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Nemonychidae and Anthribidae of Wisconsin (Coleoptera: Curculionoidea)

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(Coleoptera: Curculionoidea)

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Nemonychidae and Anthribidae of Wisconsin (Coleoptera: Curculionoidea)

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Abstract. A statewide survey of Wisconsin's Nemonychidae and Anthribidae (Coleoptera: Curculionoidea) was conducted over one full (2012) and two partial (2011, 2013) field seasons. Specimens were collected using a variety of techniques. Two species of the nemonychid genus *Cimberis* and 22 species of Anthribidae in 13 genera are now confirmed. Generic and species-level keys for Wisconsin species are provided along with generic and species diagnoses. Species treatments also include a synonymy, a description, and information on natural history, phenology, distribution and collecting methods. Dorsal and lateral habitus images are also provided for most of the species.

Key Words. Primitive weevils, faunal survey.

Introduction

Faunal surveys provide the primary method for establishing baseline knowledge of the geographical and phenological distributions, diversity and natural history of organisms. This contribution is the first to actively target the Wisconsin or western Great Lakes fauna of primitive weevil families Nemonychidae and Anthribidae. It establishes a list of Wisconsin species, a state with a diversity of habitat types and natural communities.

The taxa surveyed are families within the superfamily Curculionoidea: one of the largest superfamilies of Coleoptera with around 62,000 described species worldwide (Oberprieler et al. 2007). It constitutes 12.8% of the entire North American beetle fauna (Marske and Ivie 2003). The basal families Nemonychidae and Anthribidae are comprised of 3,936 described species worldwide (Nemonychidae = 76, Anthribidae = 3860) (Oberprieler et al. 2007) and 137 species (Nemonychidae = 17, Anthribidae = 120) in North America north of Mexico (Anderson 2002; Valentine 2002).

Primitive weevils (Nemonychidae, Anthribidae, Belidae, Caridae, Attelabidae, and Brentidae) share the common characteristic of having straight, as opposed to geniculate, antennae (except for Nanophyinae of Brentidae, which independently acquired that character state). The primitive weevil families have existed as extant lineages for at least 140 million years (Kuschel 2003) and are phylogenetically basal to Curculionidae (e.g., Marvaldi et al. 2002; McKenna et al. 2009). Nemonychidae, among the more primitive curculionoid families, is known from pre-Cretaceous fossils and extant taxa exhibit little differentiation (Bright 1993). Their diet has changed little as well: they still solely feed on pollen from cones of gymnosperms, except for *Nemonyx lepturoides* (Fabricius), which feeds on Ranunculaceae (Kuschel 2003).

The clade including Nemonychidae and Anthribidae is currently considered to represent the most basal lineage of Curculionoidea, sister group to the remaining families (McKenna et al. 2009). These two families share similar ovipositor structures as well as similar ventral abdominal setiferous patches (Marvaldi et al. 2002). Larvae of nemonychids and anthribids have a molar area, distinguishing them from the other weevil families (Bright 1993).

Materials and Methods

An initial literature search yielded seven published species records from Wisconsin, only one of which was provided with county or more specific distributional data. These records were augmented by material from museum and private collections to expand the provisional species list. Additional sites were identified based on habitat types and associated plants and fungi to conduct fieldwork over one full (April – September 2012) and two partial (July – September 2011, April – August 2013) field seasons to improve the number and distribution of survey sites. Natural history data, including plant/fungal associations, habitat associations, and flight period, were recorded from personal observations, existing literature and label data.

Field collected specimens contributing to this survey were obtained using a variety of collecting techniques. Available natural history information suggested that oak and pine barrens as well as prairies and hardwood forests would be the best habitats to explore. The most fruitful collecting techniques included sweeping vegetation, beating foliage of trees and shrubs, as well as hand collecting. Sorting bulk trap residue samples (primarily Lindgren funnel, Malaise, and flight intercept trap samples in the University of Wisconsin Insect Research Collection (hereafter, WIRC) provided a good source of material from additional locations.

All new material collected during this survey is deposited in the WIRC. Collection event data from all specimens (historical collections, personal collections, specimens from fieldwork) were entered into the relational database, Specify.

Results

This survey research yielded over 600 specimens from fieldwork, personal collections, and institutional collections, including 23 species in 14 genera: (Nemonychidae: one genus, two species; Anthribidae: 13 genera, 21 species). This represents an increase of 16 species from previously published literature. There was also a considerable increase in county records for most species, with 179 new county records, the average increase in county records per species of 7.78.

Family Nemonychidae Bedel

In the Northern Hemisphere, most nemonychids are associated with staminate cones of pines and are commonly referred to as the “pine flower snout beetles” (Blatchley and Leng 1916). The species in *Nemonyx* feed on plants in the family Ranunculaceae.

Nemonychidae is a relatively small family with three subfamilies: Nemonychinae (for the Eurasian *Nemonyx*, only), Rhinorhynchinae and Cimberidinae. There are 76 species in 23 genera in the world. The Nearctic nemonychids are now placed in the subfamilies Rhinorhynchinae and Cimberidinae (=Doydirhynchinae), comprising five genera and 17 species; two species of the rhinorhynchine genus *Atopomacer* are endemic to Mexico.

Thomas and Herdy (1961) provided life history information on *Cimberis elongata* (LeConte), (the only species reported in the published literature from Wisconsin prior to this survey (O'Brien and Wibmer 1982; Hamilton 1994). Two species were confirmed from Wisconsin during the present study: *C. elongata* and *Cimberis pilosa* (LeConte).

Family diagnosis. Adult nemonychids can be distinguished from other primitive weevils by presence of distinctly paired gular sutures (Bright 1993), basally narrowed rostrum, distinct labrum (shared with Anthribidae), simple inner elytral surface, and by the confused elytral punctation.

Subfamily Cimberidinae Gozis**Tribe Cimberidini Gozis****Genus *Cimberis* Gozis**

Cimberis Gozis 1881: 112. *Neocimberis* O'Brien and Wibmer 1982: 3.

Type species. *Rhinomacer attelaboides* Fabricius 1787, by original designation.

Cimberis, the only nemonychid genus in Wisconsin, can be recognized by mandibular form: each mandible is evenly curved on its outer edge in dorsal and lateral views and each is armed with a strong tooth on the inner edge; the mandibular sockets are only partially exposed dorsally. Additionally, the antennae are inserted medially or antemedially (Kuschel 1989).

Key to the Wisconsin Species of Adult *Cimberis*

1. Pronotum broadly flattened or impressed; elytra black with yellow to brown setae; labrum subrectangular, with sides converging from about middle, apical margin broadly emarginate; pre-rostrum similar in males and females; length 2.8–5.1mm *C. elongata* (LeConte)
- Pronotum not flattened or impressed; elytra yellow or rusty brown, with white setae; labrum trapezoidal, with sides converging from base and with rounded or subtruncate apical margins; pre-rostrum more elongate in female than male; length 2.0–3.8mm ... *C. pilosa* (LeConte)

***Cimberis elongata* (LeConte)**

(Fig. 1–2)

Rhinomacer elongatus LeConte 1876: 2.

Cimberis elongatus Hamilton 1969: 52.

Neocimberis elongatus (LeConte); O'Brien and Wibmer 1982: 18.

Cimberis elongata (LeConte); Kuschel 1989: 134.

Description. Length 2.8–5.1mm. Body elongate-oval. Integument black, pre-rostrum, femora, tibiae, coxae and antennae reddish-orange, tarsi darker. Vestiture consisting of long, coarse, light brown to yellow setae with coppery reflection dorsally, surface with finer, white or grey setae ventrally. Frons 1.25–1.33X dorsal tip of rostrum. Rostrum 0.92–1.09X pronotal length, moderately saddled basally; pre-rostrum slightly more elongate in female. Labrum subrectangular, sides converging from about the middle, apical margin broadly emarginate. Antennae reaching eyes at segment four. Eyes large, slightly elongate, with long interfacetal setae. Pronotum usually just slightly wider than long, moderately curved laterally, truncate or subemarginate apically, truncate basally; broadly flattened or impressed mesally. Elytra elongate, length 1.85–2.08X width. Femora moderately swollen. Sexual dimorphism present: abdominal sternites 3–4 of females with large, transverse, white setiferous patch.

Diagnosis. *Cimberis elongata* can be distinguished by the sub-rectangular labrum with sides converging from about the middle and with the apical margin broadly emarginate, broadly flattened or impressed pronotum that is strigose on the depressed area due to coarse, confluent punctures, black integument with long, light brown to yellow setae, and by the orange pre-rostrum and antennae.

Natural history. Adults can be found on male pollen-bearing flowers of various pine species (*Pinus* spp.), including Jack pine (*P. banksiana*), white pine (*P. strobus*), Virginia pine (*P. virginiana*), lodgepole pine (*P. contorta*), and loblolly pine (*P. taeda*). In Wisconsin, *C. elongata* has been collected from red pine (*P. resinosa*) and Jack pine (*P. banksiana*). According to Thomas and Herdy (1961), this species overwinters through two seasons, one year as mature larvae and the other as adults. Adults overwinter in the ground and emerge in May to feed on staminate pine flowers. Females then lay eggs on the strobili, and after about a week the newly eclosed larvae are able to move around freely among the sporophylls, feeding on pollen or pollen sacs of the strobili. The larvae burrow into the top three inches

of soil after about 10 days to pupate and overwinter. The following season they overwinter as adults and emerge early the next spring (Thomas and Herdy 1961; Kuschel 1983).

Phenology. In Wisconsin, adults have been collected from April – July, with a peak in May.

Collecting methods. The 25 specimens examined during this study came from 13 counties. This species can be found in most habitats where pine is present, especially pine barrens; where recorded, most adults were collected from Jack pine. Adults are most readily collected by beating branches of male pine trees about two weeks prior to pollination. One adult was collected at light about 1–1.5 months after pollination in July, and another was collected in a Malaise trap.

Distribution.

United States. AL, CT, DC, FL, GA, IL, IN, KS, KY, MA, MD, ME, MI, MN, MS, NC, NH, NJ, NY, OH, PA, SC, TN, TX, VA, WI, WV.

Canada. BC, SK, MB, ON, PQ, NB, NS.

Wisconsin records. Previous Wisconsin records include O'Brien and Wibmer (1982), Kuschel (1989), and Downie and Arnett (1996). The 25 specimens of *C. elongata* examined during this study were recorded from the following counties: Adams, Dane, Douglas, Florence, Juneau, Marathon, Marinette, Marquette, Monroe, Richland, Shawano, Waupaca, and Wood.

***Cimberis pilosa* (LeConte)**

(Fig. 3–4)

Rhinomacer pilosus Leconte 1876: 2.

Cimberis pilosus (LeConte); Anderson 1947: 515.

Neocimberis pilosus (LeConte); O'Brien and Wibmer 1982: 18.

Cimberis pilosa (LeConte); Kuschel 1989: 139.

Description. Length 2.0–3.8mm. Body elongate-oval. Integument reddish-brown to brown, if elytra reddish-brown head, prothorax and sterna often darker; antennae, prerostrum and legs partially to entirely reddish-brown. Vestiture consisting of recumbent to semierect, recurved, greyish or reddish setae. Frons 1.37–1.57X dorsal tip of rostrum, usually densely punctate. Rostrum strongly saddled basally, slender, 0.98–1.33X pronotal length, abruptly widened basally towards eyes. Labrum trapezoidal, sides converging from the base, apical margin rounded or subtruncate. Antennae reaching eyes at segment four or five. Eyes small, more or less circular in outline, strongly convex, with long interfacettal setae. Pronotum width 1.04–1.28X length, strongly rounded laterally, truncate or emarginate apically. Elytra elongate, length 1.76–1.94X width. Femora moderately to strongly swollen. Sexual dimorphism present: abdominal sternites 3–4 of female each with one setiferous pit of variable size.

Diagnosis. *Cimberis pilosa* can be distinguished by the trapezoidal labrum with sides converging from the base and rounded to subtruncate apical margin, small, convex eyes, yellow or rust-brown elytra with white setae, and by the smaller size.

Natural history. Adults are associated with male pollen-bearing flowers of pine (*Pinus* spp.), including Jack pine (*P. banksiana*), longleaf pine (*P. palustris*), Virginia pine (*P. virginiana*), and Scots pine (*P. silvestris*).

Phenology. In Wisconsin, adults were collected from April – June.

Collecting methods. The 19 specimens examined during the study came from eight counties and represent a **NEW STATE RECORD**. This species can be found in most habitats with pines, especially pine barrens; most specimens examined were collected from Jack pine. Adults can be collected most readily by beating branches of male pine trees between late April and early May, especially those of Jack pine. One specimen was collected from a Lindgren funnel trap suspended on Jack pine.

Distribution.

United States. United States: AL, CO, DC, FL, GA, IL, LA, MA, MD, ME, MI, MN, MS, NC, NH, NJ, NY, OH, PA, TX, VA, WI.

Canada. ON, PQ, NB.

Wisconsin Records. Douglas, Florence, Juneau, Marathon, Marquette, Richland, Shawano, Wood.

Family Anthribidae Billberg

Anthribidae consists of 3,860 species in 371 genera across the world's temperate and tropical regions (Valentine 1998), with a richer fauna in the subtropics and tropics.

Valentine (1960) revised the family for North America north of Mexico, including 87 species in 23 genera. In 1998, he updated that statistic and reported the Nearctic fauna consists of 88 species in 30 genera within 17 tribes. He also noted (Valentine 1998) that an additional 32 species of *Ormiscus* Waterhouse remained undescribed, as well as a few species in other genera represented by inadequate material. In Canada, 20 species in 10 genera have been recorded (Bright 1993; Bousquet et al. 2013), while in Wisconsin, published records of six species in six genera existed prior to this study (Downie and Arnett 1996). For the Wisconsin records, only one of the six species had records at the county level. At the conclusion of this study, there were 21 species in 13 genera recorded from Wisconsin.

