

## A review of Nearctic and some related Anthribidae (Coleoptera)

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**Abstract:** Taxonomy, synonymy, distribution, and biologies of Nearctic (and a few Neotropical and Palearctic) Anthribidae are reviewed, new keys are provided, and four new genera and eleven new species are described. *Allandrus* Leconte, 1876 (= *Tropiderinus* Reitter, 1916). *Anthribus* Geoffrey, 1762 (= *Pseudobrachytarsus* Pierce, 1930). *Araecerus* Schoenherr, 1823 (= *Araecorynus* Jekel, 1855); *Araecerus coffeae* Fabricius, 1801 (= *Tropideres* (*Rhaphitropis*) *mateui* Cobos, 1954). *Brachycorynus* n. gen., type species *Tropideres rectus* Leconte, 1876; congeneric: *Homocloeus distentus* Frieser, 1983 from Cuba and Florida, and *B. hirsutus* n. sp. from Texas. *Choragus major* n. sp., Ohio, etc., *striolatus* n. sp., Ohio, and *exophthalmus* n. sp., Virginia. *Corrhecerus* Schoenherr, 1826 (= *Paranthribus* Jordan, 1904) resulting in *Corrhecerus rufescens* (Jordan, 1904), new combination. *Eurymycter* Leconte, 1876, and *Gonotropis* Leconte, 1876, are removed from synonymy with *Tropideres* Schoenherr, 1823, and returned to full generic rank. *Eusphyrus* Leconte, 1876 is removed from synonymy with *Ormiscus* Waterhouse, 1845, and returned to full generic rank; *Tropideres* (*Opisthotropis*) *vasconicus* Hoffmann and Tempère, 1954, from France is transferred to *Eusphyrus*, with *Opisthotropis* a generic synonym; *Eusphyrus pulicarius* Boheman, 1859, Brasil, is transferred from *Brachytarsus*, and the species *eusphyroides* Schaeffer and *quercus* Schaeffer are transferred from *Ormiscus*. *Gymnognathus triangularis* n. sp., Texas. *Habroxenus* n. gen., type species *H. politus* n. sp., Texas and Maryland, also *H. fuscus* n. sp., Guatemala, and *H. sarmenticola* n. sp., Haiti. *Neoxenus* n. gen., type species *N. versicolor* n. sp., Texas, etc.; congeneric: *Notioxenus ater* and *polius* Jordan, 1907, Central America, and *pallipes* Suffrian, 1870, Cuba. *Phoenicobiella trituberculata* (Suffrian, 1870, Cuba) transferred from *Toxonotus* Lacordaire, 1866. *Piesocorynus lateralis* Jordan, 1906 (= *P. virginicus* Leng, 1918). *Sicanthus* n. gen., type species *S. rhizophorae* n. sp., Florida. *Toxonotus bipunctatus* Schaeffer, 1904 (= *Neanthribus obtusus* Jordan, 1906); *Toxonotus penicellatus* Schaeffer, 1906 (= *Neanthribus segregus* Jordan, 1906); *Toxonotus vagus* Horn, 1894 (= *Neanthribus hieronymus* Jordan, 1906). *Trigonorhinus lepidus* n. sp., California; *Trigonorhinus limbatus* Say, 1827 (= *Brachytarsus plumbeus* and *B. vestitus* Leconte, 1876, and *Brachytarsoides minor*, *quadratus*, *quadratus* ssp. *nigrinus* and *rufodorsalis* Dethlefsen, 1954); *Trigonorhinus griseus* Leconte, 1876 (= *Brachytarsus riddelliae* Schaeffer, 1906, and *Brachytarsoides cylindratus*, *elongatus*, *nevadensis*, *nevadensis* ssp. *tigrinus*, and *vulgaris* Dethlefsen, 1954); *Trigonorhinus tomentosus* Say, 1827 (= *Brachytarsus paululus* Casey, 1884, *B. beyeri* Schaeffer, 1906, *B. franseria* Barrett, 1931, and *B. irregularis* Tanner, 1934); *Trigonorhinus zae* Wolfrum, 1931 (= *Opanthribus trimaculatus* Senoh, 1986); *Trigonorhinus areolatus* Boheman, 1845 (= *Tropideres* (*Tropideres*), *bagueni* Cobos, 1954, Spain). Introgressive hybridization is invoked for the *Trigonorhinus limbatus-griseus* complex. New keys are provided for the species of *Brachycorynus*, *Choragus*, *Habroxenus*, *Neoxenus*, *Phoenicobiella*, *Trigonorhinus*, and *Eusphyrus*, plus a new key to Nearctic tribes and genera, and a new Nearctic checklist. New distribution and life-history data are given for many species.

### Introduction

The two most recent discussions of the Nearctic anthribid fauna are Valentine (1960) and Arnett (1962). Many additions and changes have since accumulated, only a few of which have been published. The present work describes new taxa, reassigns others, proposes new synonymies, provides some new keys, augments distributions, and generally brings the North American fauna up to date. It summarizes my 50 years of interest in the family and is based on examination of about 15,000 Nearctic specimens.

The Nearctic fauna now has 88 species in 30 genera and 17 tribes. In addition, 30 species of *Ormiscus* remain undescribed, as well as a few species in other genera represented by inadequate material. The sequence below starts with new taxa and reassignments, then a key to Nearctic tribes and genera, and ends with a synonymic checklist of Nearctic species. Note that many of our tribes appear to have only one or two genera; almost all are more diverse when the World fauna is included. A detailed description of the family is in Valentine (1960), and some biological information is in the same paper and in Valentine (1971). The data on distributions and

biologies in the following pages are based exclusively on specimens and pin labels examined by me. Many misidentifications make the literature unreliable.

**Material examined:** Over 6,000 Nearctic specimens are in my own collection; of these, about half were obtained via dozens of exchanges with museums, universities, and private collectors worldwide (the first in 1946 with Ross Arnett), one fourth were collected by myself and family, and one fourth are duplicates retained from collections sent for identification. An additional 9,000 specimens have been identified, recorded, and returned to their owners. Most major and many minor collections in the United States and Europe have been visited, or have sent material. Special emphasis has been placed on examination of types, and 85% of the Nearctic species in my collection include one or more specimens compared with holo- or syntypes, and when possible, topotypic specimens have been included.

Codons for specimens cited are:

- BDVC B. D. Valentine, Columbus, Ohio  
 BMNH British Museum Natural History), London, England  
 CNHM Field Museum of Natural History, Chicago, Illinois  
 CUIC Cornell University, Ithaca, New York  
 CWOB C. W. O'Brien, Tallahassee, Florida  
 FSCA Florida State Collection of Arthropods, Gainesville, Florida  
 GHNC G. H. Nelson, Kansas City, Missouri  
 ICCM Carnegie Museum, Pittsburgh, Pennsylvania  
 MCZC Museum of Comparative Zoology, Cambridge, Massachusetts  
 NMDC N.M. Downie; now in CNHM  
 OSUC Ohio State University, Columbus, Ohio  
 UCRC University of California at Riverside, California  
 USNM National Museum of Natural History, Washington, D C.

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Ottawa, Canada, courtesy of Henry Howden; figures 15, 16, and 20 are by David Dennis, and figures 13, 14, 17-19, 21-23 are by Andrey Sharkov.

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### *Araecerus* Schoenherr, 1823

- Araecerus* Schoenherr, 1823:1135. Type species: *Anthribus coffeae* Fabricius, 1801:411, by monotypy.  
*Araecerus* Schoenherr, 1839:273. This corrected spelling is preoccupied by Nordmann, 1837, in Staphylinidae.  
*Araecorynus* Jekel, 1855:150, pl. 1, fig. 6. Type species: *Araecorynus cumingi* Jekel, 1855, by original designation and monotypy. **New Synonymy.**  
*Doticus* Pascoe, 1882:27. Type species: *Doticus palmaris* Pascoe, 1882, by monotypy. Synonymy by Holloway, 1982:155.  
*Metadoticus* Olliff, 1890:75. Type species: *Metadoticus pestilens* Olliff, 1890, by monotypy. Synonymy with *Doticus* by Olliff, 1891:288.  
*coffeae* (Fabricius, 1801:411) (*Anthribus*). Type locality: In Indiae coffea.  
 =*fasciculatus*, of authors, not DeGeer, 1775:276, pl. 16, fig. 2. See Zimmerman (1994:205-208) for a discussion of this synonymy, and Childers and Woodruff (1980:384-394) for a bibliography.  
 =*mateui* (Cobos, 1954:41, fig. 1) (*Tropideres*, subgenus *Rhaphitropis*). **New Synonymy.**  
*cumingi* (Jekel, 1855:152, pl. 1, fig. 6a, b.) (*Araecorynus*). Type locality: [Philippine Islands, Luzon,] "Manilla." New Combination. Also: Zimmerman, 1942:72, pl. 1, fig. D. (Guam). Warner, 1963:109 (California and Arizona). Chong, 1964:343 (Hawaii: Oahu). Shiroma 1965:10, 16 (Hawaii: Oahu). Shiroma, 1967:326-327 (Hawaii: Hawaii). Etc.  
 =sp. Valentine, 1963:1, 4 (Ohio).

Our two species are both introduced; at present, only *coffeae* is established.

This difficult complex of about 70 described Indo-Pacific species is still in unsatisfactory condition despite important discussions by Holloway (1982) and Zimmerman (1994). These authors agree that *Doticus* (and its synonym *Metadoticus*) are synonyms of *Araecerus*, but neither discusses *Araecorynus* which is even more *Araecerus*-like. If *Araecerus* is ever subdivided, *Doticus*, with its high subbasal

elytral crests is the best candidate for separate status. *Araecorynus* is simply a very large *Araecerus* and is here synonymized.

I suspect the oldest valid name for the coffee bean weevil is *Bruchus cacao* Fabricius, 1775:64 described from cocoa beans without a locality. The type in Copenhagen is an *Araecerus*, but when I examined it many years ago, I was unsure of its specific identity. This will have to be settled at a later date.

The identity of *Curculio fasciculatus* DeGeer, 1775, is still not clear. Zimmerman points out that the DeGeer cotype he studied does not fit the original description nor illustration. However, the two males and one female in the DeGeer collection in Stockholm each bear a small square of pink paper. According to Dr. Per Inge Persson (personal communication, 1970) after DeGeer's death the Coleoptera collection was arranged by C. J. Schoenherr; the actual year is uncertain, but probably close to 1820. Schoenherr placed small squares of red (now faded to pink) paper on the original DeGeer Coleoptera and filled in missing and broken species with new specimens not so marked with red. He also replaced DeGeer's labels with new ones he wrote himself. In 1839, a later curator, Bengt Fries, threw out Schoenherr's labels, wrote his own, and arranged the collection to match DeGeer's (1775) *Memoires pour Servir a l'Histoire des Insectes*. The collection in 1970 was essentially as Fries left it. Thus there is a discrepancy between the three co-types (which are coffee bean weevils) and which apparently are original DeGeer specimens, and DeGeer's description and illustration. Until this is reconciled, I recommend using the Fabrician name *coffae*.

The coffee bean weevil is a generalist which feeds on dozens of dried and/or living plant tissues. It has been recorded world-wide, but probably survives out-of-doors only in warmer climates; its northern survival limits are unknown. I've seen specimens from British Columbia, Washington, California, Arizona, Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, New York, Ohio, Illinois, and Massachusetts. Of these, only some specimens from the North Carolina to Florida to Texas sequence and southern California are definitely based on outside populations that have survived the winter. In Lake County, Florida, this species has attacked developing oranges, causing premature fruit drop. In New Orleans, I've seen it in uncountable thousands in and around coffee bean warehouses. In Orange County, California, it attacked the live branches of apple trees. In

Louisiana it breeds and overwinters in corn stubble left after harvesting. It has even been reared from strychnine beans.

Twenty specimens of *Araecerus cumingi* were reported by Valentine (1963) emerging in Columbus, Ohio from a single large sea bean, *Mucuna gigantea* (Willd). D. C., in a necklace purchased on Oahu, Hawaii. Warner (1963) reported this weevil in seeds of monkey-pod, *Samanea saman*, intercepted in California, also in "beans" from Hawaii in California, and in "beans" from an unknown source, in Arizona. Zimmerman (1942) records it "from *Barringtonia*" and "ex pago" in Guam. Pin label data mention in pods of *Macropsychnanthus lauterbachii* in New Guinea; and Kalshoven (1951:808) recorded the species from Lombok. Less informative data from intercepted specimens are: "ex seed necklace on boat from Hawaii" at Everett, Washington; "Host *Caesalpinia glabata*" on Guam; "ex 'dadap' pod" at Penang, Malaysia; and "from bean necklace" at Honolulu, Hawaii.

This species can be distinguished from other *Araecerus* in the classic sense by much larger size, length with head down-turned 4-6 mm, the upturned apex of the lateral prothoracic carina, the curved, internally denticulate fore tibiae, and the short, unusually broad fore tarsi. Unlike some species, there are no dorsal tubercles, crests, or carinae on the elytra. As in other species of *Araecerus*, males have foreleg dimorphism more extreme, the pygidium is vertical and apically rounded (oblique and pointed in females), and the center of the metasternum has a pale trichobothrium (setal patch).

The generic name *Notioxenus* Wollaston, 1861, described for endemic species from the tiny Atlantic Ocean island of St. Helena, has been misapplied to two species from Central America (Jordan, 1907) and one from Cuba (Suffrian, 1870). Recently, my wife Buena and I collected a long series of a fourth species in south Texas. This new species and the new genus for it are described below.

#### *Neoxenus* n. gen.

*Neoxenus* new genus (G. *neo*, new; G. *xenos*, a stranger); masculine gender. Type species: *Neoxenus versicolor* Valentine, new species.

*Notioxenus*, Suffrian, 1870, Jordan, 1907, and other authors, not Wollaston, 1861b.

**Diagnosis:** A genus of Araecerini with antennae inserted between the eyes on the frons; mandibles without a preapical tooth; head not retractile past the

eyes; eyes round, lateral; antennal club very asymmetrical; sides of prothorax without a lateral carina, dorsal transverse carina antebasal; elytra with scutellar plus ten rows of punctures.

**Description:** ♂, ♀, 1.25-3.5 mm. elongate, alate, elytra about 2 to 3 times length of prothorax; pubescence varying from short and fine to long and unkempt, not hiding surface sculpture. Rostrum broader than long, continuously convex with frons, narrowest at base, apex truncate or faintly convex; mandible bases protruding laterally; postmentum broadly emarginate, lobes rounded, variously sculptured, no longitudinal basal carina, the whole structure not flush with the ventral surface of the head (as is customary) but raised and set off from the rest of the head by a broad transverse groove; mandibles with double cutting edges, the ventral one hidden in dorsal view, without a preapical tooth, but a median one might be present. Antennae inserted at the inner, lower border of the eye; the scrobes contiguous with the eye, margin toothed on side opposite from eye; club asymmetrical. Eyes dorsolateral in position, round, not approaching on the frons, facets variable; no interocular puncture. Prothorax a little wider than long, dorsum punctate, usually deeply so, the interspaces minutely alutaceous or polished; mid-dorsal length about twice mid-ventral length; transverse carina strongly antebasal, arched towards the base medially, lateral carina absent, lateral carinula present or absent; front coxae narrowly separate, antecoxal strip narrow, about half the width of a coxa, postcoxal strip very narrow, almost horizontal, coxae incapable of touching mesothorax. Scutellum small, round, conical, with very fine pubescence forming a delicate tuft. Elytra separate, their bases with a raised margin following the curve of the transverse thoracic carina; ten striae or rows of punctures plus the usual short scutellar row, the striae sometimes indistinct or represented by a row of punctures. Venter with large punctures; mesosternal intercoxal process narrow, apex rounded, metacoxae elongate, transverse, well separate from mesocoxae. Legs robust, hind femora not reaching abdominal apex; first tarsal article shorter than 2 + 3, third with enlarged lobes, claws each with a long basal tooth.

**Distribution:** Brazil to Texas; Greater Antilles. Four neotropical species are undescribed. Those with names are keyed or discussed below:

#### Key to named species of *Neoxenus*

1. Elytra elongate, 2.7 to 3 times longer than pronotum; south Texas to Panama.....  
..... *versicolor* Valentine n. sp.
- 1'. Elytra at most 2.5 times longer than pronotum .. 2
- 2(1). Intervals between pronotal punctures smooth and shining; cuticle blackish; odd elytral interspaces with pubescence mixed silvery gray and brown without a repeated pattern; Panama .....  
..... *ater* (Jordan)
- 2'. Intervals between pronotal punctures alutaceous or microreticulate; cuticle brown; odd elytral interspaces with a row of pale spots; Mexico, Belize, and Guatemala ..... *polius* (Jordan)

#### *Neoxenus versicolor* Valentine, n. sp.

(Figure 15.)

**Holotype:** male, "Texas, Cameron Co., Audubon Sabal Palm Grove 25-vii-1993 B. & B. Valentine colls." The type was taken beating recently dead fronds of *Sabal texana* (Cook) Becc., still hanging on the trees. In BDVC.

**Diagnosis:** Dorsal pubescence long, partially hiding sculpture; antennal club very asymmetrical, with last article conspicuously paler than 9 and 10; eye almost round, coarsely faceted; interspaces between pronotal punctures convex and finely microgranulate; elytra elongate, 2.7-3 times longer than pronotum.

**Description:** ♂, ♀, length (head excluded) 2.0-3.2 mm; body elongate for a choragine, not flattened, without the inflated look of some congeners. Cuticle and pubescence with unusually variable colors and patterns; cuticle from pale honey-brown (? teneral) to reddish brown to dark brown, sometimes with the anterior 1/4 and/or the declivity redder or paler, appendages paler than body, femora darker than tibiae; dorsal pubescence usually silvery gray with a vague, irregular brown antemedian discal spot on each elytron, rarely entirely gray or brown spot more extensive. Head coarsely punctate-reticulate, the raised rims not forming parallel rugae; eyes small, almost round, width (perpendicular to frons) x length (parallel to frons) 9-12 x 11-14 facets; rostrum very short, mandibles and labrum both long and weakly oblique to frons (apices more dorsal than bases); antennal article 2 symmetrical, elongate, apically swollen like a bowling pin, not bent; club abrupt, 9 and 10 dark and triangularly produced on one side, 11 pale, oval, all articles with conspicuous erect setae. Prothorax at transverse carina weakly and then more

abruptly narrowed to apex; carina forming a very obtuse V; lateral carina and carinula absent; disc and lower sides with crowded punctures, the later less pubescent; antecoxal strip narrow but almost twice length of postcoxal. Scutellum minute but distinct, round, not contrasting with elytral base. Elytra with raised basal margin continuous around humerae, suture not flattened or depressed, each basal edge convex and weakly overlapping pronotal base, discal striae not impressed, each formed by a row of punctures separated by (on average) a puncture diameter; striae 9 and 10 fusing above sternite III or IV; metasternum more coarsely and densely punctate than other sternal sclerites; mesepimeron impunctate, metepimeron with a row of large punctures. Sternite I with a basal row of large punctures, apex of I and II to IV with progressively weaker punctures. Pygidium weakly convex, with many poorly-defined punctures. Legs with hind femora reaching suture between sternites III and IV; hind tibiae with a dorsal comb-like tuft of grooming setae on apical third; tarsi longer than  $\frac{1}{2}$  tibia, article 3 strongly bilobed and flared laterad, 5 shorter than 1, with toothed claws. Male with very slight sexual dimorphism, midline of sternite IV equal or slightly longer than V; in females IV shorter than V; one male, not otherwise different, has a weak tubercle on the posterior margin of sternite I; both sexes with convex abdomen.

**Specimens examined:** Holotype, allotype, and 278 paratypes from the Audubon Sabal Palm Grove taken in about 1 hour of collecting, on 25-vii-1993, by my wife and myself; also 1 paratype, same locality, 12-x-1993 (S. M. Clark), 4 paratypes, same locality 12-x-1993 (Androw & Clark), 3 paratypes, same locality 25-ix-1996 (S. M. Clark). Additional specimens, not in the type series: Mexico: 1, Tamaulipas, La Pesca 24-vi-1980 (N. L. Valentine); 1, San Luis Potosi, 20 mi. w. Antigua Moralos 3-vii-1954 (D. G. Kissinger) on dried limbs of *Acacia* sp. in desert area; 2, 21 mi. s. Ciudad Valles 25-v-1974 (C. W. & L. O'Brien & Marshall); 5, Oaxaca, 15 mi. SE. Matias Romero, 700' 2-viii-1974 (C. W. & L. O'Brien & Marshall). 1, Panama: XX Plntn 11-ii-1930 (Blackwelder). Holotype and allotype in BDVC, paratypes in BDVC, USNM, MCZC, CWOB, BMNH, FSCA.

**Remarks:** The type series was swarming on the undersides of recently dead palm fronds still hanging on the trees. My wife and I counted 75 specimens on one frond, and with continued collecting we could have taken thousands. At the time, the Sabal Sanctuary was very dry; we found only 19 other beetles of 12 species. It is hard to believe that anthribids outnumbered all other Coleoptera 15:1.

Since the Brownsville area has been carefully collected by experts for 100 or more years, with no specimens of *Neoxenus* spp. in any of the many collections studied, I suspect this species had just arrived from Mexico, or farther south, and was exploding in a new habitat when we arrived in July. Subsequent collecting in October of the same year by Shawn Clark and Bob Androw and September, 1996, by Shawn Clark, has yielded only a few specimens.

#### *Neoxenus ater* (Jordan)

*Neoxenus ater* (Jordan, 1907:380, pl. xiv, fig. 30) (*Notioxenus*). Type locality: "Panama, Bugaba 800-1500 feet (Champion)." **New Combination.**

The female holotype is in the British Museum. All subsequently collected specimens seen by me have been from the Canal Zone. The shiny black cuticle is distinctive.

#### *Neoxenus polius* (Jordan)

*Neoxenus polius* (Jordan, 1907:380) (*Notioxenus*). Type locality: "Guatemala, Panzos in Vera Paz (Champion)." **New Combination.**

Also described from a single female. My wife and I collected this species in Belize, Cayo District, 2 mi. s. Orange Walk, 14-viii-1956 by beating dead branches in dense mesic forest; I have seen specimens from the Mexican states of Vera Cruz and Tabasco.

#### *Neoxenus pallipes* (Suffrian)

*Neoxenus pallipes* (Suffrian, 1870:170) (*Notioxenus*). **Type locality:** Cuba. **New Combination.**

Gundlach, who sent this species to Suffrian, stated (1891:262) that it was from the Cienega de Zapata, an extensive swamp in southwestern Matanzas Province.

This unrecognized species was not among the Suffrian types sent from the Martin-Luther Universitat, Halle, Germany, nor did I find it in Berlin in the Museum für Naturkunde der Humboldt Universitat. According to Suffrian, it has round eyes with antennae inserted between them, tuberculate scrobes, an antebasal pronotal carina, and a punctate and pubescent dorsum, all suggesting *Neoxenus*. However, the body was described as unicolored black

with fine yellowish-gray pubescence, and all appendages yellow. Although I have seen two species from Cuba, neither fits this description.

### *Habroxenus* n. gen.

*Habroxenus* n. gen. (G. *habros*: dainty, graceful; plus G. *xenos*: a stranger); masculine gender. **Type species:** *Habroxenus politus* Valentine, **new species.**

**Diagnosis:** a genus of Araecerini with head retractile into prothorax past the eyes; antennae inserted between the rounded eyes on the frons; sides of prothorax with two carinae at base, the lower extending to apex; elytra with scutellar row of punctures extending onto apical declivity, and with from eight to 14 additional rows of punctures instead of the normal 10-row pattern, the punctures obsolete apically.

**Description:** ♂, ♀, small, less than 2 mm. long; elongate; in shape very similar to the small aphodiine scarabs of the genus *Ataenius*; dorsum polished, shining, glabrous. Rostrum very short, plane with frons, parallel-sided, apex triemarginate; postmentum short, reduced, with a broad low median carina, apex broadly emarginate, the lobes rounded apically and impunctate, the base with a shallow transverse groove; mandibles with a small tooth at apical third, and double cutting edges. Antennae short, inserted on frons between the eyes, appearing nine segmented due to the reduced tenth and eleventh articles being fused with the enlarged and swollen ninth; the scrobes each with a prominent tubercle on the inner rim, and running transversely across the beak. Eyes almost round, not approaching on frons, about eight rows of facets in maximum width and about 12 facets in maximum length. Prothorax broader than long (can appear the opposite until measured); dorsum punctured, not reticulate, mid-dorsal length about three times mid-ventral length; transverse carina antebasal, complete, evenly curving forward on sides, not reaching to middle; a second carina running from base to apex below the lateral ends of the transverse carina; a basal carina visible anterior to the scutellum, other carinae absent; front coxae very narrowly separate, ante- and postcoxal strips of prosternum both very narrow, the former with a curving, transverse carina delimiting a narrow crescentic apical region. Scutellum minute, round, convex. Elytra each with basal edge slightly convex and overhanging the prothorax; non-striate but with eight to 14 confused rows of punctures at widest part, the scutellar row extending along suture to the apical

declivity, all rows obsolete and more widely spaced or absent on declivity; epipleurae narrow, edges parallel above metathorax, then narrowed, ending above sternite III; a row of minute punctures along the upper margin. Venter almost impunctate; mesepimeron very large, filling most of the area between coxa and humeral angle; metepisternum long, slender, parallel-sided, impunctate; metepimeron not visible; mesosternal process much narrower than a coxa, apex rounded; metacoxae elongate, transverse. Pygidium with an apical row of setae. Legs short, heavy, third tarsal article with lobes short, basally connate, claws with an acute tooth at basal third.

**Distribution:** at present includes one species each from eastern United States, Guatemala, and Hispaniola. I have seen three specimens representing two or three additional new species from Jamaica, and one badly distorted specimen from the Virgin Islands.

**Relationships:** This genus resembles *Euxenulus* Valentine, 1960. The two genera share the retractile head, sinuate rostral apex, tuberculate scrobes, punctate rather than reticulate pronotum, absence of patterned pubescence, and 8 to 14 rows of elytral punctures rather than the normal 10 row pattern of the family. *Habroxenus* is easily separable due to its elongate form, partly fused antennal club, rounder eyes, and the loss of elytral punctures posteriorly.

### Key to the species of *Habroxenus*

1. Apical 2/3 of elytral disc essentially impunctate; metasternum punctate; eastern United States .  
..... *politus* Valentine, n. sp.
- 1'. Basal 2/3 of elytral disc seriate-punctate; metasternum without punctures ..... 2
2. Pronotal disc microgranulate (at 96x) between the punctures. Hispaniola .....  
..... *sarmenticola* Valentine, n. sp.
- 2'. Pronotal disc smooth and polished between the punctures. Guatemala .. *fuscus* Valentine, n. sp.

### *Habroxenus politus* Valentine, n. sp.

(Figures 2, 3, 4)

**Holotype:** ♂, Texas, Columbus, 7 June, Hubbard and Schwarz, in USNM.

**Diagnosis:** Elytral disc and declivity impunctate, some very fine punctures present on basal third; pronotal disc with surface between the punctures smooth and shining, not microgranulate; metasternum punctate.

