March 2002

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An annotated checklist of Wisconsin Scarabaeoidea (Coleoptera)

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Abstract. A survey of Wisconsin Scarabaeoidea (Coleoptera) conducted from literature searches, collection inventories, and three years of field work (1997-1999), yielded 177 species representing nine families, two of which, Ochodaeidae and Ceratocanthidae, represent new state family records. Fifty-six species (32% of the Wisconsin fauna) represent new state species records, having not previously been recorded from the state. Literature and collection distributional records suggest the potential for at least 33 additional species to occur in Wisconsin.

Introduction

The superfamily Scarabaeoidea is a large, diverse group of beetles, comprising more than 30,000 species in 13 families worldwide. Over 1,530 species occur in the continental United States. Despite this superfamily's popularity among scientists and hobbyists, and its incredible diversity (or perhaps, because of it), few scarabaeoid surveys have been conducted in the United States. Blatchley (1910) surveyed the Coleoptera of Indiana; Dawson (1922b) catalogued the scarabs of Nebraska; Blatchley (1927 a,b, 1928 a-d, 1929 a-c, 1930 a,b) catalogued the scarabs of Florida; Rogers (unpublished M.S. thesis, 1946) surveyed the scarabs of Washington State, which served as the basis of Hatch's (1971) treatment of scarabs in his volumes on Coleoptera of the Pacific Northwest; Helgesen and Post (1967) surveyed the saprophagous scarabs of North Dakota, which was followed by the phytophagous scarabs and trogids (Lago et al. 1979). Following Blatchley's works, Woodruff (1973) and Woodruff and Beck (1989) published more detailed surveys of Florida laprostict scarabs and June beetles, respectively. Expanding on Dawson's catalogue, Ratcliffe (1991 a,b) published the most comprehensive (Nebraskan) scarabaeoid surveys to date. Harpootlian (2001) surveyed the scarabaeoids of South Carolina.

No comprehensive scarabaeoid surveys have been conducted in Wisconsin, much less the Great Lakes region. Rauterberg (1885-1889) recorded a passalid and some stag beetles from Milwaukee County; Snyder (1897) recorded 30 species from Dodge County; Dahl and Mahr (1991) conducted a limited survey of June beetles (Phyllophaga spp.); Katovich (1995) and Katovich et al. (1998) surveyed the larvae of Wisconsin Phyllophaga. Until now, however, most of Wisconsin's scarabaeoid species diversity, life histories, and distributions were virtually unknown.

Methods

To determine what species had been taken in Wisconsin, historical collection and literature records, as well as data from private regional collections [e.g. University of Wisconsin-Madison Insect Research Collection (WIRC) (including the collection of Daniel K. Young), Milwaukee Public Museum (MPMC), and Field Museum of Natural History (FMNH)] were compiled. Field sampling focused on regions of Wisconsin that had unique records or were thought to be historically under-sampled. A variety of collecting methods was employed, including blacklight, flight intercept traps (Malaise and window-pane), Lindgren funnel, unbaited and baited pitfall traps, leaf litter and sand sifting, and hand collecting from flowers and foliage during both daylight and evening hours. To expand geographical and temporal species distributions, specific sites were chosen for more in-depth examinations due to apparent species rarity or uniqueness of habitat types. Collecting efforts were modified for specific taxa, and natural history information was gathered for each species.

Field samples from broader, ongoing surveys [e.g. joint projects with the Wisconsin Department of Natural Resources, Nature Conservancy surveys (e.g. Hemlock Draw), Fort McCoy inventory project, and inventory work at the Necedah National Wildlife Refuge] also contributed significantly to this study.
Results

This survey yielded 177 Wisconsin scarabaeoid species representing nine families. The familial phylogenetic arrangement of Scarabaeoidea adopted herein is based primarily on the works of Browne and Scholtz (1999). Subfamilial, tribal, and generic arrangements are primarily based on Lawrence and Newton (1995) and Ratcliffe (1991b), respectively. Vouchers of specimens taken during this survey are housed in the WIRC. A website has been developed for Wisconsin scarabaeoids, and it includes information on their distributions in the form of printable maps; it can be accessed at the following address:

http://entomology.wisc.edu/~young/scarab/wiscarab.html

Additionally, a specimen-level database for all Wisconsin records has been completed as part of a larger project for Wisconsin's Coleoptera fauna. The data reside with the authors and the WIRC under the BIOTA software (Colwell 1996).

