & Freytag 1982). The body shape of *L. texana* is elongate and moderately broad, somewhat depressed above, with the margins weakly arcuate. The length is 4.8-5.9 mm. and the greatest width is 2.2–2.5 mm. at about the middle of the elytra. Overall coloration of the body is uniform dark brown. Males have distinctly pectinate antennae with antennomeres 4 through 10 bearing a single, proximally articulated ramus. *Lachnodactyla texana* is the only known species of the genus occurring in Texas.

The genus is keyed in Stribling (1986) relative to other New World genera, and by Ivie (2002) relative to other genera from America north of Mexico.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range
Texas (Cameron and Hidalgo counties).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Lachnodactyla texana* was located in the literature.

2) From specimens: A few specimens are labeled as having been collected at UV lights.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
One may assume that the life history and habits of *Lachnodactyla* are probably similar to those of *Ptilodactyla*. As far as known, all larvae of Ptilodactylinae are terrestrial (larvae of some other Ptilodactylidae belonging to different subfamilies are aquatic) but live in wet or damp places. Larvae feed on decaying vegetation or wood. Adult Ptilodactylinae apparently feed on surface microfungi aided by maxillae that are modified into "spore brushes" (Stribling & Seymour 1988). Adults are commonly taken at lights and can be taken by beating vegetation (Ivie 2002).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: March (1), April (1), May (3), October (1).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1995.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Ivie, M. A. 2002. Ptilodactylidae Laporte, 1836, pp. 135-138, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Johnson, V. and P. H. Freytag. 1982. A review of the species of *Ptilodactyla* in the United States with descriptions of three new species (Coleoptera: Ptilodactylidae). Entomological News 93(5): 129-135.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Schaeffer, C. F. A. 1906. New Dascyllidae. Psyche 13: 114-116.

Stribling, J. B. 1986. Revision of Anchytarsus (Coleoptera: Dryopoidea) and a key to the New World genera of Ptilodactylidae. Annals of the Entomological Society of America 79: 219-234.

Stribling, J. B. and R. L. Seymour. 1988. Evidence of mycophagy in Ptilodactylidae (Coleoptera: Dryopoidea) with notes on phylogenetic implications. The Coleopterists Bulletin 42: 152-154.

Valid name

Loberus ornatus Schaeffer

Synonymy/catalog
Loberus ornatus Schaeffer, 1904:201
Loberus ornatus: Leng, 1920:202
Loberus ornatus: Schenkling, 1923:11
Loberus ornatus: Lawrence & Vaurie, 1983:2
Loberus ornatus: Bender et al., 2005:775

Classification
Family: Languriidae
Subfamily: Xenoscelidae
Tribe: Loberini
Loberus and various other genera now assigned to a multitude of beetle families were at one time treated as the family Cryptophagidae. Sen Gupta and Sen Gupta and Crowson transferred most of the genera constituting the non-Languriinae Languriidae to the Languriidae (Sen Gupta & Crowson 1971). The status of Languriidae as a family separate from Erotylidae is in question (Leschen & Wegrzynowicz 1998).

Diagnostic remarks
This is a small beetle, length 2.0-2.6 mm., maximum width at 1.0-1.1 mm., moderately elongate and subparallel-sided in shape. The pronotum and elytra are moderately convex and together with the head are sparsely setose. The coloration above is shining brown with blackish spots. Most of the pronotal disc is covered by a broad, obscurely defined spot; the elytra base has a spot on each side of scutellum (often joined and surrounding scutellum) and at midlength with a broad transverse band that extends anteriorly above the lateral margin towards, but not reaching, the humeri. These blackish markings are variably developed among specimens but are of uniform configuration. The antennal club is symmetrical and consists of three segments. The pronotum has a prebasal transverse furrow that terminates well before the lateral margin in a distinct pit. The elytral punctation is organized in distinct rows.

The genus is keyed in Leschen & Skelley (2002) and Sen Gupta (1968). A species level revision of the genus is needed. Contrary to the statement under *Loberus* by Leschen & Skelley (2002: p 346), a key to species of *Loberus* is not found in Sen Gupta (1967) [this likely an editorial error since this notation should have been placed under their entry for *Toramus*, p 345)]

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: See “communicated records” on attached Excel spreadsheet.

Known Range
Texas (Cameron Co.) and Mexico (Tamaulipas).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Loberus ornatus* was located in the literature.

2) From specimens: None

3) From communicated records: I have taken this beetle by random beating in the Sabal Palm Grove, and especially by beating dense tangles of vines and consider it fairly common (E. G. Riley, pers. obser., June 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Members of the Xenoscelinae display a broad range of food habits. A few are phytophagous, but most are associated with decaying plant materials and are either saprophagous or mycophagous (Leschen & Skelley 2003). Carlton et al. (2000) provided notes on the natural history of *Loberus impressus* LeConte, a wide-ranging species of the eastern United States. Although attempts to observe reproduction in the laboratory failed, one adult was reared from a mature field-collected larva on corolla tissue of *Iris hexagona* (Iridaceae). In the field, *Loberus* adults were consistently found within dehisced or otherwise compromised seedpods of *I. hexagona*, and many of these pods also contained an unidentified fungus. Uncompromised seedpods prevented entry of larva and adult *Loberus*. Spores of *Fusarium* and *Cladosporium* spp. were found on the integument of adult *Loberus*, and frass from rearing efforts contained several kinds of spores and cell wall fragments of fungal hyphae. Cultures from frass produced hyphae and spores of *Cladosporium* sp.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (4), May (2), June (4), July (5), October (8).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2002.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Carlton, C. E., V. R. Townsend, P. A. Van Zandt, and S. Mopper. 2000. Description of the larva of *Loberus impressus* (Coleoptera: Languriidae: Xenoscelinae) with notes on its natural history. Annals of the Entomological Society of America 93(3): 356-361.

Lawrence, J. F. and P. Vaurie. 1983. A catalog of the Coleoptera of America north of Mexico. Family Languriidae. United States Department of Agriculture Handbook no. 529-92: x + 1-12 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Leschen, R. A. B. and P. E. Skelley. 2002. Languriidae Wiedeman, 1823, pp. 343-347, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Leschen, R. A. B. and P. Wegrzynowicz. 1998. Generic catalogue and taxonomic status of Languriidae (Cucujoidea). Annales Zoologici 48(3/4): 221-243.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Schenkling, S. 1923. Cryptophagidae. (pars 76) *in* Junk W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 15. Berlin, 's-Gravenhage. pp. 1-92.

Sen Gupta, T. 1967. A new subfamily of Languriidae (Coleoptera) based on four genera, with a key to the species of *Toramus*. Proceedings of the Royal entomological Society of London 36(11-12): 167-176.

Sen Gupta, T. 1968. Review of the genera of the tribe Loberini (Coleoptera: Languriidae). Brevoria 303: 1-27.

Sen Gupta, T. and R. A. Crowson. 1971. A review of the classification of the family Languriidae (Coleoptera: Clavicornia) and the place of Languriidae in the natural system of Clavicornia. Memoirs of the Zoological Survey of India 15(2): 1-42.

Valid name

Malagoniella astyanax yucateca Harold

Synonymy/catalog
Megathopa Yucateca Harold, 1863:173
Megathopa yucateca: Bates, 1886-1890 (1887):25; pl. ii, fig. 1
Megathopa yucateca: Schaeffer, 1905:157
Megathopa yucateca: Gillet, 1911:27
Megathopa yucateca: Leng, 1920:248
Megathopa yucateca: Blackwelder, 1944:198
Megathopa yucateca: Martínez, 1950:269
Megathopa astyanax yucateca: Halffter, Pereira, & Martínez, 1960:203
Malagoniella astyanax yucateca: Halffter & Matthews, 1966:27, 68, 74, 91
Malagoniella yucateca: Halffter & Martínez, 1966:
Megathopa astyanax yucateca: Howden, 1966:726
Malagoniella astyanax yucateca: Halffter, 2003:23; pl. 2.1, fig a
Malagoniella astyanax yucateca: Riley & Wolfe, 2003:18
Malagoniella astyanax yucateca: Bender et al., 2005:775

Classification
Family: Scarabaeidae
Subfamily: Scarabaeinae
Tribe: Canthonini
The classification of the genus *Malagoniella* as a member of the tribe Canthonini of the subfamily Scarabaeinae is not controversial; however, a recent phylogenetic study indicates that the tribe "Canthonini" is not a monophyletic group (Philips et al. 2004).

Diagnostic remarks
Malagoniella astyanax yucateca is a large, bulky beetle, 13-20 mm long, 8-13 mm wide, with a typical canthon-like dung beetle habitus. It is shining black, and the elytra have well-defined impressed striae and broad smooth intervals. The head and pronotum are not sexually dimorphic and lack horns or other modifications. The tarsi of the anterior legs are present and the hind tibia is long and only weakly expanded apically, characters that are typical of dung beetle species that are classic dung-ball rollers (Philips et al. 2004). *Malagoniella* differs from most other North America genera of the tribe Canthonini in that the scutellum is clearly visible, this structure being completely concealed in other genera of the tribe found in southern Texas. This is the only member of the genus found outside South America (Gill 2002).

The genus is keyed in Gill (2002) and Halffter & Martinez (1977). The subspecies of *M. astyanax* are treated by Halffter et al. (1960). Color images of specimens are available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Malagoniella.htm] (last accessed 12/10/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron County), Mexico (Chiapas, Quintana Roo, San Luis Potosi, Tamaulipas, and Yucatan), Costa Rica, Nicaragua, and Guatemala.

Biology, Host, Substrate, Habitat Data

1) From literature: Halffter and Matthews (1966) categorize this species as an exclusive tropical forest species. They report that in southern Chiapas, Mexico, *M. astaynax yucateca* is an interior forest dweller that is nocturnally active and exclusively coprophagous, showing no attraction to carrion at a location where it was abundant in human excrement traps. At locations in Chiapas and Guatemala, this species began arriving at dung traps at dusk and continued arriving until about 22:00 hrs. According to Gill (2002), adults are nocturnally active and frequently attracted to ultraviolet light.

2) From specimens: Specimens are labeled as having been collected … "bosque modificado, excremento humano, noche"[= modified/disturbed forest, human feces, night], "excremento human"[= human feces], "pitfall trap baited with human feces, at lights, pig dung trp, swine feces pit-fall, pit-fall trap baited with swine feces."

3) From communicated records: Cate and Quinn captured this species with pit-fall traps baited with swine feces near Laguna Atascosa National Wildlife Refuge. C. S. Wolfe and E. G. Riley used swine feces-baited pit-fall traps to capture this species near Laguna Atascosa National Wildlife Refuge, and E. G. Riley captured this species in Yucatán and Quintana Roo states of Mexico with human feces-baited pit-fall traps (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Malagoniella species are general scavengers of dung and carrion (Halffter & Matthews 1966).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (2), June (2), July (1), September (2), October (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1996.

Literature Cited

Bates, H. W. 1886-1890 (1887). Biología Centrali Americana. Insecta. Coleoptera. Pectinicornia and Lamellicornia. vol. 2. part 2. London. pp. 25-160, pls. ii-viii.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 2. United States National Museum Bulletin 185: iv + 189-341 pp.

Gill, B. D. 2002. Scarabaeinae Latreille, 1802, pp. 39-81, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Gillet, J. J. E. 1911. Scarabaeidae: Coprinae I. (pars 38), *in* Junk , W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 19. Berlin, 's-Gravenhage. pp. 1-100.

Halffter, G. 2003. Tribu Scarabaeini, pp. 21-43, *in* Morón, M. A. (ed.). Atlas de los escarabajos de México. Coleoptera: Lamellicornia. Vol. II Familias Scarabaeidae, Trogidae, Passalidae y Lucanidae. Argania editio, S. C. P., Barcelona. 227 pp.

Halffter, G. and A. Martínez. 1966. Revisión monográfica de los Canthonina Americanos (Coleoptera, Scarabaeidae) (1a. parte). Revista de la Sociedad Mexicana Historia Natural 27: 114-175. [reference not seen]

Halffter, G. and A. Martínez. 1977. Revisión monográfica de los Canthonina Americanos, IV Parte. Clave para generos y subgeneros. Folia Entomologica Mexicana 38: 29-107.

Halffter, G. and E. G. Matthews 1966. The natural history of dung beetles of the subfamily Scarabaeinae (Coleoptera, Scarabaeidae). Folia Entomologica Mexicana 12-14: 1 - 312.

Halffter, G., F. S. Pereira, and A. Martínez. 1960. *Megathopa astyanax* (Olivier) y formas afines (Coleopt. Scarab.). Ciencia (Méx.) 20(7-8): 202-204.

Harold, E. v. 1862 (1863). Note sur les espèces mexicaines du genre *Phanaeus* et descriptions de quelques espèces nouvelles de coléoptères mexicains. Ser. 4. Annales de la Société Entomologique de France 3: 161-176.

Howden, H. F. 1966. Notes on Canthonini of the "Biologia Centrali-Americana" and descriptions of new species (Coleoptera: Scarabaeidae). The Canadian Entomologist 98: 725-741.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Martínez, A. 1950. Contribución al conocimiento del género *Megathopa* Eschsch. Eos 26(3-4): 197-269. [reference not seen]

Philips, T. K., E. Pretorius, and C. H. Scholtz. 2004. A phylogenetic analysis of dung beetles (Scarabaeinae: Scarabaeidae): unrolling an evolutionary history. Invertebrate Systematics 18: 53-88.

Riley, E. G. and C. S. Wolfe. 2003. An Annotated Checklist of the Scarabaeoidea of Texas (Coleoptera). Southwestern Entomologist, Supplement (26): 37 pp.

Schaeffer, C. F. A. 1905. Some additional new genera and species of Coleoptera found within the limit of the United States. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(7): 141-179.

Valid name

Megascelis texana Linell

Synonymy/catalog
Megascelis texana Linell, 1898:473
Megascelis texana: Townsend, 1902:80
Megascelis texana: Leng, 1920:287
Megascelis texana: Arnett, 1960:921
Megascelis texana: Wilcox, 1975:14
Megascelis texana: Riley et al., 2002:670, fig. 77
Megascelis texana: Riley, Clark, & Seeno, 2003:150
Megascelis texana: Clark et al., 2004:131
Megascelis texana: Bender et al., 2005:774

Classification
Family: Chrysomelidae
Subfamily: Eumolpinae
Tribe: Megascelidini
The systematic placement of the genus *Megascelis* has been mildly controversial among students of the Chrysomelidae. Most early workers (up to Seeno & Wilcox 1982) placed the genus in its own subfamily near the chrysomelid subfamily Criocerinae because of its overall gross similarities, especially in the unmargined pronotum and the connate tarsal claws. Modern workers, following Bechyné & Bechyné (1969), have placed the genus in the Eumolpinae. Support for this placement comes from phylogenetic studies (Reid 1995), male genitalic structure (Flowers 1999), and larval characters (Cox 1998).