**Description:** ♂, ♀, length (head excluded) 1.1 to 1.3 mm; alate; body elongate but not parallel-sided, dorsum convex from side to side. Head with beak barely developed, surface smooth and shining without punctures; rostral apex triemarginate, labrum well-developed, as wide as central emargination of rostral apex; scrobes at lower mesal edge of eyes, narrowly separated by a flat raised area which is continuous with the apex of a V-shaped carina, the arms tangent to the upper inner margin of the eyes, the base fused with the central raised area. Prothorax strongly produced over the head, notum with many small punctures, the spaces between flat and polished; transverse carina weakly antebasal, broadly curved into a short lateral carina which is continued to the thoracic apex by a weakly developed, not-dark-pigmented ridge; the second (lower) lateral carina originating opposite the elytral humerae, then weakly converging towards and past the upper carina, and continued as a less pigmented but sharp ridge to thoracic apex behind the eye, accompanied by a row of fine punctures on its upper slope; prosternum short, with a carina delimiting a narrow, semi-lunar apical field; sides finely and densely punctate anteriorly, becoming progressively impunctate at hind angles. Scutellum almost invisible, minute, conical, glabrous. Elytra with raised basal margin continued around humerae; disc and declivity non-punctate, basal third with a few scattered, minute punctures, one or two long sutural rows of punctures present internally, not externally. Pygidium dull, impunctate, with a fine fringe of brown setae. Venter duller than elytra, glabrous; mid and hind coxae with normal separation (metepisternum not attenuate between them), only metepisternum with scattered punctures; sternites minutely alutaceous, impunctate, fused, sometimes the first suture not demarcated.

**Distribution:** eastern United States: Maryland and Texas.

**Specimens Examined:** 7. Holotype and 3 paratypes: Texas, Columbus, 7 June, 22 June, 24 June, 3 July, collected by Hubbard and Schwarz, in USNM and BDVC. 2 paratypes: Maryland, Plummers I. 16 July, 1902, H. S. Barber, and 24 July, 1903, E. A. Schwarz, in USNM. 1 paratype: Maryland, Bladensburg [Bladensburg] 20 July, Hubbard and Schwarz, in BDVC.

**Remarks:** This species was collected almost 100 years ago and has not been found since. I suspect it occurs on dead or dying twigs infected with pyrenomycete fungi. Related species can jump suddenly and are good flyers. Two of the paratypes (Columbus, Texas, and Plummer's Island, Maryland) are labeled "Euxenus n. sp." and "? Euxenus n. sp." in E. A. Schwarz's handwriting.

### *Habroxenus fuscus* Valentine, n. sp.

**Holotype:** ♂, Guatemala, Alta Vera Paz, Chaco, Trece Aguas, 20 April, Schwarz & Barber, in USNM. Paratype: Guatemala, Livingston, 11 May, Barber & Schwarz, in BDVC.

**Diagnosis:** pronotal disc, prosternum, and pygidium smooth and polished between the punctures; elytral punctures extending to upper apical declivity; metasternum with microsculpture, but without large punctures.

**Description:** ♂, length 1.2 to 1.3 mm (additional variation expected). Transverse pronotal carina ending at side angles, not turning forward to form a lateral carina, instead a rounded ridge extending anteriorly dorsal to the sharp-edged lower carina, the smooth space between these parallel ridges with a very fine row of punctures along the dorsal side of the lower carina. In addition to being smaller, more robust, more coarsely punctured than the other species, *H. fuscus* has more extensive elytral punctures than *H. politus*, and lacks the prosternal and pygidial microsculpture of *H. sarmenticola*.

**Distribution:** Known only from Guatemala.

**Specimens Examined:** only the holotype and paratype.

### *Habroxenus sarmenticola* Valentine, n. sp.

(Figure 1)

**Holotype:** ♂, Haiti, Morne Guimby, 22 km. SE. Fond Verettes, 6000', vii-19-56 (B. and B. Valentine) Forêt des Pins, Hardwood cloud forest, beating; in BDVC. Allotype ♀, same data except 6500' vii-20-56; in BDVC.

**Diagnosis:** Transverse carina of pronotum gradually curving forward at sides, extending as a sharp-edged carina anteriorly about 1/3 distance to apex; postero-lateral portion of the ventral side of the prothorax impunctate, the surface alutaceous; pronotal disc microgranulate; metasternum impunctate.

**Description:** ♂, ♀, length (head excluded) 1.8 mm to 1.9 mm (additional variation expected); body elongate but not parallel-sided; dorsum convex from side to side. Head with rostrum at least three times wider than long (length measured from apex of labrum to base of tubercle at edge of antennal scrobe), surface glabrous, finely alutaceous and with a few scattered small punctures; frons finely and distantly punctate, labrum large, rounded, as wide as central emargination of rostral apex; postmentum very small, prementum with elongate slender lobes. Prothorax hiding head from dorsal view; shape subparallel sided for basal half, then rounded and narrowed to the apex; transverse carina slightly arched forward on either side of the midline, then backward opposite the humerae, and finally forward again where it curves into the lateral carina; dorsal surface smooth and polished, densely and deeply pitted by small punctures, these separated by distances equal to or slightly larger than their individual diameters; lower of two lateral carinae bordered above with a row of punctures, these separated by distances equal to or slightly larger than their individual diameters; sides of pronotum with the punctures much larger and more approximate than on disc. Scutellum almost invisible, conical, glabrous, Elytra with basal margin carinate, the carina continuous with the sharp edge of the epipleurae, and extending around the scutellum to the suture where the carina rapidly becomes obsolete; surface smooth, polished, glabrous, striae not impressed, the rows of punctures confused, especially just posterior to the very faint basal callus and the small humeral callus; apical declivity virtually impunctate; widest point at about the basal quarter. Pygidium glabrous, alutaceous, with shallow scattered and irregular punctures. Venter glabrous except for a row of fine setae on each sternite; surface alutaceous; derm varying from pale brown to piceous. Legs short; femora broad, slightly flattened; tibiae somewhat widened apically, both alutaceous, with very shallow scattered punctures and very fine pale pubescence; tarsi with articles 1-3 short, less than  $\frac{1}{2}$  tibia length, article 5 elongate. Male with pygidial apex not modified; sternite V appreciably longer than IV along midline. Female with apex of pygidium slightly up-curved and with a hint of a point (faintly resembling that of *Araecerus* but far less pronounced); sternite V subequal or at best faintly longer than IV along the midline.

**Specimens examined:** Only the holotype and allotype.

**Relationships:** The Guatemala species does not fit the two features mentioned in the species diagnosis of *H. sarmenticola*, although it is fairly close in other characteristics. The species from the United States has metasternal punctures and lacks pronotal microgranulae.

**Remarks:** The allotype is very dark brown, almost black, while the holotype is brown with paler legs and slightly teneral. Both are shiny. *Habroxenus* is masculine. The name *sarmenticola* comes from Latin *sarmentum*: a twig or small branch, and Latin *-cola*: an inhabitant of or dweller in. This is a first declension noun which does not take *-us*, *-a*, *-um*, adjectival endings.

In 1971, Dr. Daniel Simberloff sent two small anthribids from mangrove islands in the Florida Keys, collected during his island colonization experiments, which I identified as *Cisanthribus* n. sp. At the time I knew the genus only from Zimmerman's description (1938:247), and although the distribution (Polynesia and Florida) didn't make sense, it was clear the Florida specimens were astonishingly similar. Recently obtained specimens of *Cisanthribus* from the B. P. Bishop Museum verified the remarkable resemblance of the species in dorsal view. However, after remounting the Pacific material, the ventral surfaces were found to be so different, the Florida species requires a new genus.

### *Sicanthus* Valentine n. gen.

*Sicanthus* Valentine, new genus. **Type species:** *Sicanthus rhizophorae* new species. Gender: masculine. Derivation: anagram of *Cisanthribus* with the "rib" removed.

**Diagnosis:** Tribe Cisanthribini (Zimmerman, 1994:232); hind coxae globular; metasternum laterad of hind coxa reduced to an irregular triangle broadest anteriorly; metepisternum elongate, narrow, parallel-sided, extending from a point close to hind coxa obliquely forward and laterad to below widest part of elytra; metepimeron huge, triangular, filling area between metepisternum, elytral epipleuron, and abdomen.

**Description:** The single species falls within 1-2 mm length range; probably apterous, broadly oval, resembling a small, convex coccinellid; dorsum glabrous, venter with very fine short setae, these longer at rostral apex; head not retractile into the prothorax past the eyes; long axis of very coarsely faceted eyes almost perpendicular to surface of frons in holotype, slightly more oblique in allotype; rostrum



very short and broad, apically flared, apical margin weakly emarginate in center; antennae with article 1 very asymmetrical, more than 2x longer than 2, 3-7 progressively shorter, 8 slightly swollen, 9-11 forming an elongate asymmetrical club, especially 9 and 10 triangularly produced on one side, 11 longer than 9 or 10, all three with more long setae than 3-8. Prothorax without a transverse carina, lateral carina complete to apex, forming the edge of a wide flange between notal and pleural areas, supra-coxal suture appearing to extend dorsad past the lateral carina, visible in dorsal view as a black mark; antecoxal strip narrow, postcoxal strip linear, notum produced in a broad curve over head, mid-dorsal length much greater than mid-ventral, the cuticle so thin the occiput is visible beneath it. Scutellum not visible. Elytra not striate, with many minute punctures tending to be more linearly arranged laterally; dorsal edge of epipleuron sharply carinate, epipleural surface strongly reflexed and invisible from above, narrowed from a point above the mid coxa, ventral edge broadly concave, ending about above sternite IV. Pygidium with outer rim very thin, basal rim weakly developed, central locking groove present, barely visible beyond the elytral apices. Venter as in diagnosis; mid coxae separated by more than a coxal diameter; metasternum very narrow between mid and hind coxae. Legs slender, hind femora reaching tip of pygidium, tibiae and tarsi normal, claws with a blunt basal tooth.

**Distribution:** Known only from the Florida Keys.

**Relationships:** The only relative is *Cisanthribus* Zimmerman, 1938, now known from Okinawa to Lord Howe Island and from Palau Islands to Tahiti; essentially southern Japan, Indonesia, Melanesia, Micronesia, and Polynesia. Only three of the species have names. *Cisanthribus* appears to have the metepisternum and metepimeron either covered by the elytral margin or so fused with the rest of the metasternum to be unrecognizable, except that the posterior end of the metepimeron is visible in some specimens, as in Zimmermann (1994:fig. 153).

***Sicanthus rhizophorae* Valentine, n. sp.**

(Figures 5, 6)

**Holotype** ♀, labeled "Island WH1, Monroe Co., Fla./D. Simberloff vi-29-1969/Lot #WH-14;" "SEM" on yellow; "#120" on red, the last two referring to scanning electron microscope photos. In BDVC.

**Diagnosis:** Left mandible with two preapical teeth, the basal one very weakly developed; body except elytra microreticulate and very finely punctate; elytra not microreticulate, polished, with very fine punctures arranged in at least 20 rows at widest point, the seriate pattern difficult to make out.

**Description:** ♂, ♀, length (head excluded) 1.2-1.5 mm, maximum width about 0.8-1.0 mm (additional variation is expected), body broadly oval, very convex. Head with rostrum virtually nonexistent, broad, apex weakly sinuate; surface microreticulate and punctate, the punctures largest and densest on rostrum, least so on vertex; labrum much broader than long, triangular, the apex obtusely angled; mandibles large, protruberant basally, outer margin weakly concave, inner margin of left mandible bidentate preapically, right mandible edentulous; postmentum large with a deep V-shaped apical notch, the lobes with obtusely pointed apices; eyes small and very coarsely faceted, about 5 x 8 rows across maximum width and length, long axis almost perpendicular to frons; antennal insertions widely separated, interscrobial: interocular distance about 7:9, antennae extending slightly past elytral base, article 1 bent, reaching about middle of the eye, 2 shorter but same diameter, 3-8 abruptly narrower, gradually decreasing in length and increasing in width, 9-11 forming a small, very asymmetrical club, each article with an area of dense bristles on the produced side. Prothorax hiding head in dorsal view when mouth parts are in hypognathous position; mid-dorsal length much greater than mid-ventral length; dorsal transverse carina absent or barely indicated, the pronotum recessed under the thin expanded elytral bases; antecoxal strip linear in front of coxal cavity, postcoxal strip perhaps a little wider; lateral carina sharp-edged, complete; other carinae absent; pronotal punctures very fine, separated by about 2-3x their diameters, prosternum impunctate, the microreticulae reaching the lateral carina for its entire length, even under the thoracic hind angles; form longer dorsally than laterally, dorsal outline with sides weakly convex and narrowed anteriorly, posterior margin broadly V-shaped, widest point where lateral carina meets elytral base. Scutellum invisible. Elytra with basal margin thin, not carinate, overlapping pronotum, humeral area with a well-developed carina separating the convex disc from the strongly deflexed epipleurae, latter wide above the pterothorax, abruptly narrowed just anterior to the abdominal base, continuing around elytral margin almost to edge of pygidium; humerae broadly rounded, no humeral callus, no scutellar stria; base weakly emarginate; widest point above mesocoxae,

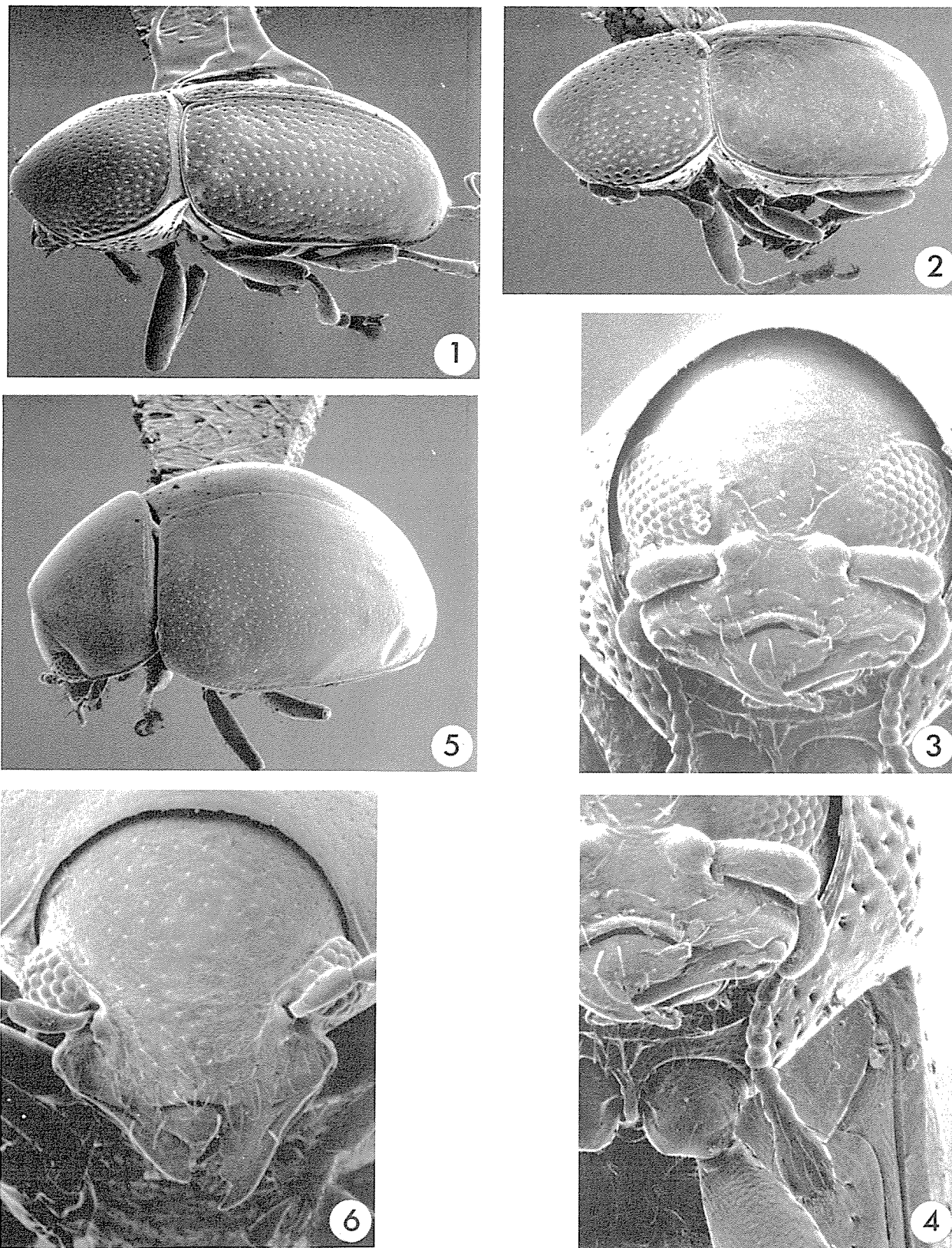


Figure 1-6. 1, *Habroxenus sarmenticola* n. g., n. sp. G Holotype: Haiti, Morne Guimby. 2-4 *Habroxenus politus* n. g., n. sp. G Paratype: Maryland, Bladensburg. 5-6. *Sicanthus rhizophorae* n. g., n. sp. E Holotype: Florida, Monroe Co., Island WH1.

elytra together are faintly heart-shaped with only a small indentation where the scutellum should be; not striate, the punctures very fine, separated by 2-4x their diameter, the seriate arrangement visible only from some angles, otherwise appearing confused, the number of rows very difficult to ascertain, from 20 to 30 depending on how many incomplete series are counted. Pygidium microreticulate, not punctate; perpendicular to the abdominal sternites in lateral view; basal ridge obsolete, reduced to a faint transverse swelling. Venter microreticulate; mesocoxae widely separated by intercoxal process which projects anteriorly into the space between the procoxae, this tuberculiform process with a median longitudinal keel and scattered curving erect bristles; oval metacoxae widely separated by broad intercoxal process of first sternite; sternites 1-4 with very faint punctures, sternite 5 with punctures more evident; enlarged metepimeron silvery-gray, contrasting with brown surrounding cuticle. Legs slender; femora only weakly swollen, metafemora surpassing fourth sternite; tibiae not flared apically; tarsi short, article 3 with lobes slender, 5 with simple claws, the customary tooth lacking. Male with abdomen in side view weakly concave, sternite 5 weakly punctate and a little shorter than 3 + 4 along the midline (7:9), pygidium length to width about 7:9, apex evenly rounded; female with abdomen in side view barely convex, sternite 5 with about 3 rows of punctures, slightly longer than 3 + 4 along the midline (12:10); pygidium length to width 8:12, apex broadly subtruncate.

**Specimens examined:** only the holotype and allotype; the latter labeled: "ISLAND MUD2, Monroe Co., Fla./D. Simberloff vi-16-1970/Lot#MD-269." Both specimens were hand-collected under dead bark of *Rhizophora mangle* L., (Red mangrove). Islet MUD2 is in The Mud Keys, about five miles (by boat) northeast of Key West; Islet WH1 is near Whiting Key, about two miles north of Sugarloaf Key and fifteen miles northeast of Key West. The tiny islands consist entirely of emergent mangrove, have no supratidal ground whatever, and are about a tenth of an acre in extent.

***Acaromimus* Jordan, 1907**

*Acaromimus* Jordan 1907:381. **Type species:** *Acaromimus sharpi* Jordan, 1907:382, by original designation and monotypy.

*Acaropsis* Jordan, 1907:382, and pl. 14, fig. 31. (*Lapsus*). *americanus* (Motschoulsky, 1873:251) (*Xenorchestes*) = *piceus*, Blatchley, 1920:162, not Leconte, 1878a:434.

Although Motschoulsky described this minute, flightless species from Mobile, Alabama, and Leconte (1884:32) recorded it from Texas, I have not seen it from either state. Motschoulsky's letters (1856:6, 8) indicate he was in Mobile from 13 to 18 May, 1854; he mentions: (translation mine): I found on bushes a small beetle intermediate between *Bruchus* and *Anthrribus*... He described it in the family Bruchidae. Material seen ranges from Charlotte and Palm Beach Counties, Florida, south along the coasts, to Bush and Loggerhead Keys in the Dry Tortugas, as well as New Providence and Andros Islands in the Bahamas. I

**Table 1.** *Choragus* eye facet counts. The width of *exophthalmus* is estimated because of the convexity of the eyes. The individual from Lamar Co., Alabama appears distinct but is in too poor condition to describe.

	Sample Size	Width	Length
Alabama, Lamar Co.	1	8	14
<i>exophthalmus</i>	1	14	18
<i>striolatus</i>	1	9	19
<i>zimmermanni</i>	20	8-11	16-20
<i>harrisii</i>	20	8-13	16-20
<i>sayi</i>	20	9-12	16-22
<i>major</i>	12	9-12	20-24

have taken it beating dead *Sabal* palm fronds on Gasparilla Island, Charlotte Co., Florida; on dead coconut palm fronds on Andros Island, Bahamas; on dead branches in coastal forest with no palms present, also on Andros; crawling on tree trunks at night in Matheson Hammock, Miami, Florida; and beating dead mangrove on Virginia Key, Miami. Additional mangrove records (*Rhizophora mangle*), are Bush Key, Dry Tortugas (R. E. Woodruff), and Keys MUD2 and J1, Monroe Co., (D. Simberloff).

Undescribed species occur in the Antilles, and Central America.

### *Choragus* Kirby, 1819

*Choragus* Kirby, 1819:447. **Type species:** *Choragus sheppardi* Kirby, 1819, by monotypy.

*Alticopus* Villa and Villa, 1833:35. Type species: *Alticopus galeazzii* Villa and Villa, 1833 by monotypy.

In the Nearctic region, species of *Choragus* range from southern Quebec to Florida west to Michigan, eastern Kansas, and eastern Texas. There are no records for the Brownsville area of south Texas, nor west of the 100th meridian in North America. Several species occur in Japan, others, including *C. sheppardi* the type species, in Europe, and more in the Old World tropics, some of which are misplaced and belong in new genera. There are very few series, so individual vs. geographic variation is difficult to assess. For the present, I have elected to apply conservative taxonomic criteria and recognize only six Nearctic species, including the three described by Leconte (1876, 1878) and the three most distinct new species. This arrangement is not the last word on this difficult complex.

In the Neotropics, *Choragus* is replaced by related taxa which, in the literature, have been called *Choragus*, *Dysnos* Pascoe, and *Melanopsacus* Jordan. Only the last appears to be correct. *Melanopsacus* has the transverse pronotal carina basal, and the hind angles strongly turned down following the curve of the elytral humerae. In *Choragus* the carina is antebasal and the downturned angles are mostly post-carinal. Both genera have the pronotal hind angles produced and downturned along the elytra, but in *Choragus* the junction of transverse and lateral carinae is anterior to the actual hind angle and connected to it by a short carina. In *Melanopsacus*, this junction of transverse and lateral carinae extends to the tip of the thoracic hind angle and helps form it.

Our species of *Choragus* feed on and in pyrenomycete fungi in the families Xylariaceae (genus *Rosselinia*) and Diatrypaceae (*Diatrype*). Anderson's Maryland specimens (1947:515) of *Choragus zimmermanni*, reared from *Rosselinia*, have been reidentified by me as *Choragus sayi* Leconte.

After examining 250 specimens of Nearctic *Choragus*, (most collected by me) I am still dissatisfied. There are specimens which mix features and will not key out. Variation is confusing and there are probably additional new species. The numbers of facets across maximum eye width and length appeared useful, and this feature does delineate two species, but for the others, when series are available, smaller specimens often average 1 or 2 facets less than larger conspecifics, independent of sex; and there is an overlapping progressive increase from smallest to largest species (Table 1).

### Key to the described Nearctic species of *Choragus* Kirby

1. Elytra with a short extra group of punctures between striae 9 and 10, above the metasternum; Ohio.....*striolatus* n. sp.
- 1'. Elytra without extra punctures near the base of interstria 10 ..... 2
- 2(1). Floors of elytral punctures each with a circular hole; eye length 20-24 facets; male sternite V with a weak tubercle or swelling tufted with fine, erect setae; New Jersey and D.C. west to Indiana ..... *major* n. sp.
- 2'. Floors of elytral punctures each with a longitudinal slit; eye length 14-22 facets; male sternite V without a setose swelling. .... 3
- 3(2). Eye short, fat, and protruberant, approximately 14x18 facets (width x length); Virginia..... *exophthalmus* n. sp.
- 3'. Eye long and less convex, 13 or fewer facets wide ..... 4
- 4(3). Larger, length usually more than 2 mm; transverse pronotal carina usually double arched; Quebec to Georgia west to Indiana and Texas ..... *sayi* Leconte
- 4". Smaller, length usually less than 2 mm; transverse carina straight or almost so ..... 5
- 5(4). Elytral interstriae densely, coarsely granulate; pronotal reticulum very fine; interstria 10 swollen and stria 9 angulate above the metasternum; striae 9 and 10 complete and

- separate to elytral apex; Massachusetts to Florida west to Ohio and Texas .....  
 ..... *zimmermanni* Leconte  
 5'. Elytral interstriae almost smooth; pronotal reticulum with larger meshes; interstria 10 not swollen and stria 9 not abruptly angulate above metasternum; striae 9 and 10 fuse or intermingle near the apex; Massachusetts to Maryland west to Michigan and Oklahoma ..... *harrisii* Leconte

***Choragus striolatus* Valentine, n. sp.**

Figures 11, 12, 13.

**Holotype:** ♀, "Ohio, Highland Co., Hardin Creek, 3.3 km. s. of Centerfield, 18-viii-1972, Collector: B. D. Valentine and family;" "On brown velvety pyrenomycete." "SEM;" "#111;" "Grooming studies. B. D. Valentine" in BDVC.

**Diagnosis:** The only Nearctic species with a short, extra stria between striae 9 and 10, above the metasternum; in addition, striae 9 and 10 fused or intermingle above sternites IV and V; stria 9 displaced dorsad above the supernumerary stria and angulate where it returns to normal position, this slightly anterior to hind coxae; elytral granulae weakly developed.

**Description:** ♀, length (head excluded) 2.2 mm, variation is expected; cuticle reddish brown, elytra, legs, palpi, and 2 basal antennal articles paler. Pubescence appearing reddish or pale gray depending on light angle, unusually dense for the genus but not hiding surface, without silvery patterns on pronotum. Head reticulate and punctate, eyes 9 x 19 facets (width and length). Prothorax wider than long, length:width 8:11, densely and finely microreticulate, each mesh with a single short seta; main transverse carina weakly antebasal, very weakly double arched with a weak posterior curve anterior to scutellum; hind angles weakly produced posterior to transverse carina, tips rounded, junction with very short lateral carina slightly less than 90°; prosternum densely, coarsely punctate except under the hind angles; antcoxal strip much longer than a coxal diameter, postcoxal strip much shorter. Scutellum minute, transverse. Elytral interspaces weakly convex, densely but weakly microgranulate, stria punctures oval with oval holes in the floors; scutellar stria and interspace well-developed, depressed relative to adjacent interspaces; an abbreviated puncture field between striae 9 and 10, the latter intermingling above sternite V, this area weakly depressed relative to adjacent striae. Venter and pygidium densely and shallowly punctate. Legs

with hind femora barely reaching suture between sternites IV and V; tarsi more than half as long as tibia, claws with a strong basal tooth.