In the following checklist of Wisconsin Scarabaeoidea, the 56 new state species records are indicated in boldface. Species previously recorded in the literature from Wisconsin are followed by the pertinent literature reference. Those species with a literature record only (no specimens found and no locality data available) are marked with an asterisk (*) following the literature citation. To simplify county associations, Wisconsin has been divided into nine, 8-county regions (Map 1) after Hilsenhoff (1995). Life history and phenological information pertain solely to adult Wisconsin scarabaeoid records and has been taken directly from labels accompanying specimens. Thus, in reporting plant associations, we report the data as indicated by specimen labels. However, we also commonly indicate an appropriate vernacular name when the specimen bears a latin binomial, and vice versa [e.g., on the trunk of a standing dead hackberry tree (*Celtis* sp.)] or [on the trunk of *Quercus rubra* (Linnaeus) (red oak)]. Many scarabaeoid species are long-lived as adults, and many phenologies are likely artifacts of human activity. We still lack sound natural history information for some species in Wisconsin.

Family Glaresidae


Family Passalidae

*Odontotaenius disjunctus* (Illiger) – Schuster (1983)*. Rauterberg (1889) reported this species to be widely encountered in Wisconsin, however, he provided no further locality data, and no Wisconsin specimens have been found. It is possible that this species has been extirpated from Wisconsin due to the loss of mature, old growth forests with downed timber of moderate to large diameter in the southern half of Wisconsin.

Family Lucanidae

Subfamily Lucaninae

*Dorcuus parallelus* (Say) – Benesh (1960). Hand collected at night, on the trunk of a standing dead hackberry tree (*Celtis* sp.) and on the trunk of *Quercus rubra* (Linnaeus) (red oak). June-July. NC: Lincoln, Taylor; SW: Grant, La Crosse; SC: Dane, Sauk; SE: Milwaukee.

*Lucanus capreolus* (Linnaeus) – Benesh (1960). Taken at UV light, hand collected at night from porches, sidewalks, and sandy roads. May-August. WC: Monroe; SW: Crawford, Grant, Richland, Vernon; SC: Columbia, Dane, Iowa, Rock; SE: Jefferson, Kenosha, Milwaukee, Racine, Waukesha.

*Lucanus placidus* Say – Benesh (1960). Shenefeldt and Simkover (1950) reported conifer damage in tree nurseries in Wisconsin by the larvae feeding on the roots. On one occasion, an aggregation of about 15 males and females was found under *Quercus velutina* Lamarck (black oak) shortly after dusk. May-August. NW: Burnett, Rusk; NE: Marinette, Oconto; WC: Monroe, Pierce; C: Adams, Juneau, Portage, Waupaca, Wood; EC: Winnebago; SW: Grant, La Crosse, Richland, Vernon; SC: Columbia, Dane, Lafayette, Rock, Sauk; SE: Racine, Walworth.

*Platycerus piceus* (Kirby) – Benesh (1960). Found along the shore of Lake Superior. May-July. NW: Bayfield, Douglas; NE: Marinette.

*Platycerus virescens* (Fabricius) – Benesh (1960). On the surface of rotting oak logs. April-September. NW: Bayfield; NC: Oneida; NE: Door, Oconto; WC: Eau Claire; C: Waupaca, Waushara; SW: Grant; SC: Dane, Green, La Fayette, Sauk; SE: Ozaukee, Racine.
Subfamily Nicaginæ


Subfamily Syndesinae

*Ceruchus piceus* (Weber) – Benesh (1960). Found in oak logs in an advanced red-rot stage of decay. Active year around. **NW**: Bayfield, Polk; **NC**: Price, Taylor; **NE**: Door, Florence, Oconto; **WC**: Eau Claire, Jackson, Monroe; **C**: Juneau; **SW**: Grant, Richland; **SC**: Columbia, Dane, La Fayette, Rock, Sauk; **SE**: Milwaukee, Racine, Waukesha.
Family Trogidae

Omorgus scabrosus (Beauvois) – In a pitfall trap baited with pig dung, malt, and molasses. June-August. SW: Grant, Richland.

Omorgus suberosus (Fabricius) – Vaurie (1955). At light and in pitfall traps baited with pig dung, malt, and molasses. May-September. C: Wood; SW: Crawford, Grant, Richland; SC: Columbia, Dane, Sauk; SE: Jefferson.

Trox aequalis Say – At light and in tree hole leaf litter material. May-September. NW: Bayfield, Burnett; NC: Taylor; NE: Oconto; WC: Jackson, Monroe, Pierce; C: Marquette, Waupaca, Wood; SW: Crawford, Grant, Richland; SC: Columbia, Dane, Green, Sauk; SE: Racine, Walworth, Waushara.