Monophyly of Anthribidae is supported by the possession of more than five setae on the frons (larva); an adult autapomorphy is the notosternal suture represented by a weak transverse line extended vertically to the notum (Marvaldi and Morrone 2000).

Most anthribids are wood-borers and many of them are often found on wood decaying ascomycete fungi. In many cases, adults obtain their nutrients either by directly feeding on fungi or indirectly feeding on the decaying matter around the fungi; in other cases, adults feed on seeds, pollen, bark or even scale insects. In general, adults can be found associated with larval foods.

Adults are most frequently collected by beating dead or dying branches, clumps of dead twigs, or branches of hardwood trees. They can also be collected by sweeping weedy fields or overgrown areas, by examining trees with pyrenomycete fungi (Valentine 2002), and occasionally with passive traps such as Malaise traps, flight-intercept traps or light traps.

Family diagnosis. Anthribidae is distinguished from other families of Curculionoidea by the broad, flat rostrum (though in some species it can be relatively thick), absence of gular sutures, 4-segmented, movable maxillary palpi, free labrum, ventrally spongy pubescent 3rd tarsomere, and by the exposed pygidium.

Key to the Wisconsin Genera of Anthribidae

1. Antennae inserted on anterior surface of the rostrum or head; antennal club never 4-segmented (Subfamily Choraginae Kirby) **2**
- Antennae inserted on lateral or ventral surface of the rostrum or head; antennal club may be 4-segmented (Subfamily Anthribinae Billberg) **4**
- 2(1). Eyes rounded, upper edges not closer to each other than lower edges (Tribe Araecerini Lacordaire); lateral prothoracic carinae present, transverse pronotal carina basal **Araecerus** Schönherr
- Eyes elongate-oval, upper edges closer to each other than lower edges (Tribe Choragini Kirby); lateral and transverse prothoracic carinae variable **3**
- 3(2). Head not retractile into prothorax due to ocular width; pronotum with a raised reticulum forming a honey-comb pattern; size relatively larger **Choragus** Kirby
- Head capable of being retracted into prothorax; pronotum punctate but not raised reticulate; size relatively smaller **Euxenus** LeConte

- 4(1). Mandibles each with a strongly toothed ventral cutting edge, as well as normal dorsal edge (Tribe Cratoparini LeConte) ***Euparius* Schönherr**
 — Mandibles without a toothed ventral cutting edge 5
- 5(4). Eyes entire, truncate, or finely sinuate on anterior margin 6
 — Eyes strongly emarginate on anterior margin (very subtle in *Anthribus*) 10
- 6(5). Entire face with conspicuous, white pubescence; pronotal disc with a pit or groove; elytra each with a conspicuous patch or band of white pubescence (Tribe Tropiderini Lacordaire) 7
 — White pubescence, if present on face, confined to spots, if conspicuous; pronotum with disc concave, with a central swelling; elytra with multiple tufts of erect setae 8
- 7(6). Pronotum with a smooth, longitudinal, shallow groove from central pit to central carina; elytra each with a pale antemedial patch, not reaching lateral margins ***Gonotropis* LeConte**
 — Pronotum with a sinuous, transverse, median groove; elytra each with a pale postmedial band that reaches lateral margins ***Eurymycter* LeConte**
- 8(6). Eyes finely faceted, with > 26 facet rows across maximum width 9
 — Eyes coarsely faceted, with ≤ 26 rows across maximum width (Tribe Piesocorynini Valentine) ***Piesocorynus* Dejean**
- 9(8). Fusion of rostrum with venter of head capsule forming a broad curve; rostrum long, flattened and apically flared; antennae without whorls of long, erect setae; minimum interocular distance greater than minimum width of rostrum near base (Tribe Allandrini) ***Allandrus* LeConte**
 — Fusion of rostrum with venter of head capsule indicated by a transverse groove or abrupt angle; rostrum shorter, not apically flared; interocular distance not greater than minimum width of rostrum (Tribe Platyrhinini) ***Goniocloeus* Jordan**
- 10(5). All 3rd tarsomeres with lobes fused along midline (Tribe Anthribini) ***Anthribus* Geoffroy**
 — All 3rd tarsomeres with lobes separate 11
- 11(10). Rostrum, excluding mandibles, narrowed from base to apex; rostral apex with central 1/3 longer than sides (Tribe Trogonorhinini) ***Trigonorhinus* Wollaston**
 — Rostrum quadrate or apically widened; rostral apex not narrower than base and not prolonged medially (Tribe Zygaenodini) 12
- 12(11). Transverse pronotal carina clearly antebasal, incapable of contacting elytral base; pronotal hind angles not projecting laterad the humerae ***Ormiscus* Waterhouse**
 — Transverse pronotal carina sub-basal or basal, capable of contacting elytral base at some point; pronotal hind angles often projecting laterad the humerae ***Eusphyrus* LeConte**

Subfamily Choraginae Kirby

Tribe Araecerini Lacordaire

Genus *Araecerus* Schönherr

Araecerus Schönherr 1823: 1135.

Araeocerus Schönherr 1839: 273.

Araeosarus Walker 1859: 262.

Doticus Pascoe 1882: 27.

Type species. *Anthribus coffeae* Fabricius, 1801, by original designation and monotypy.

Generic diagnosis. *Araecerus* can be recognized by having the antennae inserted on the anterior surface of the rostrum or head, by the rounded eyes, by the head non-retractile into the pronotum, by the basal transverse pronotal carina, and by the presence of lateral prothoracic carinae.

***Araecerus fasciculatus* (DeGeer)**

Curculio fasciculatus DeGeer 1775: 276. *Araecerus fasciculatus* (DeGeer); Wolfrum 1929: 105.

Description. Length (head excluded) 2.4–4.5mm. Body elongate. Integument light to dark red and black. Vestiture consisting of abundant, recumbent, grey to light brown or dark brown to nearly black setae; pronotal vestiture more intermixed and often darker medially on disc; setae of elytral interstriae light and dark, appearing as spots. Rostrum truncate, slightly prolonged apically. Eyes rounded. Pronotal width 1.5X length, widest at base, base broadly emarginate, sides conspicuously converging apically; transverse carina basal, acute, lateral carinae forming a 90° angle with transverse carina; shape convex, surface densely punctate. Elytral length 1.2X width, 1.8X pronotal length; striae weakly impressed, with shallow punctures; interstriae with abundant punctures that are smaller than those of striae. Sexual dimorphism present in pygidium and metathoracic sternum: pygidium of male vertical, evenly rounded apically, and pygidium of female inclined, oblique or pointed apically; metathoracic sternum of male with pale trichobothrial patch mesally.

Diagnosis. *Araecerus fasciculatus* can be distinguished from other members of *Araecerus* by the larger size (2.4–4.5 mm, excluding head), upturned apex of the lateral prothoracic carina, curved, internally denticulate prothoracic tibiae, short, unusually broad prothoracic tarsomeres, and by the absence of elytral tubercles, crests, or carinae. It can be distinguished from other anthribids by having the antennae inserted on the head or anterior surface of the rostrum, rounded eyes with the upper margins not closer than the lower margins, elongate body, and by the extruded head.

Natural history. This species has a cosmopolitan distribution but probably survives outdoors only in warmer climates. That said, its northern distributional limit is unknown (Valentine 1998). Larvae, pupae and adults have been found in the pith of corn (*Zea mays*) and they are able to cause stunted ears, with the most noticeable damage being on the joints (Tucker 1909). This species is a generalist and feeds on dozens of dried and/or living plant tissues, including nutmeg, dried fruits, potatoes, chocolate, coffee beans, corn stalks, dry decayed cotton balls, as well as berries of chinaberry trees (Tucker 1909). The adults also have been recorded to feign death for a short time when disturbed, as is commonly observed for other weevils (Tucker 1909).

Distribution.

United States. AL, AZ, CA, DC, FL, GA, IL, KS, LA, MA, MS, NC, NJ, NY, OH, SC, TX, WA, WI.

Canada. BC, ON, PQ.

Wisconsin Records. Downie and Arnett (1996) indicated Wisconsin in the distribution, but no Wisconsin specimens were examined during this study from fieldwork or collections.

Tribe Choragini Kirby

Genus *Choragus* Kirby

Choragus Kirby 1819: 447.

Alticopus Villa and Villa 1833: 35.

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

Generic diagnosis. *Choragus* can be recognized by having the antennae inserted on the anterior surface of the rostrum or head, the elongate-oval eyes with the upper edges closer to each other than the lower edges, head not retractile into the prothorax, pronotum with a raised reticulum that forms a honey-comb pattern, and by the 11-segmented antennae.

***Choragus zimmermanni* LeConte**

(Fig. 5–6)

Choragus zimmermanni LeConte 1876: 408.

Description. Length 1.2–1.3mm (head excluded). Body subcylindrical. Integument light brown to dark brown, without luster; antennae and legs yellow, slightly pubescent. Vestiture consisting of sparse, white to yellow setae. Rostrum flattened, short, dilated, subtruncate apically. Antennal segments 1–3 conical, 4–8 slender, 9–11 forming a loose, setaceous club. Eyes slightly convex, longer than wide, with about 10 rows of facets across. Pronotal width 1.6X length, widest at base; surface densely punctate, finely reticulate. Elytral length 1.3X width, 2.0X pronotal length; striae with deep punctures, striae 9–10 complete and separate to elytral apex, 9th stria angulate above metathoracic sternum; interstriae densely and coarsely granulate, interstria 10 swollen. Pretarsus with claws each possessing a basal tooth.

Diagnosis. *Choragus zimmermanni* can be recognized by the elytra not having an extra group of punctures near interstria 10, interstria 10 swollen and 9th stria angulate above the metathoracic sternum, straight pronotal carina, fine pronotal reticulum, granulate interstriae, and by the circular (instead of slit-like) floors of the elytral punctures. This species also tends to be smaller than most other *Choragus* species, usually around 1.3mm.

Natural history. In general, members of *Choragus* are associated with pyrenomycete fungi in the families Xylariaceae and Diatrypaceae. This species has been collected from sweet gum (*Liquidambar styraciflua*) in Florida (Blatchley and Leng 1916) and from basswood (*Tilia americana*) in Wisconsin.

Phenology. In Wisconsin, adults of this species have been collected in July and August.

Collecting methods. The seven specimens examined during this study came from three counties and represent a **NEW STATE RECORD**. Two specimens were collected in Malaise traps in a *Fagus-Acer* forest, two from Lindgren funnel traps, one from a flight-intercept trap, one by sweeping, and another by beating branches of live basswood (*Tilia americana*) in a dry-mesic southern forest.

Distribution.**United States.** DC, FL, KS, MA, MD, MI, NC, NJ, NY, TX, WI.**Wisconsin county records.** Milwaukee, Ozaukee, Sauk.**Genus *Euxenus* LeConte***Euxenus* LeConte 1876: 409.*Holostilpna* Jordan 1907: 382.

Type species. *Euxenus punctatus* LeConte, 1876, by monotypy.

Generic diagnosis. *Euxenus* can be easily recognized by the presence of two carinae on each lateral pronotal margin, very small size, glabrous, shining body, and by the retractile head.

***Euxenus punctatus* LeConte**

(Fig. 7–8)

Euxenus punctatus LeConte 1876: 409.

Description. Length 0.8–1.2 mm (head excluded). Body short, oval, convex, nearly glabrous, shining. Integument light to dark brown. Vestiture consisting of a few scattered, short, erect, almost invisible setae. Head retractile. Rostrum sinuate apically. Frons weakly convex, surface weakly punctate, reticulate. Pronotal width 1.4–1.5X length, widest at base; surface convex, with distinct, small, close, evenly spaced punctures; broadly angulate basally, with prominent basal transverse carina; laterally with two carinae on basal 1/2, these separated by distinct row of punctures, with upper carina distinct

and elevated, lower carina less developed. Scutellum very small, almost invisible. Elytra about as wide as long, widest near middle, length 1.4–1.6X pronotal length; broadly rounded apically and laterally; striae punctate in irregular double rows; interstriae smooth. Abdomen very short. Pygidium vertical.

Diagnosis. *Euxenus punctatus* is the smallest primitive weevil species found in Wisconsin. It can be distinguished from other anthribids by the small size, compact, glabrous body, and by the retractile head. It can be distinguished from other species of *Euxenus* by elytral striae 2–7 with fields of confused punctures instead of uniseriate punctures, and by the microreticulate pronotal surface between the punctures.

Natural history. Valentine (1998) reared *E. punctatus* from the fungus *Hypoxyton perforatum* growing on dead twigs of common dogwood (*Cornus sanguinea*). He also observed this species on ridges of a reddish-brown pyrenomycete growing on dead, debarked branches that were partially buried in leaf litter. In Wisconsin, it has been found near a slime mold plasmodium.

Phenology. In Wisconsin, adults have been collected in July.

Collecting methods. The two Wisconsin specimens examined during this study from two counties represent a **NEW STATE RECORD**. One specimen was found near a slime mold plasmodium under bark of a fallen tree in a southern-mesic forest; the other was found at a point where one log was sitting atop another, at the edge of a small wooded patch near Helena Marsh, in the early afternoon.

Distribution.

United States. AL, DC, FL, MI, OH, WI.

Canada. PQ, NB.

Wisconsin county records. Iowa, Racine.

Subfamily Anthribinae Billberg

Tribe Allandrini Pierce

Genus *Allandrus* LeConte

Allandrus LeConte 1876: 396.

Type species. *Allandrus bifasciatus* LeConte 1876, by monotypy.

Generic diagnosis. *Allandrus* can be recognized by the widely separated eyes, with the minimum interocular distance always greater than the minimum width of the rostrum near the base, the flat, spatulate and apically flared rostrum that is narrower at the base than apex, transverse antebasal pronotal carina, and by the reticulate-punctate pronotal surface.