**Specimens examined:** only the holotype.

**Remarks:** The supernumerary inter-strial fragment between striae 9 and 10 is unique in the New World, but is an important character for some Old World species. The type has the denser pubescence of *C. harrisii* and the larger size of *sayi*.

The pyrenomycete fungus with which this specimen was associated, was determined as *Rosellinia* sp. by Dr. Jack Rogers of Washington State University. This forms clusters of hard black spherical nodules embedded in or even covered by a dense brown fibrous matrix. The fungus was growing on a tangle of small cut branches left behind by a work crew who had cleared a road right-of-way some months before. The pile was shaded by tall grass and weeds which kept the humidity high. Several polypores and additional species of pyrenomycetes were present. This collection site yielded the most diverse anthribid fauna I have encountered in the United States, seven genera and nine species. Anthribids in the pile were *Choragus striolatus* n. sp., *Choragus sayi* Leconte, *Choragus* sp., *Euxenus punctatus* Leconte, *Eurymycter tricarinatus* Pierce, *Piesocorynus plagifer* Jordan, *Goniocloeus bimaculatus* (Olivier), *Euparius marmoreus* (Olivier), and *Trigonorhinus tomentosus* (Say). Only the unidentified species of *Choragus* was taken in series.

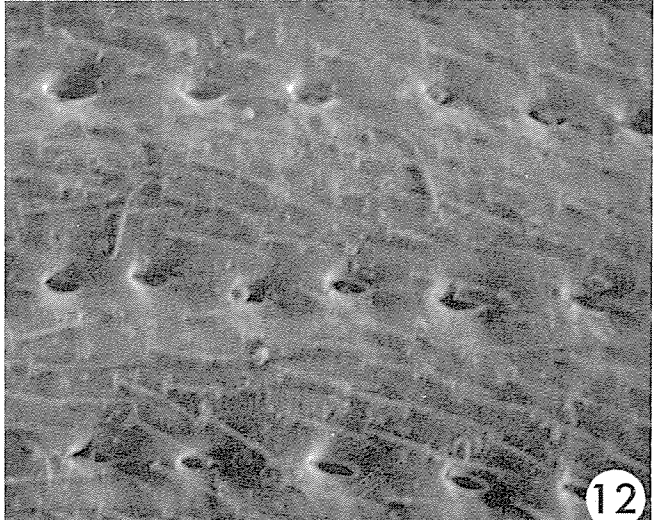
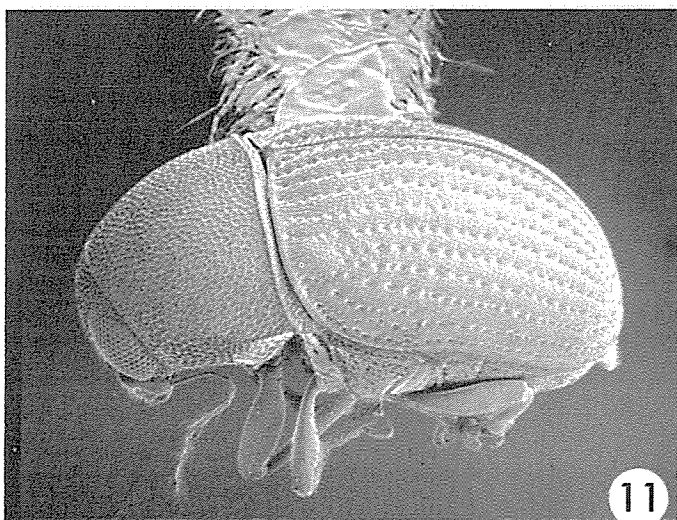
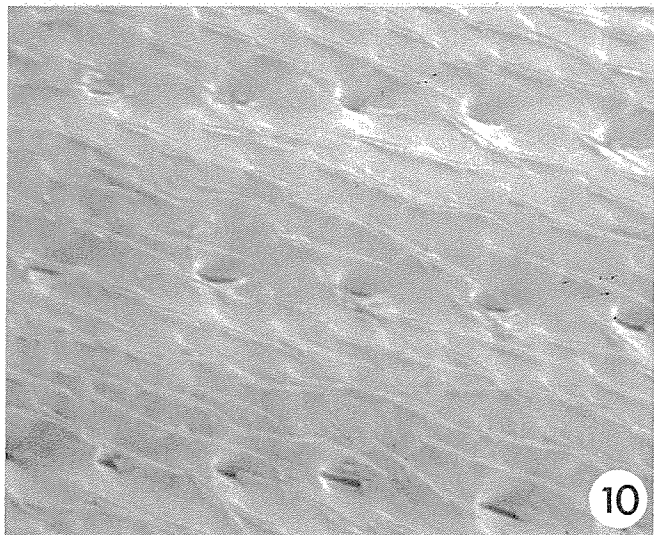
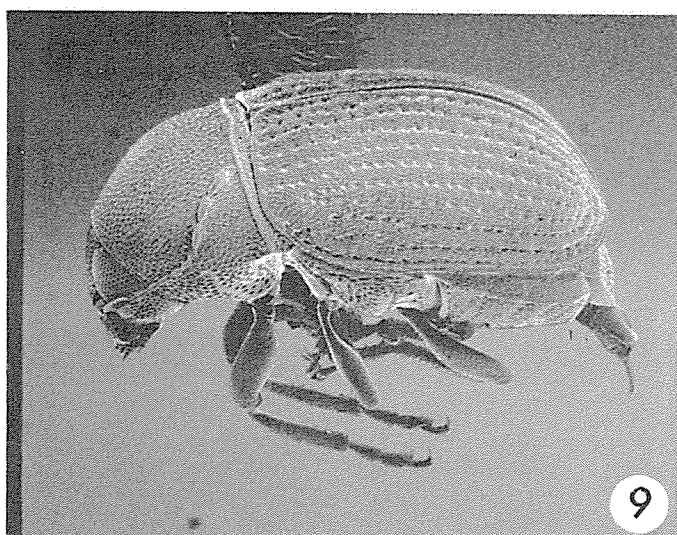
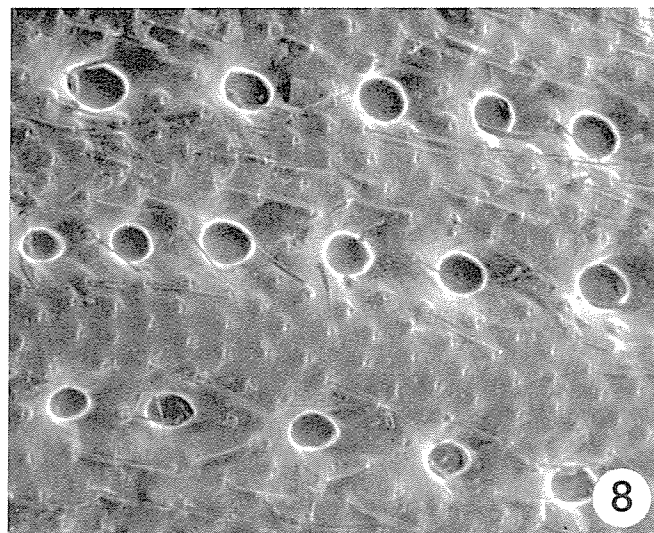
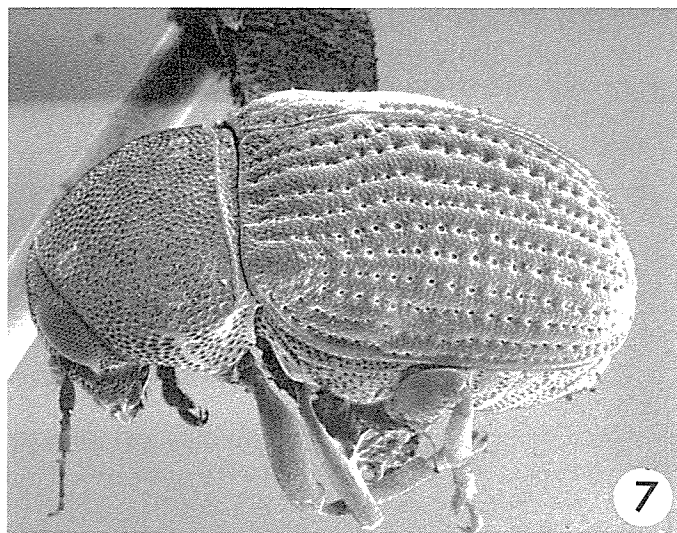
***Choragus major* Valentine, n. sp.**

Figures 7, 8.

**Holotype:** ♂, Ohio, Franklin Co., Columbus, 30 May, 1991, B. & B. Valentine, on apple log in backyard; in BDVC.

**Diagnosis:** averaging two or more times larger than any other Nearctic *Choragus*; lower end of eyes flush with surface of head, not strongly protruberant; stria punctures of elytra with circular holes in the puncture floors; no extra punctures in interstria 8/9 nor 9/10; male with a sparsely setose tubercle at base of fifth sternite, sternites I-IV not strongly concave down the center.

**Description:** ♂, ♀, length (head excluded) 2.4-3.2 mm (holotype 3.2 mm), most specimens over 2.7 mm; cuticle almost entirely black; mouthparts, antennal base, tibial base, and tarsi dark reddish brown. Pubescence very short and sparse, not hiding sculpture, reddish brown with very vague silvery overtones on each side of pronotum and on venter. Head reticulate-punctate, the raised meshes coarsest



Figures 7-12. 7-8, *Choragus major* n. sp. E Paratype, Ohio, Franklin Co., Columbus. 9-10, *Choragus sayi* Leconte, E Maryland, University Park. 11-12, *Choragus striolatus* n. sp. E Holotype: Ohio, Highland Co., Hardin Creek, 3.3 km. s. Centerfield.

between eyes on frons; mandible without preapical tooth; eyes vertical, weakly approaching on frons, in holotype 23 facets long and 10 facets wide; scrobes sulciform around sides of rostral base; rostral apex weakly angulate on either side of labrum. Prothorax wider than long, length:width 7:10, strongly convex, densely reticulate-punctate, each puncture with a short, fine, brown seta; main transverse carina weakly antebasal, barely angulate towards scutellum in center, hind angle obtuse, lateral carina short, extending about half way to supra-coxal suture; basal transverse carina complete, produced downward below the elytral humerae, the resulting lobe weakly acute, the carinula forming an obtuse angle with the main antebasal carina; prosternum densely punctate, antecoxal strip longer than a coxal diameter, postcoxal strip much shorter.

Scutellum minute, transverse. Elytra very coarsely sculptured with convex interspaces, especially 2, 3, 5, 7; stria punctures very large, deep, squared, each with a circular hole in bottom; all raised surfaces with dense small granules; scutellar stria well-developed, the suture depressed; interstriae 9 and 10 without anterior puncture fields; striae 9 and 10 overlapping and concave on declivity. Venter with large shallow punctures; metasternum not abnormally shortened; pygidium convex, elongate-triangular with apex rounded, surface with dense, shallow punctures. Legs with hind femur passing base of sternite V, slightly more swollen than fore and mid; tibiae slender; tarsi about half the tibial length, narrow, claws with a small tooth.

Male with sternites II-IV flat or weakly concave in center, 5 with low, setose, median tubercle or swelling close to anterior margin; female abdomen evenly convex; ovipositor very delicate, coxites with 3 very small down-curved teeth, apical tooth most divergent.

**Specimens examined:** holotype, allotype, and 6 paratopotypes taken by my wife, Buena, and myself 30 May, 1991; 19 paratopotypes from the same site taken 29 and 31 May, and 1, 3, 4, 7, and 11 June, in BDVC except 2 each in ICCM, USNM, NMDC. Additional specimens not in the type series: 1 male, D. C. [District of Columbia] Henry Ulke Coll.; 1 male, Pennsylvania, Jeannette, 6 March, H. G. Klages; 1 female, Maryland, CabJohnBr [Cabin John Bridge], 16 June, F. C. Pratt; 1 female, Indiana, Tippecanoe Co., 18 June, 1955, N. M. Downie; all in BDVC.

**Comments:** the large size, circular holes in the floor of the elytral punctures, and the low setose tubercle on the fifth sternite of males are unique. In

other species the puncture floors have elongate slits and the male fifth sternite is neither tuberculate nor tufted.

All species of *Choragini* are strongly saltatorial, although there are no externally recognisable modifications. The present species is an especially strong jumper, and in hot weather, is difficult to catch.

The 27 topotypic specimens were collected in my back yard in the Columbus suburb of Upper Arlington. Additional specimens of both sexes were left at the site. The site is a well-shaded and continuously humid stack of apple logs which we have maintained for collecting and firewood. Our lot was part of a large apple orchard, and as the trees died, we maintained a graded age series of logs from fresh to soft and pulpy. The anthribids occurred on two logs near the top of the stack which had been cut about two years previously. The logs had lost most of the bark and were partly rotten. Many different fungi were present, but no definite association with the weevils was noted, and feeding tests in the laboratory were negative. We were unable to determine if the anthribids were emerging or flying in from elsewhere. The logs have hundreds of exit holes from small wood boring coleopterans, and we have taken 20 species of anobiids, plus various scolytids and other beetles from the pile and from adjacent porch lights.

*Choragus exophthalmus* Valentine, n. sp.

Figure 14.

**Holotype:** ♀, labeled: "Great Falls, July 25, 1914 Va." and "W. L. McAfee/Collector," actually: Virginia, Fairfax Co., Great Falls, 25 July, 1914, Waldo L. McAfee collector.

**Diagnosis:** eyes short, fat, protruberant, approximately 14 x 18 facets (width x length); elytral and ventral punctures finer than usual in this genus, former with narrow slits in the floors; no extra punctures between striae 9 and 10 which are almost straight above the metasternum and which fuse above sternite V.

**Description:** ♀, length (head excluded) 2.1 mm, variation is expected. Cuticle dark reddish brown, appendages slightly paler. Pubescence short, sparse, not hiding sculpture, reddish or gray depending on light angle, pronotum without a silvery pattern. Frons faintly concave in center; eyes shorter, wider, more vertical, and more convex than congeners; scrobes connected by a faint transverse ridge.

Prothorax wider than long (length:width 8:11), strongly convex, densely and finely microreticulate; transverse carina weakly antebasal, almost straight; not obviously double arched, hind angle almost 90°, weakly produced, lateral carinula and carina vestigial but recognizable; prosternum densely and coarsely punctate, including the hind angles; antecoxal strip much wider than postcoxal. Scutellum minute but large for the genus. Elytra densely but weakly microgranulate, interspaces weakly convex, striae weakly impressed, punctures much narrower than interstriae; scutellar interstria almost plane with adjacent interstriae, fused parts of striae 9 and 10 only weakly depressed relative to rest. Venter of prothorax and abdomen with many shallow punctures which are smaller than in congeners. Hind femur almost reaching pygidium, tarsi longer than half a tibia.

**Specimens examined:** only the holotype in BDVC.

**Comments:** The broad, convex eyes are diagnostic. This otherwise ordinary looking specimen was sent to me as *C. zimmermanni* in an exchange years ago. It differs from that species in size, in the finer microgranulation, straighter elytral striae 9 and 10, and their fusion posteriorly; and from *sayi* which is similar in size by having the pronotal carina not double arched and having straighter striae 9 and 10; from *harrisii* by size, by having a finer pronotal microreticulum, and coarser elytral microgranulae.

### *Pseudochoragus* Petri, 1912

*Pseudochoragus* Petri, 1912: (unpaged but would be p. x).

**Type species:** *Pseudochoragus brachycerus* Petri, 1912, *loc. cit.*, by monotypy.

See Valentine, 1991:305 ff. for illustrations and a discussion of this Holarctic genus, and the transfer to it of *Choragus nitens* Leconte, 1884:32.

Leconte's species, described from Tyngsboro, Massachusetts, is known only from that locality and Latimer County, Oklahoma, where Karl Stephan found it by beating dead branches of hickory. It is our only choragine anthribid with 10 (rarely 9) antennal articles, and is also one of our smallest species (0.715 - 1.265 mm).

### *Euxenus* Leconte, 1876

*Euxenus* Leconte, 1876:409. **Type species:** *Euxenus punctatus* Leconte, 1876:409, by monotypy.

*Holostilpna* Jordan, 1907:382. **Type species** by original designation: *Choragus nitens* of Jordan, 1907:382, not Leconte, 1884:32 (equals *Euxenus jordani* Valentine, 1991:303, fig. 3, 4, 5). Synonymy by Valentine, 1991:302.

Valentine (1991:302 ff.) describes, keys, and illustrates a third species of this genus from eastern United States. There are many more, mostly undescribed, in the Neotropics.

Adults and larvae feed on the pyrenomycete fungus family Xylariaceae. In Alabama, I reared *E. punctatus* from *Hypoxylon perforatum* growing on dead twigs of common dogwood, and it occurs on ridges of a reddish-brown pyrenomycete growing on dead branches which have lost all bark and are partially buried in leaf litter, in Columbus, Ohio. Most of the type series of *E. jordani* Valentine was reared from *Biscogniauxia atropunctata* (formerly in the genus *Hypoxylon*) in Maryland, or was found on the same fungus in Ohio. *Euxenus ater* Blatchley, from south Florida, is known only from two specimens beaten from dead branches in hardwood hammocks, the type by Willis Blatchley in Dunedin, Florida, the other by me in Matheson Hammock, Miami, Florida.

### *Euxenulus* Valentine, 1960

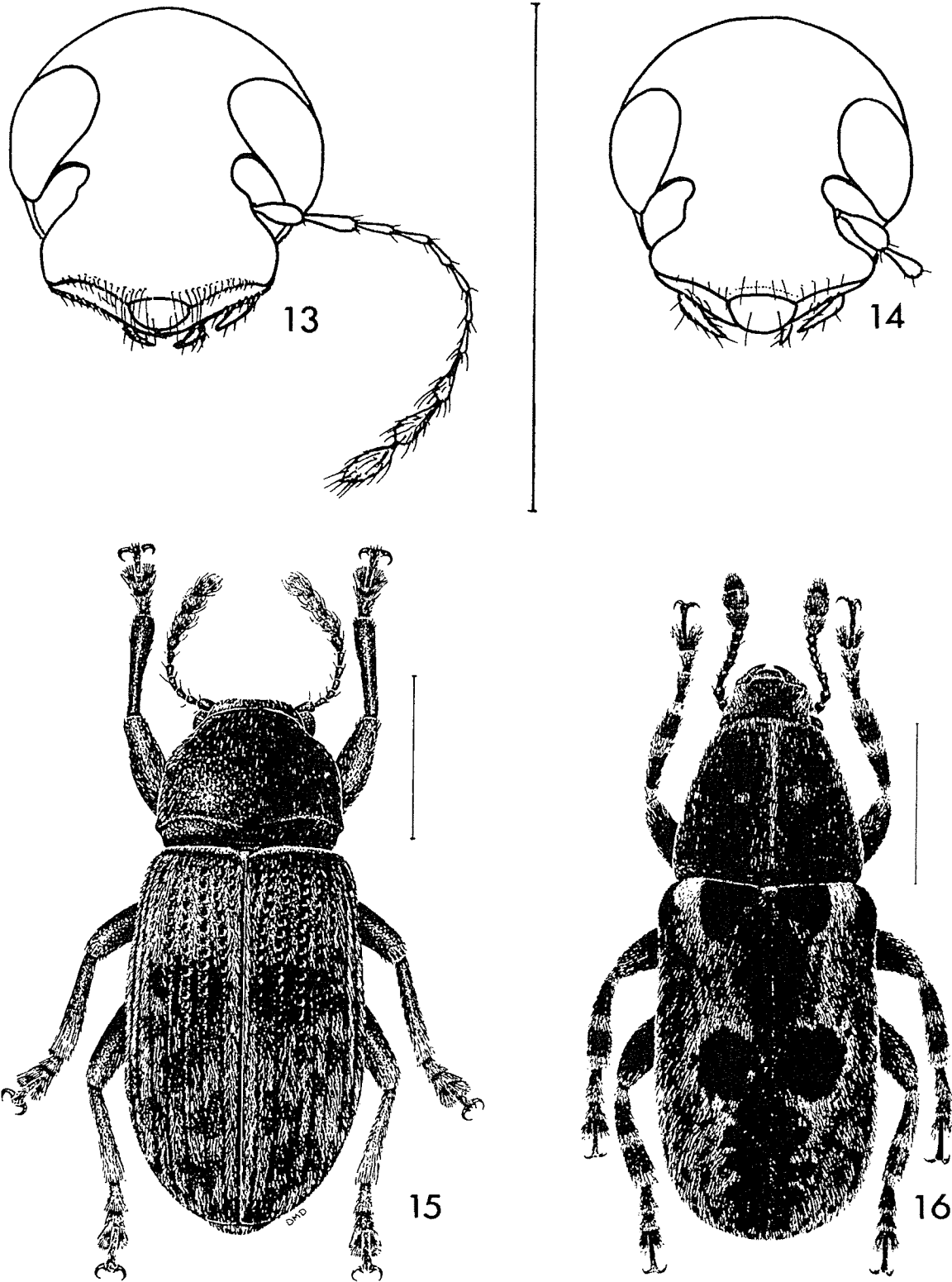
*Euxenulus* Valentine, 1960:48, 53. **Type species:** *Euxenus piceus* Leconte, 1878:434, by original designation and monotypy.

*piceus* (Leconte, 1878:434) (*Euxenus*).

This is one of the smallest weevils in the world; carefully measured adults are 0.5 - 1.0 mm long, and I have seen smaller individuals when an adequate measuring scale was not on hand. The genus has undescribed species throughout the West Indies; the only described species is confined to south Florida. I have taken it beating dead fronds of *Sabal* in Mahogany Hammock, Dade Co.; on the same palm on Gasparilla Island, Lee Co.; and on the same palm in Myakka River State Park, Sarasota Co. Other records are Lake Poinsett, Crescent City, and Haw Creek. In each of the three records on *Sabal*, it was associated with flat streaks of a silvery-grey fungus growing on the petioles; however, identity of the fungus, and additional details of biology are unknown.

The retractile head, oval, vertical eyes, 11-articulate antennae, and 12 seriate-punctate elytra (some absent or incomplete apically) are diagnostic.





**Figures 13-16.** 13. *Choragus striolatus* n. sp. ♀ Holotype: Ohio, Highland Co., Hardin Creek, 3.3 km. s. Centerfield. Figure 14. *Choragus exophthalmus* n. sp. ♀ Holotype: Virginia, Great Falls. Figure 15. *Neoxenus versicolor* n. g., n. sp. ♂ Paratype: Texas, Cameron Co., Audubon Sabal Palm Groove. Figure 16. *Trigonorhinus lepidus* n. sp. ♂ Paratype: California, Los Angeles Co., Claremont.

**Discotenes Labram and Imhoff, 1839**

*Discotenes* Labram and Imhoff, 1839: Heft VIII. **Type species:** *Discotenes coelebs* Labram and Imhoff, 1839:Heft VIII, by monotypy.

*Phanosolena* Schaeffer, 1904:234. **Type species:** *Phanosolena nigrotuberculata* Schaeffer, 1904: 235, by original designation and monotypy. Synonymy by Jordan, 1906:308.

*arizonica* (Schaeffer, 1906:269) (*Phanosolena*).

*nigrotuberculata* (Schaeffer, 1904:235) (*Phanosolena*).

=*affinis* Jordan, 1906:311, pl. x, fig. 16. **New Synonymy.**

This is our only genus with four articles in the antennal club, and with 8 as long as 9 + 10 or longer. The foveiform scrobes are dorso-lateral, suggesting the subfamily Choraginae, but the short, symmetrical scape and the absence of a smooth depression for it on the sides of the beak indicate Anthribinae. The generic range extends to Brasil and Peru.

Our two species, keyed in Valentine (1960:55), barely enter the United States. *Discotenes arizonica* is known only from the Huachuca Mountains, se. Arizona, and *P. nigrotuberculata* occurs in Cameron and Hidalgo Cos., Texas, south to Guatemala. The synonymy of *affinis* Jordan with *nigrotuberculatus* (Schaeffer) is based on comparison of topotypes of the latter with Jordan's holotype.

A topotype of *D. nigrotuberculata* from Brownsville, Texas, was reared from *Acacia* sp., and I have collected it in Orizaba, Mexico by beating dead branches of coffee.

**Ischnocerus Schoenherr, 1839**

*Ischnocerus* Schoenherr, 1839:191. **Type species:** *Ischnocerus iufuscatus* Fahraeus, 1839:192, by original designation.

*Meconemus* Labram and Imhoff, 1839:Heft IV. **Type species:** *Meconemus tuberculatus* Labram and Imhoff 1839:Heft IV, by monotypy, equals *Ischnocerus iufuscatus* Fahrs. Synonymy by Lacordaire, 1866:505.

There are now three species of this genus recorded in the United States (Valentine, 1972b:2), all distinguished from other Nearctic taxa by a small post-ocular tooth on the anterior prothoracic margin. These teeth are not continuous with the lateral prothoracic carina (as in *Eugonus* Sch.), and are absent in most of the Neotropical species of *Ischnocerus*.

**Key to the species of Nearctic *Ischnocerus***

1. Face, pronotal disc, and especially pygidium with dense, contrasting white pubescence ..... 2
- 1'. Face, pronotum, and pygidium with diffuse areas of white pubescence or none, mottled with browns and grays; Maryland to Texas in the Coastal Plain; Bahamas; Mexico to Honduras .....  
..... *infuscatus* Fähræus
- 2(1). Midline of antebasal pronotal carina not interrupted, forming a large posteriorly directed loop; elytra without a small, pale, post-scutellar spot; elytral apex with entire declivity visible from above due to the weak preapical callus; southeastern Arizona; Sonora .....  
..... *angulatus* Martin
- 2'. Midline of antebasal pronotal carina interrupted; elytra with a minute pale post-scutellar spot of same color as scutellum; elytral apex with part of declivity hidden from above by broad preapical callus; southeastern Arizona; Morelos, Puebla, Guerrero ..... *impressicollis* Jordan

This is the first record of *I. angulatus* in Mexico; it is based on 3 males and 3 females from Sonora, four collected 13 km. se. Alamos 30-x-1972 by K. Stephan, and two collected 5 mi. E. Alamos 11-viii-1973 by K. Stephan and D. S. Chandler; Arizona records are from Santa Cruz, Cochise, Yavapai, Pima, and Gila/Graham Counties. The only biological data are Martin's (1930) comment that the types were on the dead branches of a large willow tree, and the 1973 Stephan and Chandler pair which are labeled "on Fouquieria." There are no biological data for *I. impressicollis*. *Ischnocerus iufuscatus* appears to be a generalist in dead branches, apparently without fungi. In Florida it is recorded with *Bucida buceras*, *Koelreuteria* sp., and emerging from dead gumbo limbo. In Louisiana it emerged from dead wood of sugar maple; and in Texas "emerged 20/25-viii-1994 ex dead *Salix* collected 13-x-1993;" emerged 12-vi-1991 ex *Leucaena pulverulenta* (Leguminosae); emerged 20-x-1996 ex dead Tepehuaje (*Leucaena pulverulenta*) collected ix-1996; and reared from miscellaneous dead wood. It has been collected by beating, under bark, at light, in a Steiner trap, and in an ethanol/turpentine trap.