The spelling of the family-group name based on *Megascelis* has been disputed (*Megascel-* vs *Megascelid-*), but this report follows Reid (1995) who corrected the spelling to reflect the genitive stems of the Greek noun on which is it based: *skelis, skelidos* (rib).

Diagnostic remarks
The genus *Megascelis* is a large Neotropical genus containing approximately 140 species and has never received a modern taxonomic treatment. The Mexican species have remained unstudied since Jacoby (1880, 1888) who treated 11 species from that country. Study of *Megascelis* material that has accumulated in modern chrysomelid collections indicates that Jacoby's synopsis is far from complete for Mexico. The only modern taxonomic study of *Megascelis* species is a detailed study that treats the species from Venezuela (Zaide & Savini 2001). This study utilizes several morphological character systems for the separation of species including the male and female genitalia.

Megascelis texana, being the only member of the genus found in the United States, is an easy species to recognize. The genus is keyed in Riley et al. (2002). It will first key-out by itself in the subfamily key (couplet 10, p. 621) opposite the subfamily Criocerinae due to the unusual combination of characters: pronotum lacking a marginal bead, eyes emarginate, hind femur unarmed (in the Texas species), head without x-shaped grooves, and simple tarsal claws that are connate at their base. In general body shape, *Megascelis*

texana looks superficially similar to members of the beetle genus *Phyllobaenus* (Cleridae). Images of several species of *Megascelis* are available the Harvard University's MCZ Type Database website [http://insects.oeb.harvard.edu/mcz/FMPro] (last accessed 12/8/2008).

Separation of *M. texana* from some Mexican species of *Megascelis* requires close and detailed study. For the identification of specimens for this study, the following characters were used to separate *M. texana* from multiple unidentified *Megascelis* species of northeastern Mexico: length, 4.7-4.6 mm; color of elytra bright metallic green ranging to yellowish-brown overlain with strong metallic green reflections with sutural area being the least strongly metallic and not narrowly darker than elytral disc; color below elytral humerus metallic green or yellowish overlain with metallic green reflection, not darker than elytral disc; elytral epipleuron yellowish-orange, non-metallic; color of abdomen, including pygidium, entirely yellow-orange; sutural apex of elytron unarmed, hind tarsal claw segment symmetrical, without a weak to strong expansion on lower external margin; shape of median lobe of male genitalia differing from studied Mexican species.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known range

Texas (Cameron County).

Biology, Host, Substrate, Habitat Data

1) From literature: Riley et al. (2002) and Clark et al. (2004) mention this species' association with *Leucaena pulverulenta* (Schlecht.) Benth. (Fabaceae).

2) From specimens: Specimens examined are labeled, ... "sweeping succulent undergrowth in Palm grove, on *Leucaena pulverulenta*, and at UV lights."

3) From communicated records: During some years, this species was found in high numbers on *Leucaena pulverulenta* growing in re-growth areas at the Palm Grove. A few adults were kept alive for a week or so on leaves of *Leucaena pulverulent*, which they consumed (E. G. Riley, pers. obser., May 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

As a member of the leaf beetle family Chrysomelidae, *M. texana* will feed on living plants as an adult and larva. The larva of *M. texana* is unknown, but as a member of the subfamily Eumolpinae, it is highly likely to be a subterranean root feeder, as is the case with known eumolpine larvae (Riley et al. 2002).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: March (3), April (5), May (5), June (8), July (1). September (1), October (12).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1993.

Literature Cited

Arnett, R. H. 1960. The beetles of the United States (A manual for identification). The Catholic University Press, Washington, D. C. xi + 1112 pp.

Bechyné, J. and B. Springlová de Bechyné. 1969. La posición sistemática de *Megascelis* Chevrolat (Col. Phytophaga). Revista de la Facultad de Agronomía (Maracay) 5(3): 65-76.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Clark, S. M., D. G. LeDoux, T. N. Seeno, E. G. Riley, A. J. Gilbert, and J. M. Sullivan. 2004. Host plants of leaf beetle species occurring in the United States and Canada (Coleoptera: Megalopodidae, Orsodacnidae, Chrysomelidae, excluding Bruchinae). Coleopterists Society Special Publication no. 2: 476 pp.

Cox, M. L. 1998. The first instar larva of *Megascelis puella* Lacordaire (Coleoptera: Chrysomelidae: Megascelinae) and its value in the placement of the Megascelinae. Journal of Natural History 32: 387-403.

Flowers, R. W. 1999. Internal structure and phylogenetic importance of male genitalia in the Eumolpinae, pp. 71-93, *in* Cox, M. L. (ed.). Advances in Chrysomelidae biology 1. Backhuys Publishers, Leiden. xii + 671 pp.

Jacoby, M. 1880-1888 (1880). Biologia Centrali-Americana, Insecta, Coleoptera, Vol. VI. pt. 1, Phytophaga (part). London. pp. 1-73, pls. i-iv.

Jacoby, M. 1888-1892 (1888). Biologia Centrali-Americana, Insecta, Coleoptera, Vol. VI. pt. 1, Supplement. Phytophaga (part). London. pp. 1-80.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Linell, M. L. 1897 (1898). New species of Coleoptera of the family Chrysomelidae, with a short review of the tribe Chlamydini. Proceedings of the United States National Museum 20(1130): 473-485.

Reid, C. A. M. 1995. A cladistic analysis of subfamilial relationships in the Chrysomelidae sensu lato (Chrysomeloidea), pp. 559-631, vol. 2, *in* Pakaluk, J. and S. A. Slipinski (eds.). Biology, Phylogeny, and Classification of Coleoptera: papers celebrating the 80th birthday of Roy A. Crowson . Muzeum i Instytut Zoologii PAN, Warszawa. vi + pp. 559-1092.

Riley, E. G., S. M. Clark, R. W. Flowers, and A. J. Gilbert. 2002. Chrysomelidae Latreille, 1802, pp. 617-691, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles, Volume 2. Polyphaga: Scarabaeoidea through Curculionoidea. CRC Press. xiv + 861 pp.

Riley, E. G., S. M. Clark, and T. N. Seeno. 2003. Catalog of the leaf beetles of America north of Mexico (Coleoptera: Megalopodidae, Orsodacnidae and Chrysomelidae, excluding Bruchinae). Coleopterists Society Special Publication no. 1: 1-290.

Seeno, T. N. and J. A. Wilcox. 1982. Leaf beetle genera (Coleoptera: Chrysomelidae). Entomography 1: 1-221.

Townsend, C. H. T. 1902. Contribution to a knowledge of the coleopterous fauna of the lower Rio Grande valley in Texas and Tamaulipas, with biological notes and special

reference to geographical distribution. Transactions of the Texas Academy of Science 5: 51-101.

Wilcox, J. A. 1975. Checklist of the beetles of Canada, United States, Mexico, Central America and the West Indies. Vol. 1, pt. 7. The leaf beetles (red version). [inside title: Checklist of the Chrysomelidae of Canada, United States, Mexico, Central America and the West Indies, family no. 104]. Biological Research Institute of America. New York. 166 pp. [The date "VIII-1-74" appears on the header of each page of the body of this work. This has led some authors to cite 1974 as the year of publication. The cover bears the date "January 1975".]

Zaide, T. G. and V. Savini. 2001. El genero *Megascelis* Latreille, 1825 (Coleoptera: Chrysomelidae: Eumolpinae) en Venezuela. Entomotropica 16(2): 89-125.

Valid name

Nemotarsus rhombifer Bates

Synonymy/catalog
Nemotarsus rhombifer Bates, 1881-1884 (1883):173
Nematotarsus rhombifer: Csiki, 1932:1305
Nemotarsus rhombifer: Blackwelder, 1944:52
Nemotarsus rhombifer: Erwin et al., 1977:61
Nemotarsus rhombifer: Bender et al., 2005:773

Classification
Family: Carabidae
Subfamily: Harpalinae
Tribe: Lebiini
Subtribe: Nemotarsina
The classification of the genus *Nemotarsus* has been unstable (discussion in Ball & Bousquet 2001). The tribe and subtribe placement used here follows Ball & Bousquet (2001). In general, tribes within the family Carabidae are well established and stable. The grouping of tribes into taxa of higher rank, however, is far from settled, "... with virtually every classification of carabid beetles published during the past 40 years differing more or less substantially from one another."(Ball & Bousquet 2001). The Lebiini is here listed in the Harpalinae following Ball & Bousquet (2001) and Bousquet & Larochelle (1993). Higher classification within the Carabidae is reviewed by Ball et al. (1998).

Diagnostic remarks
This species is a typical-looking small lebiine carabid. It can at once be separated from similar lebiines by the especially long inner spur at the apex of the metatibia. This spur is almost as long has the first metatarsal segment in *Nemotarsus* whereas in other Lebiini, this spur is short, less than half the length of the first metatarsal segment. *Nemotarsus rhombifer* is pale yellowish-orange with a pair of brownish longitudinal lines on the pronotal disc and a brownish pattern on the elytra. The head is evenly rounded and markedly constricted posterior to eyes forming a narrow "neck." The tarsal claws are pectinate. The body length is ca. 4.5 mm, and the maximum width (at middle of elytra) is ca. 2.0 mm. The genus is keyed in Ball and Bousquet (2001). Bates (1883) provides a color habitus illustration.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron County) and Guatemala. This species has not been recorded from the United States in the primary literature. In 1994, G. E. Ball identified some of the first-known specimens from Texas.

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Nemotarsus rhombifer* was located in the literature.

2) From specimens: None

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Erwin (1991) reports that *Nemotarsus* species live in the canopy and subcanopy of tropical forests. *Nemotarsus elegans* LeConte of the eastern United States flies to lights (Ball & Bousquet 2001).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: October (2).

2) Year of most recent known collection in Texas: 1991.

Literature Cited

Ball, G. E. and Y. Bousquet. 2001. Carabidae Latreille, 1810, pp. 32-132, *in* Arnett, R. H. and M. C. Thomas (eds.). American Beetles. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. Volume 1. CRC Press. xv + 1-443 pp.

Bates, H. W. 1881-1884 (1883). Biologia Centrali-Americana. Insecta. Coleoptera. Vol. 1, Part 1. London. pp. 153-256, pls. vi-xii.

Ball, G. E. and Y. Bousquet. 2001. Carabidae Latreille, 1810, pp. 32-132, *in* Arnett, R. H. and M. C. Thomas (eds.). American Beetles. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. Volume 1. CRC Press. xv + 1-443 pp.

Ball, G. E., A. Casale, and A. Vigna Taglianti (eds.). 1998. Phylogeny and classification of Caraboidea (Coleoptera: Adephaga). Atti, Museo Regionale di Scienze Naturali, Torino, Italy. 543 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 1. United States National Museum Bulletin 185: xii + 1-188 pp.

Bousquet, Y. and A. Larochelle. 1993. Catalogue of the Geadephaga (Coleoptera: Trachypachidae, Rhysodidae, Carabidae including Cicindelini) of America north of Mexico. Memoirs of the Entomological Society of Canada No. 167: 1-397 pp.

Csiki, E. 1932. Carabidae: Harpalinae VII. (pars 124), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 3. Berlin, ‘s-Gravenhage. pp. 1279-1598.

Erwin, T. L. 1991. Natural history of the carabid beetles at the BIOLAT Biological Station, Rio Manu, Pakitza, Peru. Revista Peruana de Entomologia 33: 1-85.

Erwin, T., D. R. Whitehead and G. E. Ball. 1977. Family 4. Carabidae, the ground beetles, *in* Blackwelder, R. E., R. H. Arnett and associates (eds.). Checklist of the beetles of Canada, United States, Mexico, Central America, and the West Indies (yellow version). Part 1. The tiger beetles, ground beetles, water beetles, and related groups (families 1-9). World Digest Publications, Kinderhook, New York. 68 pp.

Valid name

Neoxenus versicolor Valentine

Synonymy/Catalog
Neoxenus versicolor Valentine, 1999:254, fig. 15
Neoxenus versicolor: Valentine, 2002:698
Neoxenus versicolor: Rheinheimer, 2004:121
Neoxenus versicolor: Bender et al., 2005:772

Classification
Family: Anthribidae
Subfamily: Choraginae
Tribe: Araecerini
The classification of the genus *Neoxenus* is not controversial.

Diagnostic Remarks
This is a small, dull-colored anthribid beetle with a subcylindrical body form. The body length is ca. 2.0-3.2 mm., and the body width is greatest at the posterior third of the elytra, ca. 1.0-1.4 mm. Body color (cuticle) is of a variable patchy pattern of medium to dark brown, often with some areas a strong reddish-brown. The legs are generally reddish-brown and lighter than the body color. The dorsum of the body is covered with silvery-gray pubescence that thins to form a vague anteriomedian discal spot on each elytron. The antennae are inserted on the front of the head next to the lower margin of the eyes (not inserted laterally). The antennal club is 3-segmented and asymmetrical. The head is not strongly retracted into the prothorax and the eyes are round and projected. The lateral margin of the prothorax is smooth, without a sharp marginal bead.

Neoxenus versicolor is the only species of the genus occurring in the United States (Valentine 1999, 2002). It is distinctive and not likely to be confused with other Anthribidae occurring in the Lower Rio Grande Valley. The genus is keyed in Valentine (1999, 2002) relative to other genera of Anthribidae known from America north of Mexico. A black-and-white habitus illustration is provided in Valentine (1999).

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
Brownsville area of Texas, Mexico (Tamaulipas, San Luis Potosi, and Oaxaca), and Panama.

Biology, Host, Substrate, Habitat Data

1) From literature: The type series of 280 specimens collected by Barry and Buena Valentine in 1993 was taken on the “undersides of recently dead palm fronds still

hanging on the trees." Valentine (1999) further states, … "My wife and I counted 75 specimens on one frond, and with continued collecting we could have taken thousands." These observations together with the lack of previously collected specimens from the Brownsville area led Valentine to speculate that this species had just arrived in the Brownsville area.

2) From specimens examined: UV light.

3) From communicated records: Taken by beating dead palm fronds in the interior of the Palm Grove (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

None.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (1), July (2), September (3), October (4).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2002.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Rheinheimer, J. 2004. Illustrierter Katalog und Bibliographie der Anthribidae der Welt (Insecta: Coleoptera). Mitteilungen des Entomologischen Vereins Stuttgart 39(1-2): 1-243.

Valentine, B. D. 1998 (1999). A review of Nearctic and some related Anthribidae (Coleoptera). Insecta Mundi 12(3-4): 251-296.