Key to the Wisconsin Species of Adult *Allandrus*

1. Supra-scrobal carina absent or not surpassing the posterior margin of scrobe; male with rostrum, prothoracic tibiae and antennae normal; elytral surface uneven, more strongly swollen behind bases, foveae behind swellings deeply impressed; length 2.3–2.9 mm *A. brevicornis* Frost
- Supra-scrobal carina surpassing posterior margin of scrobe; male rostrum with keel-like, raised median carina, prothoracic tibiae strongly curved; elytral surface nearly even, with obscure basal swellings, fovea behind swellings absent or very weak; length 2.6–3.5mm *A. bifasciatus* LeConte

***Allandrus bifasciatus* LeConte**

(Fig. 9–10)

Allandrus bifasciatus LeConte 1876: 396.

Description. Length (head excluded) 2.6–3.5 mm. Body elongate. Integument black; elytra reddish to dark brown. Vestiture consisting of a mixture of white, light brown, and dark brown to black setae; elytra with predominantly dark setae with white setae in scattered small patches. Rostrum of male with keel-like, sharply elevated longitudinal carina, that of female with carina evident but not elevated; surface with dense, deep punctures. Frons convex and broad, with dense, deep punctures. Antennae of male 2.0X longer than those of female. Eyes entire, slightly oval. Pronotum about as wide as long, widest at lateral extension of transverse carina, transverse carina antebasal, strongly, sharply elevated, rather strongly emarginate; disc convex, surface even and very weakly impressed before middle, with dense, deep punctures that are internally reticulate. Elytral length 1.6X width, length 2.0X pronotal length; surface of disc generally nearly even, with obscure basal swellings; striae deeply impressed, with moderate punctures; interstriae flat, densely and minutely punctate. Pretarsus with each claw cleft, inner tooth minute. Sexual dimorphism present in tibiae: prothoracic tibiae of male strongly curved and bent.

Diagnosis. *Allandrus bifasciatus* can be distinguished from *A. brevicornis* by the suprascrobal carina that surpasses the antennal scrobe, nearly even elytral surface with obscure basal swellings, the long antennae, high median keel or carina on the rostrum, and by the strongly curved and bent prothoracic tibiae in the males. It can be distinguished from *A. populi* by the presence of a small, medial tooth on each pretarsal claw.

Natural history. This species is a specialist on *Tilia* species (Blatchley and Leng 1916; Majka et al. 2007), including American basswood (*Tilia americana*).

Phenology. In Wisconsin, adults have been collected July – September.

Collecting methods. In Wisconsin, 49 specimens were examined during this study from 11 counties. They can be readily collected by beating live or dead branches of American basswood (*Tilia americana*).

Distribution.

United States. IA, KS, IL, IN, NY, MI, OH, PA, SC, VA, WI.

Canada. ON, PQ, NB, NS.

Wisconsin county records. This species was previously recorded from Wisconsin by Blatchley and Leng (1916). Dane, Dodge, Dunn, Eau Claire, Grant, Iowa, Milwaukee, Polk, Racine, Sauk, Waukesha.

***Allandrus brevicornis* Frost**

(Fig. 11–12)

Allandrus brevicornis Frost 1920: 252.

Description. Length (head excluded) 2.3–2.9 mm. Body elongate. Integument black. Vestiture consisting of a mixture of white, light brown, and dark brown to black setae. Rostrum with punctures as on frons, that of male with elevated longitudinal carina, carina of female not distinctly elevated. Frons convex, broad, punctate, surface granulate between punctures. Eyes entire, slightly oval. Pronotum about as wide as long, widest at lateral extension of transverse carina, transverse carina antebasal, strongly, sharply elevated, rather strongly emarginate; disc convex, surface even and very weakly impressed before middle, with dense, deep punctures that are reticulate internally. Elytral length 1.4X width, 2.0X pronotal length; surface with distinct, elevated basal swelling on each elytron, distinctly impressed behind swellings; striae with punctures moderate in size, deeply impressed; interstriae flat, densely and minutely punctate. Prothoracic tibiae of male straight. Pretarsus with claws cleft, inner tooth minute.

Diagnosis. *Allandrus brevicornis* can be distinguished from other *Allandrus* species by the supra-scrobal carina that is absent or not surpassing the posterior margin of the scrobe, uneven elytral surface with strongly elevated swellings behind the elytral base, much lower rostral carina, and by and the straight prothoracic tibiae in males.

Natural history. This species is generally associated with willows (*Salix* spp.) (Bright 1993).

Phenology. In Wisconsin, adults have been collected June – September.

Collecting methods. The nine Wisconsin specimens examined during this study from four counties represent a **NEW STATE RECORD**. Most specimens were collected in Malaise traps; one was recovered from a Lindgren funnel trap.

Distribution.

United States. CA, CO, IL, MA, ME, MI, NJ, RI, WI, WV.

Canada. AB, SK, MB.

Wisconsin county records. Jackson, La Crosse, Oneida, Sauk, Waukesha.

Tribe Anthribini Billberg

Genus *Anthribus* Geoffroy

Anthribus Geoffroy 1762: 306.

Brachytarsus Schönherr 1823: 1135.

Psuedobrachytarsus Pierce 1930: 29.

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

Generic diagnosis. *Anthribus* can be distinguished by having all 3rd tarsomeres with the lobes fused down the midline.

***Anthribus nebulosus* Forster**

(Fig. 13–14)

Anthribus nebulosus Forster 1770: 5.

Antribus variegatus Fourcroy 1785: 136.

Bruchus clathratus Herbst 1786: 158.

Bruchus varius (Fabricius 1787: 42).

Anthribus capsularis Scriba 1790: 129.

Brachytarsus nebulosus (Forster); Kuster 1859: 457.

Description. Length 1.5–4.6mm. Body oblong. Integument brown to dark brown; beneath vestiture slightly microsculptured and shining. Vestiture consisting of tessellate, dark brown and whitish-grey, hair-like setae, that of antennae and legs darker or paler brown. Head distinctly broader than long, broadest basally thence strongly narrowed apically in rounded lines. Rostrum flattened and broad, narrowed apically; apex truncate, without central prolongation. Antennae 11-segmented, with 3-segmented conspicuous terminal club. Eyes entire, round. Pronotal width about 1.7X length, sinuate basally and with slightly pointed basal projections; lateral carinae reaching middle of pronotum only; surface strongly, densely punctate; basal fovea absent. Scutellum small, round to triangular. Elytral length about 1.6X width, about 2.0X. pronotal length, width slightly over 1.0X pronotal width; shape oblong, parallel-sided; striae distinct; interstriae wider than striae, not punctate apart from microsculpture, interstriae 1–4 with sub-basal bulge, interstria 3 with vestiture raised. Pretarsus with each claw toothed. Pygidium vertical.

Diagnosis. *Anthribus nebulosus* can be distinguished from other species of *Anthribus* by the shortened lateral pronotal carinae that are present only along the basal portion of the pronotum. It can be distinguished from other anthribid species by the fused or connate lobes of the 3rd tarsomeres, rostrum that narrows apically and lacks the apical prolongation in the central 1/3 (in contrast to *Trigonorhinus*), and by the tessellate vestiture.

Natural history. *Anthribus nebulosus* preys on, and is a parasitoid of, scale insects (Coccidae and Kermesidae). It occurs commonly in deciduous forests, spruce forests, orchards, and on ornamental trees infested with scale insects (Hoebeke and Wheeler 1991). It has been recorded from various hardwood trees, including Colorado blue spruce (*Picea pungens*), white spruce (*Picea glauca*), Norway spruce (*Picea abies*), oak (*Quercus* spp.) and American basswood (*Tilia americana*) (Hoebeke and Wheeler 1991; Gønget 2003), and can be found generally on scale insect-infested plants. Adults have also been found on flowers of midland hawthorn (*Crataegus laevigata*); they have also been recorded to overwinter in bark cracks or in the empty ovisacs of scale insects (Gønget 2003). This species is reported to eat a hole in the semisoft exoskeleton of a female scale insect and then lay an egg inside the brood chamber of the scale, closing the wound with a secretion (Howden 1992). Oviposition begins in May shortly after oviposition by the scale insects. The adult beetle lays one egg in the ovisac of the female scale insect and there the larva develops. Pupation takes place in June-July inside the ovisac, and adults emerge a few weeks after and either feed on honeydew or the eggs and remains of other scale insects (Gønget 2003). This species was intentionally introduced to the eastern United States in the late 1970's to control scale insects that were considered pest species, though some authors speculate they were introduced as early as the late 19th century (Hoebeke and Wheeler 1991). In Europe, 15 scale insect species have been recorded as prey of *A. nebulosus*, three of which are considered economically significant species in the United States: *Parthenolecanium corni* (Bouche) (Coccidae), *Physokermes hemicryphus* Dalman (Coccidae), and *Eulecanium tiliae* Linnaeus (Kermesidae) (Hoebeke and Wheeler 1991).

Phenology. The only known Wisconsin specimen was collected in July.

Collecting methods. The single Wisconsin specimen examined during this study from Dane County represents a **NEW STATE RECORD**. It was collected by beating branches of basswood (*Tilia americana*) along the shore of Lake Monona in Madison, in a mixed hardwood forest.

Distribution.

UNITED STATES. CT, MA, NY, VA, WI.

Wisconsin county records. Dane.

Tribe Cratoparini LeConte

Genus *Euparius* Schönherr

Euparius Schönherr 1823: 1135.

Cratoparis Dejean 1833: 235.

Caccorhinus Sharp 1891: 321.

Type species. *Anthribus lunatus* Fabricius, 1801, by monotypy.

Generic diagnosis. *Euparius* can be easily recognized by the presence of a sharp tooth on the ventral as well as the dorsal cutting edges of the mandibles; the ventral tooth usually larger and nearer to the base than the dorsal tooth. It can also be recognized by the conspicuous vestiture that consists of light brown, dark brown and white setal vestiture, basal transverse pronotal carina, truncate or slightly convex eyes that are adjacent to the antennal grooves, and by the broadly and sinuately emarginate rostral apex.

Key to the Wisconsin Species of *Euparius*

1. Mesothoracic tibiae each with two narrow pale rings; pronotal hind angles rectangular with angles rounded off; lateral pronotal carina straight; length (head excluded) 3.3–5.8 mm *E. paganus* Gyllenhal
- Mesothoracic tibiae each with one broad median pale ring; pronotal hind angles slightly less than a right angle; lateral pronotal carina sinuate near base in dorsal and lateral views; length (head excluded) 4.5–8.8 mm *E. marmoreus* (Olivier)

***Euparius marmoreus* (Olivier)**

(Fig. 15–16)

Macrocephalus marmoreus Olivier 1795: 12.*Euparius marmoreus* (Olivier); Blatchley and Leng 1916: 37.

Description. Length (head excluded) 5.5–7.0 mm. Body elongate. Integument dark reddish-brown. Vestiture consisting of abundant setae, those on frons and rostrum light brown or white with a few light brown setae upper medially; pronotal and elytral setae an intermix of light brown, dark brown and white, pronotal disc usually with two dark brown spots basolaterally and one light brown patch basally; elytral disc with one large white patch anteriorly; interstriae with numerous patches. Rostrum prolonged, thick, thickness 0.3X rostral width. Frons convex, with prominent but weakly elevated median carina extending from epistomal margin to around middle of eyes. Eyes round, prominent. Antennae 11-segmented, segments 3–8 similar, filiform, distal three segments forming a conspicuous club. Pronotal width 1.1–1.2X long, widest basally; sides converging apically, broadly emarginate basally; transverse carina basal, acute, lateral carina acute, joining transverse carina at about an 80° angle; disc convex, with medial and basal impressions; surface strongly punctate-reticulate, usually obscured by vestiture. Elytral length 1.6–1.7X width, broadly rounded apically; disc weakly impressed along suture and more distinctly impressed over declivity; striae with shallow, moderate to large punctures. Pygidium vertical, broadly rounded apically.

Diagnosis. *Euparius marmoreus* can be distinguished from *E. paganus* by the presence of a single broad, median, pale ring on each mesothoracic tibia, pronotal hind angles at slightly less than a right angle, sinuate base of the lateral carina, and by the larger size (most commonly around 6.0 mm).

Natural history. This species is generally associated with fungi and dead oaks (*Quercus* spp.) (Anderson 1992). Specifically, it is associated with polypore fungi in the following genera: *Trametes*, *Megasporoporia*, *Trichaptum*, *Phlebia*, *Panis*, *Pereniporia* (Valentine 1998). Specific species include *Megasporoporia setulosa*, *Trichaptum bifforme*, *Trichaotum abietinus*, *Trichaptum sector*, *Phlebia hydroides*, *Panis rudis*, *Pereniporia medullapanis*, *Trametes hirsutus*, and *Trametes versicolor* (Valentine 1998; Bloem et al. 2002). In Wisconsin, it has been found in polypore fungi on fallen dead logs of big toothed aspen (*Populus grandidentata*), on the underside of *Trametes hirsutes*, and in *Stereum*-infested dead oak branches.

Phenology. In Wisconsin, adults have been collected from March – November, with a peak May – July.

Collecting methods. The 113 Wisconsin specimens examined during this study from 23 counties represent a **NEW STATE RECORD**. This species is most often collected by beating dead logs or branches that are infested by fungi and by examining fungi on dead logs. It has also been collected from flight intercept, Malaise, and Lindgren funnel traps, Berlese leaf litter samples, by rearing larvae from fungus-infested dead branches, as well as light traps or simply hand-collected at light. It was recovered from an unbaited Lindgren funnel trap in an oak pine forest, a Malaise trap in old *Populus* deadfall, and beaten from *Stereum*-infested dead oak branches.

Distribution.

United States. AL, FL, GA, IA, LA, MO, MT, NB, NC, SC, TX, VA, WI.

Canada. MB, ON, PQ, NB, NS.

Wisconsin county records. Adams, Brown, Burnett, Dane, Dodge, Grant, Green, Iowa, Jackson, Jefferson, Juneau, La Crosse, Marathon, Marinette, Marquette, Monroe, Ozaukee, Richland, Rock, Sauk, Waukesha, Walworth, Winnebago.