**Allandrus Leconte, 1876**

*Allandrus* Leconte, 1876:396. **Type species:** *Allandrus bifasciatus* Leconte, 1876:396, by monotypy.

*Tropiderinus* Reitter, 1916:5. **Type species:** *Tropideris munieri* Bedel, 1882:8, by monotypy. **New Synonymy.**

This is a Holarctic genus confined to the temperate areas of the northern hemisphere. The rostrum is narrower at base than at apex, and the minimum rostral width is less than the minimum interocular distance.

Our species are keyed by Buchanan (in Pierce, 1930:19) and Valentine (1960:78). Some specimens do not key out well and may represent undescribed species. As far as known, *A. bifasciatus* has been bred from *Tilia* (basswood), *A. brevicornis* from *Salix* (willow), and *A. populi* from *Populus* (aspen). See the checklist for bibliographic details.

In Europe and Japan, nine species names are available, but universal misidentification of the two oldest: (*Curculio cinctus* Paykull, 1792 and *Curculio undulatus* Panzer, 1795) has caused the names to be applied incorrectly or randomly. I have seen five European species, only two of which I can identify with certainty.

Many published distribution records are not reliable. I have seen *bifasciatus* Leconte from Quebec to Virginia west to Iowa and Kansas; *brevicornis* Frost from Quebec to West Virginia west to Alberta and California; *populi* Pierce from Ontario and Maine west to British Columbia, California, south to northern Arizona.

### *Stenocerus* Schoenherr, 1826

*Stenocerus* Schoenherr, 1826:4, 39. **Type species:** *Anthribus fulvitaris* Germar, 1824:174, by original designation and monotypy.

This New World genus (south Texas to northern Argentina) was revised by Valentine (1980). No additional specimens of our single species *Stenocerus longulus* Jekel, 1855:106 have been seen. The Texas specimens were under bark of dead hackberry trees.

### *Gymnognathus* Schoenherr, 1826

*Gymnognathus* Schoenherr, 1826:37. **Type species:** *Anthribus ancora* Germar, 1824:177, by original designation and monotypy.

*Analotes* Schoenherr, 1839:198. **Type species:** *Analotes discoideus* Fähræus, 1839:199, by original designation and monotypy. Synonymy by Jordan, 1937:212.

This Neotropical genus has 90 described and dozens of undescribed species. All have the unique configuration in which the elytra partially enclose the anterior-lateral margin of the scutellum. All are complexly patterned, and the fly mimics can be beautifully marked with red and yellow in addition to the usual browns and grays.

Two species enter extreme southern United States, in Arizona and Texas. *Gymnognathus chiricahuae* Sleeper, 1954 is known only from Cochise Co., Arizona, in the Chiricahua and Huachuca Mountains. The type series was taken by beating deciduous oaks. The second species is described below.

### Key to Nearctic species of *Gymnognathus*

1. Pygidium and abdominal sternites uniformly pale gray pubescent; humeral cuticle orange-red and paler than the disc. SE Arizona .....  
..... *chiricahuae* Sleeper
- 1'. Pygidium white with a median brown stripe narrowed basally; sternites each with a small anterior-lateral brown spot; humeral cuticle same color as disc. S. Texas .....  
..... *triangularis* Valentine

### *Gymnognathus triangularis* Valentine, n. sp.

Figures 17, 18, 19

**Holotype:** ♀, labeled: "USA, Texas./San Patricio County./ 2 mi. N.E. Sinton/15-x-1993, S. M. Clark" in BDVC.

**Diagnosis:** Pronotum without longitudinal rugae; cuticle of head and prothorax dark brown, all dorsal pubescence sharply patterned, pale whitish gray and dark brown; pygidium pale whitish gray with a median brown wedge that is widest at apex; sternite 5 apex bidentate; elytral disc with a large, irregular, pale gray area enclosing three large round brown spots, one on each subbasal swelling, one more posterior on the suture, an additional smaller brown spot immediately posterior to the pale scutellum.

**Description:** ♀, length (anterior margin of eye to elytral apex) 7 mm, variation is expected. Pale pubescence on rostrum and frons forming a wide median longitudinal stripe dividing into 3 branches on vertex, the outer pair ending near the posterior limit of the eyes, the central branch less defined; on venter of head a dense white patch from scrobe to below the eye, and more diffuse setae below scrobes and on gular area; on pronotum a broad irregular median stripe widest anterior to transverse carina, twice narrowed towards apex and weakly narrowed

at base, venter entirely pale, this surrounding the junction of the three carinae at the hind angles, and all of the lateral carina; scutellum pale; elytra as in diagnosis, with three small pale lateral spots: below humeral angle, above coxa 3, above suture between sternite 2 and 3, plus a spot at extreme apex, the discal pale patch is widest opposite each of the three lateral spots and is well separate from the apical spot; pygidium as in diagnosis; venter of thorax and abdomen pale with very small brown spots at the anterior lateral corners of sternites 1 - 4, and a more elongate dark spot on the sides of sternite 5; coxae, femora, and tibiae mostly pale pubescent, narrowly dark at knees and tibial apices, tarsi dark with the bases of articles 1 and 2 pale; antennae basically dark, the most obvious pale pubescence on article 8 and the base of 9.

Rostrum longitudinally concave with a weak median carina extending to vertex, frons with 4 more irregular carinae between the eyes, plus fragments of others; eyes almost round, the facets all the same size (both eyes are damaged on the holotype); suprascrobal carina well-developed to eye margin, postmentum with median longitudinal carina and apical V-shaped groove, the ventral gular junction of rostrum and head capsule abrupt but greater than 90°. Prothorax with lateral carina extending to supracoxal suture and with the apex upcurled; transverse carina weakly but multi-sinuuous, almost interrupted in center. Elytra with base (as usual in the *Gymnognathini*) without a raised margin and lobed over the pronotal base; striae faint, represented by rows of small, elongate punctures. Pygidium with apex weakly rounded and the lateral posterior angles weakly projecting. Prosternum with antecoxal length (to thoracic apex) almost twice a coxal diameter, postcoxal length reduced to a linear strip. Inter-coxal process of mesosternum about as wide as a coxa, apex rounded; metasternum swollen so in lateral view it extends more ventrad than mesocoxae. Sternites 1-4 convex, 5 down turned and weakly concave between the apical teeth.

Femora weakly swollen, tibiae and tarsi slender, tarsi shorter than tibiae, article 1 longer than 2 + 3, claws of 5 with a prominent subbasal tooth.

**Relationships:** This species appears closest to *Gymnognathus mexicanus* Jordan, 1906:338, pl. 11, fig. 13 and several undescribed Mexican species, all of which lack the median sutural brown spot, the brown pygidial stripe, and differ in many other details.

Dr. Clark collected the holotype sweeping and beating grass and small roadside trees and shrubs, mostly mesquite and *Baccharis* along U. S. route 77. The species will not key past couplet 3 in Jordan's

(1906:336) key to Central American species because the pygidium has a median brown stripe. In Jordan (1937:232) it belongs in Section I, Subsection C, except the cuticle of the occiput and pronotum is not rufous red and there is no oblique, dorsolateral, pale stripe on the pronotum, the pale area above the lateral carina being continuous with the pale venter.

### *Piesocorynus* Dejean, 1834

*Piesocorynus* Dejean, 1834:235. **Type species:** *Euparius dispar* Gyllenhal, 1833:140, by monotypy.

*Piezocorynus* Schoenherr, 1839:250 (amended spelling of *Piesocorynus*).

*Camptotropis* Jekel, 1855:136 **Type species:** *Camptotropis gracilicornis* Jekel, 1855:138, by original designation and monotypy. Synonymy by Jordan, 1904:276.

The following name change brings our checklist up to date.

*Piezocorynus lateralis* Jordan, 1906:317, pl. 10, fig. 28.

**Type locality:** Panama, Volcan de Chiriqui (Cham-pion); paratypes from Guatemala and Mexico.

*Piezocorynus virginicus* Leng, 1918a:11. **Type locality:** "Buckingham County, near Wingina, Virginia." **New Synonymy.**

Jordan's holotype and a topotypic paratype were compared with specimens from Mexico: Veracruz, Cordoba; Oaxaca, Oaxaca; and from the United States: Connecticut, Pennsylvania, Ohio, Indiana, Illinois, Virginia, West Virginia, Maryland, Alabama, Florida, Mississippi, Louisiana, Oklahoma, and Texas. All were judged conspecific.

In my key to Nearctic species (1960:69-70) the three species in couplets 3 and 4 can be better separated as follows:

3. Frons and rostrum with derm equally dark; male mid legs not modified; male sternite 2 without a tubercle; Arizona, New Mexico, and western Texas ..... *tesselatus* Schaeffer
- 3'. Frons with derm paler than rostrum or else frons with conspicuous irregular areas of pale setae (this less developed on rostrum); male mid tibiae and/or tarsi modified (see below) ..... 4
4. Elytra with interspaces 1 and 2 black or dark brown for basal 2/3 or more ..... typical *lateralis* Jordan
- 4'. Elytra with interspaces 1 and 2 tessellate black and brown, 1 more so than 2 ..... 5

5. Tarsi slender, elongate; male mid tarsus with first article usually with a ventral apical tubercle, or when maximally developed, a long spine; mid tibia unarmed; sternite 2 with a minute median tooth; Connecticut to Florida west to Illinois and Oklahoma ..... *mixtus* Leconte
- 5'. Tarsi more robust; articles 2 and 3 wide and flat; male article 1 of mid tarsus without a ventral tubercle or spine; male mid tibia with a short apical, ventral spine or small swelling; male sternite 2 without a minute median spine; Central Florida: Levy, Highland, and Collier Cos. .... atypical *lateralis* Jordan

Adults and larvae of our species eat pyrenomycete fungi of the order Sphaeriales, family Zylariaceae, genera *Biscogniauxia*, *Camillea*, *Daldinia*, and *Hypoxylon*, and family Diatrypaceae, genus *Diatrype*. Fragmentary but overlapping data suggest that each species eats more than one genus of fungi.

In 1960 I used the generic name *Brevibarra* Jordan, 1906, for the species described by Leconte as *Tropideres rectus*. Subsequent examination of the holotype of *Brevibarra scotosagis* Jordan, 1906, the type species, reveals that Jordan's description was incorrect and misleading; Leconte's species is not congeneric, and requires a new genus. Additional species are also known, two of which are discussed below.

### ***Brachycorynus* Valentine, new genus**

*Brachycorynus* Valentine, **new genus** (*G. brachys*, short; *G. koryne*, club); here treated as masculine. **Type species:** *Tropideres rectus* Leconte, 1876:395, by present designation.

*Tropideres*, Leconte, 1876:395, and many subsequent American authors, not Schoenherr, 1823:1135.

*Brevibarra*, Valentine, 1960:67, not Jordan, 1906:312.

**Diagnosis:** Antennae inserted on the ventrolateral surface of the rostrum, third article not greatly longer than the second or fourth; eyes oval, lateral, oblique, entire or weakly sinuate nearest the scrobes, with only 10 to 14 rows of facets across the maximum width; elytral bases subtruncate.

**Description:** ♂, ♀, length 2.7 to 4.5 mm. in the specimens examined. Form usually parallel sided, occasionally slightly inflated; body convex; surface neither tuberculate nor pustulate. Pubescence very short or mixed with longer pale scales; usually not hiding the derm. Rostrum short and broad, parallel-sided or slightly widened apically; median dorsal carina present or not; apex tri-emarginate; continuous with frons or else with a transverse basal depression; postmentum with a transverse basal

depression, and usually with a vestige of a median longitudinal carina at the apex. Antennae short, at most reaching the mesocoxae; inserted ventrolaterally; the scrobes invisible from above, foveiform, widely open ventrally, not quite reaching the eye; article 3 as in the diagnosis, 3-8 progressively shorter, club loose jointed, small, 9 and 10 apically truncate, 11 oval. Eyes small, oval, oblique, 10 to 14 rows of large facets across the greatest width. Prothorax either smooth, punctate, reticulate, or rugate, but without tubercles; transverse carina at basal ninth or tenth, entire, usually straight; subbasal transverse carina present; lateral carina present, extending about 1/3 to apex and joining the transverse carina in a broad curve or at an angle of 90° or more; carinula present; intercoxal process narrow; antecoxal strip narrower or wider than a coxa; postcoxal strip narrow. Scutellum small, always present. Elytra separate; base margined and subtruncate; surface never pustulate nor tuberculate; seriate-punctate; scutellar stria well-developed, striae 9 and 10 usually fused before the apex. Venter punctate or not; mesosternal process narrowed to apex which usually is rounded; metacoxae transverse, usually well separate from mesocoxae, but very close in some undescribed Antillean species; abdomen usually impunctate except for the basal groove of sternite one. Legs normal; usually the middle femora smallest; tibiae slender; tarsi cylindrical to slightly flattened, the third article never broadly enlarged, the claws with an acute tooth.

**Distribution:** New Jersey to Indiana, south to Florida and Texas; Mexico to Panama; Antilles.

**Relationships:** This genus is a member of the tribe Piesocorynini, within which its closest relatives are *Piezobarra* Jordan, 1906, *Barridia* Jordan, 1906, and *Phaenotheriopsis* Wolfrum, 1931. These four genera differ from the rest of the tribe, including *Piesocorynus*, *Lagopezus* Dejean, 1834, *Piezonemus* Jordan, 1904, *Barra* Jordan, 1904, and *Brevibarra* Jordan, 1906, in that they have the outer edge of the mandible straight or weakly incurved, then strongly curved to the apex, while the latter group has the mandible more broadly and more evenly curved to the apex, giving them a blunter, heavier appearance. The feature is difficult to describe, but once seen, is easy to recognize.

*Piezobarra* has the transverse pronotal carina basal or very weakly antebasal, and the elytral bases are weakly convex, projecting over the extreme pronotal base. *Phaenotheriopsis* is flightless, the metasternum is attenuate between mid and hind coxae, and the pronotum is either tuberculate or

coarsely and densely punctate. *Barridia* has finely faceted eyes, with 24 rows of facets across longest axis, and longitudinally rugate pronotum.

*Opisolia lenis* Jordan, 1926, known only from the Juan Fernandez Islands off the coast of Chile, is tentatively included in this tribe. The few specimens seen average 12 x 12 eye facets, and the elytral punctures are progressively smaller posteriorly and absent on the delivity. I suspect it is flightless, but have not yet dissected a specimen.

#### Key to the Nearctic species of *Brachycorynus*

1. Pubescence short and appressed to cuticle ..... 2
- 1'. Pubescence long, semi-erect, giving a fuzzy appearance; S. Texas ..... *hirsutus* new species
- 2(1). Rostral base with a short median carina; pronotum shallowly reticulate-punctate; elytral pubescence mostly pale gray and brown with a few paler spots in odd interspaces; S. Florida; Cuba ..... *distentus* (Frieser)
- 2'. Rostral base without a median carina; pronotum irregularly, longitudinally rugate; elytral pubescence less uniform, more strongly variegated or tessellated with pale spots; Pennsylvania to central Florida west to Indiana and Texas ..... *rectus* (Leconte)

#### *Brachycorynus rectus* (LeConte)

(Figure 22)

*Brachycorynus rectus* (Leconte, 1876:395) (*Tropideres*).

**Type locality:** Enterprise, [Volusia Co.], Florida. **New Combination.**

*Tropidoderes rectus*, Donckier de Donceel, 1884: CCCXXVII.

*Goniocloeus rectus*, Wolfrum, 1938:71.

*Piezocorynus rectus*, Wolfrum, 1953:26-27.

*Brevibarra rectus*, Valentine, 1960:67.

The correct generic position for this species has been a problem. The synonymy above lists only the first use of each name combination; many additional references use one of these or state that the generic position of *rectus* is dubious.

Biological data are poor. Single specimens have emerged from *Celtis laevigatus* at Norfolk City, Virginia (H. A. Hespenheide); emerged ex black locust at Athens, Georgia (R. Turnbow); emerged from dead wood *Acer saccharinum* L. at East Baton Rouge Parrish, Louisiana (C. B. Barr). Other collecting methods include beating, light, blacklight trap, and Lindgren funnels with ethanol and *Ips* lure;

all are single specimens except 12 collected by beating at Marianna, Florida by Andrew and Brattain, 4 June, 1994.

#### *Brachycorynus distentus* (Frieser)

(Figure 23)

*Brachycorynus distentus* (Frieser, 1983:53). (*Homocloeus*).

**Type Locality:** "Cuba, Prov. Havana, Playa Marianao. **New Combination.**

The type series in the Museum G. Frey in Germany, (now in Basel, Switzerland) has been studied by me. The species appears widespread in Cuba; in the United States it is known from the southern Florida Counties of Dade, Monroe, Collier, and Charlotte, and Loggerhead Key in the Dry Tortugas. At present, the range does not overlap *rectus* in central Florida northward.

Biological data are fragmentary. Single specimens are from dead red mangrove branch from Bill Finds Key, Florida. (E. O. Wilson & R. H. MacArthur); "at *Avicennia nitida*" in Everglades National Park (H. A. Denmark), and "issued 28-iii-1919 ex pupa in cell under dead bark of *Lysoloma* tree top branch" from Paradise Key in Royal Palm National Park (H. Barber). The species used to be abundant in Matheson Hammock, south Miami, where many specimens have been taken by hand picking off dead branches at night, and beating dead branches and bunches of dead leaves.

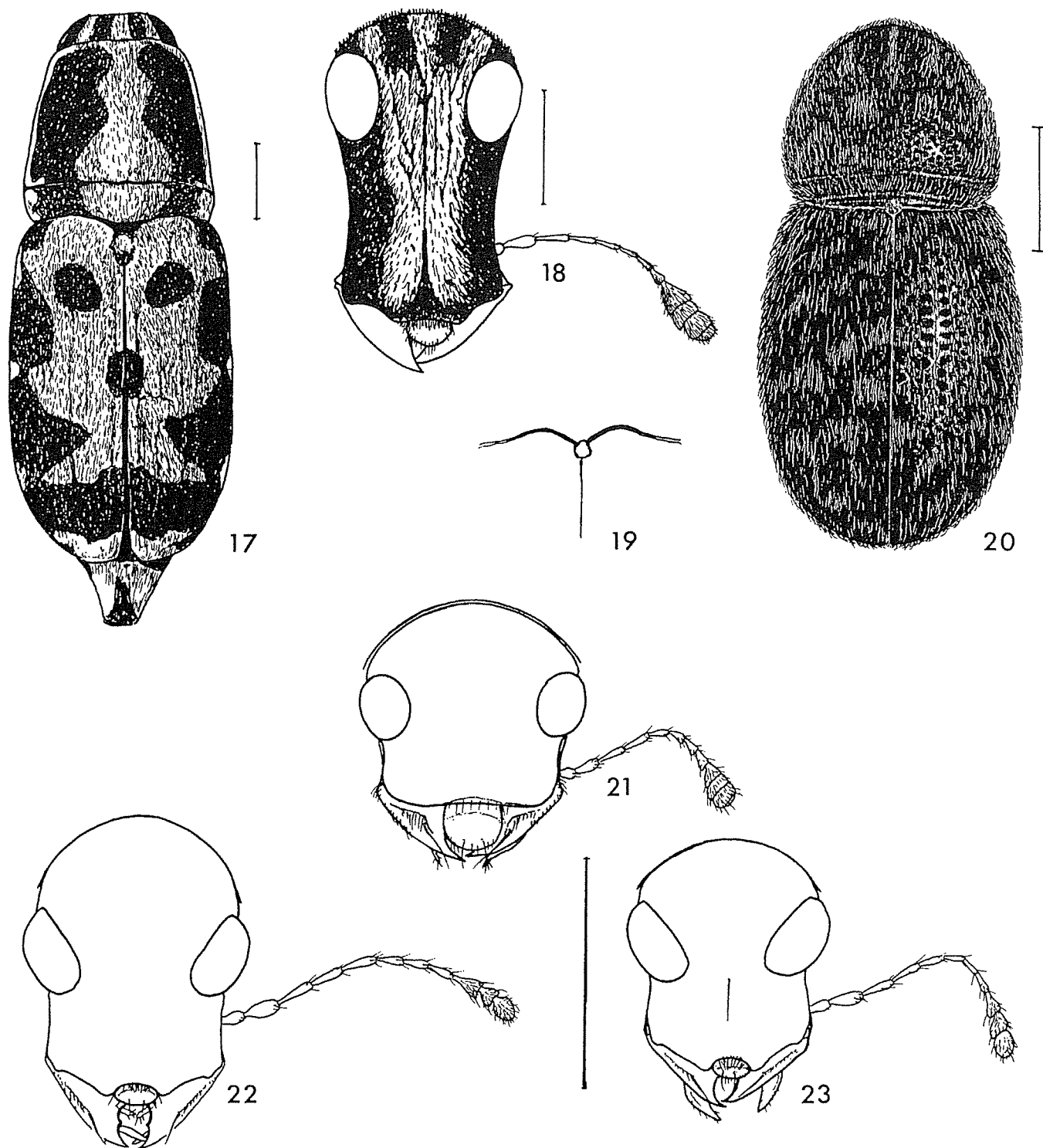
#### *Brachycorynus hirsutus* Valentine, n. sp.

(Figures 20, 21)

**Holotype**, ♂, allotype ♀, and 2 ♀♀ paratypes, "Texas, Hidalgo Co., Bentsen-Rio Grande State Park, 19-iv-1974," in BDVC.

**Diagnosis:** The only described species with long, semi-erect setae on the body, and elytral striae 9 and 10 separate for their entire length; eyes shorter and wider than the other two species, facet counts are 10-16 x 14-19; lateral carinae and carinulae of prothorax absent.

**Description:** ♂, ♀, length (head excluded) 3.2-3.8 mm, additional variation expected. Body more convex and inflated than the other two species; humerae more rounded, perhaps flightless; elytra widest above base of abdomen; prothorax widest anterior to transverse carina. Cuticle very dark reddish brown, almost black in some specimens, antennae,



**Figures 17-23.** 17-19. *Gymnognathus triangularis* n. sp. ♀ Holotype: Texas, San Patricio Co., 2 mi. ne. Sinton. 20-21. *Brachycorynus hirsutus* n. g., n. sp. ♀ Paratype: Texas, Hidalgo Co. 22. *Brachycorynus rectus* (Leconte) ♂ Florida, Jackson Co., Marianna. Head more downturned than Fig. 23. 23. *Brachycorynus distentus* (Frieser) G Florida, Monroe Co., Upper Key Largo.

mouthparts, and tarsi slightly paler. Pubescence long and shaggy, mixed reddish brown and silvery gray, the gray especially on the dorsum of the head, a small apical and 2 ante-apical spots on pronotum, plus vague irregular groups; on elytra forming irregular tessellations especially in odd interspaces, and most concentrated on humerae and post-medially; venter mostly gray; tibiae weakly browner on basal half or less, tarsi gray. Head with eyes weakly emarginated by scrobes and supra-scrobal carina, rostrum short and broad, longitudinally punctate-rugate, eyes almost round, weakly oblique, facets as in diagnosis, postmentum without a median carina, and transversely grooved at base; antennae short, not reaching pronotal carina; articles 2 and 3 subequal, longer than 1 or 4, 7-8 progressively shorter and each slightly more inflated, 9-11 forming a short, compact, asymmetrical club, apex of 11 pale and obliquely truncate; scrobes lateral, large, filling space between mandibular base and eye. Prothorax much longer dorsally than ventrally, with a complete antebasal transverse carina, no other carinae, notum deeply and closely punctate, the narrow interspaces weakly convex and microreticulate, underside coarsely punctured, antecoxal strip narrow, but about twice as wide as postcoxal. Scutellum very small, with gray pubescence. Elytra bases together evenly concave from shoulder to shoulder, paralleling the pronotal carina; with rows of large, deep, closely placed punctures, sides reflexed so that interstria 9 forms the widest point in dorsal view; epipleuron narrow for entire length, ending about at the level of the pygidial base; apices broadly emarginate, and paralleling the basal rim of the pygidium. Pygidium polished, smooth ( $\sigma$ ), irregularly punctate ( $\varphi$ ), with a large puncture on each side of the basal longitudinal groove, the raised basal margin of the disc undercut, and the lateral and apical raised margin very narrow. Venter with intercoxal process broad, not expanded laterally at apex; mesosternum mostly hidden, but appears impunctate; metasternum between meso- and metacoxae narrower than a mesocoxa, with a few very large punctures, metepimeron linear with a row of a few large punctures; in side view, abdomen flat or weakly concave, sternites with a basal row of large punctures. Legs with hind femora not reaching pygidium ( $\varphi$ ) or reaching it ( $\sigma$ ), tarsi narrow, slightly longer than  $\frac{1}{2}$  a tibia, claws toothed. Male with slender apical spine on inside of mid tibia, claws of fore and mid tarsi unevenly cleft; abdomen shorter, more concave in lateral view, pygidium longer and narrower. Female without an apical spine on midtibia, all claws with a large tooth, abdomen longer

and flat or less concave, pygidium shorter and wider. See also differences in hind femur length and pygidial sculpture above.

**Distribution:** Known only from Hidalgo Co., Texas.

**Specimens Examined:** 1  $\sigma$ , 3  $\varphi\varphi$ , mentioned above, in BDVC; 1 paratype, Texas, Hidalgo Co., in OSUC; 2 paratypes, Texas, Hidalgo Co., Bentsen St. Pk. 11 Oct. 1977 N.M. Downie, in BDVC and CNHM.

**Remarks:** This species appears discontinuously different from the two previous species, and from the undescribed Antillean congeners; however, undescribed species from Central America bridge the gaps. Without the Central American taxa *B. hirsutus* could be a separate, monotypic genus.

The original handwritten labels have a black border and are large and cumbersome, they read "Tex. Hidalgo Co./Bentsen Pk./IV-19-1974." I have replaced these with printed labels (quoted for the holotype), and have retained an original label, folded, on the holotype pin.

Unfortunately, the collector's name is not given, and I do not remember which of dozens of exchanges produced the type series. I suspect that like others in this genus, the present species will be taken by beating dead branches and bunches of dead leaves and vines. I have collected series of *Brachycorynus*, *Phaenotheriopsis*, and *Piezobarra* using these techniques, in no case was there any obvious association with fungi.

#### *Goniocloeus* Jordan, 1904

*Goniocloeus* Jordan, 1904:260. **Type species:** *Goniocloeus baccatus* Jordan, 1904:261, by original designation.  
*Strabus* Jekel, 1860:239. **Type species:** *Anthribus aculeatus* Fabricius, 1801: 409, by original designation. Preoccupied by *Strabus* Gerstaecker, 1860: 380, in Curculionidae. **New Synonymy.**  
*bimaculatus* (Olivier, 1795:genus 80, no. 19) (*Macrocephalus*).  
 =*barberi* (Pierce, 1930:13) (*Tropideres*). Synonymy by Valentine, 1961:34.