Valentine, B. D. 2002. Anthribidae Billberg, 1820, pp. 695-700, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Valid name

Onthophagus batesi Bates

Synonymy/catalog
Onthophagus incensus: Howden, 1955:264 [misidentification]
Onthophagus batesi Howden & Cartwright, 1963:21; pl. ii, figs. 6-7
Onthophagus batesi: Halffter & Matthews, 1966:18, 69, 70, 71, 74
Onthophagus batesi: Estrada et al., 1993:48
Onthophagus batesi: Lobo & Montes De Oca, 1994:117-127
Onthophagus batesi: Estrada et al., 1998:582
Onthophagus batesi: Horgan, 2001:106
Onthophagus batesi: Estrada & Coates-Estrada, 2002:1911
Onthophagus batesi: Hernández et al., 2003:96, 100
Onthophagus batesi: Riley & Wolfe, 2003:17
Onthophagus batesi: Zunino, 2003:70
Onthophagus batesi: Bender et al., 2005:775

Classification
Family: Scarabaeidae
Subfamily: Scarabaeinae
Tribe: Onthophagini
The classification of the genus *Onthophagus* as a member of the tribe Onthophagini of the subfamily Scarabaeinae is not controversial.

Diagnostic remarks
This is a dung beetle of medium size, length 6-8 mm., and width 4-5 mm. The body is mostly shining blackish to dark brown overlain with a faint to distinct olive-greenish luster. The dorsum is without a color pattern. The pronotum is without setae and finely punctate with the punctation in the posteromedial area the weakest. Males possess weakly to strongly developed head horns, one on each side arising from near the eye. These cephalic horns are united by a sharp carina that extends down one horn across the front and up the other. Females lack these cephalic horns and in place have a posterior transverse carina that is fairly evenly raised. Females have an anterior cephalic carina that is not noticeably elevated at the middle. *Onthophagus batesi* can be easily confused with the common Mexican-Central American species, *O. incensus* Say. *Onthophagus incensus* differs in not having the sharp carina between the cephalic horns in the male, and the female differs in having the anterior cephalic carina noticeably elevated at the middle.

Gill (2002) keys Onthophagus relative to other dung beetle genera found in the United States. Howden and Cartwright (1963) provide a taxonomic treatment for the *Onthophagus* species of the United States and provides habitus photographs.

Historic Occurrence Records
1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.
3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range
Texas (Cameron County), Mexico (Chiapas, Colima, Guerrero, Jalisco, Morelos, Oaxaca, San Luis Potosí, Veracruz, and Yucatán), Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama.

Biology, Host, Substrate, Habitat Data
1) From literature: Halffter and Matthews (1966) provide some details on the habits of this species based on observations at Mexican forest localities (in Veracruz and Oaxaca) and in Guatemala. They report that *O. batesi* has been associated with cow, horse, human and cow dung. In comparison between dung and carrion, *O. batesi* strongly preferred dung over carrion. This species was stated as "very abundant" at one site under horse dung, and adults were also found buried at a shallow depth under cow dung. At Sontecomapan, Veracruz, *O. batesi* was categorized as a "very abundant" coprophagous species. In periodicity studies, *O. batesi* was the only dung beetle species studied that did not have a clearly demarcated diurnal or nocturnal activity period. Very few were taken during the afternoon and it was seen flying at dusk. At locations in Chiapas and Guatemala, this species began arriving at dung traps at dusk and continued arriving until about 22:00 hrs. when their activity ceased completely.

The specimens reported from near Brownsville, Texas by Howden and Cartwright (1963) were collected from under horse dung.

Halffter and Edmonds (1982) report that *O. batesi* constructs a burrow with multiple brood masses (a compound nest).
2) From specimens: Specimens examined during this study are labeled as having been collected by "pitfall trap baited with human feces", "swine feces pit-fall", "under cow dung", "under horse dung", "at lights", and "at UV lights".
3) From communicated records: E. G. Riley captured this species in Tamaulipas state of Mexico in lowland forest using human feces-baited and swine feces pit-fall traps, and in Quintana Roo using human dung traps (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
North American and South American species of *Onthophagus* are normally coprophagous, however they may come to carrion and decaying vegetable matter (Halffter & Matthews 1966).

Adult Phenology in Texas
1) Number of compiled Texas collecting events by month: June (3).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1986.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Estrada, A. and R. Coates-Estrada. 2002. Dung beetles in continuous forest, forest fragments and in an agricultural mosaic habitat island at Los Tuxtlas, Mexico. Biodiversity and Conservation 11: 1903-1918.

Estrada, A., G. Halffter, R. Coates-Estrada, and D. A. Meritt, Jr. 1993. Dung beetles attracted to mammalian herbivore (*Alouatta palliata*) and omnivore (*Nasua narica*) dung in the tropical rain forest of Los Tuxtlas, Mexico. Journal of Tropical Ecology 9: 45-54.

Estrada, A., R. Coates-Estrada, A. A. Dadda, and P. Cammarano. 1998. Dung and carrion beetles in tropical rain forest fragments and agricultural habitats at Los Tuxtlas, Mexico. Journal of Tropical Ecology 14: 577-593.

Gill, B. D. 2002. Scarabaeinae Latreille, 1802, pp. 39-81, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Halffter, G. and W. D. Edmonds. 1982. The nesting behavior of dung beetles (Scarabaeinae). An ecological and evolutive approach. Instituto Ecologia, Mexico, D.F. Pub. no. 10 : 1 - 176 pp.

Halffter, G. and E. G. Matthews 1966. The natural history of dung beetles of the subfamily Scarabaeinae (Coleoptera, Scarabaeidae). Folia Entomologica Mexicana 12-14: 1 - 312.

Hernández, B., J. Maes, C. A. Harvey, S. Vílchez, A. Medina, and D. Sánchez. 2003. Abundancia y diversidad de escarabajos coprófagos y mariposas diurnas en un paisaje ganadero en el departamento de Rivas, Nicaragua. Agroforestería en las Américas 10(39-40): 93-102.

Horgan, F. G. 2001. Burial of bovine dung by coprophagous beetles (Coleoptera: Scarabaeidae) from horse and cow grazing sites in El Salvador. European Journal of Soil Biology 37: 103-111.

Howden, H. F. 1955. Some new species and records of North American Scarabaeidae (Coleoptera). Proceedings of the Entomological Society of Washington 57(6): 257-264.

Howden, H. F. and O. L. Cartwright. 1963. Scarab beetles of the genus *Onthophagus* Latreille North of Mexico (Coleoptera: Scarabaeidae). Proceedings of the United States National Museum 114(no.3467): 1-135, pls. i-ix.

Lobo, J. M. and E. Montes De Oca. 1994. Distribución local y coexistencia de *Digitonthophagus gazella* (Fabricius, 1787) y *Onthophagus batesi* Howden & Cartwright, 1963 (Coleoptera: Scarabaeidae). Elytron 8: 117-127.

Riley, E. G. and C. S. Wolfe. 2003. An Annotated Checklist of the Scarabaeoidea of Texas (Coleoptera). Southwestern Entomologist, Supplement (26): 37 pp.

Zunino, M. 2003. Tribu Onthophagini, pp. 66-74, *in* Morón, M. A. (ed.). Atlas de los escarabajos de México. Coleoptera: Lamellicornia. Vol. II Familias Scarabaeidae, Trogidae, Passalidae y Lucanidae. Argania editio, S. C. P., Barcelona. 227 pp.

Valid name

Ormiscus albofasciatus (Schaeffer)

Synonymy/catalog
Toxotropis albofasciatus Schaeffer, 1906:271
Toxotropis albofasciatus: Leng, 1920:307
Ormiscus albofasciatus: Wolfrum, 1929:46
Toxotropis albofasciatus: Pierce, 1930:10
Ormiscus albofasciatus: Valentine, 1960:62
Ormiscus albofasciatus: Valentine, 1999:289
Ormiscus albofasciatus: Rheinheimier, 2004:53
Ormiscus albofasciatus: Bender et al., 2005:772

Classification
Family: Anthribidae
Subfamily: Anthribinae
Tribe: Zygaenodini
This report follows the classification of Valentine (1999, 2002).

Diagnostic remarks
This species is typical in appearance for the genus. Body length is ca. 2.0 mm. The body is robust, subcylindrical and subparallel sided. The ground color of the integument is uniformly blackish. The hairs of the dorsum of the elytra are mostly blackish. There is a conspicuous arcuate band of dense white hairs on the basal third of the elytra. This band is more or less well defined and extends to the fifth interval. On the apical third of the elytra there are a few flecks composed of white scales. The extent of these subapical white patches varies. From Valentine's (1999) comparative remarks, it is unclear if males of this species were known to him since he does not mention the condition of the apical spine on the male middle tibia. The females of *O. albofasciatus* and four other named species have the female ovipositor without teeth on the coxites, a condition that will separate these species from four other named species that do have teeth on the coxites (Valentine 1999). The transverse pre-basal pronotal carina at its apex turns downward in this species, helping to define a projecting lobe at the hind angles of the prothorax (Valentine 1960). Other structural characters that apply to this species include the inner teeth of the bifid claws are large, the elytra are not tuberculate, and the hind femur is not swollen.

The genus is keyed in Valentine (2002). The species-level taxonomy of this genus is seriously incomplete, and the North American species need revision. Valentine (1999) lists 14 named species of *Ormiscus* from America north of Mexico and states that there are about 30 additional undescribed species in the region.

Specimens that are patterned as described above are easy to recognize, but the amount of variation in this pattern is unclear at the present time. The specimens under this name in the USNM appear to represent multiple species. Only those that closely match the syntypes of Schaeffer are cited in this report.

Historic Texas Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Southern Texas (Cameron, Duval, Hidalgo and San Patricio counties).

Biology, Host, Substrate, Habitat Data

1) From literature: "Taken on anacahuita (*Cordia boissieri*)" (Pierce 1930).

2) From specimens: on Anacahuita.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (from closely related species)

Valentine (1999) states that very little information is available on the habits of this genus: "Most species are taken by beating dead twigs and vines, or sweeping dead herbaceous stems and a few inhabit seeds and galls. I know of no firm association with fungi." Anderson (1947) described larvae belonging to *Ormiscus* based on several species, mostly unidentified. He reported *O. angulatus* (Suffrian) larvae "in husk, immediately about seeds of *Atrocarpus communis*" and further stated that numerous unidentified larvae of this genus "were collected in various hosts, nearly always dead twigs."

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: March (1), April (2), May (1), June (1), July (2).

2) Year of most recent known collection in the lower Rio Grande valley: 1961.

Literature Cited

Anderson, W. H. 1947. Larvae of some genera of Anthribidae (Coleoptera). Annals of the Entomological Society of America 40: 489-517.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Pierce, W. D. 1930. Studies of the North American weevils belonging to the superfamily Platystomoidea. Proceedings of the United States National Museum 77: 1-34, pls. i-v.

Rheinheimer, J. 2004. Illustrierter Katalog und Bibliographie der Anthribidae der Welt (Insecta: Coleoptera). Mitteilungen des Entomologischen Vereins Stuttgart 39(1-2): 1-243.

Schaeffer, C. F. A. 1906. New Anthribidae. Transactions of the American Entomological Society 32: 267-278.

Valentine, B. D. 1960. The genera of the weevil family Anthribidae north of Mexico (Coleoptera). Transactions of the American Entomological Society 86: 41-85.

Valentine, B. D. 1998 (1999). A review of Nearctic and some related Anthribidae (Coleoptera). Insecta Mundi 12(3-4): 251-296.

Valentine, B. D. 2002. Anthribidae Billberg, 1820, pp. 695-700, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Wolfrum, P. 1929. Anthribidae. (pars 102), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 26. Berlin, ‘s-Gravenhage. pp. 1-145.

Valid name

Ormiscus irroratus (Schaeffer)

Synonymy/catalog
Toxotropis irroratus Schaeffer, 1904:233
Toxotropis irroratus: Leng, 1920:307
Ormiscus irroratus: Wolfrum, 1929:47
Toxotropis irroratus: Pierce, 1930:9
Ormiscus irroratus: Valentine, 1960:62
Ormiscus irroratus: Valentine, 1999:289
Ormiscus irroratus: Rheinheimer, 2004:53
Ormiscus irroratus: Bender et al., 2005:772

Classification
Family: Anthribidae
Subfamily: Anthribinae
Tribe: Zygaenodini
This report follows the classification of Valentine (1999, 2002).

Diagnostic remarks
This species is typical in appearance for the genus. Body length is ca. 2.5-3.0 mm. The body is robust, subcylindrical, and subparallel sided. The ground color of the integument is uniformly blackish-brown. The hairs of the dorsum of the elytra are about a 50:50 mix of blackish-brown and grayish-white with the paler hairs clumped forming small patches. There is an inconspicuous arcuate band of pale hairs on the basal third of the elytra. This band is less well defined than in *O. albofasciatus* and extends to the lateral margin. From Valentine's (1999) comparative remarks, it appears that males of this species were unknown to him since he does not mention the condition of the apical spine on the male middle tibia. The females of *O. irroratus* and three other named species have the female ovipositor with strong teeth on the coxites, a condition that will separate these species from five other named species that do have teeth on the coxites (Valentine 1999). The transverse pre-basal pronotal carina at its apex does not turn downward in this species, and the lobe at the hind angle of the prothorax is less well defined (Valentine 1960). Other structural characters that apply to this species include the inner teeth of the bifid claws are large, the elytra are not tuberculate, and the hind femur is not swollen.

The genus is keyed in Valentine (2002). The species-level taxonomy of this genus is seriously incomplete, and the North American species need revision. Valentine (1999) lists 14 named species of *Ormiscus* from America north of Mexico and states that there are about 30 additional undescribed species in the region.

Specimens that are patterned as described above are not necessarily obviously distinguishable from some other species in the genus, and the amount of variation in this pattern is unclear at the present time. The specimens under this name in the USNM general collection could include multiple species. Only those few that closely match the syntypes of Schaeffer are cited in this report.

Historic Texas Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Brownsville area of Texas (Cameron Co.).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Ormiscus irroratus* was located in the literature.

2) From specimens: None.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Valentine (1999) states that very little information is available on the habits of *Ormiscus* species: "Most species are taken by beating dead twigs and vines, or sweeping dead herbaceous stems and a few inhabit seeds and galls. I know of no firm association with fungi." Anderson (1947) described larvae belonging to *Ormiscus* based on several species, mostly unidentified. He reported *O. angulatus* (Suffrian) larvae "in husk, immediately about seeds of *Atrocarpus communis*" and further stated that numerous unidentified larvae of this genus "were collected in various hosts, nearly always dead twigs."

Adult Phenology in Texas

1) Summary of compiled Texas collecting events by month: April (1), May (2), June (1), July (2), August (1).

2) Year of most recent known collection in the lower Rio Grande valley: pre-1905. Specimens the literature records and specimen data complied for this report do not give the year of collection. Schaeffer likely collected the specimens that were part of his collection, which was formerly at the Brooklyn Museum Collection and is now at the United States National Museum of Natural History. Schaeffer's last collecting trip to the Brownsville area was in 1904.