Trox aequalis Say – At light and in tree hole leaf litter material. May-September. NW: Bayfield, Burnett; NC: Taylor; NE: Oconto; WC: Jackson, Monroe, Pierce; C: Marquette, Waupaca, Wood; SW: Crawford, Grant, Richland; SC: Columbia, Dane, Green, Sauk; SE: Racine, Walworth, Waushara.

Trox capillaris Say – On a dead dog in a ditch along a county highway. April-July. SW: Richland; SC: Dane, Sauk.

Trox foveicollis Harold – Vaurie (1955). At light, in carrion-baited pitfall traps, and on dried carnivore dung containing hair and bone fragments, on a dead raccoon, in pitfall traps baited with carrion or human dung or pig dung, and in flight intercept traps. April-September. NE: Florence, Forest, Menominee; NC: Oneida, Vilas; WC: Eau Claire, Monroe; C: Green Lake, Waupaca, Waushara, Wood; SW: Grant, La Crosse, Richland, Vernon; SC: Columbia, Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Racine, Walworth, Washington, Waushara.

Trox laticollis LeConte – No ecological information available. April-June. SW: Crawford, SC: Dane.

Trox hamatus Robinson – In flight intercept traps, pitfall traps baited with carrion or pig dung/malt/molasses, and at light. May-August. NW: Douglas; NE: Marinette, Oconto; WC: Monroe, Pierce; C: Juneau, Marquette, Portage, Waushara, Wood; SW: Grant, Richland, Vernon; SC: Dane, Green, Rock, Sauk; SE: Walworth, Waukesha.

Trox hamatus Robinson – In flight intercept traps, pitfall traps baited with carrion or pig dung/malt/molasses, and at light. May-August. NW: Douglas; NE: Marinette, Oconto; WC: Monroe, Pierce; C: Juneau, Marquette, Portage, Waushara, Wood; SW: Grant, Richland, Vernon; SC: Dane, Green, Rock, Sauk; SE: Walworth, Waukesha.

Trox laticollis LeConte – No ecological information available. April-June. SW: Crawford, SC: Dane.

Trox robinsoni Vaurie – Vaurie (1955). In pitfall traps baited with carrion or pig dung/malt/molasses. April-September. NW: Douglas; NC: Vilas; NE: Door; C: Wood; SW: Grant.


Trox sordidus LeConte – On a deer carcass. May-June. SC: Iowa.

Trox striatus Melsheimer – At UV light. May-July. SW: Richland.

Trox variolatus Melsheimer – Vaurie (1955). On dried carnivore dung containing hair and bone fragments, on a dead raccoon, in pitfall traps baited with carrion or human dung or pig dung, and in flight intercept traps. April-September. NE: Florence, Forest, Menominee; NC: Oneida, Vilas; WC: Eau Claire, Monroe; C: Green Lake, Waupaca, Waushara, Wood; SW: Grant, La Crosse, Richland, Vernon; SC: Columbia, Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Racine, Walworth, Washington, Waushara.

Family Bolboceratidae

Bolboceras falli (Wallis) – Howden (1955). In unbaited pitfall traps partially filled with propylene glycol and hand collected on a deer path in northern mesic hardwood forest. June-July. NC: Vilas; NE: Marinette; C: Wood.


Bolboceras liebecki (Wallis) – Howden (1955). Flying low over a footpath at dusk in small oak and maple woods with organic, compacted, clay soil. May-September. WC: Eau Claire, Jackson; SC: Dane, Green, Iowa, La Fayette, Sauk.


Bolbocerosoma brunei Dawson and McColloch – Howden (1955). At UV lights near agriculture stations, privately owned farms, and state-owned nurseries. April-October. SW: Crawford, Grant, La Crosse, Vernon; SC: Columbia, Dane, Sauk; SE: Racine.

Bradyacinetus fossatus (Haldeman) – At UV light near state-owned nursery near Boscobel, sandy savanna. May-August. SW: Grant, La Crosse.

Eucanthus lazarus (Fabricius) – Howden (1955). At UV light and in flight intercept traps. April-September. NW: Burnett; WC: Chippewa, Eau
Claire, Pierce; C: Wood; EC: Fond du Lac; SW: Grant, Richland; SC: Columbia, Dane, Iowa, Sauk; SE: Racine, Walworth, Waukesha.

Family Geotrupidae

Subfamily Geotrupinae


Geotrupes semiopacus Jekel – Howden (1955). In pitfall traps baited with human dung or pig dung. May-September. NW: Burnett, Polk; NC: Vilas; NE: Menominee; WC: Eau Claire; C: Juneau, Waupaca, Wood; EC: Sheboygan; SW: Crawford, Richland, Vernon; SC: Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Waukesha.