This is a large Neotropical genus with one species in eastern United States. See the key and discussion under *Trachytropis* for additional details. Our species ranges from Ontario to Florida west to Wisconsin, Kansas, and Texas, as well as near Gomez Farias, Tamaulipas, Mexico (R. Turnbow)(R. Anderson). First records for Mexico.

I have collected 3 *G. bimaculatus* in Ohio on *Biscogniauxia* sp. fungus on winter-killed sugar maple, 3 on *Xylaria* sp. fungus, 2 on *Diatrype* sp. fungus, and single specimens under bark and on a



fence post in a field. Singles from Maryland collected by E. J. Ford mention "ex osage orange" and "dead maple." Karl Stephan took a series in Oklahoma "under bark of large dead oak;" the October to January dates suggest they were hibernating.

### *Trachytropis* Jordan, 1904

*Trachytropis* Jordan, 1904:266. **Type species:** *Trachytropis asper* Jordan, 1904:266, by original designation and monotypy. *arizonicus* (Sleeper, 1954:117) (*Ischnocerus*).

This genus is discussed by Valentine (1960:72-74). In the Nearctic fauna, this and *Ischnocerus* are the only multituberculate (more than 3 per elytron) taxa. They differ in that *Trachytropis* has the mesosternal intercoxal process widened at apex and the lateral prothoracic carina ends in a flattened tubercle. *Trachytropis* and *Goniocloeus* share the flared intercoxal process, the sinuately lobed elytral bases, and many Neotropical *Goniocloeus* are multituberculate. They differ in the tuberculate apex of the lateral carina and the depressed or concave pronotal disc (with or without a central tubercle) of *Trachytropis*. In 50 years I have seen only five specimens: Jordan's type female of *asper* from District Federal, Mexico, one female from Huachuca Mts., Cochise Co., Arizona, one female from Madera Canyon, Santa Cruz Co., Arizona, and one male from San Jose, Costa Rica. The four non-type specimens are very similar but appear to represent four different species. None have been compared carefully with the Jordan or Sleeper types. There are no biological data.

### *Gonotropis* Leconte and *Eurymycter* Leconte

In 1960, these two genera of Tropiderini were synonymized by me with *Tropideres* Schoenherr, 1823. Examination of more species convinces me to reverse this decision and reinstate them as valid genera. In this I am supported by European and Japanese workers who have a richer fauna.

*Gonotropis* Leconte, 1876:393. **Type species:** *Gonotropis gibbosus* Leconte, 1876, by monotypy. **Resurrected generic status.**

In the Nearctic fauna, this Holarctic genus can be recognized by the smooth, shallow, median, longitudinal groove on the posterior half of the

pronotum. In addition, the antebasal transverse carina of the pronotum is very irregular and angulate towards the scutellum in the center, the elytra have a strong subbasal crest in the third interspace, and the face has dense, mostly white or creamy pubescence.

Frieser (1981:56, 57, fig. 14, 15), working primarily with European material, recognizes two circumpolar "forms" of our species which he calls *Tropideres dorsalis dorsalis* Thunberg, and *T. d. gibbosus* Leconte. I have two specimens of each, identified and donated by him, from the same locality in Germany: Bavaria, Chiemgau, Grassau Moor, collected by Ettenberger. The two he referred to typical *dorsalis* were taken on *Betula alba* the two *gibbosus* on *Rhamnus frangula*. I also have a teneral specimen from Florissant, Colorado reared from *Alnus tenuifolia*; one from Madison, Wisconsin with a long label: "Hybrid poplar, Madison Wis. Beetle issued from callous around a canker. Aug. 1952 Dr. Waterman, Pathologist New Haven, Conn. Sent by J. V. Schaffner, Jr." and one from Creston, British Columbia has "ex *Populus trichocarpa*." Mr. Charles Leng (1918b:115) "... exhibited *Gonotropis gibbosus* Lec., collected on dead hemlock at Peterborough, Ont., in July, by Mr. Frank R. Morris." at the 26 November, 1917 meeting of the New York Entomological Society. D. G. Kissinger (1953:14) collected a series of about 30 specimens at Stony Creek Mills near Reading, Pennsylvania by beating the dead limbs of large fallen, old, hemlock trees, and I collected a dozen specimens on the trunk of a large dead hemlock at Dryden, New York. This plant diversity is unusual; however all the specimens, are very similar, except the birch pair from Germany which are darker and have slightly reduced pale markings on pronotum and elytra.

In 1960 I synonymized *G. gibbosus* Leconte, 1876 with "*Tropideres dorsalis* (Thunberg, 1796: 146)" using the author and date accepted in Europe. I have since seen a copy of Thunberg's paper, it is a list of manuscript names for specimens donated to the Museum Naturalium Academiae Upsaliensis, so *Anthribus dorsalis* Thunberg is a *nomen nudum* and is not valid. The first description known to me is by Paykull (1792, *Monographia Curculionum Sveciae*, p. 121) who describes it as an unnamed variety of *Curculio albirostris* Fabricius. Gyllenhal (1813 *Insecta Svecica*, 1(3):5) using the name *Anthribus dorsalis*, cites Thunberg, 1796, and Paykull's *Anthribus albirostris* variety b, thus finally linking the name *dorsalis* with a published description. He also redescribes it and establishes the type locality: "Habitat in Svecia Australi frutetis, rarius."

The questions of relationship and nomenclature of *Gonotropis gibbosus* Lec. (type locality: Colorado) and *Gonotropis dorsalis* (Gyllenhal) (type locality: southern Sweden) are not resolved. If they are synonyms, *dorsalis* has many years priority. If they are sibling species and both are Holarctic (as accepted by Frieser), the identity of Gyllenhal's types will determine which gets the name *dorsalis*, and whether or not *gibbosus* remains valid or becomes a synonym. If types have survived, they should be in the Schoenherr collection in Stockholm.

Since Frieser (1981:57) recognizes two sympatric "Formen" of *dorsalis* in Germany, and forms have no nomenclatorial status, I am returning Nearctic *gibbosus* Lec. to full specific status. The identity of *dorsalis* (Gyll.) will determine if this is correct. Our species ranges from Newfoundland to Pennsylvania west to Wisconsin, and from Colorado to Northwest Territory.

### *Eurymycter* LeConte

*Eurymycter* Leconte, 1876:394. **Type species:** *Macrocephalus fasciatus* Olivier, 1795:9, pl. 1, fig. 9, by monotypy. **Resurrected generic status.**

Our three species of *Eurymycter* stand out in a collection due to the very broad, irregular white band crossing the elytra above the declivity. Also the pronotum has the short, antemedian transverse, sinuous groove characteristic of most genera in the tribe Tropiderini, and the face is white pubescent from between the eyes to the scrobes or beyond. Our species are keyed in Valentine (1960); additional distribution data are: *fasciatus* (Olivier) from Quebec to Florida west to Iowa and Texas, plus Idaho, Washington, and British Columbia; *latifascia* Pierce from Nova Scotia to the mountains of North Carolina and Tennessee; *tricarinatus* Pierce from Quebec to North Carolina west to Illinois and Arkansas. The last species is known to feed on the Xylariaceous fungi *Daldinia* and *Hypoxydon*.

### *Toxonotus* Lacordaire, 1866

*Toxonotus* Lacordaire, 1866:575. **Type species:** *Anthribus fascicularis* Schoenherr, 1833:133, by monotypy. *Anthribus* of many authors, not Geoffroy, 1762:306. *Neanthribus* Jordan, 1906:341. **Type species:** *Neanthribus championi* Jordan, 1906:342, by original designation. Synonymy by Valentine, 1960:65. *Pseudanthribus* Pierce, 1930:22, 24. **Type species:** *Anthribus cornutus* Say, 1831:4, designated by Anderson, 1947:504. Synonymy by Valentine, 1960:66.

New synonyms and the addition of Mexican *T. vagus* (Horn) to our fauna are clarified here.

*bipunctataus* (Schaeffer, 1904:235) (*Anthribus*). **Type locality:** "Brownsville, Texas (Esperanza Ranch and San Tomas)," in USNM.

=*obtusus* (Jordan, 1906:343, pl. 12, fig. 21, 21a) (*Neanthribus*) **Type locality:** Panama: "David, Bugaba, Tolé (Champion)." In the British Museum, the Bugaba specimen bears Jordan's type label and is the specimen illustrated; I here designate it Lectotype. **New Synonymy.**

*penicellatus* (Schaeffer, 1904:236) (*Anthribus*). **Type locality:** "Brownsville, Texas (Esperanza Ranch)," in USNM.

=*segregus* (Jordan, 1906:343, pl. 12, fig. 19, 20a) (*Neanthribus*) **Type locality:** "Guatemala: Torola (Champion)." **New Synonymy.**

Topotypic specimens compared with Schaeffer types were compared with Jordan types in London, confirming the above synonymies. The Schaeffer species, previously known only from Cameron and Hidalgo Counties, Texas, now extend into Central America, *bipunctatus* in Mexico, Guatemala, and Panama, and *penicellatus* in Mexico, Belize, and Guatemala.

*vagus* (Horn, 1894:359, 448) (*Anthribus*). **Type locality:** Mexico, Baja California Sur, "El Taste." See Valentine (1972b:3) for more details, distribution, and recognition features.

=*hieronymus* Jordan, 1906:343, pl. 12, fig. 20, 19a. (*Neanthribus*) **Type locality:** Guatemala, San Geronimo (Champion). **New Synonymy.**

Jordan overlooked Horn's description when he wrote the anthribid section of the *Biologia*, creating the synonym. Specimens from Baja California were compared with Jordan's cotypes from Guatemala and appear conspecific. Jordan says that *hieronymus* (note that this species and *obtusus* are reversed in his key) has no distinct dot at the sutural angles; this is true of a few specimens, but most have two well-developed black spots, plus the usual sutural black dash.

This species occurs in Cochise and Santa Cruz Counties, Arizona; Hidalgo County, New Mexico; and in Mexico in the states of Baja California Sur, Sonora, Nayarit, Sinaloa, Oaxaca, Morelos, Jalisco, and Chiapas. It comes to light, but there are no other biological data.

### Key to Nearctic Species of *Toxonotus*:

1. Pronotum, elytra, and tibiae without erect tufts or fringes; rare; known from scattered specimens from Virginia to Florida west to Illinois, Missouri, and Arkansas..... *lividus* (Leconte)
- 1'. Pronotum, elytra, and tibiae with erect tufts and fringes of scale-like setae ..... 2
- 2(1). First article of all tarsi with a dorsal, apical spine which may be partially hidden by long pubescence; Florida, Bahamas, Cuba .....  
..... *fascicularis* (Schoenherr)
- 2'. First article of all tarsi without a spine ..... 3
- 3(2). Apical margin of pronotum without a pair of erect scale tufts ..... 4
- 3'. Apical margin of pronotum with a pair of erect scale tufts ..... 5
- 4(3). Sides of prothorax with a longitudinal ridge from apex of lateral carina to anterior margin; southern Texas, Mexico to Panama .....  
..... *bipunctatus* (Schaeffer)
- 4'. Sides of prothorax without a longitudinal ridge anterior to the lateral carina; Arizona and New Mexico, south to Chiapas ..... *vagus* (Horn)
- 5(3). Central pronotal tuft much larger than lateral discal tufts; dark sutural tessellations oblique; no transverse patch of dense white setae crossing suture between first two large tufts in interspace 3; southern Texas to Guatemala .....  
..... *penicellatus* (Schaeffer)
- 5'. Central pronotal tuft barely or not larger than lateral discal tufts; dark sutural tessellations transverse or obscure; elytra usually with a transverse patch of dense white setae crossing suture between the first two large tufts in interspace 3; New Jersey to Florida west to Illinois and Texas, northern Mexico .....  
..... *cornutus* (Say)

Most specimens are taken at lights, or by beating dead branches, apparently without associated fungi. Host tree information is surprisingly sparse; there are no data for *T. bipunctatus* and *penicellatus*. *Toxonotus fascicularis* is recorded "on *Lysiloma*" and on dead gumbo limbo in south Florida; *T. cornutus* has been found "boring in *Diospyrus*" in Florida, "ex *Prosopis*" in Texas, "ex pith mine dead white oak seedling" in Ohio, and my wife and I took a series of 10 specimens near Hattiesburg, Mississippi by beating branches of small oak trees. *Toxonotus vagus* was taken by "beating dead *Prosopis* on beach" in Jalisco, Mexico, and *T. lividus* was found "on *Arundinaria gigantea* (Walt)" 3 miles west of Slade, Powell Co., Kentucky.

### *Phoenicobiella* Cockerell, 1906

*Phoenicobius* Leconte, 1876:400. **Type species:** *Phoenicobius chamaeropsis* Leconte, 1876:401, by monotypy. Not Moersch, 1852:32, in Mollusca.

*Phoenicobiella* Cockerell, 1906:243. Replacement name for *Phoenicobius* Leconte.

*chamaeropsis* (Leconte, 1876:401) (*Phoenicobius*).  
*schwarzi* (Schaeffer, 1906:273) (*Phoenicobius*).

Two genera in our fauna, *Phoenicobiella* and *Anthribus* have the lobes of tarsal article 3 fused down the center. In the former, these lobes are greatly enlarged and assist traction on the smooth, dead palm (*Sabal*) petioles in which they breed. In *Anthribus*, the lobes are not unusually enlarged, the body is short and fat; and the rostrum lacks a basal pit or groove. *Phoenicobiella* has three species and possibly a fourth. The species *trituberculata* (Suffrian, 1870:172) (*Toxonotus*) New Combination, was described from Cuba, and I have seen one unidentified specimen labeled "Mex."

*Phoenicobiella chamaeropsis* is now known to occur in coastal South Carolina, Georgia, and Louisiana, and apparently throughout Florida where *Sabal* occurs; I have recorded it (Valentine, 1955) from the Bahamas. *Phoenicobiella schwarzi* is known only from the Brownsville area of extreme south Texas (on *Sabal texana*), and the adjacent Mexican state of Tamaulipas. First record from Mexico.

### *Eugonus* Schoenherr, 1833

*Eugonus* Schoenherr, 1833:3, 144. **Type species:** *Eugonus virgatus* Gyllenhal, 1833:145, by original designation and monotypy.

*Schimatocheilus* Dejean, 1834:236. Proposed without valid species. Validated by Schoenherr, 1839:171, 172 as a synonym of *Eugonus* Schoenherr, 1833. **Type species:** *Eugonus virgatus* Gyllenhal, 1833:145, by present designation.

*Phaenisor* Motschoulsky, 1874:240. **Type species:** *Phaenisor albofasciatus* Motschoulsky, 1874: 241, by monotypy. Synonymy by Jordan, 1906:350.

Our single species, *Eugonus bicolor* Valentine, 1972b:9, fig. 2a, 2b, from southeastern Arizona is now known to have a wider range: ARIZONA: Cochise Co.: Chiricahua Mts., Dragoon Mts., Cottonwood Canyon, and Huachuca Mts.; Pima Co.: Madera Canyon and Bogs Springs; Santa Cruz Co.: Santa Rita Mts., and Pajarito Mts. MEXICO: Jalisco: 6 km. n. El Tuito, and 20.8 mi. s. Puerto Vallarta. BELIZE: Orange Walk Distr.: Rio Bravo Conservat. Area, vic. La Milpa Field

Station. First Records for Mexico and Belize. See the above reference for generic synonymy. Most specimens were taken at lights; there are no other biological data.

### *Phaenithon* Schoenherr, 1823

*Phaenithon* Schoenherr, 1823:1135. **Type species:** *Phaenithon costatus* Boheman, 1833:158, by original designation. Schoenherr, 1823:1135 presents *Phaenithon* without validly described species. Schoenherr, 1826 again presents *Phaenithon* with *costatus* (still undescribed) as type; Schoenherr, 1833, repeats this and *costatus* is formally described.

*Camaroderes* Jekel, 1855:85. **Type species:** *Camaroderes viduus* Jekel, 1855:88, pl. 1, fig. 4, by original designation and monotypy. Synonymy by Jordan, 1906:355.

*Griburiosoma* Schaeffer, 1906:272. **Type species:** *Griburiosoma platanum* Schaeffer, 1906:273. Synonymy by Valentine, 1960:60.

*platanum* (Schaeffer, 1906:273) (*Griburiosoma*).

The 65 described species are all Neotropical (south to Argentina; none in the West Indies) except *P. platanum*, known only from the Huachuca Mountains of southeastern Arizona. Schaeffer collected the holotype on 27 August on dead branches of sycamore. The red, longitudinally rugate pronotum with mixed black and gray pubescence and the dark elytra with brown and gray pubescence make this a very distinctive member of the fly-mimicking complex described by Hespenheide (1973).

### *Anthribus* Geoffroy, 1762

*Anthribus* Geoffroy, 1762:306. **Type species:** *Anthribus fasciatus* Forster, 1770:5, designated by Jordan, 1931:285, 287.

*Brachytarsus* Schoenherr, 1823:1135, Type species: *Anthribus varius* Fabricius, 1787, (equals *Anthribus nebulosus* Forster, 1771:10) by original designation).

*Anthotribus* Gemminger and von Harold, 1872:2747, emendation.

*Psuedobrachytarsus* Pierce, 1930:29; **Type species:** *Anthribus fasciatus* Forster, 1771:9, by original designation.

Two common European species, both predators on scale insects and their eggs, have been imported into the United States, one survives and is spreading, the other may not have been released for I know of no wild-caught specimens. Both have confusing and extensive synonymies; the main points are summarized below.

*fasciatus* Forster, 1770:5. (*Anthribus*). **Type locality:** England.

*scabrosus* (Fabricius, 1775:64) (*Bruchus*). **Type locality:** "in Anglia."

*marmoratus* Fourcroy, 1785:136. (*Antribus*). **Type locality:** Paris, France.

*fasciatus* var. *ventralis* (Rey, 1893:49) (*Brachytarsus*). No type locality.

*fasciatus* var. *rubripes* (Rey, 1893:49) (*Brachytarsus*). No type locality.

*rufipes* Schilsky, 1907:no. 77. (*Anthribus*). No type locality.

This species (*Anthribus fasciatus* Forster) is mentioned because I have seen a single male labeled "State Insectary/1035A Calif" and "Ex. Lecanium/persicae. Italy."

*nebulosus* Forster, 1770:5. **Type locality:** England.

*clathratus* Herbst, 1786:158. (*Bruchus*). [Not seen.]

*varius* (Fabricius, 1787:42) (*Bruchus*). **Type locality:** Sveciae [Sweden].

*variegatus* Fourcroy, 1785:136. (*Antribus*). **Type locality:** Paris, France.

*capsularis* Scriba, 1790:129. [Not seen.]

*nebulosus* Küster, 1859:457. (*Brachytarsus*). **Type locality:** Germany. Not *nebulosus* Foster, 1770:5.

var. *Küsteri* Reitter, 1916:9. Type locality: not given, evidently Germany. This is a replacement name for *Brachytarsus nebulosus* Küster, 1859:457, which Küster believed was a species separate from *varius* Fabricius.

var. *gavoyi* Chobaut, 1922:86, 88. (*Anthribus*). **Type locality:** France, Hte. Garonne, Montréjean.

This species has been collected in Virginia (Kosztarab and Kozar, 1983, Kosztarab and Rhoades, 1983), and New York, Connecticut, and Massachusetts (Hoebeke and Wheeler, 1991). The Virginia population was imported from Hungary by Kosztarab, and first released at Blacksburg in 1978. An additional release in 1981 at Virginia Beach has apparently not become established. The New England population is considered by Hoebeke and Wheeler to be adventive — an older, accidental introduction. The three above papers contain detailed accounts.

### *Euparius* Schoenherr, 1823

*Euparius* Schoenherr, 1823:1135. **Type species:** *Anthribus lunatus* Fabricius, 1801:409, by monotypy, equals *Macrocephalus marmoreus* Olivier, 1795:genus 80, p. 12, pl. 2, fig. 16, a, b.

*Cratoparis* Dejean, 1834:235. Apparently proposed to replace *Euparius* Schoenherr in the mistaken belief that the Schoenherr name was preoccupied by *Euparia* Serville, 1825:357, in Scarabaeidae.

*Caccorhinus* Sharp, 1891:321. **Type species:** *Caccorhinus oculatus* Sharp, 1891:321, by monotypy. Synonymy by Valentine, 1960:56.

Valentine (1972b:4-8) describes *Euparius pictus* n. sp. from southeastern Arizona, and gives detailed pin label data and a map for *Euparius subtesselatus* Schaeffer, 1906, in Arizona, New Mexico, west Texas, and northern Mexico. There appears to be another new species in southeastern Arizona which is a member of an unresolved complex of small Central American taxa. To work this out, it will be necessary to reexamine Jordan's (1906) *Biologia* species in London.

In my key (1960:58) to Nearctic species, *E. pictus* runs to the second half of couplet 2 where it can be distinguished by an irregular, broad white sutural stripe, widened at both ends and spotted (sometimes even interrupted) with brown, and the white face and pygidium. The illustration in the original description is quite characteristic.

New distribution data are: *Euparius pictus* Valentine: Arizona: Gila Co.: 1 mi. e. Payson; Yavapai Co.; Prescott. Mexico: Sonora: 13 mi. se. Alamos. First Record for Mexico.

*Euparius subtesselatus* Schaeffer: Texas: Jeff Davis Co.: Ft. Davis, Limpia Canyon; Culbertson Co.: Guadalupe Mts. Natl. Park. New Mexico: Hidalgo Co.: Guadalupe Canyon; Animas Mts., Godfrey Place & Double Adobe Creek; Torrance Co.: Clines Corners. Mexico: Sonora: 17 km. sw. Moctezuma.

The three eastern species of *Euparius* are distributed as follows: *lugubris* (Olivier) from District of Columbia to Florida, west to Illinois, Missouri, and Texas; *paganus* Gyllenhal from Quebec to Florida, west to Iowa, Kansas, and Texas; *marmoreus* (Olivier) from Quebec to Florida, west to Manitoba, Montana, Nebraska, and Texas.

Unique among Nearctic Anthribidae, species of *Euparius* feed on polypore fungi, *E. lugubris* on *Pycnoporus cinnabarinus*, *Poria* sp., and *Phlebia hydnoides*, *E. paganus* on *Irpex lacteus*, and *E. marmoreus* on *Trametes hirsutus* and *versicolor*, *Megasporoporia setulosa*, *Trichaptum bifforme*, *abietinus*, and *sector*, *Phlebia hydnoides*, *Panis rudis*, and *Pereniporia medulla-panis*. *Euparius subtesselatus* has been observed eating an unidentified polypore.

### *Trigonorhinus* Wollaston, 1861

*Trigonorhinus* Wollaston, 1861a:102. **Type species:** *Trigonorhinus pardalis* Wollaston, 1861a:103, by monotypy. Wollaston, 1867:138 suggests that the St. Vincent (Cape Verde Archipelago) type locality was probably erroneous, and the species was originally from Algeria. See synonymic note below.

*Trigonorrhinus* Gemminger and von Harold, 1872:2745 (emended spelling).

*Brachytarsus*, of authors, in part, not Schoenherr, 1823:1135.

*Anthribulus* Leconte, 1876:405, 406. **Type species:** *Anthribulus rotundatus* Leconte, 1876:407, by monotypy. Synonymy by Valentine, 1957:9.

*Brachytarsoides* Pierce, 1930:29. **Type species:** *Brachytarsus griseus* Leconte, 1876:405, by original designation. Synonymy by Valentine, 1957:9.

**Note:** *Trigonorhinus pardalis* Wollaston is a junior synonym of the species described as *Brachytarsus areolatus* Boheman, 1845:344, from Sicily. Synonymy by Bedel, 1906:93. The species is essentially circum-Mediterranean: Spain, France, Italy, Yugoslavia, Czechoslovakia, Greece, Tunisia, and Algeria. *Tropideres (T.) baguenai* Cobos, 1954:42, fig. 2, from Spain, is a New Synonym.

This genus is recognized by the basal transverse pronotal carina, notched eyes, progressively narrowed rostrum which has the apical corners emarginate, so that the rostral center is longer than the sides, and separate lobes of all third tarsal articles.

Although Holarctic, *Trigonorhinus* has radiated in the New World, ranging from Canada to Argentina with maximum diversity in the United States. Thirty five names have been proposed for New World taxa, but I am here reducing this to 12 species and adding a thirteenth. Examination of 30 of the 31 existing holotypes (or cotypes) and about 10,000 specimens, has been a mixed blessing. Many cases of obvious synonymy are balanced by new problems and unresolved questions.

The two Old World species appear very different from each other because they fall at opposite extremes of intrageneric variation; they are connected by a graded sequence of New World taxa. The Palearctic species are *T. areolatus* (Boheman, 1845:344) (*Brachytarsus*) type of the genus, from the Mediterranean region, and *T. dolgovi* (Korotyaev, 1977:373) (*Brachytarsus*) from Mongolia. The former is the largest and most distinct member of the group with annulate tibiae, the latter is very close to our *T. sticticus* (Boheman) at the other end of the generic continuum.

Another relative of *T. sticticus* is *T. zeae* (Wolfrum, 1931:75) described in *Brachytarsus*, from Argentina. This species appears to extend north to Mexico and is there replaced by *sticticus* and another relative, *T. nigromaculatus* (Schaeffer, 1906:277) (*Brachytarsus*); *sticticus* from northern Mexico to Canada, and *nigromaculatus* in our desert southwest. *Trigonorhinus zeae* is the most wide-spread species in the genus, and has been redescribed twice, apparently based on introduced specimens, from the Atlantic Ocean island of Madeira (Hoffmann, 1963:128) and Tokyo, Japan (Senoh, 1986:706).

The World species of *Trigonorhinus* are:

*areolatus* (Boheman, 1845:344) (*Brachytarsus*) var. *pantherinus* (Lucas, 1846:406; pl. 35, fig. 4a-d) (*Brachytarsus*).

*pardalis* Wollaston, 1861a:102.

*baguenai* (Cobos, 1954:42; fig. 2) (*Tropideres*). **New synonymy.**

*alternatus* (Say, 1827:250) (*Anthribus*).

*strigosus* (Jordan, 1907:379) (*Brachytarsus*).

*championi* (Jordan, 1906:378) (*Brachytarsus*).

*ornatus* (Schaeffer, 1906:276) (*Brachytarsus*).

*ornatellus* (Wolfrum, 1929:99) (*Brachytarsus*).

*annulatus* (Carr, 1930:279) (*Brachytarsus*).

*lepidus* Valentine, n. sp.

*tomentosus* (Say, 1827:251) (*Anthribus*).

*brevis* (Fahraeus, 1839:168) (*Brachytarsus*).

*paululus* (Casey, 1885:194) (*Brachytarsus*). **New synonymy.**

*beyeri* (Schaeffer, 1906:277) (*Brachytarsus*). **New synonymy.**

*franzeria* (Barrett, 1931:188) (*Brachytarsus*). **New synonymy.**

*irregularis* (Tanner, 1934:285) (*Brachytarsoides*). **New synonymy.**

*limbatus* (Say, 1827:250) (*Anthribus*).