Literature Cited

Anderson, W. H. 1947. Larvae of some genera of Anthribidae (Coleoptera). Annals of the Entomological Society of America 40: 489-517.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Pierce, W. D. 1930. Studies of the North American weevils belonging to the superfamily Platystomoidea. Proceedings of the United States National Museum 77: 1-34, pls. i-v.

Rheinheimer, J. 2004. Illustrierter Katalog und Bibliographie der Anthribidae der Welt (Insecta: Coleoptera). Mitteilungen des Entomologischen Vereins Stuttgart 39(1-2): 1-243.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Valentine, B. D. 1960. The genera of the weevil family Anthribidae north of Mexico (Coleoptera). Transactions of the American Entomological Society 86: 41-85.

Valentine, B. D. 1998 (1999). A review of Nearctic and some related Anthribidae (Coleoptera). Insecta Mundi 12(3-4): 251-296.

Valentine, B. D. 2002. Anthribidae Billberg, 1820, pp. 695-700, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Wolfrum, P. 1929. Anthribidae. (pars 102), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 26. Berlin, ‘s-Gravenhage. pp. 1-145.

Valid name

Pachyschelus fisheri Vogt

Synonymy/catalog
Pachyschelus fisheri Vogt, 1949a:53, fig. 10
Pachyschelus fisheri: Vogt, 1949b:199
Pachyscelus (sic) *fisheri*: Bellamy, 1991:736
Pachyschelus fisheri: Hespenheide, 2003:460
Pachyschelus fisheri: Bender et al., 2005:772
Pachyschelus fisheri: Nelson et al., 2008: 189

Classification
Family: Buprestidae
Subfamily: Agrilinae
Tribe: Trachyini
Subtribe: Pachyschelina
The placement of *Pachyschelus* into various higher categories has changed over the years, but its classification is not particularly controversial, rather the higher classification within Buprestidae has been slowly refined over the years resulting in some splitting and changes in rank of various higher categories. The classification presented here follows Nelson et al. (2008) and Bellamy & Nelson (2002). In previous classifications, *Pachyschelus* has been placed in Agrilinae-Agrilini (Arnett 1971) and Trachyinae-Pachyschelini (Bellamy 1985).

Diagnostic Remarks
This is a distinct buprestid beetle, not likely to be confused with similar species. It is small, the length is 2.6-3.0 mm., and the greatest width is 1.7 mm. at base of pronotum. The body is flattened and broadly wedge-shaped. The head and pronotum are copper-colored, the later with a narrow vague band of pubescence on each side at base. The scutellum and elytra are bright metallic blue, the latter with a distinct band of pubescence at apical third. The scutellum is large and triangular (as is typical of the genus).

The genus is keyed in Bellamy & Nelson (2002), and the species is keyed relative to other species of the genus found north of Mexico in Hespenheide (2003).

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
This species is apparently known from a single locality in Cameron County, Texas: 3 mi. E Santa Maria, southwestern Cameron County, Texas.

Biology, Host, Substrate, Habitat Data

1) From literature: The only known material for this species is that originally collected by George Vogt, either collected from the foliage of *Bernardia myricaefolia* (Scheele) S. Watts. (Euphorbiaceae) or reared from the leaves of this plant.

2) From specimens: Only that affixed to the original Vogt material.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

The larvae of this genus mine the leaves of their host plants.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: June(1), July (1), August (2), September (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1947.

Literature Cited

Arnett, R. H. 1971. The beetles of the United States. Third printing. American Entomological Institute. Ann Arbor, Michigan. xii + 1112 pp.

Bellamy, C. L. 1985. A catalogue of the higher taxa of the family Buprestidae (Coleoptera). Navorsinge van die Nasionale Museum, Bloemfontein 4: 405-472.

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Bellamy, C. L. and G. H. Nelson. 2002. Buprestidae Leach, 1815, pp. 98-112, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Hespenheide, H. A. 2003. A reconsideration of *Pachyschelus schwarzi* Kerremans and a review of American Pachyschelus north of Mexico (Coleoptera: Buprestidae). The Coleopterists Bulletin 57(4): 459-468.

Nelson, G. H., G. C. Walters, Jr., R. D. Haines, and C. L. Bellamy. 2008. A catalog and bibliography of the Buprestoidea of American north of Mexico. Coleopterists Society Special Publication no. 4: iv + 1 - 274 pp.

Vogt, G. B. 1949a. Five new Buprestidae from south Texas (Coleoptera). Annals of the Entomological Society of America 42(1): 48-54.

Vogt, G. B. 1949b. A biologically annotated list of the Buprestidae of the Lower Rio Grande Valley, Texas. Annals of the Entomological Society of America 42(2): 191-202.

Valid name

Phanaeus adonis Harold

Synonymy/catalog
Phanaeus adonis Harold, 1863:169
Phanaeus adonis: Bates, 1886-1890 (1887):61; pl. iv, fig. 9, 9a
Phanaeus adonis: Nevinson, 1892:1
Phanaeus adonis: Villada, 1901:
Phanaeus Adonis: Gillet, 1911:81
Phanaeus adonis: Olsoufieff, 1924:
Phanaeus adonis: Blackwelder, 1944:209
Phanaeus adonis: Halffter & Matthews, 1966:62
Phanaeus adonis: Barrera, 1969:
Phanaeus adonis: Edmonds, 1972:835
Phanaeus adonis: Arnaud, 1982:114
Phanaeus adonis: Edmonds, 1994:57; figs. 63-65, 251-252, 256
Phanaeus adonis: Arnaud, 2002:110
Phanaeus adonis: Edmonds, 2003:62; pl. 2.7, fig. f
Phanaeus adonis: Riley & Wolfe, 2003:18
Phanaeus adonis: Bender et al., 2005:775

Classification
Family: Scarabaeidae
Subfamily: Scarabaeinae
Tribe: Phanaeini
The classification of the genus *Phanaeus* as a member of the subfamily Scarabaeinae is not controversial; however, the recognition of tribes within the Scarabaeinae is somewhat unstable (Philips et al. 2002). Older taxonomic references list *Phanaeus* as a member of a broadly interpreted Coprini (Ratcliffe 1991, Woodruff 1973, and others) while more modern treatments treat *Phanaeus* and related New World genera to tribe level as the Phanaeini (Gill 2002) which is a well-supported monophyletic tribe (Philips et al. 2002). Edmonds (1972) provided a detailed modern study of suprageneric taxonomy of the phanaeine dung beetles. Edmonds (1994) diagnosed and keyed two subgenera and 13 species groups in the genus *Phanaeus*.

Diagnostic remarks
This is a large, bulky beetle, 12-17 mm long, 7-11 wide, with typical *Phanaeus* habitus. The head and pronotum are strongly sexually dimorphic with males possessing a small to large curved horn arising from the frons of the head. The male has the disc of the pronotum broadly flattened and triangular. As a member of the subgenus *Phanaeus s. str*., it lacks distinct punctation on the anterolateral portions of the pronotum and the anterior prominence of the metasternum is keeled (not acuminate). As a member of the triangularis species group, it has the pronotum granulate anterolaterally, the anterior tibia tridentate, the longer mesotibial spur not subapically dilated, and the basal tarsomere of the female mesotarsus not strongly dilated. *Phanaeus adonis* is separated from *Phanaeus*

triangularis (Say), the only other member of the triangularis species group, primarily by size, color and distribution (Edmonds 1994). Its color is "uniformly dark blue, blue-green, or bright green" versus that for *P. triangularis* which is "black to weakly shining coppery red ... to strongly shining green ..." Specimens of *P. adonis* examined under the present study from the Lower Rio Grande Valley are all dark blue. The *P. triangularis* that are likely to occur in the Lower Rio Grande Valley (Brownsville is a known locality for this species) are members of the subspecies *P. t. texensis* Edmonds, and thus can be further separated from *P. adonis* by their flattened elytral intervals that are dull in appearance due to strong surface sculpturing.

Edmonds (1994) treated the taxonomy of the genus *Phanaeus* in great detail and provided color a habitus image of *P. adonis*. Arnaud (2002) provides a synopsis of the tribe Phanaeini and also provides color images of *P. adonis*.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron County) and México (Distrito Federal, Guanajuato, Hidalgo, México, Michoacán, Nuevo Leon, Querétaro, San Luis Potosí, and Tamaulipas).

Biology, Host, Substrate, Habitat Data

1) From literature: Edmonds (1994) reports the habitat of this species as "Mid- to high-elevation open forest,... 350 –2110 m." Halffter and Matthews (1966, p. 62) report *P. adonis* as an inhabitant of the prairie or grassland-desert ecotones of the Mexican plateau and that in some areas it partially penetrates the temperate deciduous forest on mountain slopes (usually above 2,000m). This species was reported by Edmonds (1994) as coprophagous (dung feeding). Riley & Wolfe (2003) report collections of this species in Cameron County, Texas, using pit-fall traps baited with swine feces.

2) From specimens: Specimens examined during this study are labeled as having been collected … "dung trap, pig dung trp, pit-fall trap baited with swine feces, swine feces pit-fall, dung pit-fall."

3) From communicated records: Cate and Quinn captured this species with pit-fall trap baited with swine feces near Laguna Atascosa National Wildlife Refuge.

C. S. Wolfe and E. G. Riley used swine feces-baited pit-fall traps to capture this and other dung beetles near Laguna Atascosa National Wildlife Refuge (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Most members of the genus are coprophagous on the excrement of large herbivores and omnivores (Edmonds 1994).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (1), June (1), September (7), October (5).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1996.

Literature Cited

Arnaud, P. 1982. Liste des types de Phanaeini du Muséum National d'Histoire Naturelle de Paris (Coleoptera, Scarabaeidae). Revue Francaise d'Entomologie 4(3): 113-118.

Arnaud, P. 2002. Les Coléoptères du monde. Volume 28: Phanaeini. Hillside Books, Canterbury, UK. 151 pp.

Barrera, A. 1969. Coleoptera Lamellicornia en la colección nacional. Acta Zoologica Mexicana 9(6): 93 pp. [reference not seen]

Bates, H. W. 1886-1890 (1887). Biología Centrali Americana. Insecta. Coleoptera. Pectinicornia and Lamellicornia. vol. 2. part 2. London. pp. 25-160, pls. ii-viii.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1944. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 2. United States National Museum Bulletin 185: iv + 189-341 pp.

Edmonds, W. D. 1972. Comparative skeletal morphology, systematics and evolution of the phanaeine dung beetles (Coleoptera: Scarabaeidae). The University of Kansas Science Bulletin 49(11): 731-874.

Edmonds, W. D. 1994. Revision of *Phanaeus* Macleay, a New World genus of scarabaeine dung beetles (Coleoptera: Scarabaeidae, Scarabaeinae). Contributions in Science No. 443: 105 pp.

Edmonds, W. D. 2003. Tribu Phanaeini, pp. 58-65, *in* Morón, M. A. (ed.) Atlas de los escarabajos de México. Coleoptera: Lamellicornia. Vol. II Familias Scarabaeidae, Trogidae, Passalidae y Lucanidae. Argania editio, S. C. P., Barcelona. 227 pp.

Gill, B. D. 2002. Scarabaeinae Latreille, 1802, pp. 39-81, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Gillet, J. J. E. 1911. Scarabaeidae: Coprinae I. (pars 38), *in* Junk , W. & S. Schenkling (eds.), Coleopterorum Catalogus, vol. 19. Berlin, 's-Gravenhage. pp. 1-100.

Halffter, G. and E. G. Matthews 1966. The natural history of dung beetles of the subfamily Scarabaeinae (Coleoptera, Scarabaeidae). Folia Entomologica Mexicana 12-14: 1-312.

Harold, E. v. 1862 (1863). Note sur les espèces mexicaines du genre Phanaeus et descriptions de quelques espèces nouvelles de coléoptères mexicains. Ser. 4. Annales de la Société Entomologique de France 3: 161-176.

Nevinson, B. G. 1892. Revised synonymic list of species in the genera *Phanaeus* Macleay and *Oxysternon* Castelnau. London: published privately. 10 pp.

Olsoufieff, G.d'. 1923 (1924). Les Phanaeides (Coleoptera-Lamellicornia), Famille Scarabaeidae-Tr. Coprini. Insecta, Revue Illustrée d'Entomologie 13: 4-172. [reference not seen]

Philips, T. K., E. Pretorius, and C. H. Scholtz. 2004. A phylogenetic analysis of dung beetles (Scarabaeinae: Scarabaeidae): unrolling an evolutionary history. Invertebrate Systematics 18: 53-88.

Ratcliffe, B. C. 1991. The scarab beetles of Nebraska. Bulletin of the University of Nebraska State Museum 12: 1-333.

Riley, E. G. and C. S. Wolfe. 2003. An Annotated Checklist of the Scarabaeoidea of Texas (Coleoptera). Southwestern Entomologist, Supplement (26): 37 pp.

Villada, M. 1901. Catálogo de la colección de coleópteros mexicanos del Museo Nacional, formada y clasificada por el Dr. D. Eugenio Dugés. Museo Nacional, Mexico City. 148 pp. [reference not seen]

Woodruff, R. E. 1973. The scarab beetles of Florida (Coleoptera: Scarabaeidae) part 1. The Laparosticti (subfamilies: Scarabaeinae, Aphodiinae, Hybosorinae, Ochodaeinae, Geotrupinae, Acanthocerinae). Arthropods of Florida and Neighboring Land Areas 8: i-xi + 220 pp.

Valid name

Phoenicobiella schwarzii (Schaeffer)

Synonymy/Catalog
Phoenicobius schwarzii Schaeffer, 1906:273
Phoenicobiella schwarzi: Leng, 1920:307
Phoenicobiella schwarzi: Wolfrum, 1929:83.
Phoenicobiella schwarzi: Pierce, 1930:23
Phoenicobiella schwarzi: Valentine, 1960:64
Phoenicobiella schwarzi: Valentine, 1999:277
Phoenicobiella schwarzii: Rheinheimer, 2004:88
Phoenicobiella schwarzii: Bender et al., 2005:772

Classification
Family: Anthribidae
Subfamily: Anthribinae
Tribe: Platystomini
This report follows the classification of Valentine (1999, 2002).