***Euparius paganus* Gyllenhal**

(Fig. 17–18)

Euparius paganus Gyllenhal 1833: 142.

Description. Length 3.3–5.8mm (head excluded). Body elongate. Integument dark reddish-brown. Vestiture consisting of abundant, hair-like setae; setae on frons and rostrum light brown or white with a few light brown setae upper medially; setae on pronotum and elytra an intermix of light brown, dark brown and white, pronotal disc usually with two dark brown spots basal-laterally and one light brown patch basally; elytral disc with one large white patch anteriorly; interstriae with numerous patches. Rostrum prolonged, thick, thickness 0.2–0.3X rostral length. Frons convex, with prominent but weakly elevated median carina extending from epistomal margin to around middle of eyes. Eyes rounded, prominent. Antennae 11-segmented, distal three segments forming a conspicuous club. Pronotal width 1.1–1.2X length, widest basally; sides converging apically, emarginate basally; transverse carina basal, acute, lateral carina straight; pronotal hind angles rectangular with angles rounded off; disc convex, with medial and basal impressions, basal impression deep, median impression broad, weak, longitudinal; surface strongly punctate-reticulate, usually obscured by vestiture. Elytral length 1.6–1.7X width, broadly rounded apically; disc weakly impressed along suture and more distinctly impressed over declivity; striae with shallow, moderate to large punctures. Pygidium vertical, broadly rounded apically.

Diagnosis. *Euparius paganus* can be distinguished from *E. marmoreus* by the mesothoracic tibiae each having two narrow pale rings as opposed to one broad pale ring, pronotal hind angles rectangular with the angles rounded off, the straight lateral carina on the pronotum, rounder eyes, and by the smaller size: 3.3–5.8 mm (as opposed to 5.5–7.0 mm).

Natural history. For many years this species was considered a synonym of *E. marmoreus*. Valentine (1960) elevated it back to species level, noting the two species coexist over much of the eastern United States and occasionally are found in the same polypore fungi. Both species exhibit north-south geocline variation in their morphology, the greatest differences being between the northern *E. marmoreus* and the southern *E. paganus*, and the greatest similarity in the central range, with three suggested possible hybrid zones. *Euparius paganus* is a specialist associated with the polypore fungus *Irpex lacteus*. In Wisconsin, larvae were found inside of dead branches infested with *I. lacteus*, and adults were reared from these branches, emerging late April to May.

Phenology. In Wisconsin, adults have been collected April – August, with a peak May – July

Collecting methods. In Wisconsin, 50 specimens were examined during this study from 11 counties. This species is most commonly collected by beating dead branches of hardwood trees or dead logs that are infested with *I. lacteus*, or collected by hand by examining dead logs or branches that are infested with the same fungus. It has also been collected from flight-intercept traps, Malaise traps, light traps or simply at light, and one specimen was recorded from a *Striacosta albivosta* pheromone baited trap. Specifically, it has been collected by beating branches of fallen dead oak log infested with *I. lacteus* and by beating dead branches of black walnut infested with *I. lacteus*. A series of specimens was reared from infested dead oak branches that were collected in April; adults emerged in May and lived until August.

Distribution.

United States. FL, GA, IN, KS, MA, NY, TX, WI.

Canada. PQ, NB.

Wisconsin county records. This species has previously been recorded from Wisconsin (Valentine 1960; Downie and Arnett 1996). Columbia, Dane, Grant, Iowa, Ozaukee, Sauk, Sheboygan, Trempealeau, Washington, Waukesha, Winnebago.

Tribe Piesocorynini Valentine**Genus *Piesocorynus* Dejean**

Piesocorynus Dejean 1834: 235.

Camptotropis Jekel 1855: 136.

Type species. *Euparius dispar* Gyllenhal, 1833, by monotypy.

Generic diagnosis. *Piesocorynus* can be distinguished by the oval, entire and coarsely faceted eyes (14–24 longitudinal rows of facets). The only other genus with this character is *Brevibarra*, which is not recorded from Wisconsin. It can also be recognized by the length of the 3rd antennal segment (longer than either the 2nd or 4th), lobed elytral bases overhanging the pronotal base, and by the apically rounded intercoxal process of the mesothoracic sternum.

Key to the Wisconsin Species of *Piesocorynus*

1. Elytra blackish with grey tessellations or tint, without yellow or brown pubescence; basitarsi brownish *Piesocorynus moestus* (J. E. LeConte)
- Elytra with brown or yellow tessellations; basitarsi more grey than brown *Piesocorynus mixtus* LeConte

***Piesocorynus mixtus* LeConte**

(Fig. 19–20)

Piesocorynus mixtus LeConte 1876.

Description. Length 4.7–6.0 mm. Body oblong, cylindrical. Integument brown. Vestiture consisting of short, brown, grey or dull yellow setae, the latter predominantly on elytra, grey setae forming large patch on head and small spots on alternate elytral interstriae; legs with grey annulations. Antennae slender, joints of club subequal in length, 10th and 11th antennomeres slightly shorter than 9th. Head densely punctate. Rostrum prolonged, broad, slightly widening apically, widest at apex. Antennae 11-segmented, distal three segments forming a club. Eyes coarsely faceted, with 14–24 longitudinal rows of facets. Pronotum widest at base, converging apically, surface densely punctate. Elytra with striae with deep, close-set punctures; interstriae 2–3 with obtuse elevation on basal 1/4; surface tessellate. Tibiae annulated, with 2–3 lighter patches and two darker patches. Tarsomere two of all three pairs of legs with setae extended apically towards tarsomere three. Pretarsus with each claw possessing a small basal tooth.

Diagnosis. *Piesocorynus mixtus* can be distinguished from *P. moestus* by the yellow or brown elytral pubescence and by the greyish basitarsi. It can be distinguished from other *Piesocorynus* species by the long and slender tarsi, tessellate brown or black elytral interstriae 1–2, the mesothoracic basitarsi of male usually with an anterioventral tubercle or a long spine, and by the minute median tooth on the 2nd abdominal sternite.

Natural history. Adults and larvae of Nearctic species of *Piesocorynus* feed on pyrenomycete fungi of the order Sphaeriales, family Zylariaceae, genera *Biscogniauxia*, *Camillea*, *Daldinia*, and *Hypoxylon*,

and family Diatrypaceae, genus *Diatrype* (Valentine 1998). *Piesocorynus mixtus* is also known to be attracted to light.

Phenology. The one Wisconsin specimen was collected in September.

Collecting methods. The single Wisconsin specimen examined during this study from Adams County represents a **NEW STATE RECORD**. It was collected at fluorescent light.

Distribution.

United States. AL, DC, FL, IN, LA, MD, NC, NJ, NY, OH, SC, TX, VA, WI.

Wisconsin county records. Adams.

***Piesocorynus moestus* (J. E. LeConte)**

(Fig. 21–22)

Anthribus moestus LeConte 1824: 172.

Anthribus capillicornis Say 1826: 249.

Piesocorynus moestus (LeConte); Blatchley and Leng 1916: 35.

Piesocorynus moestus (LeConte); Pierce 1930: 24.

Description. Length 2.8–6.0mm. Body oblong, cylindrical. Integument black, that of elytra with grey tessellations. Vestiture consisting of scattered brown and white setae; pronotum with small white patches of setae on apical margin, with a patch anterad the scutellum, and a white patch on each side of the pronotum, these patches in some indistinct or missing; setae on scutellum white. Rostrum prolonged, broad, slightly widening apically, widest at apex. Antennae 11-segmented, long and filiform, distal three segments forming a club. Eyes coarsely faceted, with 14–24 longitudinal rows of facets. Pronotal width at base about 1.5X length, widest basally, sides converging apically; surface finely, densely punctate. Elytral length 1.4X width, 2.0X pronotal length; striae consisting of moderate-sized punctures. Legs with dark grey annulations.

Diagnosis. *Piesocorynus moestus* can be distinguished from other species of *Piesocorynus* by the absence of a median pronotal callus, but with a small white spot on the apical margin, absence of a pale sutural elytral patch, elytral color (blackish with grey tessellations or tint), and by the lack of yellow pubescence.

Natural history. Adults and larvae of Nearctic species of *Piesocorynus* feed on pyrenomycete fungi of the order Sphaeriales, family Zylariaceae, genera *Biscogniauxia*, *Camillea*, *Daldinia*, and *Hypoxyton*, and family Diatrypaceae, genus *Diatrype*. Fragmentary but overlapping data suggest that each species feeds on more than one genus of fungus (Valentine 1998). Pierce (1930) recorded *P. moestus* from old logs and beneath loose bark.

Phenology. In Wisconsin, the two specimens collected were found in June and September.

Collecting methods. The two Wisconsin specimens examined during this study from two counties represent a **NEW STATE RECORD**. One was collected from a Malaise trap, the other from a Lindgren funnel trap.

Distribution.

United States. DC, GA, FL, IN, LA, OH, MD, NJ, NY, SC, TX, WI.

Wisconsin county records. Adams, Grant.

Tribe Platyrhinini Imhoff**Genus *Goniocloeus* Jordan**

Goniocloeus Jordan 1904: 260.

Strabus Jekel 1860: 239.

Type species. *Goniocloeus baccatus* Jordan, 1904: 262, by original designation.

Generic diagnosis. *Goniocloeus* can be recognized by the pronotal configuration: with a paired juxta-medial depression or simply convex, the lateral pronotal carina ending in a low ridge, obliquely protruding, finely faceted eyes, antebasal transverse pronotal carina, flat rostrum with rostral width more than twice that of interocular distance, and by the merger of the rostrum with ventral side of the head, indicated by a transverse groove or an abrupt angle.

***Goniocloeus bimaculatus* (Olivier)**

(Fig. 23–24)

Macrocephalus bimaculatus Olivier 1795: 14.

Anthribus quadrinotatus Say 1826: 249.

Tropideres bimaculatus (Olivier); Blatchley and Leng 1916: 31.

Tropideres barberi Pierce 1930: 13.

Goniocloeus bimaculatus (Olivier); Valentine 1960: 72.

Description. Length 4.5–6.0mm. Body elongate. Integument black. Vestiture consisting of tufts of black setae and some paler scattered setae; pronotum with several spots of white setae and an elongate spot before the scutellum; elytra each with a patch of brownish white setae basolaterally and one common patch of transverse white setae apically. Rostrum flattened, width >2.0X width of interocular distance, wider than long but not longer than head. Antennae slender, not reaching pronotal base. Eyes protruding and oblique, finely faceted, with more than 26 rows of facets across the maximal width. Pronotum about as wide as long; disc coarsely, unevenly punctate, surface either convex or with paired, juxtamedial depressions; lateral carina ending in a low ridge; transverse carina antebasal, angulate medially with angle directed forward and obtusely bent laterally. Elytral width slightly >1.0X pronotal width, length 2.0X pronotal length; striae with rows of coarse, deep punctures.

Diagnosis. *Goniocloeus bimaculatus* can be distinguished by the short, flat rostrum that is more than twice the width of the interocular distance, pronotum with several small patches of yellow setae, elytra with a patch of whitish-brown setae basolaterally and a common, transverse patch of white setae apically, by having the fusion of the rostrum with ventral side of the head indicated by a transverse groove or an abrupt angle, and by the finely faceted eyes with more than 26 rows of facets across maximal width.

Natural history. Valentine (1998) collected this species on *Biscogniauxia* spp. fungus on a winterkilled sugar maple, on fungi in the genera *Xylaria* and *Diatrype*, under bark of dead oaks (*Quercus* spp.), and on Osage orange (*Maclura pomifera*).

Phenology. No specific data for Wisconsin specimens.

Collecting methods. This species is likely collected by from under bark of dead hardwood trees that are infested with fungi in the genera *Biscogniauxia*, *Xylaria* and *Diatrype*.

Distribution.

United States. AL, DC, GA, IN, LA, MA, MS, NC, NJ, NY, OH, PA, SC, TN, TX, VA, WI.

Mexico. Country only.

Wisconsin county records. Although previously recorded from Wisconsin (Blatchley and Leng 1916; Downie and Arnett 1996; Valentine 1998), no specimens from Wisconsin were collected during this study and none were seen in museum or personal collections.

Tribe Trigonorhinini Valentine**Genus *Trigonorhinus* Wollaston***Trigonorhinus* Wollaston 1861: 102.*Brachytarsus* LeConte 1876: 405.*Anthribulus* LeConte 1876: 406.*Brachytarsoides* Pierce 1930: 29.**Type Species.** *Trigonorhinus pardalis* Wollaston, by monotypy.**Generic diagnosis.** *Trigonorhinus* can be recognized by the basal, transverse pronotal carina, notched eyes, rostrum narrowing apically with apical corners emarginate so that the rostral center is longer than the sides, and by the separate lobes of all 3rd tarsomeres.**Key to the Wisconsin Species of *Trigonorhinus***

1. Tibiae biannulate or with dark spots *T. alternatus* (Say)
- Tibiae without dark annulations or dark spots 2
2. Length <2.25X maximum body width; form relatively short and flat 3
- Length >2.25X maximum body width, form relatively elongate 4
3. Length 2.0–2.25X maximum body width, 1.8–3.2 mm; pronotal base very shallowly emarginate, arcuate opposite scutellum; elytral setae completely white or intermixed with light brown and white or entirely light brown *T. limbatus* (Say)
- Length 1.8–2.2X maximum body width, 1.3–2.0 mm; pronotal base broadly emarginate, forming shallow “V” opposite scutellum *T. tomentosus* (Say)
4. Elytra with a shared, mid-sutural brown spot or field; dorsal color pattern indistinct; pronotum hood-like *T. rotundatus* (LeConte)
- Elytra each with a prominent brown spot largely on interstriae 2 or 3 to 5, or spots absent; dorsal color pattern distinct, setae very dark in spots contrasting with light brown or white setae over surface, border between colors abrupt, distinct; pronotum not hood-like *T. sticticus* (Boheman)

***Trigonorhinus alternatus* (Say)**

(Fig. 25–26)

Anthribus alternatus Say 1826: 250.*Brachytarsus alternatus* (Say); Blatchley and Leng 1916: 38.*Brachytarsoides alternatus* (Say); Pierce 1930: 30.*Trigonorhinus alternatus* (Say); Valentine 1957: 9.**Description.** Length 2.1–3.3mm (head excluded). Body elongate. Integument dark reddish-brown to black. Vestiture consisting of white and brown setae; pronotal setae white and brown intermixed with white, forming at least three longitudinal stripes; elytral setae silvery with numerous brown spots, with larger medial and basal spots; interstriae 3, 5 and 7 with numerous white setae, 1, 2, 4 and 6 with light brown and dark brown setae scattered in numerous small spots; tibial setal patterns annulate or spotted, with two dark and three pale areas; abdominal sternites each with one lateral spot of brown setae. Rostrum flattened, not transversely impressed, narrowed apically, medial 1/3 prolonged apically; surface densely punctate. Frons flattened, not transversely impressed; surface densely punctate, the rims of the punctures elevated. Pronotal width 1.2X length, widest at basal angles; weakly arcuate laterally, converging to narrowly rounded apical margin; disc evenly convex, weakly impressed before transverse carina; transverse carina basal, weakly emarginate, acutely elevated; surface densely punctate, the rims

of the punctures not elevated, interpunctural space smooth, nitid. Elytral length 1.4X width, weakly arcuate laterally, broadly rounded apically; disc evenly convex; striae moderately impressed in even rows; interstriae flat, densely and finely punctate, 4.0X strial width.