*plumbeus* (Leconte, 1876:406) (*Brachytarsus*). **New synonymy.**

*vestitus* (Leconte, 1876:406) (*Brachytarsus*). **New synonymy.**

*naviculus* (Jordan, 1907:379) (*Brachytarsus*). **New synonymy.**

*rufodorsalis* (Dethlefsen, 1954:58) (*Brachytarsoides*). **New synonymy.**

*minor* (Dethlefsen, 1954:58) (*Brachytarsoides*). **New synonymy.**

*quadratus* (Dethlefsen, 1954:59) (*Brachytarsoides*). **New synonymy.**

*quadratus nigrinus* (Dethlefsen, 1954:60) (*Brachytarsoides*). **New synonymy.**

*griseus* (Leconte, 1876:405) (*Brachytarsus*).

*riddelliae* (Schaeffer, 1906:277) (*Brachytarsus*). **New synonymy.**

*cylindricus* (Dethlefsen, 1954:53) (*Brachytarsoides*). **New synonymy.**

*elongatus* (Dethlefsen, 1954:54) (*Brachytarsoides*). **New synonymy.**

*nevadensis* (Dethlefsen, 1954:55) (*Brachytarsoides*).

**New synonymy.**

*nevadensis tigrinus* (Dethlefsen, 1954:56) (*Brachytarsoides*). **New synonymy.**

*vulgaris* (Dethlefsen, 1954:57) (*Brachytarsoides*). **New synonymy.**

*secundus* (Wolfrum, 1931:75) (*Brachytarsus*).

*dolgovi* (Korotyaev, 1977:373) (*Brachytarsus*).

*sticticus* (Boheman, 1833:172) (*Brachytarsus*).

*variegatus* (Say, 1827:251) (*Anthribus*), not Fourcroy, 1785:136.

*obsoletus* (Fahraeus, 1839:167) (*Brachytarsus*).

*strictus* (Zimmerman, 1936:191) (*Brachytarsus lapsus* for *sticticus*).

*zeae* (Wolfrum, 1931:75) (*Brachytarsus*).

*lindbergi* (Hoffman, 1963:128) (*Tropideres*, subgenus *Eneuteeres* [sic]). Synonymy by Valentine, 1972a:356.

*trimaculatus* (Senoh, 1986:706, fig. 1) (*Opanthribus*)

**New synonymy.**

*nigromaculatus* (Schaeffer, 1906:277) (*Brachytarsus*).

*rotundatus* (Leconte, 1876:407) (*Anthribulus*).

The nine taxa described by Dethlefsen (1954) highlight a complex example of introgressive hybridization. Two distinct, geographically variable, allopatric species, mostly eastern *limbatus* (Say) and western *griseus* (Leconte) have become sympatric and hybridized due to the spread of a foodplant: bitterweed or sneezeweed (*Helenium amarum* Raf. (M. Rock)). Adults of both species feed on the pollen of this and related composites, and the larvae bore in the flower receptacles and upper stems. The hybrid swarm, centered in eastern Texas, created an astonishing variety of phenotypes; in some collections from 1900 to 1915, no two specimens are alike. From this genetic stew, a set of dominant phenotypes has emerged which is slowly replacing the parental and hybrid phenotypes and is spreading beyond the original range of the parents. Although variable (geographic? host induced?), this is basically the insect named *vestitus* (from Louisiana) by Leconte. This overview has many additional details. Say's *limbatus* was redescribed by Leconte as *plumbeus* (middle states) and by Dethlefsen as *quadratus* and *quadratus nigrinus* (both from Trinity Co., California). Leconte's *vestitus* (Louisiana) was redescribed by Dethlefsen as *minor* (Arkansas). Jordan's *naviculus* (Guatemala) is the Central American population, and Dethlefsen's *rufodorsalis* (Texas) is part of the hybrid swarm. Leconte's *griseus* (Colorado) is variable from north to south and east to west; four taxa: Schaeffer's *riddelliae* (Arizona) and Dethlefsen's *cylindricus* (Texas), *nevadensis* (Nevada), and *nevadensis tigrinus* (southern California) are smaller phenotypes from the southwest. Dethlefsen's *elongatus* (Texas) is part of the hybrid

swarm, and his *vulgaris* (Texas) is part of the most northeastern population which extends into Kansas, and is the largest and darkest of the *griseus* complex. Extensive documentation of this scenario, including detailed localities, dates, collectors, host plants, and summaries of old herbarium data, is in my files in Columbus, Ohio. References to the distribution and rapid spread of *Helenium* can also be found in such works as Harper (1944) and Caplenor (1967).

The new synonyms of *T. tomentosus* are due to geographic and seasonal variation involving clines from north to south, east to west, and summer to fall. In New England, summer patterns are unusually brown with few or no gray spots, fall patterns are brown with gray spots or darker. The most overlap appears to center in August. In the mid-Atlantic states, summer patterns are usually brown with gray spots, and in the fall, gray with brown spots. In the deep south, summer forms tend to gray with brown spots, and fall specimens are often solid gray. In California a similar pattern is emerging, superimposed on a size cline. I verified the eastern pattern in September, 1952, by driving and collecting from New York to Florida in one week. Series were easy to obtain because adults feed on the pollen of common ragweed (*Ambrosia artemisiifolia* (L.)), oviposition is in the male flowers, and larvae bore in the stems. Examination of over 1,000 specimens of this species verifies the general pattern outlined above, but also makes clear that contrary individuals or populations appear anywhere and any time in the range. The synonyms of *T. tomentosus* are: *brevis* Fahraeus (from eastern Pennsylvania), and *paululus* Casey (Milford, Delaware) are normal, northern *tomentosus* with more brown than gray, Casey's types being slightly smaller than average; *beyeri* Schaeffer from the southern tip of Baja California is the largest and is gray with brown spots; *franseria* Barrett (Hueneme, California) is smaller and averages browner; and *irregularis* Tanner (Logan Canyon, Utah) resembles *franseria* but has redder tibiae. Additional populations in southern Arizona, southern California, northern California, Mexico, and Central America, show a similar mixing of size, color, and pattern. At present, the southernmost locality is Progreso, Honduras.

*Trigonorhinus ornatus* (Schaeffer) (Buckskin, Utah) is on less firm ground than the other species. Schaeffer's unique type lacks the head and prothorax; since he stated that his species differs from all others due to the presence of a longitudinal pronotal carina extending from the base nearly to the middle, correct identity of his species is less certain. It appears close to *T. annulatus* (Carr) (Medicine Hat,

Alberta), but I have not compared specimens side by side. For the present, I am retaining *ornatus* and *annulatus* as separate species.

#### Key to the North and Central American species of *Trigonorhinus*

1. Tibiae biannulate or spotted with dark ..... 2
- 1'. Tibiae without dark annulae or spots ..... 7
- 2(1). From elongate, pronotal width contained in length 2.4 to 2.8 times ..... 3
- 2'. Form robust, pronotal width contained in length 1.9 to 2.3 times ..... 5
- 3(2). Antennae with 10 articles; pronotum with large punctures separated by microgranulate raised rims; southern California ..... *lepidus* n. sp.
- 3'. Antennae with 11 articles; pronotum with large punctures separated by smooth rims ..... 4
- 4(3). Basal half of pronotal midline weakly carinate; Utah ..... *ornatus* (Schaeffer)
- 4'. Basal half of pronotal midline not carinate; British Columbia, Alberta to California and Colorado. Note: carinal variation may invalidate this distinction ..... *annulatus* (Carr)
- 5(3). Pronotal disc with distinct longitudinal rugae .... 6
- 5'. Pronotal disc with shallow, unevenly placed punctures; southern Canada, entire United States ..... *alternatus* (Say)
- 6(5). Hind angles of prothorax simple; eyes almost flush with head capsule; Texas to Nicaragua. [Note: Variable development of pronotal rugae suggests that this species may be a synonym of *alternatus* (Say)] ..... *strigosus* Jordan
- 6'. Hind angles of prothorax with a carinal fragment forming a small lobe below the junction of dorsal and lateral carinae; eyes strongly protruding above surface of head capsule; Guatemala to Panama ..... *championi* (Jordan)
- 7(1). Pronotum widest at apices of transverse carina . 8
- 7'. Pronotum widest anterior to transverse carina 14  
[Note: variable species can be keyed through either couplet.]
- 8(7). Maximum body width contained in length 2.25 times or less; form relatively short and fat .... 9
- 8'. Maximum body width contained in length 2.25 times or more, form relatively elongate ..... 10
- 9(8). Maximum body width contained in length 2.0 to 2.25 times; coxites of female ovipositor with apical tooth much longer than either of the two more basal teeth, and longer than the stylus; male aedeagus in lateral view with dorsal and ventral surfaces sub-parallel,

- the apex diagonally truncate; New York to Saskatchewan and Washington, south to Honduras ..... *limbatus* (Say)
- 9'. Maximum body width contained in length 1.8 to 2.2 times; coxites with all three teeth subequal, and apical tooth shorter than stylus; aedeagus in lateral view with dorsal and ventral surfaces progressively convergent to apex; Quebec to Oregon south to Honduras ..... *tomentosus* (Say)
- 10(8). Pronotal cuticle red; southern parts of New Mexico, Arizona, and California, to Sonora .....  
..... *nigromaculatus* (Schaeffer)
- 10'. Pronotal cuticle brown to piceous ..... 11
- 11(10). Elytra with a shared, mid-sutural brown spot or field ..... 12
- 11'. Elytra each with a prominent brown spot mostly in interspaces 2 or 3 to 5, or these spots absent 13
- 12(11). Prothorax with a short but well-developed lateral carina; Mexico to Argentina ..... *zeae* (Wolfrum)
- 12'. Prothorax with lateral carina vestigial or absent; Maine to Illinois south to Florida, Texas, and Michoacan ..... *rotundatus* (Leconte)
- 13(11). Each elytron with a prominent discal brown spot; Quebec to British Columbia south to Oaxaca ....  
..... *sticticus* (Boheman)
- 13'. Each elytron without a prominent discal brown spot; sometimes a dark sutural stripe present; Alberta and Kansas southwest to southern California and Coahuila ..... *griseus* (Leconte)
- 14(7). Elytra with a shared mid-sutural brown spot or field ..... 12
- 14'. Elytra each with a discal brown spot ..... 15
- 15(14). Pronotal cuticle red; see couplet 10 for distribution ..... *nigromaculatus* (Schaeffer)
- 15'. Pronotal cuticle brown or piceous; see couplet 13 for distribution ..... *sticticus* (Boheman)

***Trigonorhinus lepidus* Valentine, n. sp.**

Figure 16.

**Holotype** ♂, Allotype ♀, and six paratypes: California, Riverside County, Riverside, 15-xi-1955, P. H. Timberlake, ex *Artemesia californica*; holo-, allo-, and 3 paratypes in UCRC, 3 paratypes in BDVC.

**Diagnosis:** The only species of *Trigonorhinus* with 10 instead of 11 antennal articles. Slender (length/width in three specimens: 2.63, 2.72, 2.75); lateral prothoracic carina absent; a longitudinal pale field on each elytron partially interrupted by a large dark-

brown median spot; basal and humeral spots either present or poorly defined; tibiae with a dark spot on each side of the central paler area, these not forming complete rings.

**Description:** ♂, ♀, length (head excluded) 2.8-3.1 mm, additional variation expected. General facies of *Trigonorhinus annulatus* (Carr) but smaller and pronotum lacks rugate-punctate sculpture, instead *T. lepidus* has deep punctures without raised rims, the spaces between microgranulate.

Head with shallow punctures separated by distances equal to their diameters or more, becoming slightly elongate on the frons, and replaced by small, deep, closely set punctures on the beak. Prothorax as wide or slightly wider than long, sides subparallel along basal half, then narrowed to apex; base strongly arcuate and hind angles not or only scarcely flared; lateral carinae absent, but there can be an angulation where the carina would be; pronotal punctuation discussed above. Elytra emarginate to coincide with the arcuate base of the prothorax; striae impressed, with elongate, deep punctures; subbasal concavity of *T. annulatus* absent; sutural area slightly depressed on apical declivity. Venter with scattered coarse punctures. Dorsal integument varies from brown to almost piceous; venter slightly darker; legs similar to dorsum. Pubescence of pronotum strongly suggestive of *T. annulatus*, with traces of three longitudinal pale stripes and a transverse median one; remaining thoracic vestiture primarily dark brown, with some variegation due to pale brown and gray setae which are most prominent laterally. Elytral pattern very distinctive, three colors standing out clearly enough that they can be viewed with the unaided eye; sutural and lateral areas broadly edged with pale brown, tessellated with dark brown; between these darker areas is a more or less distinct discal field or stripe of white pubescence tessellated with dark brown, and a large dark brown median spot which partially interrupts both the sutural brown area and the adjacent white stripe; the white stripe originates at base of the fifth interspace and then becomes more diffuse; in some it spreads to include parts of the third through seventh interspaces, in others the white pubescence is mainly limited to interspaces 3, 5, and 7; the fourth and sixth interspaces are primarily pale brown with scattered white setae, and in all specimens seen, the bases of interspaces 2, 3, and 4 are darker than the surrounding area, but not as dark as the large median spots. Ventral pubescence gray, with brown spots at the lateral edge of each abdominal sternite. Femora covered with gray pubescence; tibiae alternate three gray areas with two brown ones.



The biology and ecology of this species are incompletely known. Dr. Timberlake wrote that the type series from the Citrus Experiment Station at Riverside was taken from stem galls on sagebrush, *Artemisia californica*. He said that the galls were "very evidently not formed by the anthribid. There was no evidence of any other insect inhabitant . . ." He presumed that ". . . The gall was of bacterial origin, like a crown gall," and that "Old galls were well riddled by the anthribid, but some newer ones had not become infested." This is the only information available. Another species, *Trigonorhinus annulatus* (Carr), has also been associated with sagebrush, but Carr did not know if this was obligatory.

**Distribution:** *Trigonorhinus lepidus* is known from five localities in southern California, four are in the Los Angeles-San Bernadino area and one is about 50 miles southeast of Monterey.

**Specimens examined:** 14 from southern California, collected in April, October, and November. Eight are listed above, six additional paratypes are: California: (2) Los Angeles County, Claremont, 7-X-1922, J. G. Needham (CUIC); (1) Los Angeles County, San Dimas, 23-IV-1892 (Fall collection, MCZC); (1) San Bernardino County, San Bernardino (BDVC); (2) San Benito County, 5 mi. S. Bitterwater, 1-IV-1959, C. W. O'Brien (BDVC).

This species is one of very few anthribids with ten segmented antennae. It's nearest relatives in both morphology and geography are *Trigonorhinus annulatus* (Carr) and *Trigonorhinus ornatus* (Schaeffer), which occur several hundred miles to the north and east, and have the customary 11.

### *Araeoderes* Schaeffer, 1906

*Araeoderes* Schaeffer: 1906:275. **Type species:** *Araeoderes texana* Schaeffer, 1906:276, by monotypy.  
*texanus* Schaeffer, 1906:276.

This is a monotypic genus known only from Brownsville and Victoria, Texas, the former in July, the latter in April. It is part of a Neotropical generic complex including *Anthrenosoma* Jordan (1904:281), *Scymnopsis* Jordan (1904:282), and more distant, *Eusphyrus* Leconte (1876:399), *Ormiscus* Waterhouse (1845:37), *Eugonops* Jordan (1904:285), and *Cybosoma* Jordan (1906:361). *Araeoderes* and *Anthrenosoma* differ from the others because the lateral prothoracic carina is complete from base to apex. They are separable because *Anthrenosoma* has large, finely faceted, deeply notched eyes and widely separated

fore and mid coxae, *Araeoderes* has small, coarsely faceted, weakly notched eyes and normally separated coxae. There are no biological data.

### *Ormiscus* Waterhouse and *Eusphyrus* Leconte

In my 1960 paper, after studying about 45 species, I combined *Ormiscus* Waterhouse and *Eusphyrus* Leconte because they were connected by two intermediate species. I have now studied over 300 species (162 *Ormiscus*, 140 *Eusphyrus*) and only three are difficult to assign to one or the other. I conclude that 0.01% accuracy is strong support for what I now recognize as two monophyletic sister genera. I am returning *Eusphyrus* to status as a valid genus.

The tribe Zygoenodini (=Ormiscini) is keyed in Valentine (1960:48-50); included New World genera are listed on p. 63. The only changes are to add *Eusphyrus*, and to eliminate *Paranthribus* Jordan, 1904. The latter, based on one badly mounted and distorted female from Brazil, was misinterpreted by Jordan. The genus is a synonym of *Corrhecerus* Schoenherr, 1826, type species *Anthribus mixtus* Germar, 1824, designated by Schoenherr, 1826. *Corrhecerus* was proposed first by Schoenherr, 1823, without described species, and validated by him three years later. **New Synonymy.** The type species of *Paranthribus* will now be called *Corrhecerus rufescens* (Jordan, 1904), (*Paranthribus*) **New Combination.**

### *Ormiscus* Waterhouse, 1845

*Ormiscus* G. R. Waterhouse, 1845:37. **Type species:** *Ormiscus variegatus* G. R. Waterhouse, 1845, by monotypy. See Valentine (1960:62) for generic synonymy; except exclude *Eusphyrus* Leconte.

**Diagnosis:** Eyes notched on side nearest scrobes; rostrum quadrate; intercoxal process of mesosternum not expanded apically; antennae not or barely reaching humerae; lateral prothoracic carina short and straight (not upturned at apex) or absent; front and mid coxae not widely separate, each intercoxal process no wider than a coxal diameter; transverse pronotal carina antebasal, not capable of contacting the elytral base at any point along its length.

This diagnosis distinguishes *Ormiscus* from all New World genera except *Eugonops* Jordan, 1904, in which the center of the transverse pronotal carina appears capable of contacting the elytral base if the prothorax is positioned correctly. All species of

*Eugonops* have bizarre patterns and appear to mimic ants and small flies; they range from Vera Cruz to Brazil.

*Ormiscus* ranges widely from southeastern Canada to northern Argentina, including the West Indies (where on some small islands it is the only genus) and Galapagos. It is absent only from central California northward, northwestern United States, all of central and western Canada, and Chile. An introduced unidentified species, probably Neotropical, has been collected in Hawaii, on Oahu.

The Nearctic fauna has 14 described species and about 30 undescribed. Five of the 14 are known to me only from females; I suspect that some are parthenogenetic. Other species are known only from males or have not yet been dissected. Most Nearctic males, in addition to the concave abdomen, have an unusual feature: the head pubescence is uniform pale gray, contrasting with females which have faces mottled brown and gray. When both sexes are present the species can be grouped by male secondary sex characters and the female ovipositor. The character states as known at present are: male mid tibia with a small, black, apical-ventral lobe: *floridanus*, *mitchelli*, *pusillus*, *quadrimaculatus*, *saltator*, *sextuberculatus*, and *solidus*. Male mid tibia with a small apical spine or hook: *fasciatus*, *fissunguis*, *sparsus*, *submetallius*. Male hind tibia simple: *pusillus* and *quadrimaculatus*. Male hind tibia with a barely visible hook: *saltator* and *solidus*. Male hind tibia with a small black lobe: *floridanus*, *mitchelli*, *sextuberculatus*. Male hind tibia with an obvious apical spine or hook: *fasciatus*, *fissunguis*, *sparsus*, *submetallicus*. Female ovipositor with strongly toothed coxites: *floridanus*, *irroratus*, *mitchelli*, and *sparsus*. Female ovipositor without teeth on coxites, at most with edges wavy or darkly sclerotized: *albofasciatus*, *approximatus*, *quadrimaculatus*, *saltator*, and *submetallicus*. (More complete citations are given in the checklist at the end of this work).

Several species have easily recognizable features, like the solidly fused antennal club (of *saltator* and *solidus*), swollen hind femora (*fissunguis*), tuberculate elytra (*sextuberculatus*), unusually small teeth on the tarsal claws (several species), various degrees of lateral carina and hind angle development, etc., but all also occur in undescribed species. A key to described species would be very misleading, and one to the total fauna is not possible with the incomplete data available.

Although the largest genus of Anthribidae in the New World, biological data are meager. 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.

### *Eusphyrus* Leconte, 1876

*Eusphyrus* Leconte, 1876:399. **Type species:** *Eusphyrus walshii* Leconte, 1876:400, by monotypy. **Resurrected status** as a valid genus.

*Opisthotropis* Hoffman and Tempère, 1954:66. **Type species:** *Tropideres (Opisthotropis) vasconicus* Hoffman and Tempère, 1954:66, by original designation and monotypy. Synonymy with *Ormiscus (sensu lato)* by Valentine, 1972:356. **New synonymy** with *Eusphyrus*.

**Diagnosis:** As in *Ormiscus*, except transverse pronotal carina capable of contacting elytral base for most of length, or at least at center and sides.

*Eusphyrus* is not as widespread as *Ormiscus*, being absent in the West Indies (except one Florida-Cuba species) and from the Galapagos. The southernmost record is in Brazil. Two species have been introduced into Hawaii: *Eusphyrus rectus* Schaeffer, 1906, described from Brownsville, Texas, and known from Oklahoma to Florida to North Carolina in coastal states; and *Eusphyrus* sp. [perhaps *pulicarius* (Boheman, 1859) (*Brachytarsus*) **New Combination**, described from Rio de Janeiro and not recorded since]. Both Hawaiian taxa occur on Oahu, and the unidentified species also on Kauai.

The Hoffman and Tempère species was described from southern France, and is known only from females. It does not match any of the 140 species in my collection (most unidentified) and is almost certainly an introduction from the Neotropics. Until it is compared with the many Jordan types in the British Museum it should be listed as a separate species.

The Nearctic components of *Eusphyrus* include six named species, plus variant color patterns and uniques of uncertain identity. Those with names are *Eusphyrus quercus* (Schaeffer) and *E. eusphyrroides* (Schaeffer) both described in *Ormiscus*, **New Combinations**, and *E. walshi* Leconte, *E. rectus* and *arizonensis* Schaeffer, and *E. schwarzi* Pierce, these now returned to *Eusphyrus*. **Return to Original Generic Assignment.**

The key which follows distinguishes only typical specimens of the six named species; an attempt has been made to exclude material of uncertain identity. In this genus, "species" are extraordinarily variable or hide sibling complexes.

Key to the Nearctic species of *Eusphyrus*

1. Scutellum minute, barely visible, at most barely larger than an adjacent elytral puncture ..... 2
- 1'. Scutellum normal, easily visible, much larger than an adjacent elytral puncture ..... 3
- 2(1). Elytral pubescence mostly pale gray or gray with brown spots, brown concentrated on subbasal swellings, a larger transverse area on mid suture, and a narrow very irregular band across upper declivity; North Carolina; Florida to Texas and Oklahoma; introduced into Hawaii .....  
..... *rectus* Schaeffer
- 2'. Elytral pubescence mostly brown, pale gray forming irregular or incomplete rings around subbasal swellings, and spots on sides and upper declivity; Arizona and New Mexico .....  
..... *arizonensis* Schaeffer
- 3(1). Scutellum and scutellar stria with a very conspicuous patch of whitish setae paler and much denser than elsewhere on elytra; extreme south Florida; Cuba ..... *schwarzi* Pierce
- 3'. Scutellum and scutellar stria with pubescence not denser and either grayer or similar to other pale areas ..... 4
- 4(3). Pronotum with prominent longitudinal rugae; elytral disc each with a brown spot not or incompletely connected across the sutural interspace; southeastern Arizona .....  
..... *quercus* (Schaeffer)
- 4'. Pronotum at most reticulate-punctate, rugae if present short and irregular; elytra without a closely placed pair of dark spots on disc ..... 5
- 5(4). Pronotum reticulate-punctate, the raised rims darker than the depressed areas; eastern and southern Texas ..... *eusphyroides* (Schaeffer)
- 5'. Pronotum microgranulate due to traces of very small crowded punctures with fragmentary rims; Quebec to Florida west to Michigan and eastern Texas ..... *walshi* Leconte

Most published biological information is not reliable due to multiple misidentifications. Pin label data with specimens studied by me are:

*Eusphyrus rectus* Schaeffer: (1) Texas, lower Rio Grande Valley "citrus emerged;" (2) Florida, Gainesville "emerged from mistletoe twig" and "dead mistletoe;" (1) Florida, Ocala, "Prunus sp.;" (1) Texas, Fort Sam Houston "Quercus;" (1) Alabama, Hazen "on maple;" and (2) at light in Oklahoma and (1) Texas, sweeping vegetation.

*Eusphyrus arizonensis* Schaeffer; and *E. quercus* (Schaeffer): no data.

*Eusphyrus schwarzi* Pierce: (1) Florida, Key Largo "beating brush pile by U S Rte #1."

*Eusphyrus eusphyroides* (Schaeffer): (3) Texas, Hidalgo Co., "on Salix;" and (1) Texas, Brazos Co., "sweeping herbage."

*Eusphyrus walshi* Leconte: (2) Maryland, reared from dead poison ivy vines; (3) Mississippi, beating dead branches *Quercus alba*; and (1) Ohio, beating dead elm. Collecting techniques are: (15) West Virginia, Lindgren funnel traps; (4) Ohio and West Virginia, in Malaise traps; (3) Maryland, at light; (1) Louisiana, in flight intercept trap; (2) Ohio, Berlese funnel leaf litter; and single specimens beating dead leaves in Alabama, beating dead limbs in Ohio, and under oak bark in Ohio.