Diagnostic remarks
This is a fairly large anthribid, and quite distinctive. It is not likely to be confused with other members of the family occurring in the Lower Rio Grande Valley. The body length is highly variable with males often quite large, 6.4-12.2 mm., and the maximum width is 2.3-4.1 mm. across the elytral humeri. The shape of the body is subparallel for most of its length, then abruptly rounded at the elytral apex. The dorsum is densely covered in light brownish hairs and vaguely mottled with small evenly intermixed patches of darker brown and grayish hairs. The male antennae can be quite long, extending to nearly twice the body length. The antennae of the female are much shorter extending from ½ to ¾ the body length. In the male, the more terminal antennomeres are gradually enlarged and their inner faces are flattened and densely setose. The median carina of the rostrum ends in a distinct deep pit. The transverse carina of the prothorax is basal in position, abutting the base of the elytra in repose. The lateral pronotal carina extends anteriorly past the middle of the prothorax. The elytra lack tufts of erect setae. The third tarsomere is formed into a single broad lobe, with the fourth tarsomere arising from its base and the fifth tarsomere projected beyond its apical margin.

The genus is keyed relative to other anthribid genera occurring in America north of Mexico in Valentine (1960, 1999, and 2002). Valentine (1960) keys the species relative to one other member of the genus found in the United States. Anderson (1947) keys the larva of *Phoenicobiella* relative to those of several other anthribid genera.

Historic Texas Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
Texas (Cameron County) and Mexico (Tamaulipas).

Biology, Host, Substrate, Habitat Data

1) From literature: "taken inside of a dead leaf stem of Sabal mexicana" (Schaeffer 1906); on *Sabal texana* (Valentine 1999).

2) From specimens: palm forest, UV light.

3) From communicated records: E. G. Riley (pers. obser., August 2008) reports that the series of specimens he collected in southern Tamaulipas, Mexico, was taken by beating the overhanging roof of a native home that was thatched with palm fronds.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Anderson (1947) described the larva of *P. chamaeropis* (LeConte), the second species of the genus occurring in the United States, based on specimens taken in Georgia and Florida. The Florida specimens were taken from "dead leaf stems of cabbage palmetto."

Adult Phenology in Texas

1) Summary of compiled Texas collecting events by month: May (1), June (1), July (1), August (1), October (1).

2) Year of most recent known collection in the lower Rio Grande valley: 1993.

Literature Cited

Anderson, W. H. 1947. Larvae of some genera of Anthribidae (Coleoptera). Annals of the Entomological Society of America 40: 489-517.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Pierce, W. D. 1930. Studies of the North American weevils belonging to the superfamily Platystomoidea. Proceedings of the United States National Museum 77: 1-34, pls. i-v.

Rheinheimer, J. 2004. Illustrierter Katalog und Bibliographie der Anthribidae der Welt (Insecta: Coleoptera). Mitteilungen des Entomologischen Vereins Stuttgart 39(1-2): 1-243.

Schaeffer, C. F. A. 1906. New Anthribidae. Transactions of the American Entomological Society 32: 267-278.

Valentine, B. D. 1960. The genera of the weevil family Anthribidae north of Mexico (Coleoptera). Transactions of the American Entomological Society 86: 41-85.

Valentine, B. D. 1998 (1999). A review of Nearctic and some related Anthribidae (Coleoptera). Insecta Mundi 12(3-4): 251-296.

Valentine, B. D. 2002. Anthribidae Billberg, 1820, pp. 695-700, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Wolfrum, P. 1929. Anthribidae. (pars 102), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 26. Berlin, ‘s-Gravenhage. pp. 1-145.

Valid name

Ptinus tumidus Fall

Synonymy/catalog
Ptinus tumidus Fall, 1905:121
Ptinus tumidus: Leng, 1920:241
Ptinus tumidus: Bender et al., 2005:772

Classification
Family: Anobiidae
Subfamily: Ptininae
The classification of the genus is not controversial, only the recognition of the "spider beetles" as a full bostrichoid beetle family or as a subfamily of Anobiidae has changed over the years. The classification as a subfamily of Anobiidae is followed here after Lawrence and Newton (1995) and Philips (2000, 2002).

Diagnostic remarks
This is a highly distinctive member of the genus *Ptinus,* and is not likely to be confused with other species in Texas. Its size, shape and ground color are quite typical of many other members of the genus. There is apparently no sexual dimorphism of body form which can be pronounced in some other members of the genus. The body length is ca. 2.5 mm., and the greatest width is ca. 1.1 mm. across the elytra at the apical third, but the elytral margins remain nearly parallel for most of their length. The prothorax is anteriorly globose and strongly constricted basally as it is in other members of the genus. The ground color of the integument is mostly black or near-black with the elytral suture and sometimes the elytral base and apex a slightly lighter brownish. The dorsum is patterned with white and yellowish recumbent scale-like hairs and is everywhere covered with thick, rather densely-spaced, erect hairs. What sets *P. tumidus* apart from similar species is the disc of the pronotum is strongly elevated and laterally compressed. This pronotal elevation is further accentuated in being crested with a cluster of long brown or black erect hairs. Clusters of white recumbent hairs form a distinct pattern on the elytra. The eyes of the male are markedly larger than those of the female. In general, the overall coloration of the female is darker than that of the male. Fall (1905) based his description on two males.

The genus is keyed in Philips (2002) and the species is keyed in Fall (1905), both relative to other genera and species, respectively, found in America north of Mexico. Images of a syntype specimen are available at Harvard University's MCZ Type Database website [http://insects.oeb.harvard.edu/mcz/FMPro] (last accessed 12/8/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range
Texas (Cameron County).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Ptinus tumidus* was located in the literature.

2) From specimens: Nothing relating to the ecology of *Ptinus tumidus* was found on specimen labels.

3) From communicated records: Taken using a beating sheet along the levee at the Palm Grove (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Species of *Ptinus* appear to have diverse feeding habits. Some are woodborers, most feed on dried animal and plant remains, some are bird or mammal nest inhabitants, and some feed on pollen stored in bees' nests [various citations in Philips 2002].

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (1), June (1), October (3).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2002.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Fall, H. C. 1905. Revision of the Ptinidae of Boreal America. Transactions of the American Entomological Society 31: 97-296, pl. vii.

Lawrence, J. F. and A. F. Newton. 1995. Families and subfamilies of Coleoptera (with selected genera, notes, references and data on family-group names) pp. 779-1006, *in* Pakaluk, J. and S. A. Slipinski (eds.). Biology, Phylogeny, and Classification of Coleoptera. Papers Celebrating the 80th Birthday of Roy A. Crowson.. Museum i Instytut Zoologii PAN, Warszawa.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Philips, T. K. 2000. Phylogenetic analysis of the New World Ptininae (Coleoptera: Bostrichoidea). Systematic Entomology 25: 235-262.

Philips, T. K. 2002. Anobiidae Fleming, 1821, pp. 245-260, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Valid name

Spectralia prosternalis (Schaeffer)

Synonymy/catalog
Cinyra prosternalis Schaeffer, 1904:205
Cinyra prosternalis: Schaeffer, 1905:128
Cinyra prosternalis: Chamberlin, 1920:242; figs. 2, 4
Cinyra prosternalis: Leng, 1920:180
Cinyra prosternalis: Nicolay, 1921:174
Cinyra prosternalis: Chamberlin, 1926:179
Cinyra prosternalis: Obenberger, 1930:361
Cinyra prosternalis: Vogt, 1949:196
Cinyra prosternalis: Knull, 1950:89
Cinyra prosternalis: Nelson, 1968:28
Cinyra prosternalis: Bellamy & Nelson, 1990:293
Cinyra prosternalis: Bellamy, 1994:366
Spectralia prosternalis: Bender et al., 2005:773
Spectralia prosternalis: MacRae, 2006:192
Spectralia prosternalis: Nelson et al., 2008:94

Classification
Family: Buprestidae
Subfamily: Buprestinae
Tribe: Dicercini
Subtribe: Phrixiina
The species presently assigned to this genus have at times have been treated under the genus *Cinyra* and in different higher classifications within the family. Its appearance in various different higher categories is due to the refinement of the higher classification within Buprestidae over the years resulting in some splitting, and changes in rank and name for various higher categories. The classification above follows Bellamy and Nelson (2002) and Nelson et al. (2008).

Diagnostic remarks
This is a fairly large buprestid beetle, with an elongate somewhat fusiform body shape, interiorly blunt, subparallel for most of length and evenly tapered behind. The length varies from 12-16 mm., and the greatest width is across the elytral humeri. The color of the body and appendages is a uniform dark plumbeus metallic. The clypeus is broadly and evenly emarginated. The surface is everywhere polished and shining with irregularly placed punctation over most of its surface. The prosternum between the anterior coxae is smooth and impunctate. The pronotum has a weak median longitudinal sulcus. The elytral costate are usually greatly reduced, weakly evident only on the discal areas.

This and one other species of the genus, *S. robusta* (Chamberlain), occur in the Lower Rio Grande Valley (MacRae 2006). Knull (1950) confused these two species and incorrectly reported *S. prosternalis* from Val Verde County. His record was later

determined to apply to *S. robusta* (Knull 1970). *Spectralia prosternalis* is not found outside the Lower Rio Grande Valley of Texas.

The genus is keyed relative to other buprestid genera found in American north of Mexico in Nelson and Bellamy (2002). The key characters for separating the United States species of *Spectralia* (as the genus *Cinyra*) are discussed by Chamberlain (1920).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron, Duval, and Hidalgo counties).

Biology, Host, Substrate, Habitat Data

1) From literature: Chamberlain (1928) lists "ironwood."
Vogt (1949) was the first to clearly associate this species with its host, stating "On capote. Emergence holes indicate that this species bores in the heart and sapwood of healthy capote. Often large amounts of gum exudes from the emergence holes and other mechanical injuries on these trees." Capote is the local common name for *Diospyros texana* Scheele. (Ebenaceae). This association was confirmed recently by MacRae (2006), who states "...cut ex dead trunk *Diospyros texana*. The specimen was cut from sound, dry, dead wood,…." Nelson et al. (2008) repeats "larvae in dead *Diospyros texana* Scheele."

2) From specimens: Vogt's specimens carry his notations of *Diospyros texana*.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Larvae are wood borers as it typical of the members belonging to this group of Buprestidae. The closely related species, *S. robusta* (Chamberlain), also uses *Diospyros* as a host (MacRae 2006). Two other United States species of the genus have been associated mostly with oaks (Nelson et al. 2008).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (1), May (2), June(3), July (1).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2004.

Literature Cited

Bellamy, C. L. 1993 (1994). A list of the primary types of Buprestidae (Coleoptera) in the U. S. National Museum of Natural History. Giornale Italiano di Entomologia 6: 357-378.

Bellamy, C. L. and G. H. Nelson. 1989 (1990). Lectotype designations in the Buprestidae collections of the National Museum of Natural History (Coleoptera). Insecta Mundi 3(4): 289-297.

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Chamberlin, W. J. 1920. Description of one new Buprestid with notes on other little known species (Coleop.). Entomological News 31(9): 241-244.

Chamberlin, W. J. 1926. The Buprestidae of North America exclusive of Mexico, a catalogue including synonymy, bibliography, distribution, type locality and hosts of each species. W. J. Chamberlin, Corvallis, Oregon. 291 pp.

Knull, J. N. 1950. New Coleoptera with notes. II. (Buprestidae and Cerambycidae). Entomological News 61(7): 89-92.

Knull, J. N. 1970. Notes and synonymy on Buprestidae (Coleoptera). Entomological News 81: 263-264.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

MacRae, T. C. 2006. Distributional and biological notes on North American Buprestidae (Coleoptera), with comments on variation in *Anthaxia* (*Haplanthaxia*) *cyanella* Gory and *A.* (*H.*) *viridifrons* Gory. Pan-Pacific Entomologist 82(2): 166-199.

Nelson, G. H. 1968. Notes on Buprestidae (Coleoptera): Part VI. The Coleopterists Bulletin 22: 28-30.

Nelson, G. H., G. C. Walters, Jr., R. D. Haines, and C. L. Bellamy. 2008. A catalog and bibliography of the Buprestoidea of American north of Mexico. Coleopterists Society Special Publication no. 4: iv + 1 - 274 pp.

Nicolay, A. S. 1921. Corrections and additions to the Leng list of Coleoptera. Family Buprestidae No. I. Journal of the New York Entomological Society 29: 173-178.

Obenberger, J. 1930. Buprestidae II. (pars 111), *in* Junk W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol 13. Berlin, ‘s-Gravenhage. pp. 215-568.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Schaeffer, C. F. A. 1905. Additions to the Coleoptera of the United States with notes on some known species. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(6): 123-140.

Vogt, G. B. 1949. A biologically annotated list of the Buprestidae of the Lower Rio Grande Valley, Texas. Annals of the Entomological Society of America 42(2): 191-202.

Valid name

Strongylium aulicum Mäklin

Synonymy/catalog
Strongylium aulicum Mäklin, 1864:255
Strongylium aulicum: Champion, 1884-1893 (1888):362, pl. 15, fig. 17
Strongylium aulicum: Schaeffer, 1905:175
Strongylium aulicum: Gebien, 1911:591
Strongylium aulicum: Leng, 1920:237
Strongylium aulicum: Gebien, 1938-1944 (1944):531 [catalog p. 876]
Strongylium aulicum: Blackwelder, 1945:545
Strongylium aulicum: Papp, 1961:136
Strongylium aulicum: Triplehorn & Spilman, 1973:17, fig. 6

Classification
Family: Tenebrionidae
Subfamily: Stenochiinae
Tribe: Stenochiini
The classification of this genus is not controversial. The above classification follows Aalbu et al. (2002) and Bouchard et al. (2005). For strictly nomenclatural reasons, the correct names of both subfamily and tribe are based on the genus *Stenochia* Kirby (Bouchard et al. 2005). The recent work of Aalbu et al. (2002) uses the more widely known but outdated subfamily and tribe names, Coelometopinae and Strongyliini, respectively.

Diagnostic remarks
This species is typical of the genus. Among the *Strongylium* species found in the United States, it is quite distinct and not likely to be confused with other members of the genus [Note: Triplehorn (1973) contains a *lapsus* in the key (p. 3): the coloration characters presented for *S. championi* (couplet 6) and for *S. aulicum* (couplet 3) are reversed]. In Mexico and Central America there are additional species with a similar color pattern.

This species is elongate, narrow, and subparallel-sided in shape. It is 10.0-12.6 mm. in length and 2.8-3.3 mm. in width. The head, pronotum, and ventral surfaces are metallic greenish. The elytra are bicolored, bright metallic greenish with a basal and postmedian yellow-orange-red fascia that are connected laterally along the elytral suture. Other morphological characters of importance in confirming this species are antennomere three as long as or longer than four, and the pronotum is without a lateral marginal bead. The antennae are yellow.

The genus is keyed in Aalbu et al. (2002) and the species is keyed in Triplehorn (1973) relative to other genera and species, respectively, occurring in America north of Mexico. Champion (1888) provides a color habitus image.

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron County), Mexico (Veracruz), Belize, Guatemala, and Costa Rica.