Diagnosis. *Trigonorhinus alternatus* can be recognized by the tibiae that are biannulate or with dark spots, smooth interpunctural space on the elytra, and by the color pattern. *Trigonorhinus alternatus* has been misidentified as *Eusphyrus walshii*, but can be distinguished from it by the rostrum that is narrowed subapically, with the medial 1/3 longer than the sides apically, by the tibial vestiture consisting of two dark spots and three light spots, and by elytral interstriae 3, 5, and 7 possessing numerous white setae.

Natural history. Larvae of this species feed on stems surrounded by plant fragments and debris, then pupate in the stem or in the main stem (Pierce 1930). *Trigonorhinus alternatus* has also been found in fungus galls and flower heads of numerous plant species, as well as overwintering in cotton bolls and ovipositing in kernels of dry corn (*Zea mays*). It has also been recorded from fungus-infested morning glories (Valentine 2002). In Wisconsin, a specimen was collected by sweeping apple (*Malus* spp.).

Phenology. The two specimens collected from Wisconsin were found in June and July.

Collecting methods. The two Wisconsin specimens collected from two counties represent a **NEW STATE RECORD**. One specimen was collected by sweeping apple.

Distribution.

United States. AL, CA, CO, DC, FL, IA, IL, IN, KS, MA, MI, MO, NC, NY, OH, OR, PA, SC, TX, UT, VA, WI.

Canada. AB, SK, MB, ON, PQ.

Wisconsin county records. Dane, Dodge.

***Trigonorhinus limbatus* (Say)**

(Fig. 27–28)

Anthribus limbatus Say 1826: 250.

Brachytarsus plumbeus Leconte 1876: 406.

Brachytarsus vestitus Leconte 1876: 406.

Brachytarsus naviculus Jordan 1907: 379.

Brachytarsus limbatus (Say); Blatchley and Leng 1916: 40.

Brachytarsoides limbatus (Say); Pierce 1930: 30.

Brachytarsoides rufodorsalis Dethlefsen 1954: 58.

Brachytarsoides minor Dethlefsen 1954: 58.

Brachytarsoides quadratus Dethlefsen 1954: 59.

Brachytarsoides quadratus ssp. *nigrinus* Dethlefsen 1954: 60.

Trigonorhinus limbatus (Say); Valentine 1957: 9.

Description. Length 1.8–3.2mm (head excluded). Integument black to dark reddish-brown, legs light reddish-brown. Vestiture consisting of white to light brown setae; pronotal setae pale grey or brown, in spots or intermixed with darker brown; elytral discal setae white, white and light brown intermixed, or entirely light brown, with light brown setae often in small, scattered spots. Rostrum moderately prolonged, narrowed apically, medial 1/3 prolonged apically; surface finely punctate. Frons weakly convex, weakly transversely impressed below eye level, surface finely punctate. Pronotal width 1.2X length, widest at basal angles; sides distinctly arcuate, strongly converging to narrowly rounded apical margin; disc evenly and strongly convex, weakly and transversely impressed before transverse carina, transverse carina basal, very weakly arcuate, acutely elevated; surface shining, with shallow, sparse punctures, interpunctural space punctulate or minutely reticulate. Elytral length 1.2X width, sides evenly and weakly arcuate to broadly rounded apex; disc evenly convex; striae weakly and nar-

rowly impressed, with small, deeply impressed punctures; interstriae 3.0–4.0X strial width, minutely reticulate-granulate.

Diagnosis. *Trigonorhinus limbatus* can be distinguished from other *Trigonorhinus* species by its diffuse color pattern consisting of white to light brown setae, and by the pronotum possessing a shallowly emarginate base that is arcuate opposite the scutellum.

Natural history. Adults breed in the heads and stems of various flowers in Asteraceae, especially in those of *Helenium*. Specifically, they have been recorded on sneeze weed, *Helenium autumnale*. According to Howden (1992), Valentine observed that adult females use the toothed ovipositor to simply push aside parts of a composite flower head, or they may oviposit in stems. A Wisconsin series was recorded “mating and perhaps feeding on flowers of *Helenium autumnale*”.

Phenology. In Wisconsin, adults have been collected June – August.

Collecting methods. The 31 Wisconsin specimens examined during this study from five counties represent a **NEW STATE RECORD**. Most specimens were hand-collected from *H. autumnale*.

Distribution.

United States. AL, AR, CA, DC, FL, GA, IL, IN, KS, LA, MS, NY, OH, OR, PA, SC, TX, VA, WA, WI.
Canada. AB, SK, MB, ON, PQ, NS.

Wisconsin county records. Buffalo, Dane, Grant, Milwaukee, Pierce.

***Trigonorhinus rotundatus* (LeConte)**

(Fig. 29–30)

Anthribulus rotundatus Leconte 1876: 40.

Brachytarsoides rotundatus (LeConte); Pierce 1930: 31.

Trigonorhinus rotundatus (LeConte); Valentine 1957: 9.

Description. Length 1.4–2.4mm (head excluded). Body elongate-ovate, somewhat convex. Integument black to dark reddish-brown, legs light reddish-brown to orange; antennae orange, club dusky. Vestiture consisting of brown setae with scattered patches of fine silvery grey setae. Rostrum moderately prolonged; narrowed apically, medial 1/3 prolonged apically. Frons weakly convex. Pronotum longer than wide, widest at basal angles, gradually narrowed apically, broadly rounded laterally and apically; pronotal hind angles obtuse and rounded; transverse carina basal, very slightly arcuate. Elytral length 1.4X width, 1.5X pronotal length; elytral base slightly wider than base of pronotum, humeral angles rounded; sides evenly and slightly arcuate to broadly rounded apex; striae deep, punctate; interstriae 3.0–4.0X strial width.

Diagnosis. *Trigonorhinus rotundatus* can be easily recognized as it is the only *Trigonorhinus* with the pronotal hind angles obsolete (also described as obtuse and rounded). It can also be distinguished by the silvery grey and brown vestiture. It can be distinguished from *T. tomentosus* by its longer elytra.

Natural history. Blatchley and Leng (1916) recorded this species on the flowers of *Vaccinium*; they also stated that it occurs in swampy meadows. This species has also been recorded from smutty grass (*Andropogon* spp.) and ferns (Valentine 2002). In Wisconsin, it has been found on flowers of huckleberry (*Vaccinium* spp.).

Phenology. In Wisconsin, adults have been collected in June and August.

Collecting methods. The nine Wisconsin specimens examined during this study from five counties represent a **NEW STATE RECORD**. Most specimens were collected by sweeping.

Distribution.

United States. AL, CT, DC, FL, GA, IL, IN, LA, ME, MI, MS, NH, NJ, NY, RI, SC, TX, VA, WI.

Wisconsin county records. Green Lake, Jackson, Juneau, Oconto, Wood.

***Trigonorhinus sticticus* (Boheman)**

(Fig. 31–32)

Brachytarsus sticticus Boheman 1833: 172.

Anthribus variegatus Say 1826: 251.

Brachytarsus obsoletus Fahraeus 1839: 167.

Brachytarsus strictus (Boheman); Zimmerman 1936: 191.

Trigonorhinus sticticus (Boheman); Valentine 1957: 9.

Description. Length 1.8–3.2mm (head excluded). Integument black and reddish-brown. Vestiture consisting of white, light brown and dark brown setae; pronotum with dark brown setae predominant basally and white or light brown setae predominant apically. Elytra with scattered light brown setae intermixed with white setae, occasionally with scattered spots of dark brown setae surrounded by white setae in an irregular pattern basolaterally, interstriae 1–4 with one large or two connected dark brown spots basally and two dark, medial spots, medial spots sometimes connected by dark setae on interstriae 1–2. Rostrum moderately prolonged, narrowed apically, medial 1/3 prolonged apically; surface finely punctate. Frons weakly convex, transversely impressed below eye level; surface finely punctate. Pronotum slightly wider than long, widest just behind middle, sides distinctly arcuate, converging to narrowly rounded apex; disc evenly convex, with narrow transverse impression just anterad transverse carina, transverse carina basal, weakly arcuate, acutely elevated; surface shining, with obscure shallow punctures interpunctural space minutely punctate or reticulate. Elytral length 1.3X width, sides evenly and slightly arcuate to broadly rounded apex; striae weakly impressed, with large, obscure, more deeply impressed punctures; interstriae 1.0–2.0X strial width, minutely punctate.

Diagnosis. *Trigonorhinus sticticus* can look similar to *T. alternatus* in terms of dorsal vestiture, but it can be distinguished by tibial vestiture: not biannulate or with dark spots. It can be distinguished from other species of *Trigonorhinus* by the conspicuous dorsal setal pattern, consisting of very dark setae in spots that abruptly and distinctly contrast with the light brown or white setae on the surfaces.

Natural history. This species breeds in smut fungi on corn (*Zea mays*), wheat (*Triticum* spp.), wild grasses such as little bluestem (*Schizachyrium scoparium*), or shrubs. It has also been recorded on flowers of buttonbush (*Cephalanthus occidentalis*), and on prairie dropseed (*Sporobolus heterolepis*) and sideoats grama (*Bouteloua curtipendula*).

Phenology. In Wisconsin, adults have been collected from April – August.

Collecting methods. The 52 Wisconsin specimens examined during this study from 21 counties represent a **NEW STATE RECORD**. Adults are most commonly collected by sweeping grassy fields. They have also been collected in Malaise traps, Lindgren funnel traps, vacuums, and by hand.

Distribution.

United States. CA, CT, DC, FL, IA, IN, KS, ME, MI, MT, NC, NJ, NV, NY, OH, PA, SC, TX, UT, WA, WI.

Canada. NT, BC, AB, SK, MB, ON, PQ, NB, NS.

Wisconsin county records. Adams, Buffalo, Columbia, Dane, Dodge, Door, Fond du Lac, Iowa, Grant, Jackson, Jefferson, Kenosha, Lafayette, Marquette, Milwaukee, Oconto, Ozaukee, Rock, Sauk, Sheboygan, Walworth.

***Trigonorhinus tomentosus* (Say)**

(Fig. 33–34)

- Anthrribus tomentosus* Say 1826: 251.
Brachytarsus brevis Fahraeus 1839: 168.
Brachytarsus paululus Casey 1884: 194.
Brachytarsus beyeri Schaeffer 1906: 277.
Brachytarsus tomentosus (Say); Blatchley and Leng 1916: 40.
Brachytarsoides tomentosus (Say); Pierce 1930: 31.
Brachytarsus franseria Barrett 1931: 188.
Brachytarsoides irregularis Tanner 1934: 285
Trigonorhinus tomentosus (Say); Valentine 1957: 9.

Description. Length 1.3–2.1mm (head excluded). Body short and ovate. Integument light to dark reddish-brown to black. Vestiture consisting of grey and brown setae that are randomly mixed; brown elytral setae sometimes forming large and diffuse basal-median spots. Rostrum separated from frons by weak transverse impression just below level of eyes, surface flat; lateral margins weakly elevated, punctate; surface finely punctate, with short, grey recumbent setae. Frons weakly convex, surface finely punctate, with short, grey recumbent setae. Pronotal width 1.3X length, widest at basal angles; sides weakly arcuate, strongly converging to narrowly rounded apex; disc evenly convex, weakly, transversely impressed before transverse carina, transverse carina basal, acutely elevated, forming a shallow V-shape; surface with shallow, irregularly placed, inconspicuous punctures, interpunctural space finely granulose-punctate. Elytral length 1.2X width, sides evenly arcuate to broadly rounded apex, disc evenly convex; striae narrowly and weakly impressed, with small punctures that are slightly more deeply impressed; interstriae flat, finely granulose-punctate, 4.0X strial width.

Diagnosis. *Trigonorhinus tomentosus* can be distinguished from other *Trigonorhinus* species by its small size (*T. rotundatus* is also small but *T. tomentosus* has well-developed pronotal hind angles), by the acutely elevated, basal transverse pronotal carina that forms a shallow V-shape, and by the diffuse color pattern. It can be easily confused with *T. limbatus* at first glance, but the above characters should be sufficient to distinguish the two species.

Natural history. This species is the most abundant *Trigonorhinus* and anthribid species in Wisconsin; it is generally associated with smut fungi on grasses, which are ubiquitous. Pierce (1916) recorded that this species is found on the common ragweed (*Ambrosia artemisiifolia*). Bright (1993) reported that the adults oviposit in flowers of the same species. Other records of plants associations include dwarf cherry (*Prunus fruticosa*), prairie dropseed (*Sporobolus heterolepis*), sideoats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), raspberry (*Rubus* spp.), and mullein (*Verbascum thapsus*).