## Key to tribes and genera of Nearctic Anthribidae

1. Antennal insertion dorsal, between or next to the lower portion of the eyes; scape bent and asymmetrical; club never 4-articulate; Subfamily Choraginae ..... 2
- 1'. Antennal insertion lateral or ventral on beak; scape symmetrical or if doubtful, antennal club 4-articulate or insertion distant from eye; Subfamily Anthribinae ..... 10
- 2(1). Eyes rounded, the upper edges not closer than the lower ..... 3
- 2'. Eyes elongate-oval, upper ends closer than the lower; Tribe Choragini ..... 7
- 3(2). Hind coxae elongate-transverse, almost reaching elytral margin; Tribe Araecerini ..... 4
- 3'. Hind coxae globular or short tear-drop shaped; Tribe Cisanthribini ..... *Sicanthus*
- 4(3). Head not retractile into prothorax, the eyes too wide; elytra with 10 + scutellar striae or rows of punctures ..... 5
- 4'. Head retractile into prothorax past the eyes; elytra with 12 or more rows of punctures ..... 6
- 5(4). Lateral prothoracic carina present .... *Araecerus*
- 5'. Lateral prothoracic carina absent ..... *Neoxenus*
- 6(4). Lateral prothoracic carina double, not upturned at apex; elytra with 12-14 rows of punctures .....  
..... *Habroxenus*
- 6'. Lateral prothoracic carina single, apex usually upturned; elytra with 19-21 rows of punctures .....  
..... *Acaromimus*

- 7(2). Head not retractile into prothorax, the eyes too wide; pronotum with a raised reticulum forming a honey comb pattern ..... 8
- 7'. Head retractile into prothorax past the eyes; pronotum punctate, not reticulate ..... 9
- 8(7). Antennae with 11 articles ..... *Choragus*
- 8'. Antennae with 9 or 10 articles ..... *Pseudochoragus*
- 9(7). Elytra with 10 rows or fields of punctures plus a short scutellar series ..... *Euxenus*
- 9'. Elytra with 11 to 15 rows of punctures, one or more usually incomplete, scutellar series present or absent ..... *Euxenulus*
- 10(1). Anterior half of scutellum partially encircled by elytral bases; eyes large, entire, very finely faceted; Tribe Gymnognathini .....  
..... *Gymnognathus*
- 10'. Scutellar notch not narrowed anteriorly; eyes as above or variously small, or notched, or coarsely faceted ..... 11
- 11(10). Rostrum with a dorsal median carina interrupted at base by a small, abrupt deep pit or transverse groove; Tribe Platystomini ..... 12
- 11'. Rostrum carinate or not, at most with a weak basal puncture ..... 13
- 12(11). All third tarsal articles with lobes separate .....  
..... *Toxonotus*
- 12'. All third tarsal articles with lobes fused down the midline ..... *Phoenicobiella*
- 13(11). Mandibles with strongly toothed ventral cutting edge in addition to the normal dorsal edge; Tribe Eupariini ..... *Euparius*
- 13'. Mandibles without a toothed ventral cutting edge ..... 14
- 14(13). Eye margin entire or flattened on side nearest scrobes ..... 15
- 14'. Eye margin strongly notched or emarginate on side nearest scrobes ..... 24
- 15(14). Entire face with conspicuous white pubescence; center of pronotum with a pit or groove; elytra with a conspicuous patch or band of white crossing suture; Tribe Tropiderini ..... 16
- 15'. White pubescence, if present, confined to spots; if conspicuous on face, pronotum will have a concave disc with a central swelling, and elytra will have tufts of erect pubescence ..... 17
- 16(15). Pronotum with a smooth, shallow groove from central pit to base; elytral pale patch on basal half and not reaching side margins; transverse pronotal carina with a strong central angle pointing towards scutellum ..... *Gonotropis*
- 16'. Pronotum with a sinuous transverse median groove; elytral pale band above apical declivity and reaching side margins; transverse pronotal carina with a weak central angle .... *Eurymycter*
- 17(15). Antennal club 4-articulate; scrobes dorso-lateral, usually closer together than the eyes; Tribe Discotenini ..... *Discotenes*
- 17'. Antennal club 3 or 1-articulate; scrobes lateral or ventral, farther apart than inner edge of eyes ..... 18
- 18(17). Eyes finely faceted, more than 26 rows perpendicular to long axis ..... 19
- 18'. Eyes coarsely faceted, 26 or fewer rows perpendicular to long axis; Tribe Piesocorynini ..... 23
- 19(18). Sides of rostral apex abruptly widened to cover the laterally protruding mandibular bases; our species with a small post-ocular tooth on apex of prothorax; Tribe Ischnocerini ... *Ischnocerus*
- 19'. Sides of rostral apex with mandibular sheaths slightly or not wider than rostral dorsum .. 20
- 20(19). Merger of rostrum with venter of head capsule forming a broad curve; rostrum long, flat, apically flared ..... 21
- 20'. Merger of rostrum with venter of head capsule indicated by a transverse groove or abrupt angle; rostrum shorter, not apically flared; Tribe Platyrhinini ..... 22
- 21(20). Antennae with whorls of long, erect setae; length (head excluded) more than 5 mm; Tribe Stenocerini ..... *Stenocerus*
- 21'. Antennae without whorls of long erect setae; length (head excluded) less than 4 mm; Tribe Allandrini ..... *Allandrus*
- 22(20). Frons with a pair of abrupt depressions between upper ends of the eyes; lateral prothoracic carina with an apical tubercle .... *Trachytropis*
- 22'. Frons without a pair of abrupt depressions between the eyes; lateral prothoracic carina not toothed at apex ..... *Goniocloeus*
- 23(18). Eyes with 15 or more rows of facets perpendicular to maximum length; antennal article 3 longer than either 2 or 4 .....  
..... *Piesocorynus*
- 23'. Eyes with 14 or less rows of facets perpendicular to maximum length; antennal articles 2, 3, and 4 subequal or 2 longest ..... *Brachycorynus*
- 24(14). All third tarsal articles with the lobes fused down the mid-line; Tribe Anthribini ..... *Anthribus*
- 24'. All third tarsal articles with the lobes separate ..... 25

- 25(24). Antennal scrobes sulciform, continued ventrally across the rostral sides; intercoxal process of mesosternum modified (angulate, swollen, or bent); Tribe Basitropidini ..... 26
- 25'. Antennal scrobes foveiform, more or less rounded and not extending transversely or ventrally across the rostral sides; intercoxal process of mesosternum unmodified, narrowed to apex ..... 27
- 26(25). Lateral prothoracic carina complete to apical margin; body conspicuously elongate-cylindrical ..... *Eugonus*
- 26'. Lateral prothoracic carina not reaching apical margin; body normal or short and fat ..... *Phaenithon*
- 27(25). Rostrum, excluding mandibles, narrowed from base to apex; apex with central third longer than sides; Tribe Trigonorhinini ..... *Trigonorhinus*
- 27'. Rostrum quadrate or apically widened; apex not narrower than base and not prolonged in center; Tribe Zygaenodini ..... 28
- 28(27). Lateral prothoracic carina complete from base to apex ..... *Araeoderes*
- 28'. Lateral prothoracic carina absent or at most extending ½ way to apex ..... 29
- 29(28). Transverse pronotal carina clearly antebasal, incapable of contacting elytral base; pronotal hind angles not projecting laterad past the humerae ..... *Ormiscus*
- 29'. Transverse pronotal carina subbasal or basal, capable of contacting elytral base at some point; pronotal hind angles often projecting laterad past the humerae ..... *Eusphyrus*

In the following checklist, each genus has an indication of principle distribution, and where there is a clear trend, of maximum diversity. Many undescribed species are factored into these statements.

### Synonymic Checklist of Nearctic Anthribidae Billberg, 1820

Subfamily Choraginae Kirby, 1819

Tribe Araecerini Lacordaire, 1866

- Araecerus* Schoenherr, 1823:1135. Introduced from Indo-Australian region.  
*Araeocerus* Schoenherr, 1839:273  
*Araeocorynus* Jekel, 1855:150  
*Doticus* Pascoe, 1882:27  
*Metadoticus* Olliff, 1890:75

- coffae* (Fabricius, 1801:411) (*Anthribus*)  
*fasciculatus*, of authors, not DeGeer, 1775:276  
*?cacao* (Fabricius, 1775:64) (*Bruchus*)  
*mateui* (Cobos, 1954:41, fig. 1) (*Tropideres*, subg. *Rhaphitropis*)  
 see: Wolfrum, 1929:106, 107 for extensive synonymy.  
*cumingi* (Jekel, 1855:152; pl. 1, fig. 6) (*Araeocorynus*)  
 sp. (Valentine, 1963:1, 4)

*Neoxenus* Valentine, n. gen. Neotropical.  
*Notioxenus*, of authors, not Wollaston, 1861b:212  
*versicolor* Valentine, n. sp.

*Habroxenus* Valentine, n. gen. Neotropical, especially Antilles  
*politus* Valentine, n. sp.

*Acaromimus* Jordan, 1907:381. Neotropical  
*Xenorches*, Motschoulsky, 1873:251, not Wollaston, 1854:417  
*Acaropsis* Jordan, 1907:382, pl. 14, fig. 31, 31a  
*americanus* (Motschoulsky, 1873:251) (*Bruchus*)

Tribe Cisanthribini Zimmerman, 1994

*Sicanthus* Valentine, n. gen.. Nearctic.  
*rhizophorae* Valentine, n. sp.

Tribe Choragini Kirby, 1819

*Choragus* Kirby, 1819:447. Holarctic, especially Nearctic  
*Alticopus* Villa and Villa, 1833:21, 35  
*exophthalmus* Valentine, n. sp.  
*harrisi* Leconte, 1878b:626  
*major* Valentine, n. sp.  
*sayi* Leconte, 1876:408  
*striolatus* Valentine, n. sp.  
*zimmermanni* Leconte, 1876:408

*Pseudochoragus* Petri, 1912:X. Holarctic  
*Choragus*, of American authors, in part, not Kirby, 1819:447  
*Holostilpna*, of American authors, not Jordan, 1907:382  
*nitens* Leconte, (1884:32) (*Choragus*)

*Euxenus* Leconte, 1876:409. Neotropical  
*Holostilpna* Jordan, 1907:382  
*ater* Blatchley, 1928:238  
*jordani* Valentine, 1991a:303; fig. 3-5  
*nitens*, of American authors, not Leconte, 1884:32  
*punctatus* Leconte, 1876:409

*Euxenus* Valentine, 1960:48, 53. Neotropical: Antilles  
*piceus* (Leconte, 1878:434) (*Euxenus*)

## Subfamily Anthribinae

## Tribe Discotenini Lacordaire, 1866

- Discotenes* Imhoff, 1839: fasc. 8. Neotropical  
*Phanosolena* Schaeffer, 1904:234  
*arizonica* (Schaeffer, 1906:269) (*Phanosolena*)  
*nigrotuberculata* (Schaeffer, 1904:235) (*Phanosolena*)  
*affinis* Jordan, 1906:311; pl. x, fig. 16

## Tribe Ischnocerini Lacordaire, 1866

- Ischnocerus* Schoenherr, 1839:191. Neotropical  
*Meconemus* Imhoff, 1839:fasc. 4  
*angulatus* Martin, 1930:71  
*impressicollis* Jordan, 1895:373  
*infuscatus* Fahraeus, 1839:192  
*tuberculatus* (Imhoff, 1839: fasc. 4) (*Meconemus*)

## Tribe Allandrini Pierce, 1930

- Allandrus* Leconte, 1876:396. Holarctic, especially Palearctic  
*Tropiderinus* Reitter, 1916:5  
*bifasciatus* Leconte, 1876:396  
*brevicornis* Frost, 1920:252  
*populi* Pierce, 1930:19; pl. 3, fig. 45-47

## Tribe Stenocerini Kolbe, 1897

- Stenocerus* Schoenherr, 1826:4, 39. Neotropical  
*longulus* Jekel, 1855:106  
*mexicanus* Jekel, 1855:109  
*variegatus* Motschoulsky, 1874:234  
*knullorum* Sleeper, 1953:114; fig. 1

## Tribe Gymnognathini Valentine, 1960

- Gymnognathus* Schoenherr, 1826:4, 37. Neotropical  
*Analotes* Schoenherr, 1839:198  
*chiricahuae* Sleeper, 1954:118, fig. 1  
*triangularis* Valentine, n. sp.

## Tribe Tropiderini Lacordaire, 1866

- Gonotropis* Leconte, 1876:393. Holarctic, especially Palearctic  
*Tropideres*, of European authors and Valentine, 1960, in part, not Schoenherr, 1823:1135.  
*gibbosus* Leconte, 1876:394  
*Eurymycter* Leconte, 1876:394  
*Tropideres*, of European authors and Valentine, 1960, in part, not Schoenherr, 1823:1135  
*fasciatus* (Oliver, 1795:9; pl. 1, fig. 9) (*Macrocephalus*)

- bicarinatus* Pierce, 1930:17  
*latifascia* Pierce, 1930:17  
*tricarinatus* Pierce, 1930:18; pl. 3, fig. 41-44

## Tribe Piesocorynini Valentine, 1960

- Piesocorynus* Dejean, 1834:235, Neotropical  
*Piezocorynus* Schoenherr, 1839:250  
*Camptotropis* Jekel, 1855:136  
*lateralis* Jordan, 1906:317, pl. x, fig. 28  
*virginicus* Leng, 1918a:11  
*mixtus* Leconte, 1876:402  
*moestus* (J. E. Leconte, 1824:172, pl. 2, fig. 13) (*Anthribus*)  
*capillicornis* (Say, 1827:249) (*Anthribus*)  
*plagifer* Jordan, 1904:277  
*dispar*, various American authors, not Gyllenhal, 1833:140  
*tesselatus* Schaeffer, 1906:274

- Brachycorynus* Valentine, n. gen. Neotropical.  
*Tropideres*, Leconte, 1876:395, and subsequent authors, not Schoenherr, 1823:1135  
*Brevibarra*, Valentine, 1960:67, not Jordan, 1906:312  
*distentus* (Frieser, 1983:53) (*Homocloeus*)  
*rectus*, of authors, in part, not Leconte, 1876:395  
*hirsutus* Valentine, new species  
*rectus* (Leconte, 1876:395) (*Tropideres*)

## Tribe Platyrhinini Imhoff, 1856

- Goniocloeus* Jordan, 1904:260. Neotropical.  
*Tropideres*, of various authors, in part, not Schoenherr, 1823:1135.  
*Strabus* Jekel, 1860:239, not Gerstaecker, 1860:380, in Curculionidae  
*bimaculatus* (Olivier, 1795:14, pl. 2, fig. 19, a, b) (*Macrocephalus*)  
*quadrinotatus* (Say, 1827:249) (*Anthribus*)  
*barberi* (Pierce, 1930:13; pl. 2, fig. 38) (*Tropideres*)

- Trachytropis* Jordan, 1904:266. Neotropical  
*arizonicus* (Sleeper, 1954:117) (*Ischnocerus*)

## Tribe Platystomini Pierce, 1916

- Phoenicobiella* Cockerell, 1906:243. Nearctic to Cuba  
*Phoenicobius* Leconte, 1876:400, not Moersch, 1852:32, in Mollusca  
*chamaeropsis* (Leconte, 1876:401) (*Phoenicobius*)  
*schwarzi* (Schaeffer, 1906:273) (*Phoenicobius*)  
*Toxonotus* Lacordaire, 1866:573, 575. Neotropical  
*Anthribus*, of authors, in part, not Geoffroy, 1762:306  
*Neanthribus* Jordan, 1906:341  
*Pseudanthribus* Pierce, 1930:22, 24  
*bipunctatus* (Schaeffer, 1904:235) (*Anthribus*)  
*obtusus* (Jordan, 1906:343, pl. XII, fig. 21, 21a)

*(Neanthribus)*

- cornutus* (Say, 1831:4) (*Anthribus*)  
*coronatus* (Gyllenhal, 1833:141) (*Euparius*)  
*fascicularis* (Schoenherr, 1833:132) (*Anthribus*)  
*lividus* (Leconte, 1876:403) (*Anthribus*)  
*penicellatus* (Schaeffer, 1904:236) (*Anthribus*)  
*segregus* (Jordan, 1906:343, pl. XII, fig. 19, 20a)  
*(Neanthribus)*  
*vagus* (Horn, 1894:448) (*Anthribus*)  
*hieronymus* (Jordan, 1906:343; pl. XII, fig. 20,  
 19a) (*Neanthribus*)

## Tribe Basitropidini Lacordaire, 1866

- Eugonus* Schoenherr, 1833:3, 144. Neotropical  
*Schimatocheilus* Dejean, 1834:236  
*Phaenisor* Motschoulsky, 1874:240  
*bicolor* Valentine, 1972:9; fig. 2, 3

- Phaenithon* Schoenherr, 1823:1135. Neotropical  
*Camaroderes* Jekel, 1855:85  
*Griburiosoma* Schaeffer, 1906:272  
*platanum* (Schaeffer, 1906:273) (*Griburiosoma*)

## Tribe Zygaenodini Lacordaire, 1866

- Ormiscus* G. R. Waterhouse, 1845:37. New World; introduced elsewhere  
*Entomops* Lacordaire, 1866:553  
*Hormiscus* Gemminger and Von Harold, 1872:2738  
*Toxotropis* Leconte, 1876:397  
*Gonops* Leconte, 1876:398  
*albofasciatus* (Schaeffer, 1906:271) (*Toxotropis*)  
*approximatus* (Leconte, 1876:398) (*Toxotropis*)  
*fasciatus* (Leconte, 1884:32) (*Toxotropis*)  
*fissunguis* (Leconte, 1876:398) (*Gonops*)  
*floridanus* (Leng, 1916:28) (*Toxotropis*)  
*irroratus* (Schaeffer, 1904:233) (*Toxotropis*)  
*mitchelli* (Pierce, 1930:10) (*Toxotropis*)  
*pusillus* (Leconte, 1876:398) (*Toxotropis*)  
*simplex* (Pierce, 1930:8) (*Toxotropis*)  
*quadrimaculatus* (Pierce, 1930:9) (*Toxotropis*)  
*saltator* Leconte, 1876:397  
*angulatus* Pierce, 1930:6; pl. 2, fig. 14-16  
*piercei* Sleeper, 1954:117  
*sextuberculatus* (Schaeffer, 1906:269) (*Toxotropis*)  
*victoriensis* (Pierce, 1930:11) (*Toxotropis*)  
*solidus* Pierce, 1930:7; pl. 2, fig. 21-22  
*sparsus* (Pierce, 1930:9) (*Toxotropis*)  
*submetallicus* (Schaeffer, 1904:234) (*Toxotropis*)

- Eusphyrus* Leconte, 1876:399. New World; introduced elsewhere

- Opisthotropis* Hoffmann and Tempère, 1954:66  
*arizonensis* Schaeffer, 1906:272  
*eusphyroides* (Schaeffer, 1906:270) (*Toxotropis*)  
*quercus* (Schaeffer, 1906:270) (*Toxotropis*)  
*rectus* Schaeffer, 1906:271  
*schwarzi* Pierce, 1930:28; pl. 4, fig. 63

*walshi* Leconte, 1876:400

- Araeoderes* Schaeffer, 1906:275. Nearctic  
*texanus* Schaeffer, 1906:276

## Tribe Trigonorhinini Valentine, new tribe

- Trigonorhinus* Wollaston, 1861:102. Holarctic, Neotropical, mostly Nearctic  
*Brachytarsus*, of authors, in part, not Schoenherr, 1823:1135

- Trigonorrhinus* Gemminger and Von Harold, 1872:2745

*Anthribulus* Leconte, 1876:406

*Brachytarsoides* Pierce, 1930:29, 30

*alternatus* (Say, 1827:250) (*Anthribus*)

*annulatus* (Carr, 1930:279) (*Brachytarsus*)

*griseus* (Leconte, 1876:405) (*Brachytarsus*)

*riddelliae* (Schaeffer, 1906:277) (*Brachytarsus*)

*cylindricus* (Dethlefsen, 1954:53) (*Brachytarsoides*)

*elongatus* (Dethlefsen, 1954:54) (*Brachytarsoides*)

*nevadensis* (Dethlefsen, 1954:55) (*Brachytarsoides*)

*nevadensis* ssp. *tigrinus* (Dethlefsen, 1954:56)

(*Brachytarsoides*)

*vulgaris* (Dethlefsen, 1954:57) (*Brachytarsoides*)

*lepidus* Valentine, n. sp.

*limbatus* (Say, 1827:250) (*Anthribus*)

*plumbeus* (Leconte, 1876:406) (*Brachytarsus*)

*vestitus* (Leconte, 1876:406) (*Brachytarsus*)

*naviculus* (Jordan, 1907:379) (*Brachytarsus*)

*rufodorsalis* (Dethlefsen, 1954:58) (*Brachytarsoides*)

*minor* (Dethlefsen, 1954:58) (*Brachytarsoides*)

*quadratus* (Dethlefsen, 1954:59) (*Brachytarsoides*)

*quadratus* ssp. *nigrinus* (Dethlefsen, 1954:60)

(*Brachytarsoides*)

*nigromaculatus* (Schaeffer, 1906:277) (*Brachytarsus*)

*ornatus* (Schaeffer, 1906:276) (*Brachytarsus*)

*ornatellus* (Wolfrum, 1929:99) (*Brachytarsus*)

*rotundatus* (Leconte, 1876:407) (*Anthribulus*)

*strigosus* (Jordan, 1907:379) (*Brachytarsus*)

*sticticus* (Boheman, 1833:172) (*Brachytarsus*)

*variegatus* (Say, 1827:251) (*Anthribus*); not

Fourcroy, 1785:136

*obsoletus* (Fahraeus, 1839:167) (*Brachytarsus*)

*strictus* (Zimmerman, 1936:191) (*Brachytarsus*)

*lapsus*

*tomentosus* (Say, 1827:251) (*Anthribus*)

*brevis* (Fahraeus, 1839:168) (*Brachytarsus*)

*paululus* (Casey, 1885:194) (*Brachytarsus*)

*beyeri* (Schaeffer, 1906:277) (*Brachytarsus*)

*franzeria* (Barrett, 1931:188) (*Brachytarsus*)

*irregularis* (Tanner, 1934:285) (*Brachytarsoides*)

## Tribe Eupariini Valentine, 1960

- Euparius* Schoenherr, 1823:1135. New World and Indo-Australian  
*Cratoparis* Dejean, 1834:235  
*Caccorhinus* Sharp, 1891:321

*lugubris* (Olivier, 1795:13; pl. 2, fig. 17, a, b) (*Macrocephalus*)  
*notatus* (Say, 1827:248) (*Anthribus*)  
*marmoreus* (Olivier, 1795:12, pl. 2, fig. 16a, b) (*Macrocephalus*)  
*lunatus* (Fabricius, 1801:409) (*Anthribus*)  
*albifrons* (Boheman, 1829:118) (*Anthribus*)  
*paganus* Gyllenhal, 1833:142  
*pictus* Valentine, 1972:5; fig. 1, 4  
*subtesselatus* Schaeffer, 1906:274

#### Tribe Anthribini Billberg, 1820

*Anthribus* Geoffroy, 1762:306. Introduced from Palearctic  
*Brachytarsus* Schoenherr, 1823:1135  
*Anthotribus* Gemminger and Von Harold 1872:2747  
*Pseudobrachytarsus* Pierce, 1930:29  
*fasciatus* Forster, 1770:5  
*scabrosus* (Fabricius, 1775:64) (*Bruchus*)  
*marmoratus* Fourcroy, 1785:136 (*Anthribus*)  
 var. *ventralis* (Rey, 1893:49) (*Brachytarsus*)  
 var. *rubripes* (Rey, 1893:49) (*Brachytarsus*)  
 var. *rufipes* Schilsky, 1907:77 (*Anthribus*) (misspelling of *rubripes* Rey, 1893)  
*nebulosus* Forster, 1770:5  
*variegatus* Fourcroy, 1785:136 (*Anthribus*)  
*clathratus* (Herbst, 1786:158) (*Bruchus*)  
*varius* (Fabricius, 1787:42) (*Bruchus*) 1775: 223  
*capsularis* (Scriba, 1790:29) (*Bruchus*) [not seen]  
*nebulosus* (Küster, 1859:457) (*Brachytarsus*); not Forster, 1770:5.  
 var. *küsteri* (Reitter, 1916:9) (*Brachytarsus*)  
 var. *gavoyi* Chobaut, 1922:86

#### Literature Cited and References

- Anderson, William H.** 1947. Larvae of some genera of Anthribidae (Coleoptera). *Annals of the Entomological Society of America* 40(3):489-517, pl. I-IV.
- Arnett, Ross H., Jr.** 1962. Beetles of the United States (a Manual for Identification). Catholic Univ. Press. Fascicle 106:959-966, fig. 1.106-4.106.
- Barrett, Richard E.** 1931. A new *Brachytarsus* from California. *Pan-Pacific Entomologist* 7(4): 188.
- Bedel, Louis.** 1882-1888. Faune des Coléoptères du Bassin de la Seine. *Annales de la Société Entomologique de France*. Publication hors série. 6:1-442, pl. I.
- Bedel, Louis.** 1906. Synonymies de Coléoptères Paléartiques. *Bulletin de la Société Entomologique de France* 1906(8):91-93.
- Billberg, Gustavo Johanne.** 1820. Enumeratio insectorum in museo Gust. Joh. Billberg. [Holmiae] Typis Gadelianis [i-iii], 1-138.
- Blatchley, Willis S.** 1920. Some new Rhynchophora from Eastern North America with additions to and corrections of the "Rhynchophora of North-eastern America." *Journal of the New York Entomological Society* 28(2):161-178.
- Blatchley, Willis S.** 1928. Notes on the Rhynchophora of Eastern North America with descriptions of new species, IV. *Journal of the New York Entomological Society* 36(3):235-262.
- Blatchley, Willis S., and Charles W. Leng.** 1916. Rhynchophora or Weevils of North Eastern America. Nature Publishing Company, Indianapolis, Ind. p. 1-682, fig. 1-155.
- Boheman, Carl Heinrich.** 1829. Novae Coleopterorum Species. *Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou* 1:101-133.
- Boheman, Carl Heinrich.** 1833 [Descriptions]. *In*, Schönherr, C. J., *Genera et Species Curculionidum* 1(1).
- Boheman, Carl Heinrich.** 1845 [Descriptions]. *In*, Schönherr, C. J. *Genera et Species Curculionidum* 8(2).
- Bovie, Albert.** 1906. Catalogue des Anthribides. *Annals de la Société Entomologique de Belgique* 49:218-334.
- Caplenor, Donald.** 1967. The spread of bitterweed in North America. *Tennessee Technical Journal* 2:15-18.
- Carr, F[rederick] S[tephen].** 1930. New Canadian Coleoptera. I. *Canadian Entomologist* 62(12):278-279.
- Casey, Thomas Lincoln.** 1884-1885. Contributions to the Descriptive and Systematic Coleopterology of North America. Part II. [Privately printed by author] Collins Printing House, Philadelphia, p. 61-198. 1884: p. 61-124; 1885: 125-198.
- Childers, Carl C. and Robert E. Woodruff.** 1980. A bibliography of the Coffee Bean Weevil *Araecerus fasciculatus* (Coleoptera: Anthribidae). *Bulletin of the Entomological Society of America* 26(3):384-394.
- Chobaut, Alfred.** 1922. Tableau dichotomique des *Anthribus* de France et description d'une espèce et d'une variété nouvelles (Col. Anthribidae). *Bulletin de la Société Entomologique de France* 1922:85-88.
- Chong, Mabel.** 1964. *Araecorynus cumingi* Jekel. *Proceedings of the Hawaiian Entomological Society* 18(3):343.