Biology, Host, Substrate, Habitat Data

1) From literature: Schaeffer (1905) records the occurrence of this species on "dry branches of *Acacia flexicaulis*." *Acacia flexicaulis* is an out-dated name for *Ebenopsis ebano* (Berl.) Barneby & Grimes (Fabaceae).

2) From specimens: None.

3) From communicated records: The single specimen collected by E. G. Riley in Texas was taken by random beating in the interior of the Palm Grove (E. G. Riley, pers. obser., July 2008). The same is true for the specimen collected by D. J. Heffern (D. J. Heffern, pers. comm., October, 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

The habits of Tenebrionidae are very diverse (Aalbu et al. 2002). The Strongyliini [=Stenochiini] are among a group of several tribes that are associated with dead rotten wood, often "softened and chemically altered by the action of various fungi…" (Aalbu et al. 2002). Many tropical species of *Strongylium* are collected by general beating in tropical forest areas and/or attracted to lights (E. G. Riley, pers. obser., July 2008).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (5), June (8), July (1).

2) Year of most recent known collection in the Texas: 1991.

Literature Cited

Aalbu, R. L., C. A. Triplehorn, J. M. Campbell, K. W. Brown, R. E. Somerby and D. B. Thomas. 2002. Tenebrionidae Latreille, 1802, pp. 463-509, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bouchard, P., J. F. Lawrence, A. E. Davies, and A. F. Newton. 2005. Synoptic classification of the world Tenebrionidae (Insecta: Coleoptera) with a review of family-group names. Annales Zoologici 55(4): 499-530.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1945. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 3. United States National Museum Bulletin 185: iv + 343-550 pp.

Champion, G. C. 1884-1893 (1888). Biologia Centrali-Americana. Insecta. Coleoptera. Heteromera (part). vol. IV, part 1. London. pp. 354-376.

Gebien, H. 1911. Tenebrionidae.- Trictenotomidae. (pars 37). *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 18. Berlin, ‘s-Gravenhage. pp. 587-742.

Gebien, H. 1938-1944 (1944). Katalog der Tenebrioniden (Col. Heteromera). Teil II. Mitteilungen der Munchener Entomologischen Gesellschaft 34: (2): 497-555 [cat. pp. 842-899].

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Maklin, F. W. 1864. Monographie de Gattung *Strongylium* Kirby, Lacordaire und der damitzunachst verwandten Formen. Acta Societatis Scientiarum Fennicae 8: 217-518, illus. [reference not seen]

Papp, C. S. 1961. Checklist of Tenebrionidae of America, north of the Panama canal (notes on North American Coleoptera, no. 4). Opuscula Entomologica 26: 97-140.

Schaeffer, C. F. A. 1905. Some additional new genera and species of Coleoptera found within the limit of the United States. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(7): 141-179.

Triplehorn, C. A. and T. J. Spilman. 1973. A review of *Strongylium* of America north of Mexico, with descriptions of two new species (Coleoptera, Tenebrionidae). Transactions of the American Entomological Society 99: 1-27.

Valid name

Strongylium championi Gebien

Synonymy/catalog

Strongylium varians Champion, 1884-1893 (1888):365, pl. xv, fig. 21 [not *S. varians* Pascoe, 1883]
Strongylium varians: Schaeffer, 1905:175
Strongylium varians: Gebien, 1911:601
Strongylium varians: Leng, 1920:237
Strongylium Championi Gebien, 1938-1944 (1944):523 [cat. p. 877] [replacement name for *S. varians* Champion, 1888]
Strongylium varians: Papp, 1961:136
Strongylium championi: Triplehorn & Spilman, 1973:17, fig. 7
Strongylium championi: Bender et al., 2005:775

Classification

Family: Tenebrionidae
Subfamily: Stenochiinae
Tribe: Stenochiini
The classification of this genus is not controversial. The above classification follows Aalbu et al. (2002) and Bouchard et al. (2005). For strictly nomenclatural reasons, the correct names of both subfamily and tribe are based on the genus *Stenochia* Kirby (Bouchard et al. 2005). The recent work of Aalbu et al. (2002) uses the more widely known but outdated subfamily and tribe names, Coelometopinae and Strongyliini, respectively.

Diagnostic remarks

This species is typical of the genus. Among the *Strongylium* species found in the United States, it is quite distinct and not likely to be confused with other members of the genus [Note: Triplehorn (1973) contains a *lapsus* in the key (p. 3): the coloration characters presented for *S. championi* (couplet 6) and for *S. aulicum* (couplet 3) are reversed]. In Mexico and Central America there are additional species with a similar color pattern.

This species is elongate, narrow, and subparallel-sided in shape. It is 8.3-11.2 mm in length and 2.7-3.4 mm. in width. The head and pronotum are dark bluish, greenish or blackish metallic; the elytra are bicolored, orange-red with a broad sutural stripe and the apical fourth is black. Other morphological characters of importance in confirming this species are antennomere three as long as or longer than four, and the pronotum with a distinct lateral margin (bead). The antennae are black.

The genus is keyed in Aalbu et al. (2002) and the species is keyed in Triplehorn (1973) relative to other genera/species occurring in America north of Mexico. Champion (1888) provides a color habitus image (as *S. varians*).

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.
3) From communicated records: None.

Known Range
Texas (Cameron County), Mexico (Veracruz and Tamaulipas), Belize, and Guatemala.

Biology, Host, Substrate, Habitat Data
1) From literature: Notes on the habitats of this species are provided by Triplehorn (1973): "fire scorched tree *Condalia obovata* Hook.; on copice *Condalia obovata* Hook.; branch of *Pithecelobium flexicaule* (Benth.) Coult. cut three weeks before; on foliage *Celtis pallida* Torr."
2) From specimens: The data on specimens collected by Vogt and cited by Triplehorn (1973) are all that were seen.
3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
The habits of Tenebrionidae are very diverse (Aalbu et al. 2002). The Strongyliini [=Stenochiini] are among a group of several tribes that are associated with dead rotten wood, often "softened and chemically altered by the action of various fungi…" (Aalbu et al. 2002). Many tropical species of *Strongylium* are collected by general beating in tropical forest areas and/or attracted to lights (E. G. Riley, pers. obser., July 2008).

Adult Phenology in Texas
1) Number of compiled Texas collecting events by month: May (5), June (8), July (2).
2) Year of most recent known collection in the Texas: 1947.

Literature Cited
Aalbu, R. L., C. A. Triplehorn, J. M. Campbell, K. W. Brown, R. E. Somerby and D. B. Thomas. 2002. Tenebrionidae Latreille, 1802, pp. 463-509, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Bouchard, P., J. F. Lawrence, A. E. Davies, and A. F. Newton. 2005. Synoptic classification of the world Tenebrionidae (Insecta: Coleoptera) with a review of family-group names. Annales Zoologici 55(4): 499-530.

Champion, G. C. 1884-1893 (1888). Biologia Centrali-Americana. Insecta. Coleoptera. Heteromera (part). vol. IV, part 1. pp. 354-376.

Gebien, H. 1911. Tenebrionidae.- Trictenotomidae. (pars 37). *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 18. Berlin, 's-Gravenhage. pp. 587-742.

Gebien, H. 1938-1944 (1944). Katalog der Tenebrioniden (Col. Heteromera). Teil II. Mitteilungen der Munchener Entomologischen Gesellschaft 34: (2): 497-555 [cat. pp. 842-899].

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Papp, C. S. 1961. Checklist of Tenebrionidae of America, north of the Panama canal (notes on North American Coleoptera, no. 4). Opuscula Entomologica 26: 97-140.

Schaeffer, C. F. A. 1905. Some additional new genera and species of Coleoptera found within the limit of the United States. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(7): 141-179.

Triplehorn, C. A. and T. J. Spilman. 1973. A review of *Strongylium* of America north of Mexico, with descriptions of two new species (Coleoptera, Tenebrionidae). Transactions of the American Entomological Society 99: 1-27.

Valid name

Talanus mecoscelis Triplehorn

Synonymy/catalog
Talanus mecoscelis Triplehorn, 1968:33; fig. 1
Talanus mecoscelis: Bender et al., 2005:775

Classification
Family: Tenebrionidae
Subfamily: Stenochiinae
Tribe: Talanini
The classification of this genus is not controversial. The above classification follows Aalbu et al. (2002) and Bouchard et al. (2005). For strictly nomenclatural reasons, the correct name of the subfamily is based on the genus *Stenochia* Kirby (Bouchard et al. 2005). The recent work of Aalbu et al. (2002) uses the more widely known but outdated subfamily names Coelometopinae.

Diagnostic remarks
This tenebrionid beetle is elongate and parallel-sided, with the elytra approximately half has wide as long. The body length is 7.4 to 8.8 mm. and the greatest width is 2.5 to 3.2 mm. Coloration is everywhere black without metallic reflections and surface texture is shining. Apical antennomere is short, not several times longer than the preceding antennomere. The apical and basal margins of the pronotum possess a strong marginal bead, which is continuous with the lateral bead. Deep longitudinal striae are present on the elytral disc. Males have a large tooth and two well-separated denticles on the inner margin of the pro- and meso-tibiae. The female tibiae are unmodified.

The genus *Talanus* is closely related to *Strongylium* and they are not easily separated. South Texas resident *Strongylium* species are all much larger than the largest co-occurring *Talanus* species. Only one other species of *Talanus* occurs in southern Texas, *T. langurinus* (LeConte), which is also smaller than resident *Strongylium* species and distinguished from *T. mecoscelis* by the much narrower body form and the dark body coloration which has a strong olive-greenish metallic reflection.

The genus is keyed relative to other Tenebrionidae genera found in America north of Mexico in Aalbu et al. (2002). Triplehorn (1968) provides a key to the *Talanus* species found in the United States and a black-and-white habitus illustration of *T. mecoscelis*.

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
Texas, Brownsville area (Cameron County).

Biology, Host, Substrate, Habitat Data

1) From literature: None.

2) From specimens: None.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

The habits of Tenebrionidae are very diverse (Aalbu et al. 2002). *Talanus langurinus* (LeConte) has been collected in southern Florida and the Brownsville area by beating tangles of vines (E. G. Riley, pers. obser.). Thus, it appears that *Talanus* will fall into that group of Tenebrionidae that are associated with woody plant communities rather than soil-bound groups. The Strongyliini [=Stenochiini] are among a group of several tribes that are associated with dead rotten wood, often "softened and chemically altered by the action of various fungi…" (Aalbu et al. 2002).

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (4), June(2), August (1), October (1).

2) Year of most recent known collection in Texas: 1992.

Literature Cited

Aalbu, R. L., C. A. Triplehorn, J. M. Campbell, K. W. Brown, R. E. Somerby and D. B. Thomas. 2002. Tenebrionidae Latreille, 1802, pp. 463-509, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Bouchard, P., J. F. Lawrence, A. E. Davies, and A. F. Newton. 2005. Synoptic classification of the world Tenebrionidae (Insecta: Coleoptera) with a review of family-group names. Annales Zoologici 55(4): 499-530.

Triplehorn, C. A. 1968. A synopsis of the genus *Talanus* Jacquelin du Val in America north of Mexico, with descriptions of two new species. The Coleopterists Bulletin 22(2): 33-39.

Valid name

Toramus chamaeropis (Schaeffer)

Synonymy/catalog
Tomarus (sic) *chamaeropis* Schaeffer, 1904:202
Tomarus (sic) *chamaeropis*: Leng, 1920:202
Toramus chamaeropis: Schenkling, 1923:13
Toramus chamaeropis: Lawrence & Vaurie, 1983:3
Toramus chamaeropis: Bender et al., 2005:775

Classification
Family: Languriidae
Subfamily: Toraminae
Toramus and various other genera now assigned to a multitude of beetle families were at one time treated in the family Cryptophagidae. *Toramus* is among several genera constituting the non-Languriinae Languriidae that were removed from Cryptophagidae (Sen Gupta & Crowson 1971). Sen Gupta (1967) established the subfamily Toraminae in the Languriidae for *Toramus*. The status of Languriidae as a family separate from Erotylidae is in question (Leschen & Wegrzynowicz 1998).

The genus *Toramus* Grouvelle (Languriidae) has been misspelled as "*Tomarus*" by various authors, not to be confused with *Tomarus* Burmeister in the beetle family Scarabaeidae.

Diagnostic remarks
This is a minute beetle, length 1.5 mm., and oval in shape with the prothorax much narrower than the elytra. The dorsum is shining black with apex of elytra paler with the legs and antennae reddish-yellow. The antennae are slender with the fourth and fifth antennomeres subequal, and the club is symmetrical and consists of three antennomeres. The pronotum has the side margins nearly straight with rounded anterior angles and rectangular posterior angles. The base of the pronotum has a deep impression on each side before the lateral margin. The elytral margins are arcuate and strongly narrowed apically. Punctation of the elytral surface is confused (not in rows), coarse but not dense, and is obliterated at the apex, which is smooth and shining. The punctures of elytra bear an erect seta.

The genus is keyed in Leschen and Skelley (2002). A species level revision of the genus is needed. Sen Gupta (1967) provides a key to the *Toramus* species available to him at the time, but *Toramus chamaeropis* was not included. Schaeffer (1904) with his original description, compared *T. chamaeropis* to *T. niger* Sharp from Panama. Sen Gupta (1967) placed *T. niger* in this niger-group of *Toramus* species.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range
Texas (Cameron Co).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Toramus chamaeropis* was located in the literature.

2) From specimens: One specimen is labeled … "on palm."

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)
Lawrence and Vaurie (1983) state that most Toraminae … probably feed on decaying vegetation and fungal hyphae …"

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (1), June (4), July (4).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1904.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Lawrence, J. F. and P. Vaurie. 1983. A catalog of the Coleoptera of America north of Mexico. Family Languriidae. United States Department of Agriculture Handbook no. 529-92: x + 1-12 pp.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Leschen, R. A. B. and P. E. Skelley. 2002. Languriidae Wiedeman, 1823, pp. 343-347, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Leschen, R. A. B. and P. Wegrzynowicz. 1998. Generic catalogue and taxonomic status of Languriidae (Cucujoidea). Annales Zoologici 48(3/4): 221-243.

Schenkling, S. 1923. Cryptophagidae. (pars 76) *in* Junk W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 15. Berlin, 's-Gravenhage. pp. 1-92.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Sen Gupta, T. 1967. A new subfamily of Languriidae (Coleoptera) based on four genera, with a key to the species of *Toramus*. Proceedings of the Royal entomological Society of London 36(11-12): 167-176.

Sen Gupta, T. and R. A. Crowson. 1971. A review of the classification of the family Languriidae (Coleoptera: Clavicornia) and the place of Languriidae in the natural system of Clavicornia. Memoirs of the Zoological Survey of India 15(2): 1-42.