Phenology. In Wisconsin, adults have been collected from April – September.

Collecting methods. The 203 Wisconsin specimens examined from 32 counties represent a **NEW STATE RECORD**. This species is most commonly collected by sweeping. Many specimens have been collected in Malaise traps, one was collected with a vacuum, one was found at a blacklight trap, and one was “found on Mullein, *Verbascum thapsus*.”

Distribution.

United States. AL, CA, DC, DE, FL, IN, MI, NC, NJ, NV, OH, OR, PA, SC, UT, VA, WA, WI.

Canada. ON, PQ.

Wisconsin county records. Adams, Barron, Columbia, Crawford, Dane, Dunn, Eau Claire, Fond du Lac, Grant, Green, Green Lake, Iowa, Jackson, Jefferson, Juneau, Lafayette, La Crosse, Marquette, Menominee, Monroe, Ozaukee, Pepin, Pierce, Portage, Rock, Sauk, Sawyer, Shawano, Sheboygan, Trempealeau, Waushara, Wood.

Tribe Tropiderini Lacordaire**Genus *Gonotropis* LeConte***Gonotropis* Leconte 1876: 393.**Type species.** *Gonotropis gibbosa* Leconte, 1876, by monotypy.**Generic diagnosis.** *Gonotropis* can be recognized by the smooth, shallow, median longitudinal groove on the posterior half of the pronotum, the irregular antebasal, transverse pronotal carina that is angulate towards the scutellum medially, the strong sub-basal crest on 3rd elytral interstria, and by the white facial pubescence.***Gonotropis dorsalis* (Thunberg)**

(Fig. 35–36)

Anthribus dorsalis Thunberg 1796: 146.*Gonotropis gibbosus* LeConte 1876: 394.*Tropideres dorsalis* (Thunberg); Wolfrum 1929: 55.**Description.** Length 4.5–6.0mm (head excluded). Vestiture on pronotum dense, sparser laterally, white apically and laterally, forming brownish, triangular, median spot; vestiture on elytral base forming a large spot of light-brown to white setae extending laterally to 5th interstria, remainder of elytra with light to dark brown setae and scattered white setae. Rostrum covered with dense, white setae. Frons flattened, without carinae; surface sculpture concealed by dense white setae except at lateral and apical angles. Pronotal width 1.5–1.6X length, widest at base; sides angulate basally, straight, and then strongly converging to narrowly rounded apex; base broadly emarginate, transverse carina antebasal, acute, strongly elevated, angulate medially towards scutellum, lateral carinae acute, strongly elevated; pronotal surface dark, dull, setaceous, densely reticulate, with deep punctures; pronotal disc distinctly impressed medially, less distinctly impressed basally. Elytral length 1.3X width, broadly rounded apically; striae with very deep, small punctures in regular rows; interstriae 3, 5 and 7 distinctly elevated, broadly tuberculate, base of 3rd interstria with one prominent elevation. Pygidium vertical, broadly rounded apically in both sexes.**Diagnosis.** *Gonotropis dorsalis* can be recognized by the prominent elevations on the elytral bases, white frons and rostrum, large patch of whitish-yellow setae that is almost an inverse heart shape basally on the elytra, and by the patch of triangular brown setae basomedially on the pronotum.**Natural history.** This species has been recorded from “dead hemlock”. It was also recorded on dry branches of oak (*Quercus* spp.) and birch (*Betula* spp.) in Europe (Pierce 1930), as well as on poplar (*Populus* spp.) (Downie and Arnett 1996). Valentine (1998) elaborated on one specimen 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.”**Phenology.** No additional data for Wisconsin.**Collecting methods.** In Wisconsin, two specimens examined represent a **NEW STATE RECORD**. This series of specimens had meager label data associated with them: “before Oct 1897”, without county or phenological data.**Distribution.****United States.** AK, CO, CT, IN, MA, ME, MI, MN, MT, NY, OH, PA, WI.**Canada.** YT, NT, AB, SK, MB, ON, PQ, NB, NF.**Wisconsin county records.** Dane.

Genus *Eurymycter* LeConte*Eurymycter* LeConte 1876: 394.*Tropideres* Schönherr 1823: column 1135.*Tropidoderes* Gemminger and van Harold 1872: 2733.*Gonotropis* LeConte 1876: 393.**Type species.** *Macrocephalus fasciatus* Olivier, 1795, by monotypy.**Generic diagnosis.** *Eurymycter* can be recognized by the broad, irregular white band crossing the elytra above the declivity and that reaches the side margins, the short, antemedial transverse sinuous groove on the pronotum, white pubescence on the face between the eyes and antennal scrobes, rostrum broadest apically, a broad, truncate, parallel-sided mesosternal processes, and by the finely faceted, entire eyes that are not protruding.**Key to the Wisconsin Species of *Eurymycter***

1. Abdominal pubescence brown in center, usually with some grey or white setae laterally; setae on each metathoracic tibia forming a pale medial band *E. tricarinatus* Pierce
- Abdominal pubescence white throughout, or with brown spots laterally; setae on each metathoracic tibia forming two pale, narrow median bands *E. fasciatus* (Olivier)

***Eurymycter fasciatus* (Olivier)**

(Fig. 37–38)

Macrocephalus fasciatus Olivier 1795: 9.*Eurymycter bicarinatus* Pierce 1930: 17.*Tropideres fasciatus* (Olivier); Valentine 1960: 70.*Eurymycter fasciatus* (Olivier); Valentine 1998: 275.**Description.** Length 5.8–7.5 mm (head excluded). Integument dark brown. Vestiture of pronotum consisting of small, light brown setae, with scattered, small, white or yellow patches; metathoracic tibial setae each forming two, pale narrow median bands, or setae on tibial apex brown, spotted with white. Rostrum prolonged, flattened, with three carinae, two lateral carinae distinctly elevated, medial carina less distinctly elevated; rostral surface concealed by dense, white, recumbent setae. Frons evenly convex; median longitudinal groove not evident; surface concealed by dense, white, recumbent setae. Pronotal width 1.3X length, widest behind middle; sides angulate basally, converging toward broadly rounded apex, broadly emarginate basally; transverse carina antebasal, strongly elevated; lateral carinae acute, strongly elevated; surface very irregular, with median, narrow, deeply impressed W-shaped groove medially; disc with various weak elevations and distinct, strong punctures or small impressions laterally, surface shining, with dense, minute punctures. Elytral length 1.4X width, broadly rounded apically; striae indistinct, with rather small, deep punctures, these larger and much deeper basally; interstriae 3, 5 and 7 weakly elevated, the elevations smooth on summit, base of 3rd interstria slightly elevated. Abdomen with venter covered with white setae, sometimes with scattered, small brown spots laterally. Pygidium vertical, narrowly rounded apically in both sexes.**Diagnosis.** *Eurymycter fasciatus* can be easily distinguished from *E. tricarinatus* by the solid white abdominal pubescence that may or may not have brown lateral spots (as opposed to the brown abdomen in *E. tricarinatus*). It can also be distinguished by the elevated interstriae 3, 5, and 7, and by the metathoracic tibiae that each have two, narrow median bands (each metathoracic tibia with one ring in *E. tricarinatus*).**Natural history.** This species is generally associated with fungi on woody plants and can often be found under bark of decaying wood. More specifically, both adults and larvae are recorded to feed on

pyrenomycete fungi growing on birch (*Betula* spp.) (Majka et al. 2007). It has also been recorded from sassafras (*Sassafras albidum*).

Phenology. In Wisconsin, adults have been recorded in June and July.

Collecting methods. The three Wisconsin specimens examined during this study from two counties represent a **NEW STATE RECORD**. This species is most commonly collected in Malaise traps in hardwood forests or oak/pine barrens.

Distribution.

United States. CO, DC, FL, GA, ID, KS, MD, MI, MS, NC, NY, OR, PA, SC, TN, TX, WA, WI.

Canada. BC, SK, MB, ON, PQ, NB, NS.

Wisconsin county records. Adams, Oneida.

***Eurymycter tricarinatus* Pierce**

(Fig. 39–40)

Eurymycter tricarinatus Pierce 1930: 18.

Tropideres tricarinatus (Pierce); Valentine 1960: 70.

Description. Length 5.2–7.5 mm (head excluded). Integument dark brown. Vestiture of pronotum consisting of small, light brown setae, with scattered, small, white or yellow setal patches; elytral vestiture consisting of light brown setae, apical 1/2 with distinct transverse band of white setae, apex with brown setae; setae on metathoracic tibiae each forming a single, pale, narrow median band. Rostrum prolonged, flattened, with three carinae, two lateral carinae distinctly elevated; surface concealed by dense, white, recumbent setae, brown apically. Pronotal width 1.3X length, widest behind middle; sides angulate basally, converging toward broadly rounded apex, broadly emarginate basally; transverse carina antebasal, strongly elevated; lateral carina acute, strongly elevated; surface irregular, with medial, narrow, deeply impressed W-shaped groove; disc with various weak elevations and distinct, strong punctures or small impressions laterally, surface shining, with dense minute punctures. Elytral length 1.4X width, broadly rounded apically; striae indistinct, with large, shallow punctures that are much deeper behind base; interstriae 3, 5 and 7 weakly elevated, the elevations smooth on summit; base of 3rd interstria slightly elevated. Abdomen with venter with brown setae in center, white or grey laterally. Pygidium vertical, narrowly rounded apically in both sexes.

Diagnosis. *Eurymycter tricarinatus* is most similar to *E. fasciatus*. It can be distinguished by the abdominal pubescence that is brown at the center and grey or white laterally, and by the vestiture of the metathoracic tibiae, each having setae forming one pale, medial band, as opposed to two. It can be distinguished from *G. gibbosus* by the absence of a large, white setal patch basally on the elytra.

Natural history. This species is commonly found under bark of decaying wood, as it is associated with fungi on woody plants. In Wisconsin, it has been recorded from a variety of habitats, including mixed hardwood forests, old growth northern mesic forests, oak pine barrens, oak pine forests, and dry lime prairies.

Phenology. In Wisconsin, adults have been collected from May – September.

Collecting methods. In Wisconsin, 28 specimens were examined during this study from 13 counties. This species is most frequently collected with the Malaise trap, as more than half of the Wisconsin specimens were collected this way. Adults have also been collected by hand, in flight intercept traps, and in Lindgren funnel traps.

Distribution.

United States. AK, AL, DC, IL, IN, NC, OH, PA, VA, WI.

Canada. ON, PQ.

Wisconsin county records. This species has previously been recorded from Milwaukee County (Pierce 1930; Valentine 1960; Downie and Arnett 1996). Additional records include: Barron, Chippewa, Dodge, Grant, Jackson, Langlade, Marathon, Ozaukee, Polk, Rusk, Sauk, Shawano, Waupaca.

Tribe Zygaenodini Lacordaire

Genus *Eusphyrus* LeConte

Eusphyrus Leconte 1876: 399.

Type species. *Eusphyrus walshii* Leconte 1876, by monotypy.

Generic diagnosis. Species of *Eusphyrus* is very similar to species of *Ormiscus*, but can be distinguished by the basal or sub-basal transverse pronotal carina that is capable of contacting the elytral base. These genera can also be confused with species of *Trigonorhinus*, but can be distinguished by the quadrate rostrum that does not narrow apically.

Eusphyrus walshii LeConte

(Fig. 41–42)

Eusphyrus walshii LeConte 1876: 400.

Ormiscus walshii (LeConte); Valentine 1960: 62.

Description. Length 2.0–2.8mm (head excluded). Integument light to dark reddish-brown; pronotum usually darker. Vestiture consisting of white or grey and light brown to dark brown setae; brown setae scattered on apical 1/2 of elytra and forming vague medial spot; white setae scattered in small spots on basal 1/2 of elytra and forming a vague transverse spot extending to base of interstriae 6 and 7, interstriae 3–5 with baso-medial brown spot. Rostrum flattened, broad; surface with small, shallow punctures. Frons strongly convex; surface dull, with small, shallow punctures; interpunctural space densely reticulate. Pronotal width 1.5X length, widest at basal angles, weakly arcuate laterally, converging to broadly rounded apex; disc convex, surface densely granulate punctate; transverse carina basal, emarginate, acutely elevated, capable of contacting elytral base. Elytral length 1.3X width, 2.0X pronotal length, sides parallel on basal 2/3, broadly rounded apically; striae weakly impressed, with moderately deep and moderately large punctures; interstriae smooth, convex, 2.0X strial width, with minute punctures.

Diagnosis. *Eusphyrus walshii* can be distinguished from *Ormiscus* species by the basal transverse pronotal carina that is capable of contacting the elytral base. It can be distinguished from other *Eusphyrus* species by the visible scutellum that is larger than adjacent elytral punctures, and by the microgranulate pronotal surface, due to traces of very small crowded punctures with fragmentary rims.

Natural history. Valentine (1998) collected this species with various methods in many contexts: by rearing from dead poison ivy (*Toxicodendron radicans*) vines, beating dead branches of white oak (*Quercus alba*), beating dead elm (*Ulmus* spp.), beating dead leaves, beating dead limbs, from under oak bark, recovered from Lindgren funnel, Malaise, and flight intercept traps, at light, and recovered from a Berlese funnel of leaf litter samples. In general, the adults breed in dead wood of deciduous trees. This species can also be collected at light.

Phenology. In Wisconsin, adults have been collected in July and August.

Collecting Methods. The two Wisconsin specimens examined during this study from two counties represent a **NEW STATE RECORD**. One specimen was recovered from a Malaise trap at the edge of a southern mixed deciduous forest while the other was taken from a Malaise trap in a beech-maple forest.

Distribution.

United States. AL, DC, FL, IA, IL, IN, LA, MD, ME, MI, MS, NC, NJ, OH, SC, TX, VA, WI, WV.