- Cobos-Sanchez, Antonio.** 1954. Dos especies nuevas de *Tropideres* Schönh. (Col. Anthribidae) de España. Archivos del Instituto de Aclimatacion 3:41-44, fig. 1-2.
- Cockerell, Theodore Dru Allison.** 1906. Preoccupied generic names of Coleoptera. Entomological News 17(7):240-244.
- DeGeer, Carl.** 1775. Memoires pour servir a L'Histoire des Insectes. Vol. 5. Stockholm, de l'imprimerie de Pierre Hesselberg, p. i-vii, 1-448, pl. 1-16.
- Dejean, [Pierre François Marie] August.** 1833-1836 [1834]. Catalogue des Coléoptères de la Collection de M. le Comte Dejean. Paris, chez Méquignon-Marvis Père et Fils, p. 1-443.
- Dethlefsen, Edwin S.** 1954. Revisional Notes on the genus *Brachytarsoides* Pierce (Coleoptera, Platystomidae). 1. New North American species and subspecies. The Wasmann Journal of Biology 12(1):53-62.
- Donckier de Donceel, Henri.** 1884. Liste des Anthribides décrits postérieurement au catalogue de MM. Gemminger & von Harold. Bulletin de la Société Entomologique de Belgique 1884, serie III, no. 51:cccxxiv-cccxxxiii. [in Annales Soc. Ent. Belg. 28].
- Downie, Norville M. and Ross H. Arnett, Jr.** 1996. Family 130. Anthribidae; p. 1411-1419, fig. 130.1-130.3. The Beetles of Northeastern North America. II. Polyphaga: Series Bostrichiformia through Curculionoidea. The Sandhill Crane Press, Gainesville, Florida. x + 1721; figs.
- Fabricius, Johann Christian.** 1775. Systema Entomologiae, sistens Insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus. Flensburgi et Lipsiae [1-32], 1-832.
- Fabricius, Johann Christian.** 1787. Mantissa Insectorum sistens eorum species nuper detectas adiectis characteribus genericis, differentiis specificis, emendationibus, observationibus. Hafniae, I:XX + 348.
- Fabricius, Johann Christian.** 1801. Systema Eleutheratorum secundum ordines, genera, species: adiectis synonymis, locis, observationibus, descriptionibus 2:1-687.
- Fåhraeus, Olaf Immanuel von.** 1839. [Descriptions] In, Schönherr, C. J. Genera et Species Curculionidum 5(1).
- Forster, Johann Reinhold.** 1770. A catalogue of British Insects. Eyres, Warrington, 16 pp. [Not seen].
- Forster, Johann Reinhold.** 1771. Novae species Insectorum. Centuria I. i-viii, 1-100. [London].
- Fourcroy, Antoine François de.** 1785. Entomologia Parisiensis; sive Catalogus Insectorum quae in Agro Parisiensi reperiuntur; secundum methodum Geoffraeanam in sectiones, genera et species distributus: Cui addita sunt nomina trivalia et fere trecentae novae species. Pars Prima i-viii, 1-231.
- Frieser, Robert.** 1959. Einige neue Anthribiden (Col.). Annalen der naturhistorischen Museums in Wein 63:416-421.
- Frieser, Robert.** 1978. Einige neue südamerikanische Anthribiden (Coleoptera:Anthribidae). Folia Entomologica Hungarica [n.s.] 31(1):31-35.
- Frieser, Robert.** 1981a. Die Anthribiden der Westpaläarktis einschliesslich der Arten der UdSSR. Mitteilungen der Münchener Entomologischen Gesellschaft, 71:33-107, fig. 1-47.
- Frieser, Robert.** 1981b. 90. Familie: Anthribidae (Breitmaulrüssler), p. 22-34, 40 figs. In Freude, H., K. W. Harde, and G. A. Lohse (Editors) Die Käfer Mitteleuropas. Band 10. Bruchidae, Anthribidae, Scolytidae, Platypodidae, Curculionidae. Goeke + Evers, Krefeld, p. 1-310, illust. [In German].
- Frieser, Robert.** 1983. Ein witerer Beitrag zur Kenntnis der tropischen Anthribiden. Mitteilungen der Münchener Entomologischen Gesellschaft 73:45-59.
- Frost, [Charles] Albert.** 1920. Notes on the Coleoptera with descriptions. Canadian Entomologist 52:249-253.
- Gemminger, Max and Edgar von Harold.** 1872. Catalogus Colopterorum... vol. 9:2669-2988, Monachii.
- Geoffroy, Etienne Louis.** 1762. Histoire abrégée des insectes qui se trouvent aux environs de Paris 1:i-xxviii, 1-523, illust.
- Germar, Ernst Friedrich.** 1824. Insectorum species novae aut minus cognitae, descriptionibus illustratae. Coleoptera 1:i-xxiv, 1-624, pl. 1, 2.
- Gerstaecker, Carl E. A.** 1860. Beiträge zur Kenntniss der Curculionen. Stettiner Entomologische Zeitung 21:376-398.
- Gundlach, Juan.** 1891 [?1894]. Parte Quinta. Coleopteros. In Contribucion á la entomologia Cubana 3(5):5-404. Imp. de A. Alvarez y Comp, Riela num. 40, Habana.
- Gyllenhal, Leonard.** 1813. Insecta Svecica. Classis I. Coleoptera sive Eleuterata. Tomi I, Pars III. Scaris. Litteris F. J. Leverentz, [i-iv], 1-730, [1, 2].

- Gyllenhal, Leonard.** 1833 [Descriptions]. In Schönherr, C. J. Genera et Species Curculionidum 1(1).
- Harper, Roland M.** 1944. Preliminary report on the weeds of Alabama. Alabama Geological Survey Bulletin 53:1-275.
- Herbst, Johann Friedrich Wilhelm.** 1786. Erste Mantisse zum Verzeichnisse der ersten Klasse meiner Insecten-Sammlung. Füessley's Archiv der Insectengeschichte, 7-8:153-182, illustr. [Not seen].
- Herbst, Johann Friedrich Wilhelm.** 1794. Catalogue Critique des insectes du Cabinet de M. Herbst. Par le possesseur même. In Fuessly, J. G., Archives de l'Histoire des Insectes, publiées en Allemand par Jean Gaspar Fuessly, Traduites en François. J. Ziegler, Winterthour, p. 65-175, col. pl. 19a-32, 43-54.
- Hespenheide, Henry A.** 1973. A novel mimicry complex: beetles and flies. Journal of Entomology (A) 48(1):49-55, col. fig. 1-4, tab. I.
- Hoebeke, E. Richard and Alfred G. Wheeler, Jr.** 1991. *Anthribus nebulosus*, a Eurasian scale predator in the Eastern United States (Coleoptera: Anthribidae): notes on biology, recognition, and establishment. Proceedings of the Entomological Society of Washington 93(1):45-50, fig. 1-6.
- Hoffmann, Adolphe.** 1963. XVIII. Une espèce nouvelle de *Tropideres* de Madère. In Lindberg, Håkan, A Contribution to the Study of Beetles in the Madeira Islands. Results of expeditions in 1957 and 1959. Compiled with the help of various specialists. Societas Scientiarum Fennica Commentationes Biologicae 25(2):128-129.
- Hoffmann, Adolphe and Gaston Tempère.** 1954. Une espèce Française nouvelle du genre *Tropideres* Schönh. type d'un sous-genre nouveau (Col. Anthribidae). Bulletin de la Société Entomologique de France 59:66-67, 1 fig.
- Holloway, Beverley A.** 1982. Anthribidae (Insecta: Coleoptera). Fauna of New Zealand, 3:1-264, plus index added later, p. 265-269, fig. 1-710, many maps.
- Horn, George Henry.** 1894. The Coleoptera of Baja California. Proceedings of the Academy of Sciences [2]4:302-449.
- Imhoff, Ludwig.** 1856. Versuch einer Einführung in das Studium der Coleopteren. Basel. Bahnmaier, 2 vols. [Not seen].
- International Commission on Zoological Nomenclature** 1994. Opinion 1754. Histoire abrégée des insectes qui se trouvent aux environs de Paris (Geoffroy, 1762): some generic names conserved (Crustacea, Insecta). Bulletin of Zoological Nomenclature 51(1):58-70.
- International Commission on Zoological Nomenclature** 1994. Opinion 1756. Anthribidae Billberg, 1820 (Insecta, Coleoptera): given preference over Choragidae Kirby, 1819. Bulletin of Zoological Nomenclature 51(1):72-73.
- Jekel, Henri.** 1855, 1860. Insecta Saundersiana: or characters of Undescribed Insects in the Collection of William Wilson Saunders, Esq. F. R. S., F. L. S., & c. Coleoptera. Curculionides. — Part I. John Van Voorst, London, [ii] + 154, pl. 1, 2. Part II. Same, 1860. [iv] + 155-250, pl. 3, 1 fold out sheet.
- Jordan, Karl.** 1895. Zur Kenntniss der Anthribidae. IV. Stettiner Entomologische Zeitschrift, 56(10-12):369-401.
- Jordan, Karl.** 1904. American Anthribidae. Novitates Zoologicae 11:242-309.
- Jordan, Karl.** 1906-1907. Anthribidae. Biologia Centrali-Americana (Zoology) 4(6):299-383, pl. 10-14.
- Jordan, Karl.** 1926. Coleoptera-Anthribidae from Juan Fernandez. Natural History of Juan Fernandez and Easter Island 3:479-480.
- Jordan, Karl.** 1931. Anthribidae versus Platystomidae. Novitates Zoologicae 36(3):281-287.
- Jordan, Karl.** 1937. Anthribidae from South and Central America. Novitates Zoologicae 40:208-261.
- Kalshoven, Louis George Edmond.** 1951. Anthribidae, In De plagen von de Cultuurgewassen in Indonesië. Vol. II. N. V. Uitgeverij W. Van Hoeve, 's -Gravenhage/Bandoeng, p. 806-809, fig. 473.
- Kirby, William.** 1819. A century of insects, including several new genera described from his cabinet. Transactions of the Linnean Society of London 12(2):375-453, pl. xxi-xxii.
- Kissinger, David G.** 1955. New distribution and habitat records of N. A. Coleoptera. The Coleopterists Bulletin 9(1):13-15.
- Knoll, Josef N.** 1928. Descriptions of two new species of *Acmaeodera* (Buprestidae) with notes on other Coleoptera (Cleridae, Cerambycidae, Platystomidae, Curculionidae). Entomological News 39(10):314-316.
- Knoll, Josef N.** 1930. Notes on Coleoptera -- No. 2. Entomological News 41:101-102.
- Kolbe, Herman Julius.** 1897. Coleopteren. Die Käfer Deutsch Ost-Afrikas. Berlin Verlag von Dietrich Reimer, IV:1-367, pl. I-IV.

- Korotyaev, B. A.** 1977. Mongolian Anthribidae (Coleoptera). *Nasekomye Mongol.* 5:372-275, illust. [In Russian].
- Kosztarab, Michael and Ferenc Kozar.** 1983. Introduction of *Anthribus nebulosus* Forster (Coleoptera:Anthribidae) in Virginia for control of scale insects: a review. *Virginia Journal of Science* 34:223-236.
- Kosztarab, Michael and Mary Rhoades.** 1983. Food consumption, mating behavior, and shelter selection of *Anthribus nebulosus* Forster (Coleoptera: Anthribidae), an introduced predator of scale insects in Virginia. *Virginia Journal of Science* 34:237-250.
- Küster, Heinrich Carl.** 1859:457. In *Gutfleisch, Valentin. Die Käfer Deutschlands. Nach des Verfassers Tode vervollständigt und herausgegeben von Dr. Fr. Chr. Bose. Darmstadt, Joh. Phil. Diehl, I-XVI, 1-661, [662-664].*
- Labram, Jonas David and Ludwig Imhoff.** 1838-1842. *Singulorum Generum Curculionidum unam alteramve Speciem Additis Iconibus.* (also: Die Gattungen der Rüsselkäfer erläutert durch bildliche Darstellung einzelner arten). Pars (Thiel) 1, fascic. (heft) 1-10. Basel. [84 pages, 80 colored plates, all unnumbered].
- Lacordaire, Jean Théodore.** 1866. *Histoire Naturelle des Insectes. Genera des Coléoptères ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet ordre d'insectes.* 7:1-620, pl. 61-80.
- Leconte, John Eatton.** 1824. Description of some new species of North American insects. *Annals of the Lyceum of Natural History of New York* 1:169-173, pl. 11.
- Leconte, John Lawrence.** 1876. In *Leconte, John Lawrence and George H. Horn, The Rhynchophora of America north of Mexico. Proceedings of the American Philosophical Society, 15(96):i-xvi:1-455.*
- Leconte, John Lawrence.** 1878. Additional descriptions of new species. [pp. 373-434, In *Schwarz, Eugene A., The Coleoptera of Florida*]. *Proceedings of the American Philosophical Society* 17(101):353-472.
- Leconte, John Lawrence.** 1878. Descriptions of new species. [In *Hubbard, Henry G. and Eugene A. Schwarz, the Coleoptera of Michigan*]. *Proceedings of the American Philosophical Society* 17(101):593-626, 669.
- Leconte, John Lawrence.** 1884. Short studies of North American Coleoptera, (No. 2). *Transactions of the American Entomological Society* 12:1-32.
- Leng, Charles William** 1916. [Descriptions] in *Blatchley, Willis S. and Charles W. Leng. Rhynchophora or weevils of North Eastern America. Nature Publishing Company, Indianapolis, Indiana p. 1-682, fig. 1-155.*
- Leng, Charles William.** 1918. Description of a new species of *Piezocorynus*. *Journal of the New York Entomological Society* 26(1):11-12.
- Leng, Charles William.** 1918. [*Gonotropis gibbosus* on hemlock.] *Journal of the New York Entomological Society* 26(2):115.
- Leng, Charles William.** 1920. *Catalogue of the Coleoptera of America, North of Mexico.* John D. Sherman, Jr., Mount Vernon, N.Y., i-x, 1-470, 1 fold-out chart.
- Leng, Charles William and Andrew Johnson Mutchler.** 1914. A preliminary list of the Coleoptera of the West Indies as recorded to Jan. 1, 1914. *Bulletin of the American Museum of Natural History* 33(30):391-493.
- Lucas, Hippolyte.** 1846. *Exploration scientifique de l'Algerie. Zoologie. Histoire naturelle des animaux articulés.* 2:1-590, illustr. [Not Seen].
- Martin, J[ames] O[tis].** 1930. Two new coleopterous insects from Arizona. *Pan-Pacific Entomologist* 7(2):70-72.
- Moerch.** 1852, p. 32 [Not Seen].
- Motschoulsky, Victor [Ivanovich].** 1856. *Voyages: Lettre de M. de Motchulsky a M. Menetries.* [Letter #3, p. 3-20], In *Etudes Entomologiques* 5th year:1-88, 1 pl.
- Motschoulsky, Victor [Ivanovich].** 1873. *Énumération des Nouvelles Espèces de Coléoptères rapportés de ses voyages.* 13 article. *Bruchides. Bulletin de la Société Impériale des Naturalistes de Moscou* 46(2):203:252.
- Motschoulsky, Victor [Ivanovich].** 1874. *Énumération des Nouvelles Espèces de Coléoptères rapportés de ses voyages.* 14-ième article. *Anthribides. Bulletin de la Société Impériale des Naturalistes de Moscou* 48(2):226-242.
- Nordman, Alexander.** 1836. *Symbolae ad monographiam staphylinorum.* Petropoli, 167 pp., 2 pls.
- Olivier, Antoine Guillaume.** 1795. *Entomologie, ou Histoire Naturelle des Insectes, avec leur caractères génériques et spécifiques, leur description, leur synonymie, et leur figure enluminée.* Coléoptères 4(No. 80):1-16, pl. I-II.
- Olliff, A. Sidney.** 1890. Additions to the insect-fauna of Lord Howe Island, and descriptions of two new Australian Coleoptera. *Records Australian Museum* 1:72-76, pl. 10.

- Olliff, A. Sidney.** 1890 (1891). *Doticus pestilens*: a correction in nomenclature. Agricultural Gazette of New South Wales 1:288-289.
- Panzer, Georg Wolfgang Franz.** 1795. Entomologica Germanica exhibens insecta per Germaniam indigena secundum classes, ordines, genera, species adiectis synonymis, locis, observationibus. I. Eleuterata. Cum Tabulis Aeneis. Norimbergae, Apud Felseckeri Haeredes, [1-12], 1-370, 2 pp. index, 12 partly colored plates, each with a sheet of text, frontispiece.
- Pascoe, Francis P.** 1882. Notes on Coleoptera, with descriptions of new genera and species. Part IV. Annals and Magazine of Natural History [5]9(49):25-37.
- Paykull, Gustav von.** 1792. Monographia Curculionum Sveciae. Upsaliae. Joh. Edman, I-viii, 1-144.
- Paykull, Gustav von.** 1800. Fauna Svecica. Insecta. Tomus III. Upsaliae, [i-ii], 1-459.
- Petri, Karl.** 1912. Siebenbürgens Käferfauna auf Grund ihrer Erforschung bis zum Jahre 1911. Siebenbürgischen Verein für Naturwissenschaften zu Hermannstadt. [unpaged, text in double columns.]
- Pierce, W. Dwight.** 1907. On the biologies of the Rhynchophora of North America. Annual Report Nebraska State Board of Agriculture for the year 1906-1907:249-319, pl. I-VIII.
- Pierce, W. Dwight.** 1916. Studies of Weevils (Rhynchophora) with descriptions of new genera and species. Proceedings United States National Museum 51(2159):461-473, fig. 1-2.
- Pierce, W. Dwight.** 1930. Studies of the North American Weevils belonging to the Superfamily Platystomoidea. Proceedings United States National Museum 77(2840):1-34, pl. 1-5.
- Reitter, Edmund.** 1916. Fauna Germanica. Die Käfer des deutschen Reiches. Band 5. p. 1-343, pl. 153-168 [Stuttgart].
- Rey, Claudius.** 1893. Remarques en passant. Famille des Platyrrhinides ou Anthribides. L'Exchange, Revue Linnéenne 9(101):49.
- Say, Thomas.** 1827. Descriptions of new coleopterous insects inhabiting the United States. Journal of the Academy of Natural Sciences of Philadelphia 5(2):237-284. [Leconte ed.: 1859. 2:304-339].
- Say, Thomas.** 1831. Descriptions of North American Curculionides & an arrangement of some of our known species agreeably to the method of Schoenherr. July 1831. New-Harmony, Indiana p. 1-30. [Leconte edition: 1859. 1:259-299.]
- Schaeffer, Charles F. A.** 1904. New Genera and Species of Coleoptera. Journal of the New York Entomological Society 12(4):197-236.
- Schaeffer, Charles F. A.** 1906. New Anthribidae. Transactions of the American Entomological Society 32(9):267-278.
- Schilsky, Julius.** 1907. In Küster, Heinrich Carl and Gustav Kraatz. Die Käfer Europa's. 44:I-IV, 44.A-44.101.
- Schönherr, Carl Johann.** 1823. Curculionides. Isis von Oken 1823(10):1132-1146.
- Schönherr, Carl Johann.** 1826. Curculionidum Dispositio Methodica cum generum characteribus, descriptionibus atque observationibus variis seu Prodromus ad Synonymiae Insectorum. Partem IV. Lipsiae, i-x, 1-338, [1-4].
- Schönherr, Carl Johann.** 1833. Genera et Species Curculionidum, cum synonymia hujus familiae. 1(1):i-xv, 1-381. Parisiis. [also as: Synonymia Insectorum, oder Versuch einer synonymie aller von mir bisher bekannten insecten. Erster Band. Eleutherata oder Kaefer. Vierter Theil. Fam. Curculionides.]
- Schönherr, Carl Johann.** 1839. Genera et Species Curculionidum ... 5(1):i-viii, 1-456. Parisiis, Lipsiae.
- Schönherr, Carl Johann.** 1845. Genera et Species Curculionidum ... 8(2):[i-viii], 1-504, fold-out tables 1-27. Parisiis, Lipsiae.
- Scriba, Ludwig Gottlieb.** 1790. Journal für die Liebhaber der Entomologie [Frankfurt] Vol. 1 [Not seen].
- Senoh, Toshio.** 1986. Three new species of Anthribinae (Coleoptera, Anthribidae) from Japan. Kontyû, Tokyo 54(4):706-712, fig. [1-3].
- Serville, Jean Guillaume Audinet.** 1825. In A. G. Olivier, Encyclopédie Methodique, dictionnaire des insectes, Par- Zyg. Vol. 10, 704 pp., illust. [Not seen].
- Sharp, David.** 1891. The Rhynchophorous Coleoptera of Japan. Part II. Apionidae and Anthribidae. Transactions of the Entomological Society of London, 1891(2):293-328.
- Shiroma, Edwards S.** 1965. *Araecorynus cumingi* Jekel. Proceedings of the Hawaiian Entomological Society 19(1):10.
- Shiroma, Edwards S.** 1965. *Araecorynus cumingi* Jekel. Proceedings of the Hawaiian Entomological Society 19(1):16.
- Shiroma, Edwards S.** 1967. *Araecorynus cumingi* Jekel. Proceedings of the Hawaiian Entomological Society 19(3):326-327.

- Sleeper, Elbert Launee.** 1953. New genera and species of Curculionidae with a new species of Anthribidae (Coleoptera). *Ohio Journal of Science* 53(2):113-120, pl. 1 [fig. 1-11].
- Sleeper, Elbert Launee.** 1954. New Rhynchophora. I. (Coleoptera, Anthribidae and Curculionidae). *Ohio Journal of Science* 54(2):117-125, fig. 1-7.
- Suffrian, C. G. L. Eduard.** 1870. Verzeichniss der von Dr. Gundlach auf der Insel Cuba gesammelten Rüsselkäfer. *Archiv für Naturgeschichte* 36(1):150-234.
- Tanner, Vasco M.** 1934. Studies in the weevils of the western United States, No. 1. *Proceedings of the Utah Academy of Sciences, Arts and Letters* 11:285-288.
- Thunberg, Carl Peter.** 1796. Donation. Thunbergian. *Museum naturalium Academiae Upsaliensis*, (publico examini subijcit Petrus Sundberg). Appendix IV:145-150.
- Valentine, Barry Dean.** 1955a. The Anthribidae of the Bahama Islands, British West Indies (Coleoptera). *American Museum Novitates* (1741):1-11, fig. 1a, b, c.
- Valentine, Barry Dean.** 1955b. The identity of *Macrocephalus bidens* Olivier, 1795, with a review of the genus *Toxonotus* Lacordaire (Coleoptera:Anthribidae). *Psyche* 62(3):98-103.
- Valentine, Barry Dean.** 1957. Anthribid weevils from Yucatan collected on the Explorers Club-American Museum of Natural History Expedition, with notes on others of the *Brachytarsus* complex (Coleoptera, Anthribidae). *American Museum Novitates* (1848):1-11.
- Valentine, Barry Dean.** 1960. The genera of the weevil family Anthribidae north of Mexico (Coleoptera). *Transactions of the American Entomological Society* 86(1):41-85.
- Valentine, Barry Dean.** 1961. New synonymy in Nearctic Anthribidae. *The Coleopterists' Bulletin* 15(2):33-35.
- Valentine, Barry Dean.** 1962. [part of] Anthribidae. In Arnett, Ross H., Jr. *Beetles of the United States (A Manual for Identification)*. Fascicle 106:959-963.
- Valentine, Barry Dean.** 1963. Highlights of Insect Conditions. A Fungus Weevil--(*Aracocorynus* [sic] sp.) --Ohio. *Ohio Cooperative Economic Insect Report* 26:1, 4.
- Valentine, Barry Dean.** 1971. Family Anthribidae, p. 243-248, pl. xxxii, fig. 3. In Melville H. Hatch, *The Beetles of the Pacific Northwest, Part V:Rhipicerioidea, Sternoxi, Phytophaga, Rhynchophora, and Lamellicornia*. University of Washington Publications in Biology, 16:i-xvi, 1-662, pl. I-LV, frontispiece.
- Valentine, Barry Dean.** 1972a. Notes on anthribid weevils. II. The species described by Adolphe Hoffmann. *Proceedings of the Biological Society of Washington* 85(29):353-358.
- Valentine, Barry Dean.** 1972b. Notes on anthribid weevils. III. New species and records primarily from Arizona (Coleoptera: Anthribidae). *Coleopterists Bulletin* 26(1):1-11, fig. 1-4.
- Valentine, Barry Dean.** 1980. The species of the anthribid weevil genus *Stenocerus* Sch. *Coleopterists Bulletin* 34(3):287-294.
- Valentine, Barry Dean** 1991a. The *Choragus-Holostilpna* problem (Coleoptera: Anthribidae). *Coleopterists Bulletin* 45(3):301-307, fig. 1-8.
- Valentine, Barry Dean** 1991b. Four new species of *Phaenotheriopsis* from Hispaniola and Puerto Rico (Coleoptera: Anthribidae). *Coleopterists Bulletin* 45(4):331-340, fig. 1-4.
- Villa, Antonius and Joannes Baptista Villa.** 1833. *Coleoptera Europae dupleta in Collectione Villa. Mediolani*, p. 1-36.
- Walker, Francis.** 1859. Characters of some apparently undescribed Ceylon insects. *Annals and Magazine of Natural History* [3]3(16):258-265.
- Warner (Mrs. T. J. Spilman), Rose Ella.** 1963. *Araecocorynus cumingi* Jekel (Coleoptera: Anthribidae), a potential pest of stored products. *The Coleopterists' Bulletin* 17(4):109.
- Waterhouse, George R.** 1845. Descriptions of coleopterous insects collected by Charles Darwin, Esq., in the Galapagos Islands. *Annals and Magazine of Natural History* 16(102):19-41.
- Wolfrum, Paul.** 1929. Anthribidae. *Coleopterorum Catalogus*. Pars 102:1-145.
- Wolfrum, Paul.** 1931. Neue Anthribiden. 4 Beitrag zur Kenntnis der Anthribiden. *Entomologische Blätter* 27(2):70-76.
- Wolfrum, Paul.** 1938. Beitrag zur Kenntnis der Anthribiden. *Entomologische Blätter* 34(2):67-76.
- Wolfrum, Paul.** 1953. Anthribidae. *Coleopterorum Catalogus Supplementa*. Pars 102:1-63.
- Wollaston, T. Vernon.** 1854. *Insecta Maderensia; being an account of the Insects of the Islands of the Madeiran Group*. John van Voorst, London, i-xliii, 1-634, pl. I-XIII.
- Wollaston, T. Vernon.** 1861a. On certain Coleoptera from the Island of St. Vincent. *Annals and Magazine of Natural History* [3] 7(38):90-103.
- Wollaston, T. Vernon.** 1861b. On certain Coleoptera from St. Helena. *Journal of Entomology* 1(4):207-216, pl. XIV.

- Wollaston, T. Vernon.** 1864. Catalogue of the Coleopterous Insects of the Canaries in the Collection of the British Museum. London: Printed by order of the Trustees, i-xiii, 1-648.
- Wollaston, T. Vernon.** 1865. Coleoptera Atlantidum, being an enumeration of the Coleopterous Insects of the Madeiras, Salvages, and Canaries. John van Voorst, London, i-xlvi, 1-526, 1-140.
- Wollaston, T. Vernon.** 1867. Coleoptera Hesperidum, being an Enumeration of the Coleopterous Insects of the Cape Verdi Archipelago. John von Voorst, London, xxxix + 285, 1 map.
- Wollaston, T. Vernon.** 1870. On the Coleoptera of St. Helena. Annals and Magazine of Natural History [4] 5(25):18-37.
- Zimmerman, Elwood C.** 1936. *Brachytarsus* in California. Pan-Pacific Entomologist 12(4):191.
- Zimmerman, Elwood C.** 1938. Anthribidae of Southeastern Polynesia (Coleoptera). Occasional Papers of Bernice P. Bishop Museum 14(13):219-250, fig. 1a-s.
- Zimmerman, Elwood C.** 1942. Anthribidae of Guam. Insects of Guam-I, Bernice P. Bishop Museum Bulletin 172:65-72, pl. 1, fig. 1a-e.
- Zimmerman, Elwood C.** 1994. Family Anthribidae Billberg. In Australian Weevils (Coleoptera: Curculionoidea) Volume I Orthoceri. Anthribidae to Attelabidae. The Primitive Weevils. pp. 9-11, 13-23, 35-239, fig. 1-162. Also: Volume V, colour plates 5-19. Volume VI, colour plates 305-327.