Valid name
Toxonotus penicellatus (Schaeffer)

Synonymy/catalog
Anthribus panicellatus: Schaeffer, 1904:236 [rejected spelling of multiple original spelling]
Anthribus penicellatus Schaeffer, 1904:236 [accepted spelling of multiple original spelling]
Brachytarsus penicellatus: Bovie, 1906:314
Neanthribus segregus Jordan, 1906:343;pl. xii, fig. 19, 19a
Anthribus penicellatus: Leng, 1920:307
Anthribus penicellatus: Wolfrum, 1929:79
Anthribus segregus: Wolfrum, 1929:79
Pseudanthribus penicellatus: Pierce, 1930:27
Toxonotus penicellatus: Valentine, 1960:66
Toxonotus penicellatus: Valentine, 1999:276
Toxonotus penicellatus: Rheinheimer, 2004:83
Toxonotus penicellatus: Bender et al., 2005:772

Classification
Family: Anthribidae
Subfamily: Anthribinae
Tribe: Platystomini
This report follows the classification of Valentine (1999, 2002).

Diagnostic Remarks
This anthribid is moderate in size and quite distinctive. It is not likely to be confused with other members of the family occurring in the Lower Rio Grande Valley. The most distinctive feature of this species is the pair of tufts on the apical pronotal margin. The body length is 3.0-4.9 mm., and the maximum width is 1.2-2.2 mm. across the elytral humeri. The shape of the body is subparallel for most of its length, then abruptly rounded at the elytral apex. The dorsum is variably covered in hairs of various brownish shades. The male antennae are not especially long, do not differ much between the sexes, and they terminate in a rather abrupt club. The antennae of the female are much shorter extending from ½ to ¾ the body length. The median carina of the rostrum ends in a deep pit. The transverse carina of the prothorax is basal in position, abutting the base of the elytra in repose. In addition to the two tufts on the apical margin of the pronotum, there are three additional tufts across the center of the pronotal disc. The median tuft is the largest and is composed of black hairs. The elytra have scattered tufts of erect setae, the most distinctive of which is on the third elytral interval positioned at the apical third. This tuft is composed of very pale hairs that stand out against the darker background. The pale color extends posteriorly from the tuft as a progressively narrowed line. The third tarsomere is strongly bilobed, with the lobes well separated.

The genus is keyed relative to other anthribid genera in America north of Mexico in Valentine (1960, 1999, and 2002). Valentine (1960) keys this species relative to the

other four species of the genus found in the United States. Jordan (1906) provides a color habitus image.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron and Hidalgo counties), Mexico (Tamaulipas), Belize and Guatemala.

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Toxonotus penicellatus* was located in the literature.

2) From specimens examined: None.

3) From communicated records: Taken by random beating of dead limbs in the Palm Grove (E. G. Riley, pers. comm., July 2008).

Biology, host, substrate, habitat data by inference (based on knowledge of related species)

Anderson (1947) treated larvae of other *Toxonotus* species from collections made in the following microhabitats: "in Virginia creeper (*Psedera*) vine; in Virginia creeper vines; dead twig, *Rhacoma crossopetlum*; and dead limb, *Coccoloba floridana*."

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: April (2), June (1), July (1), October (2).

2) Year of most recent known collection in the lower Rio Grande valley: 1990.

Literature Cited

Anderson, W. H. 1947. Larvae of some genera of Anthribidae (Coleoptera). Annals of the Entomological Society of America 40: 489-517.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Bovie, A. 1906. Catalogue des Anthribides. Annales de la Société Entomologique de Belgique 49: 218-334. [reference not seen]

Jordan, K. 1906. Biologia Centrali-Americana. Insecta. Coleoptera. Anthribidae. Vol. IV. part 6. London. pp. 299-378.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Pierce, W. D. 1930. Studies of the North American weevils belonging to the superfamily Platystomoidea. Proceedings of the United States National Museum 77: 1-34, pls. i-v.

Rheinheimer, J. 2004. Illustrierter Katalog und Bibliographie der Anthribidae der Welt (Insecta: Coleoptera). Mitteilungen des Entomologischen Vereins Stuttgart 39(1-2): 1-243.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Valentine, B. D. 1960. The genera of the weevil family Anthribidae north of Mexico (Coleoptera). Transactions of the American Entomological Society 86: 41-85.

Valentine, B. D. 1998 (1999). A review of Nearctic and some related Anthribidae (Coleoptera). Insecta Mundi 12(3-4): 251-296.

Valentine, B. D. 2002. Anthribidae Billberg, 1820, pp. 695-700, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Wolfrum, P. 1929. Anthribidae. (pars 102), *in* Junk, W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol. 26. Berlin, ‘s-Gravenhage. pp. 1-145.

Valid name

Trichodesma pulchella Schaeffer

Synonymy/catalog
Trichodesma pulchella Schaeffer, 1903:264
Trichodesma pulchella: Fall, 1905:176
Trichodesma pulchella: Leng, 1920:242
Trichodesma pulchella: White, 1982:10
Trichodesma pulchella: Bender et al., 2005:772

Classification
Family: Anobiidae
Subfamily: Anobiinae
Tribe: Nicobiini
The classification of the genus is not problematic. White (1971) refined the subfamily classification. The tribal classification follows White (1982) and Philips (2002).

Diagnostic remarks
The body is stout and parallel-sided, subcylindrical, and in repose (i. e., with head fully retracted) the head is not exceptionally deflexed in that the mandibles are distant from the metasternum. The prothorax and elytra are of the same width. The length is 4.25-7.0 mm., and the width across the humeri is 2.0-3.0 mm. The coloration of the integument is uniformly dark brown. The elytra are clothed with dense recumbent hairs that form an alternating light and dark pattern transverse pattern. The elytral base, a narrower zig-zag median fascia, and the apical fourth of the elytra appear whitish. A few darker brush-like tufts of hairs are present on the inside edge of the basal and apical white areas. The dorsal surface of the pronotum and elytra are everywhere covered with long, closely spaced, erect hairs. The antenna is long with the last three antennomeres broad and elongate, essentially forming a loose club and together much longer than preceding five antennomeres. The prothorax has the ventral surfaces concave to mostly excavate beneath, more or less enclosing head. The lateral margins of the pronotum are sinuate before the base and the disc is formed into a strong longitudinal crest that lacks a distinct median furrow. The procoxae are distinctly separated. The punctures of elytra are confused in their arrangement, especially on the disc. The tarsal claws each bear a broad basal tooth.

The genus is keyed in White (1971) and Philips (2002) relative to other genera of Anobiidae found in America north of Mexico. The species is keyed in Fall (1905) relative to the then-known *Trichodesma* species found north of Mexico. Color images of a syntype specimen are available at Harvard University's MCZ Type Database website [http://insects.oeb.harvard.edu/mcz/FMPro] (last accessed 12/8/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron and Hidalgo counties) and Mexico (Querétaro).

Biology, Host, Substrate, Habitat Data

1) From literature: Schaeffer (1903) states, ... "Obtained mostly by beating ebony but also on other trees", and Fall (1905) repeats Schaeffer's note, ... "on ebony and more rarely on other trees." White (1982) repeats Schaeffer's note, ... "beaten from ebony." The current correct name for Texas ebony is *Ebenopsis ebano* (Berl.) Barneby & Grimes.

2) From specimens: Specimens carry the following verbatim ecological notes, ... "at lights, light trap, *Pithecellobium flexicuale*, Hg. lt., Blacklight trap, at UV light, and ex *Diospyros texana*."

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Larvae of *Trichodesma* are known to bore in wood. The eastern United States species, *T. gibbosa* (Say) attacks "sweetgum joists and studding" in Virginia (Craighead 1950). Adults have been associated with many plants (White 1982) but these do not necessarily indicate larval hosts.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: May (7), June (12), July (3).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1991.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Craighead, F. C. 1950. Insect enemies of eastern forests. U. S. Department of Agriculture, Miscellaneous Publication No. 657. ii + 679 pp.

Fall, H. C. 1905. Revision of the Ptinidae of Boreal America. Transactions of the American Entomological Society 31: 97-296, pl. vii.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Philips, T. K. 2002. Anobiidae Fleming, 1821, pp. 245-260, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Schaeffer, C. F. A. 1903. Two new Ptinidae. The Canadian Entomologist 35(9): 263-264.

White, R. E. 1971. Key to North American genera of Anobiidae, with phylogenetic and synonymic notes (Coleoptera). Annals of the Entomological Society of America 64(1): 179-191.

White, R. E. 1982. A catalog of the Coleoptera of America north of Mexico. Family: Anobiidae. United States Department of Agriculture Handbook no. 529-70: xi + 1-58 pp.

Valid name

Trichodesma sordida Horn

Synonymy/catalog
Trichodesma sordida Horn, 1894:387
Trichodesma sordida: Schaeffer, 1903:264
Trichodesma sordida: Fall, 1905:176
Trichodesma sordida: Leng, 1920:242
Trichodesma sordida: White, 1974:460
Trichodesma sordida: White, 1982:10
Trichodesma sordida: Bender et al., 2005:772

Classification
Family: Anobiidae
Subfamily: Anobiinae
Tribe: Nicobiini
The classification of the genus is not problematic. White (1971) refined the subfamily classification. The tribal classification follows that used by White (1982) and Philips (2002).

Diagnostic remarks
The body is stout and parallel-sided, subcylindrical, and in repose (i. e., with head fully retracted) the head is not markedly deflexed in that the mandibles remain distant from metasternum. The prothorax and elytral are of the same width, length 7.5 mm. The coloration of the integument is uniformly brown. The head and pronotum are covered with recumbent pubescence of a “dirty yellow” color. The elytral pubescence is relatively sparse and forms an alternating light and dark irregular pattern. The elytral base, an irregular median fascia, and an irregular apical patch are dirty-yellow in color. There are dark brown, brush-like tufts of hairs arranged in three longitudinal rows are on each elytron. The dorsal surface of the pronotum and elytra are everywhere covered with long, sparsely placed, erect hairs. The antenna is long with the last three antennomeres broad and elongate, essentially forming a loose club, together much longer than the preceding five antennomeres. The prothorax has the ventral surfaces concave to mostly excavate beneath, more or less enclosing head. The lateral margins of the pronotum are sinuate before the base and the disc is formed into a strong longitudinal crest with a weak median furrow. The punctures of the elytra disc are distinctly serial in their arrangement. The procoxae are distinctly separated. The tarsal claws each bear a broad basal tooth.

The genus is keyed in White (1971) and Philips (2002) relative to other genera of Anobiidae found in America north of Mexico. The species is keyed in Fall (1905) relative to the then-known *Trichodesma* species found north of Mexico. Color images of the type specimen are available at the Harvard University’s MCZ Type Database website [http://insects.oeb.harvard.edu/mcz/FMPro] (last accessed 12/8/2008). Color images of specimens are also available at the Texas Entomology website compiled by Mike Quinn [http://www.texasento.net/Trichodesma.htm] (last accessed 12/10/2008).

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron County).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Trichodesma sordida* was located in the literature.

2) From specimens: None.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Larvae of *Trichodesma* are known to bore in wood. The eastern United States species, *T. gibbosa* (Say) attacks "sweetgum joists and studding" in Virginia (Craighead 1950). Adults have been associated with many plants (White 1982) but these do not necessarily indicate larval hosts.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: June (2), July (2), August (2).

2) Year of most recent known collection in the Lower Rio Grande Valley: 1904.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Craighead, F. C. 1950. Insect enemies of eastern forests. U. S. Department of Agriculture, Miscellaneous Publication No. 657. ii + 679 pp.

Fall, H. C. 1905. Revision of the Ptinidae of Boreal America. Transactions of the American Entomological Society 31: 97-296, pl. vii.

Horn, G. H. 1894. The Coleoptera of Baja California. Proceedings of the California Academy of Sciences, ser. 2. 4: 302-449. [reference not seen]

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Philips, T. K. 2002. Anobiidae Fleming, 1821, pp. 245-260, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Schaeffer, C. F. A. 1903. Two new Ptinidae. The Canadian Entomologist 35(9): 263-264.

White, R. E. 1971. Key to North American genera of Anobiidae, with phylogenetic and synonymic notes (Coleoptera). Annals of the Entomological Society of America 64(1): 179-191.

White, R. E. 1974. Taxonomic notes on North American Anobiidae with a new species (Coleoptera). Proceedings of the Entomological Society of Washington 76(4): 459-463.

White, R. E. 1982. A catalog of the Coleoptera of America north of Mexico. Family: Anobiidae. United States Department of Agriculture Handbook no. 529-70: xi + 1-58 pp.

Valid name

Trichodesma texana Schaeffer

Synonymy/catalog
Trichodesma texana Schaeffer, 1903:263
Trichodesma texana: Fall, 1905:175
Trichodesma texana: Leng, 1920:242
Trichodesma texana: Blackwelder, 1945:403
Trichodesma texana: White, 1974:460
Trichodesma texana: White, 1982:10
Trichodesma texana: Bender et al., 2005:772

Classification
Family: Anobiidae
Subfamily: Anobiinae
Tribe: Nicobiini
The classification of the genus is not problematic. White (1971) refined the subfamily classification. The tribal classification follows that used in White (1982) and Philips (2002).

Diagnostic remarks
The body is stout and parallel-sided, subcylindrical, and in repose (i. e., with head fully retracted) the head is not markedly deflexed in that the mandibles remain distant from metasternum. The prothorax and elytral are of the same width. The length is 4.6-4.9 mm., and the width across the humeri is 2.0-2.2 mm. The coloration of the integument is uniformly dark reddish-brown. The head and pronotum are covered with recumbent pubescence of yellowish-brown color. The elytral pubescence is relatively dense and of the same color as that of the pronotum except for a broad postmedian fascia of whitish-gray hairs. The width of this pale fascia is expanded laterally to encompass about half the length of the elytra beginning from just behind the humeri. This color also extends anteriorly along the elytral suture to the scutellum that is also covered in hairs of this color. There are a few dark brown, brush-like tufts of hairs along the anterior and posterior border of the pale fascia. The dorsal surface of the pronotum and elytra are everywhere covered with long, sparsely placed, erect hairs. The antenna is long with the last three antennomeres broad and elongate, essentially forming a loose club, together much longer than the preceding five antennomeres. The prothorax has the ventral surfaces concave to mostly excavate beneath, more or less enclosing head. The lateral margins of the pronotum are sinuate before the base and the disc is formed into a strong longitudinal crest with a distinct median furrow. The punctures of the elytra disc are distinctly serial in their arrangement. The procoxae are distinctly separated. The tarsal claws each bear a broad basal tooth.

The genus is keyed in White (1971) and Philips (2002) relative to other genera of Anobiidae found in America north of Mexico. The species is keyed in Fall (1905) relative to the then-known *Trichodesma* species found north of Mexico.

Historic Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: None.