Canada. ON, PQ.

Wisconsin county records. Lafayette, Ozaukee.

Genus *Ormiscus* G. R. Waterhouse

Ormiscus G. R. Waterhouse 1845: 37.

Hormiscus Gemminger and von Harold 1872: 2738.

Entomops Lacordaire 1866: 553.

Toxotropis LeConte 1876: 397.

Gonops LeConte 1876: 398

Type species. *Ormiscus variegatus* G. R. Waterhouse, 1845, by monotypy.

Generic diagnosis. *Ormiscus* can be distinguished from *Trigonorhinus* by the quadrate rostrum. It can be distinguished from *Eusphyrus* by the antebasal transverse pronotal carina that is incapable of reaching the elytra base, and by the pronotal hind angles that are not projecting laterad the elytral humerae. *Ormiscus* can be distinguished from most other anthribids by having separate lobes on the 3rd tarsomeres, notched eyes, small size, and by the quadrate rostrum.

***Ormiscus saltator* (LeConte)**

(Fig. 43–44)

Hormiscus saltator LeConte 1876: 397.

Ormiscus angulatus Pierce 1930: 6.

Ormiscus piercei Sleeper 1954: 117.

Ormiscus saltator (LeConte); Blatchley and Leng 1916: 26.

Description. Length 1.5–2.0 mm (head excluded). Integument light to dark reddish-brown; legs generally lighter. Elytral vestiture consisting of white or grey with dark brown setae, white or grey setae usually more abundant, forming vague transverse line on basal 1/3, apical 1/3 variously mottled; with brown setae making up basal spot and large transverse median spot, and scattered spots on apical 2/3. Rostrum flattened, broad; surface with large, shallow, coarsely placed punctures. Frons strongly convex, with large, shallow, closely placed punctures. Pronotal width 1.2X length, widest at basal angles, sides arcuate to broadly rounded apex; disc weakly convex before transverse carina; transverse carina antebasal, remote from base, acutely elevated, emarginate; pronotal surface smooth, with dense, shallow, rather large punctures. Elytral length 1.3X width, sides parallel in basal 2/3, broadly rounded apically; striae punctate, with deeply impressed, moderately large punctures; interstriae 2.0X strial width, smooth, with scattered minute points.

Diagnosis. *Ormiscus saltator* can be distinguished from *Eusphyrus* species by the antebasal transverse pronotal carina that is incapable of contacting the elytral bases. It can be distinguished from other *Ormiscus* species by the solidly fused antennal club, transverse pronotal carina that ends without turning (as opposed to turning downwardly, apically), and by the males having a small black lobe on the inner apical angles of the mesothoracic tibiae.

Natural history. Adults breed in dead wood of deciduous trees. Some *Ormiscus* species are also known to inhabit seeds and galls. In Wisconsin, it has been recorded from dead oak leaves and dead branches in general.

Phenology. In Wisconsin, adults have been collected from June – August.

Collecting methods. The 29 Wisconsin specimens examined during this study from 18 counties represent a **NEW STATE RECORD**. Adults are most commonly collected by beating dead twigs, vines,

branches of deciduous trees, or understory bushes, or by sweeping dead herbaceous stems. In Wisconsin, they have also been collected from a Malaise trap at the edge of a mixed hardwood forest, a turpentine-baited Lindgren funnel trap in a mixed hardwood forest, beating dead oak branches with dried brown leaves, and by sweeping foliage in hardwood-dominated forest and in oak barrens.

Distribution.

United States. AL, CT, FL, IL, IN, OH, PA, NC, NE, NJ, NY, MA, MI, SC, TX, WI.

Wisconsin county records. Barron, Chippewa, Columbia, Dane, Dodge, Dunn, Fond du Lac, Grant, Jackson, Jefferson, La Crosse, Milwaukee, Oneida, Ozaukee, Sheboygan, Trempealeau, Vernon, Waukesha.

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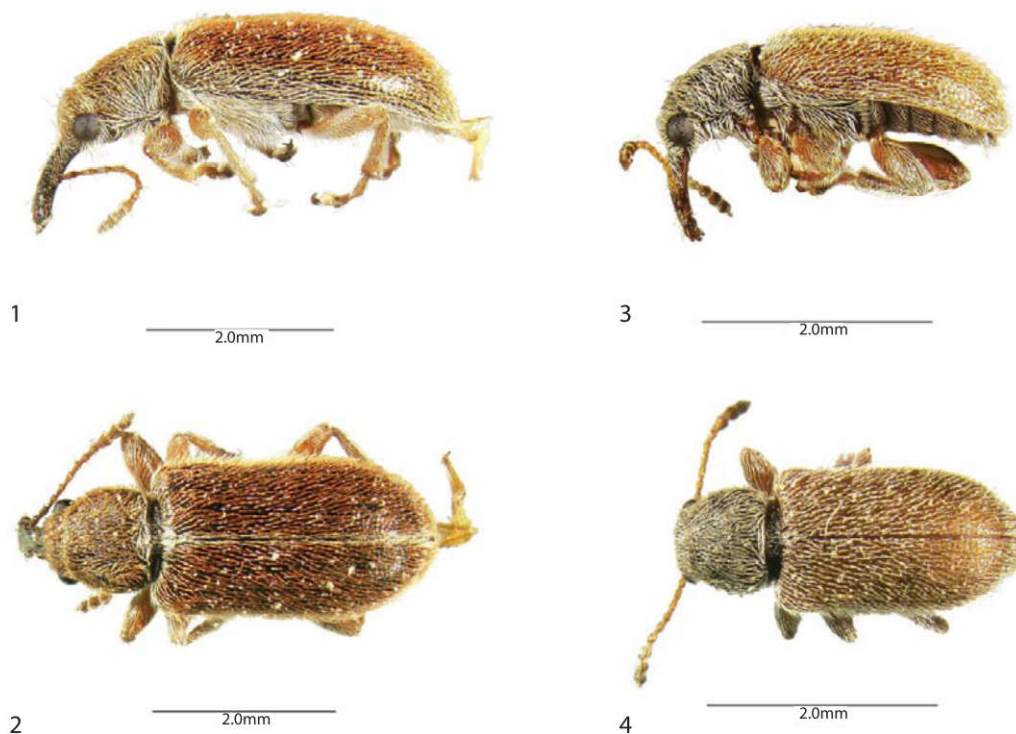
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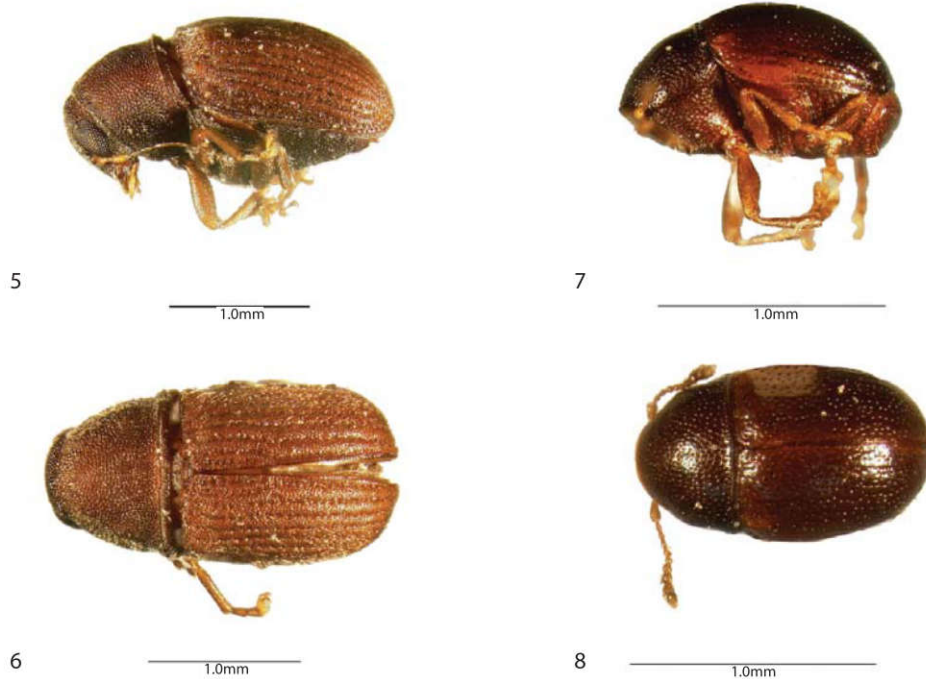
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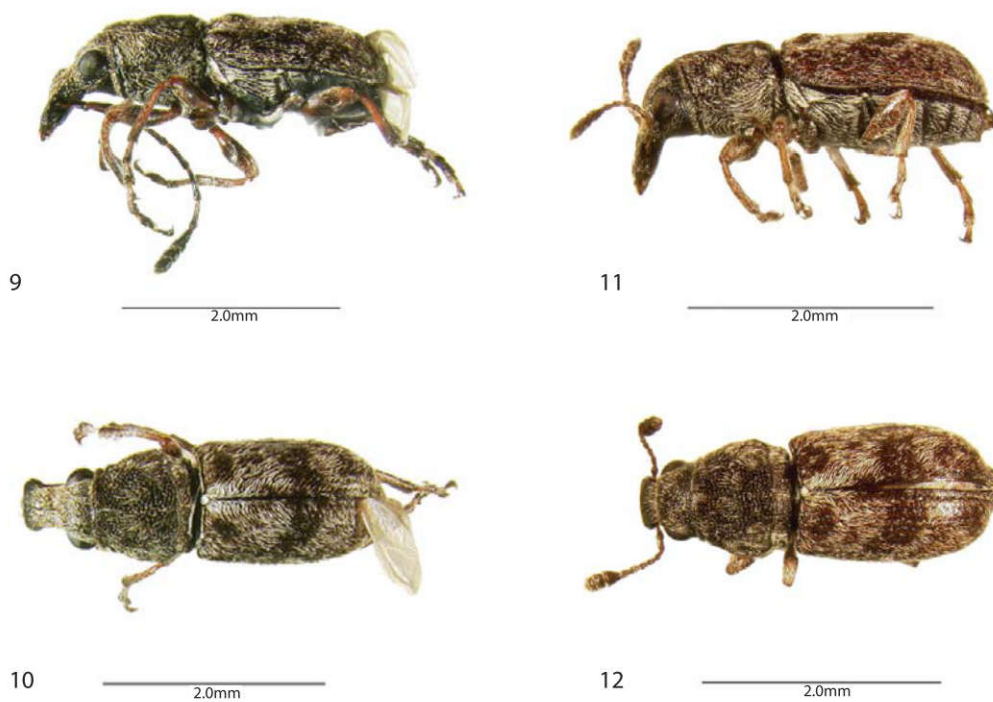
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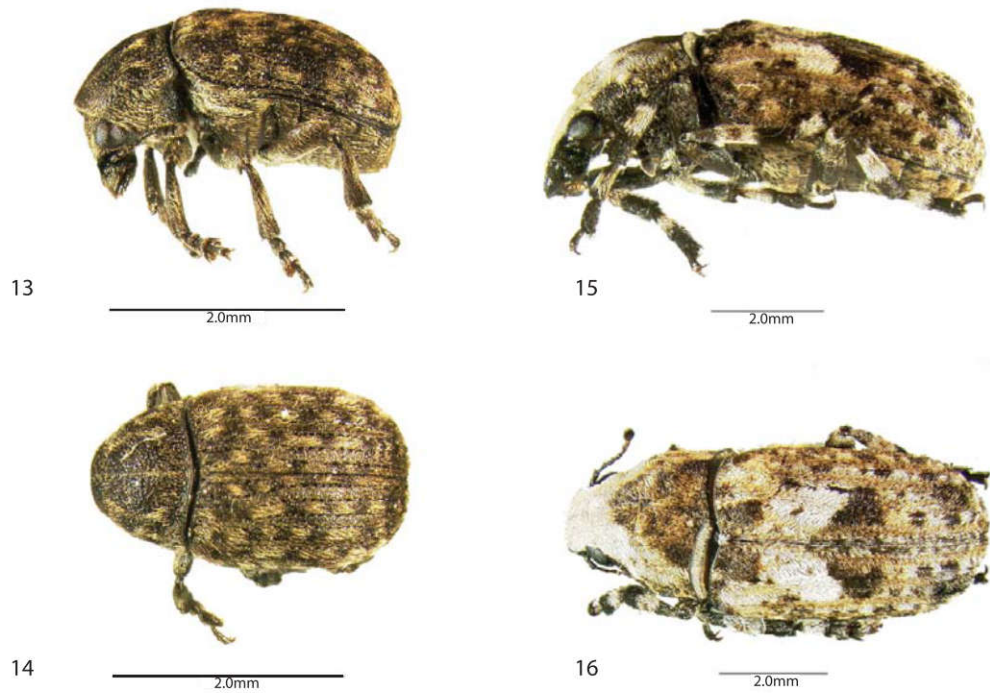
Figures 1–2. *Cimberis elongata* (LeConte). **1)** Habitus, lateral view. **2)** Habitus, dorsal view. **Figures 3–4.** *Cimberis pilosa* (LeConte). **3)** Habitus, lateral view. **4)** Habitus, dorsal view.



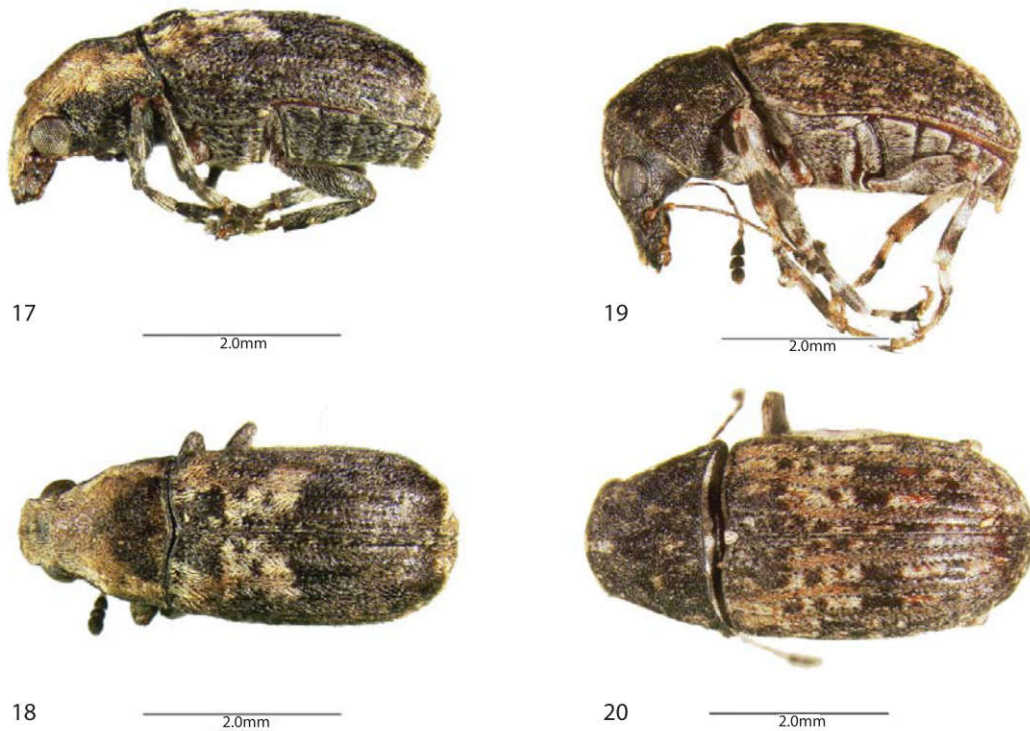
Figures 5–6. *Choragus zimmermanni* LeConte. **5)** Habitus, lateral view. **6)** Habitus, dorsal view. **Figures 7–8.** *Euxenus punctatus* LeConte. **7)** Habitus, lateral view. **8)** Habitus, dorsal view.



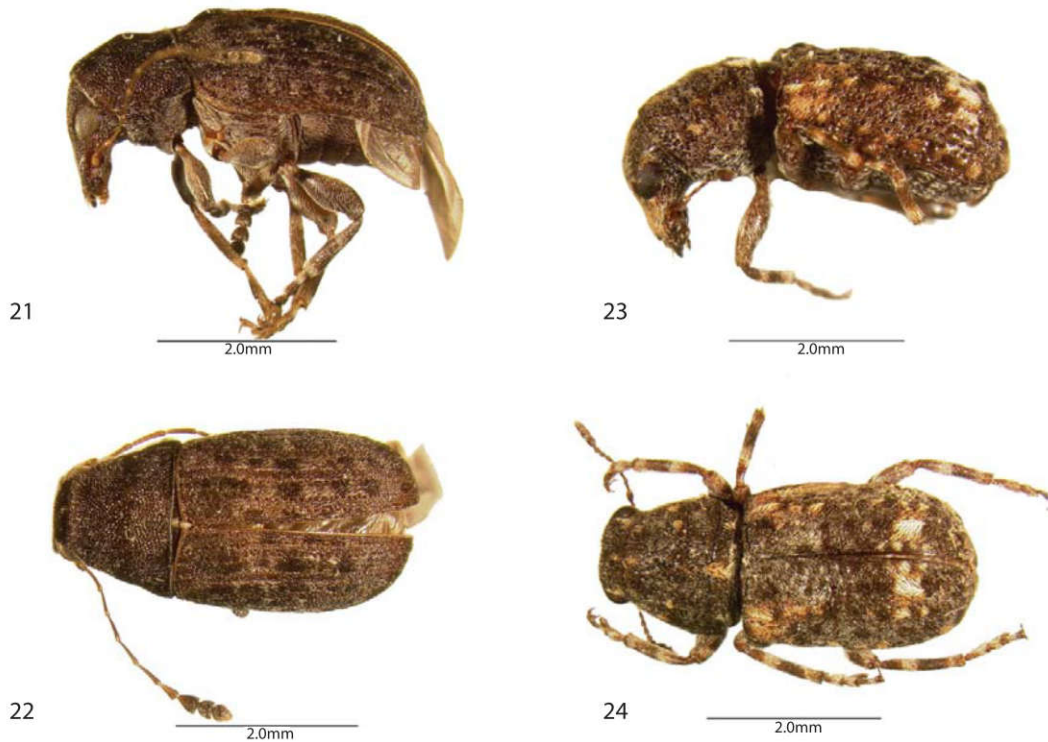
Figures 9–10. *Allandrus bifasciatus* LeConte. **9)** Habitus, lateral view. **10)** Habitus, dorsal view. **Figures 11–12.** *Allandrus brevicornis* Frost. **11)** Habitus, lateral view. **12)** Habitus, dorsal view.



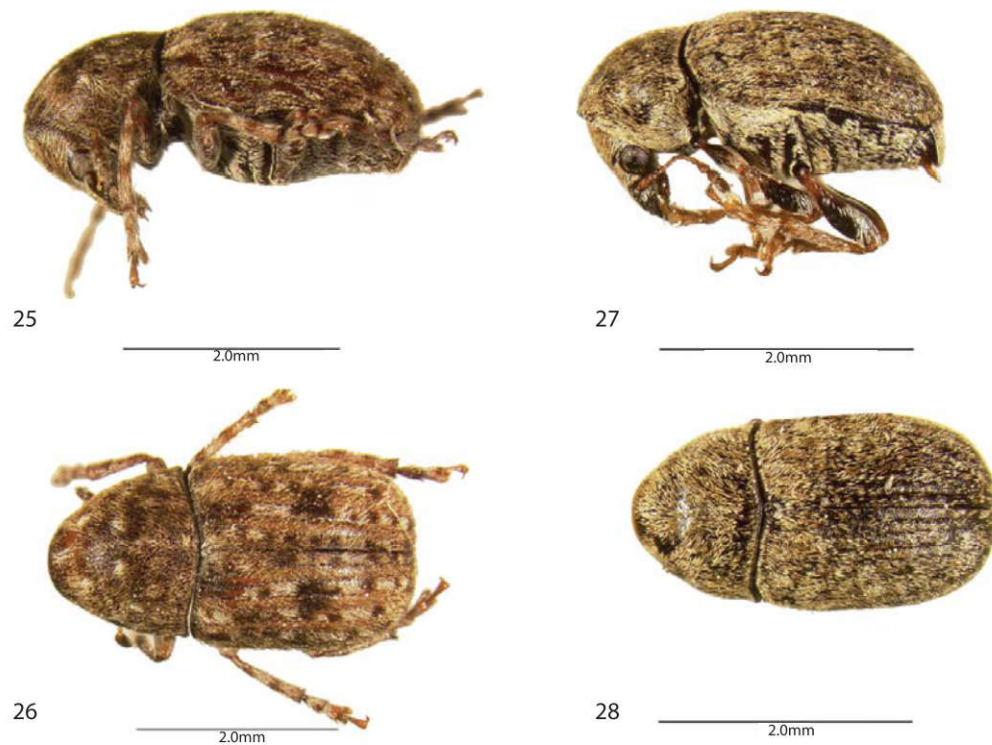
Figures 13–14. *Anthribus nebulosus* Forster. 13) Habitus, lateral view. 14) Habitus, dorsal view. Figures 15–16. *Euparius marmoreus* (Olivier). 15) Habitus, lateral view. 16) Habitus, dorsal view.



Figures 17–18. *Euparius paganus* Gyllenhal. 17) Habitus, lateral view. 18) Habitus, dorsal view. Figures 19–20. *Piesocorynus mixtus* LeConte. 19) Habitus, lateral view. 20) Habitus, dorsal view.



Figures 21–22. *Piesocorynus moestus* (J. E. LeConte). 21) Habitus, lateral view. 22) Habitus, dorsal view. Figures 23–24. *Goniocloeus bimaculatus* (Olivier). 23) Habitus, lateral view. 24) Habitus, dorsal view.



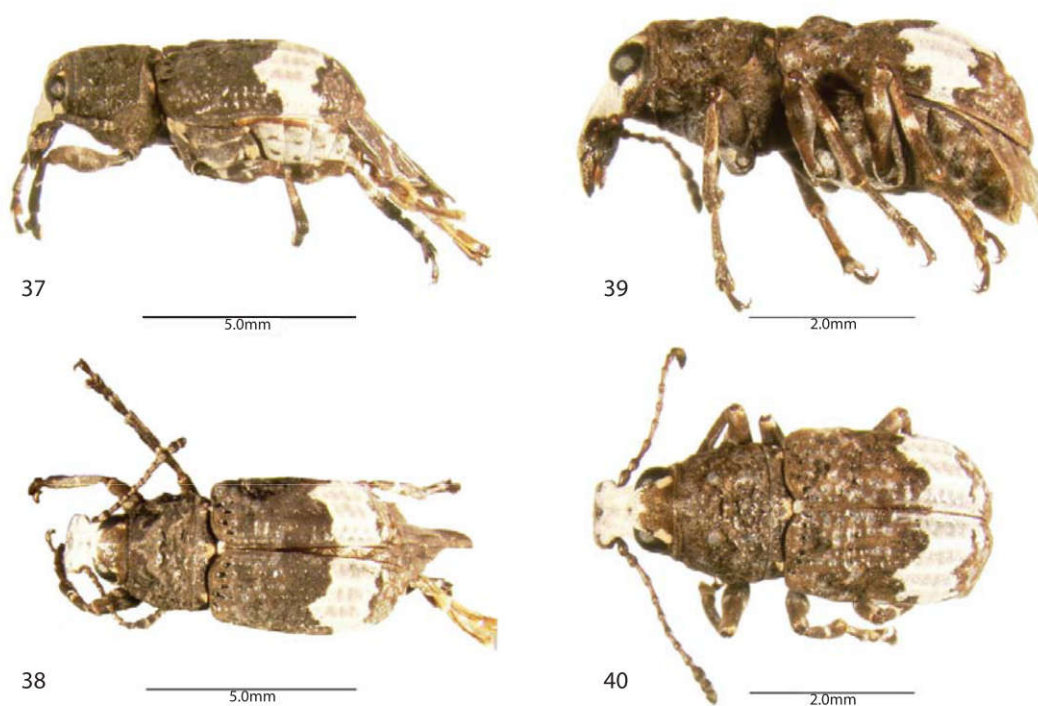
Figures 25–26. *Trigonorhinus alternatus* (Say). 25) Habitus, lateral view. 26) Habitus, dorsal view. Figures 27–28. *Trigonorhinus limbatus* (Say). 27) Habitus, lateral view. 28) Habitus, dorsal view.



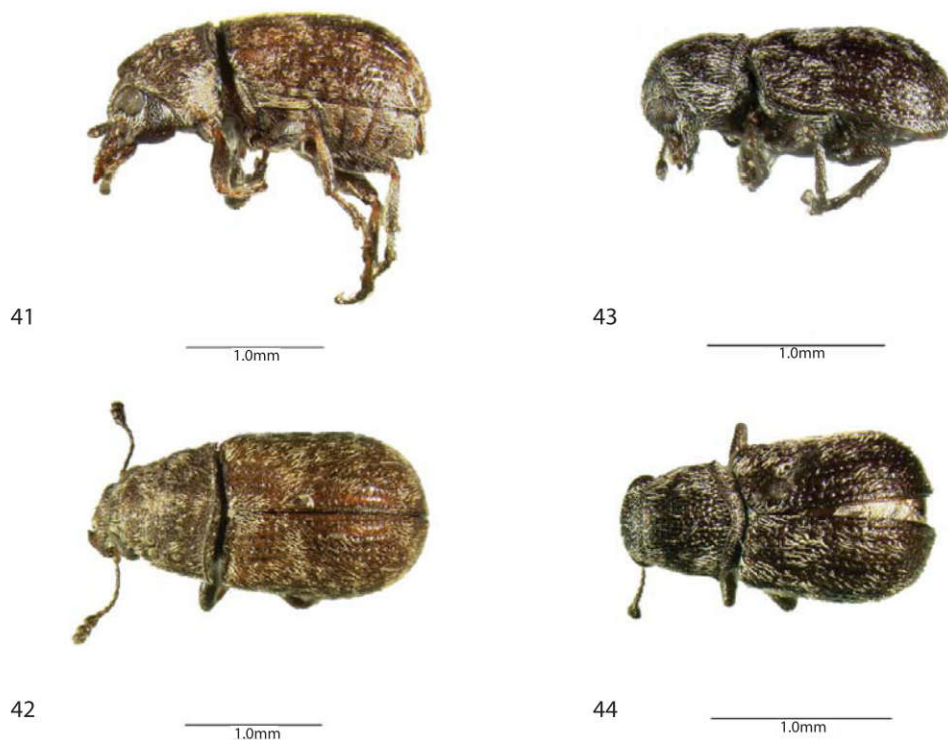
Figures 29–30. *Trigonorhinus rotundatus* (LeConte). 29) Habitus, lateral view. 30) Habitus, dorsal view. Figures 31–32. *Trigonorhinus sticticus* (Boheman). 31) Habitus, lateral view. 32) Habitus, dorsal view.



Figures 33–34. *Trigonorhinus tomentosus* (Say). 33) Habitus, lateral view. 34) Habitus, dorsal view. Figures 35–36. *Gonotropis dorsalis* (Thunberg). 35) Habitus, lateral view. 36) Habitus, dorsal view.



Figures 37–38. *Eurymycter fasciatus* (Olivier). 37) Habitus, lateral view. 38) Habitus, dorsal view. Figures 39–40. *Eurymycter tricarinatus* Pierce. 39) Habitus, lateral view. 40) Habitus, dorsal view.



Figures 41–42. *Eusphyrus walshii* LeConte. 41) Habitus, lateral view. 42) Habitus, dorsal view. Figures 43–44. *Ormiscus saltator* (LeConte). 43) Habitus, lateral view. 44) Habitus, dorsal view.