Known Range

Texas (Cameron and Hidalgo counties) and Mexico ("Matamoros"- here presumed to be in Tamaulipas).

Biology, Host, Substrate, Habitat Data

1) From literature: Nothing specific on the biology of *Trichodesma texana* was located in the literature.

2) From specimens: Two specimens from Texas representing to separate collections carry the note "at blacklight."

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Larvae of *Trichodesma* are known to bore in wood. The eastern United States species, *T. gibbosa* (Say) attacks "sweetgum joists and studding" in Virginia (Craighead 1950). Adults have been associated with many plants (White 1982) but these do not necessarily indicate larval hosts.

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: June (2), July (1), August (2), September (1), October (8).

2) Year of most recent known collection in the Lower Rio Grande Valley: 2002.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Blackwelder, R. E. 1945. Checklist of the coleopterous insects of Mexico, Central America, the West Indies, and South America. Part 3. United States National Museum Bulletin 185: iv + 343-550 pp.

Craighead, F. C. 1950. Insect enemies of eastern forests. U. S. Department of Agriculture, Miscellaneous Publication No. 657. ii + 679 pp.

Fall, H. C. 1905. Revision of the Ptinidae of Boreal America. Transactions of the American Entomological Society 31: 97-296, pl. vii.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

Philips, T. K. 2002. Anobiidae Fleming, 1821, pp. 245-260, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Schaeffer, C. F. A. 1903. Two new Ptinidae. The Canadian Entomologist 35(9): 263-264.

White, R. E. 1971. Key to North American genera of Anobiidae, with phylogenetic and synonymic notes (Coleoptera). Annals of the Entomological Society of America 64(1): 179-191.

White, R. E. 1974. Taxonomic notes on North American Anobiidae with a new species (Coleoptera). Proceedings of the Entomological Society of Washington 76(4): 459-463.

White, R. E. 1982. A catalog of the Coleoptera of America north of Mexico. Family: Anobiidae. United States Department of Agriculture Handbook no. 529-70: xi + 1-58 pp.

Valid name

Tricorynus texanus White

Synonymy/catalog
Tricorynus texanus White, 1965:345; figs. 66,148
Tricorynus texanus: White, 1967:30; fig. 39
Tricorynus texanus: White, 1982:35
Tricorynus texanus: Bender et al., 2005:772

Classification
Family: Anobiidae
Subfamily: Mesocoelopodinae
Tribe: Tricorynini
The classification of the genus is not controversial. Its placement in various different subfamilies and tribes, and the different names used for these groups over time, reflect general improvements made in the understanding of the systematics and nomenclature of this family. The classification used in this report follows White (1982) and Philips (2002).

Diagnostic remarks
The general appearance of this species is quite typical of the various groups of anobiids that process highly compact bodies with contractile appendages. The 10-segmented clubbed antennae, the non-striate elytra, the metasternum lacking grooves for the reception of tarsi, the procoxae visible when body retracted, and the mesosternum produced into a small knob that is visible with the head is retracted are the principal characters that distinguish the genus *Tricorynus* in North America

White (1965) placed *T. texanus* together with two other species in the *texanus* species group. The following diagnosis of *texanus* species group is given: “Elongate and rather gibbous in profile. A single posterior groove present on the anterior tibia, middle tibia not grooved. Pronotum laterally distinctly bulging over anterior margin. Metasternum somewhat rounded laterally, large punctures attain sides. Body size moderate.” . From other *Tricorynus* species, *T. texanus* is distinguished by slight differences in punctation of the metasternum and head, and the fact that it is the only species of the *texanus* group that occurs in Texas (White 1965), the other being from southern Florida and the Caribbean. White figured the male genitalia.

The genus is keyed in White (1962, 1971) and in Philips (2002). The species is keyed in White (1965) relative to the fauna of the United States, and in White (1967) relative to the fauna of Mexico.

Historic Occurrence Records

1) From literature: See “literature records” on attached Excel spreadsheet.

2) From specimens examined: See “specimen records” on attached Excel spreadsheet.

3) From communicated records: See “communicated records” on attached Excel spreadsheet.

Known Range

Florida, Texas (Cameron, Jim Wells, Hidalgo and Starr counties), Mexico, Guatemala, Honduras, and Costa Rica. This species has been intercepted in the United States from material shipped from Mexico (White 1965, 1967) and Guatemala (White 1965). Specimens at the National Museum of Natural History are labeled as intercepted in materials shipped from Costa Rica, Guatemala, Honduras and Mexico. Most of the specimens examined by White (1965) represent wild captures in the Brownsville area.

Biology, Host, Substrate, Habitat Data

1) From literature: Intercepted from Mexico at Brownsville Texas " ...from ebony bean seeds and mesquite beans." One specimen was intercepted from Guatemala "on *Cyclocarpum*," and another "apparently introduced" specimen from Guatemala was taken on "monkey flowers" (White 1965), he also lists "from seed of monkey flower." Specimens intercepted from Mexico and reported by White (1967) bear the following notes: "mesquite beans, ebony beans, ebony seeds, and ebony bean pods."

2) From specimens: Specimens examined carry the following biological notations, ... "on Ebony beans, reared from ebony beans, in mesquite beans, Ebony bean pods, Ebony bean seed, on *Cyclocarpum*, ex Monkey flower seed, Host Texas Ebony, feeding on pulp of *Hymenaea courbaril* pods, in tropic fruit, dry forest Mimosaceous legume, in Ebony beans, reared from *Thaspesia* seed, with pod *Caesalpinia*?, and in *Cassia grandis*."

3) From communicated records: This species was taken in the Lower Rio Grande Valley by beating ebony trees at a few different sites (E. G. Riley, pers. obser., July 2008).

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

White (1965) provides a summary of what is known on the biotic associations of *Tricorynus* species known to him at that time. These notes indicate that *Tricorynus* species are associated with dried plant materials of many types, and also books and leather, but... "More than any other material, seeds of various plants serve as larval food for members of this genus."

Adult Phenology in Texas

1) Number of compiled Texas collecting events by month: January (1), March (4), April (1), May (9), June (4), July (4), August (1), September (1), October (7)

2) Year of most recent known collection in the Lower Rio Grande Valley: 1989.

Literature Cited

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Philips, T. K. 2002. Anobiidae Fleming, 1821, pp. 245-260, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles. Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

White, R. E. 1962. The Anobiidae of Ohio. Bulletin of the Ohio Biological Survey, (new series), 1 (4):1-58.

White, R. E. 1965. A revision of the genus *Tricorynus* of North America (Coleoptera: Anobiidae). Miscellaneous Publications of the Entomological Society of America 4(7): 283-368.

White, R. E. 1967. The *Tricorynus* of Mexico (Coleoptera: Anobiidae). Transactions of the American Entomological Society 93: 1-40.

White, R. E. 1971. Key to North American genera of Anobiidae, with phylogenetic and synonymic notes (Coleoptera). Annals of the Entomological Society of America 64(1): 179-191.

White, R. E. 1982. A catalog of the Coleoptera of America north of Mexico. Family: Anobiidae. United States Department of Agriculture Handbook no. 529-70: xi + 1-58 pp.

Valid name

Trigonogya reticulaticollis (Schaeffer)

Synonymy/catalog
Mastogenius reticulaticollis Schaeffer, 1904:210
Mastogenius reticulaticollis: Schaeffer, 1905:149
Mastogenius reticulaticollis: Fall, 1906:167
Trigonogya reticulaticollis: Schaeffer, 1919a:214
Mastogenius reticulaticollis: Schaeffer, 1919b:239
Trigonogya reticulaticollis: Leng, 1920:185
Trigonogya reticulaticollis: Chamberlin, 1926:244
Trigenogya (sic) *reticulaticollis*: Obenberger, 1937:1452
Trigonogya reticulaticollis: Knull, 1937:41
Trigonogya reticulaticollis: Vogt, 1949:200
Trigenogya (sic) *reticulaticollis*: Obenberger, 1957:310
Trigonogya reticulaticollis: Arnett, 1971:489
Trigonogya reticulaticollis: Bellamy, 1991:123
Mastogenius reticulaticollis: Bellamy, 1994:369
Trigonogya reticulaticollis: Bellamy, 2002:2
Trigonogya reticulaticollis: Bender et al., 2005:773
Trigonogya reticulaticollis: MacRae, 2006:193
Trigonogya reticulaticollis: Nelson et al., 2008:14

Classification
Family: Buprestidae
Subfamily: Polycestinae
Tribe: Haplostethini
The classification of the genus is not particularly controversial. It has always been closely associated with the common genus *Mastogenius*. Its appearance in various different higher categories within Buprestidae is due to the refinement of the higher classification within Buprestidae over the years resulting in some splitting, and changes in rank and name for various higher categories. The classification above follows Bellamy (2002) and Nelson et al. (2008). In previous classifications, *Mastogenius* has been placed in Agrilinae-Mastogeniini (Arnett 1971), Mastogeninae-Mastogenini (Bellamy 1985), and Polycestinae-Mastogeniini (Bellamy & Nelson 2002).

Diagnostic remarks
This is a small buprestid, 2.5-3.5 mm in length. The color is shining black with the elytra dark bluish. The legs and antennae are entirely black. The body shape is elongate oval, widest at base of elytra, which gradually narrow towards the apex. The surface of the pronotum is distinctly reticulate. The elytral punctation is confused. It is easily distinguished by the presence of antennal cavities on the prosternum, which are lacking in the related genus *Mastogenius*

The genus *Trigonogya* is monotypic, containing only *T. reticulaticollis*.

The genus is keyed most recently in Bellamy and Nelson (2002) and Bellamy (2002). Schaeffer (1905) keyed the species relative to some *Mastogenius* species, and later in 1919a created the genus *Trigonogya*.

Historic Texas Occurrence Records

1) From literature: See "literature records" on attached Excel spreadsheet.

2) From specimens examined: See "specimen records" on attached Excel spreadsheet.

3) From communicated records: See "communicated records" on attached Excel spreadsheet.

Known Range

Texas (Cameron and Hidalgo counties).

Biology, Host, Substrate, Habitat Data

1) From literature: Knull (1937) associated adults with "*Fraxinus caroliniana*" (=*Fraxinus berlandieriana* DC) (Oleaceae) in the Brownsville area. MacRae (2006) confirmed *Fraxinus berlandieriana* as the larval host by rearing adults that emerged from V-1 to VI-30-2004 from a dead branch of this tree collected on IV-7-2004.

2) From specimens: None.

3) From communicated records: None.

Biology, Host, Substrate, Habitat Data by Inference (based on knowledge of related species)

Adult activity is probably limited to the early spring as is typical of *Mastogenius* species of the eastern United States (E. G. Riley, pers. obser., July 2008).

Adult Phenology in Texas

1) Summary of compiled Texas collecting events by month: April (5), May (1).

2) Year of most recent known collection in the lower Rio Grande valley: 2007.

Literature Cited

Arnett, R. H. 1971. The beetles of the United States. Third printing. American Entomological Institute. Ann Arbor, Michigan. xii + 1112 pp.

Bellamy, C. L. 1985. A catalogue of the higher taxa of the family Buprestidae (Coleoptera). Navorsinge van die Nasionale Museum, Bloemfontein 4: 405-472.

Bellamy, C. L. 1990 (1991). Studies in the Mastogeniinae (Coleoptera: Buprestidae) III. New species, combinations and a world catalogue. Giornale Italiano di Entomologia 5: 109-128.

Bellamy, C. L. 1993 (1994). A list of the primary types of Buprestidae (Coleoptera) in the U. S. National Museum of Natural History. Giornale Italiano di Entomologia 6: 357-378.

Bellamy, C. L. 2002. The *Mastogenius* Solier, 1849 of North America (Coleoptera: Buprestidae: Polycestinae: Haplostethini). Zootaxa 110: 1-12.

Bellamy, C. L. and G. H. Nelson. 2002. Buprestidae Leach, 1815, pp. 98-112, *in* Arnett, R. H., M. C. Thomas, P. E. Skelley, and J. H. Frank (eds.). American Beetles.

Polyphaga: Scarabaeoidea through Curculionoidea. Volume 2. CRC Press. xiv + 1-861 pp.

Bender, S., S. Shelton, K. C. Bender, and A. Kalmbach (eds.). 2005. Texas Comprehensive Wildlife Strategy, 2005-2010. Texas Parks and Wildlife, Austin. xv + 1131 pp.

Chamberlin, W. J. 1926. The Buprestidae of North America exclusive of Mexico, a catalogue including synonomy, bibliography, distribution, type locality and hosts of each species. W. J. Chamberlin, Corvallis, Oregon. 291 pp.

Fall, H. C. 1906. On the genus *Trachykele*, with notes and descriptions of other North American Buprestidae. Entomological News 17: 160-168.

Knull, J. N. 1937. Notes on Coleoptera with descriptions of new species (Buprestidae and Cerambycidae). Entomological News 48: 15-17, 36-42.

Leng, C. W. 1920. Catalogue of the Coleoptera of America, north of Mexico. John D. Sherman Jr., Mount Vernon, New York. x + 1-470 pp.

MacRae, T. C. 2006. Distributional and biological notes on North American Buprestidae (Coleoptera), with comments on variation in *Anthaxia* (*Haplanthaxia*) *cyanella* Gory and *A.* (*H.*) *viridifrons* Gory. Pan-Pacific Entomologist 82(2): 166-199.

Nelson, G. H., G. C. Walters, Jr., R. D. Haines, and C. L. Bellamy. 2008. A catalog and bibliography of the Buprestoidea of American north of Mexico. Coleopterists Society Special Publication no. 4: iv + 1 - 274 pp.

Obenberger, J. 1937. Buprestidae VI. (pars 157), *in* Junk W. & S. Schenkling (eds.). Coleopterorum Catalogus, vol 13. Berlin, ‘s-Gravenhage. pp. 1247-1714.

Obenberger, J. 1957. Eine neue Buprestidenart aus dem baltischen Bernstein nebst Bemerkungen über einige fosile Buprestiden (Coleoptera: Buprestidae). Beiträge zur Entomologie 7: 308-316.

Schaeffer, C. F. A. 1904. New genera and species of Coleoptera. Journal of the New York Entomological Society 12(4): 197-236.

Schaeffer, C. F. A. 1905. Some additional new genera and species of Coleoptera found within the limit of the United States. The Museum of the Brooklyn Institute of Arts and Sciences Science Bulletin 1(7): 141-179.

Schaeffer, C. F. A. 1918 (1919a). Miscellaneous coleopterological notes and descriptions. Journal of the New York Entomological Society 26: 211-214.

Schaeffer, C. F. A. 1918 (1919b). A note. Journal of the New York Entomological Society 26: 239.

Vogt, G. B. 1949. A biologically annotated list of the Buprestidae of the Lower Rio Grande Valley, Texas. Annals of the Entomological Society of America 42(2): 191-202.