Geotrupes splendidus (Fabricius) – Howden (1955). In pitfall traps baited with carrion or human dung or pig dung, on stems of fungi, and at light. March-October. NW: Burnett, Douglas, Polk; NC: Vilas; NE: Forest, Marinette, Menominee, Oconto; WC: Eau Claire, Monroe; C: Juneau, Marquette, Portage, Waupaca, Waushara, Wood; SW: Grant, La Crosse, Richland; SC: Dane, Dodge, Green, Iowa, Rock, Sauk; SE: Racine.

Family Ochodaeidae

Ochodaeus musculus Say – At UV light, in a window-pane trap and a Malaise trap, all located in sandy, savanna habitat. June-September. NW: Douglas, Sawyer; WC: Monroe; SW: Richland; SC: Columbia, Dane, Sauk.

Family Ceratocanthidae

Germarostes aphodiioides (Illiger) – At light and hand collected at night from the bark of standing, dead oak trees. May-July. SW: Richland; SC: Dane.

Family Scarabaeidae

Subfamily Aphodiinae

Tribe Aegialiini

Aegialia conferta Horn – Among driftwood and beach debris along the shore of Lake Michigan. May-August. NE: Door; EC: Manitowoc; SE: Milwaukee.

Aegialia criddlei Brown – In pitfall traps in sandy, oak-pine savanna. May-August. WC: Jackson; C: Wood.

Aegialia latispina LeConte – Sifted from leaf litter in sandy, oak barrens. May-August. SW: Richland.

Aegialia rufa (Fabricius) – Found dead amongst beach debris on the shore of Lake Michigan. May-June. EC: Sheboygan.

Tribe Aphodiini


Aphodius badipes Melsheimer – In a gray squirrel nest in a hollowed, fallen tree and in tree hole leaf litter in oak barrens and savanna. March-November. NE: Oconto; C: Waupaca, Wood; SW: Grant, La Crosse, Richland; SC: Sauk, Green.

Aphodius bicolor Say – Under scat, in human dung-baited pitfall traps, and in flight intercept traps. September-April. SC: Green, La Fayette, Sauk.

Aphodius distinctus (Muller) – Gordon (1983). In pitfall traps baited with human dung or pig dung and among tall grasses in barrens-type habitat. March-December. NW: Burnett, Douglas, Polk; NE: Door; WC: Monroe, St. Croix; C: Green Lake, Marquette, Waushara, Wood; SW: Grant, Pepin, Richland, Vernon; SC: Colum-
Aphodius insolitus (Linnaeus) – Gordon (1983). In pitfall traps baited with human dung or pig dung and in flight intercept traps. April-May. 

NW: Burnett; NC: Vilas; NE: Door, Oconto; WC: Eau Claire, Monroe; C: Marquette, Waushara; SW: Grant; SC: Columbia, Dane, Iowa, Rock; SE: Jefferson, Walworth.

Aphodius fumetarius (Linnaeus) – Gordon (1983). In pitfall traps baited with human dung or pig dung, in flight intercept traps, and found dead in beach debris on the shore of Lake Michigan. March-October. NW: Polk; NC: Marathon; NE: Door, Oconto; WC: Clark, Jackson, Monroe; C: Marquette, Portage, Waupaca, Wood; EC: Kewaunee, Manitowoc; SW: Crawford, Grant, Vernon; SC: Columbia, Dane, Green, Iowa, La Fayette; SE: Jefferson, Walworth, Waukesha.

Aphodius fuscus (Linnaeus) – Gordon (1983). In pitfall traps baited with human dung or pig dung and in cow dung in open pastures. April-August. NW: Burnett; NE: Door; Oconto; C: Waupaca, Wood; EC: Kewaunee; SC: Dane; SE: Walworth.

Aphodius granarius (Linnaeus) – Gordon (1983). At light, in pitfall traps baited with human dung or pig dung, in flight intercept traps, on a dead raccoon and a dead deer, and among beach debris on the shore of Lake Michigan. April-September. NW: Bayfield, Douglas; NC: Taylor; NE: Oconto; WC: Dunn, Jackson, Monroe; C: Juneau, Marquette, Waupaca, Wood; EC: Manitowoc, Sheboygan; SW: Buffalo, Crawford, Richland; SC: Columbia, Dane, Grant, Iowan; SE: Milwaukee, Ozaukee, Racine, Walworth, Waukesha.

Aphodius haemorrhoidalis (Linnaeus) – In cow dung in open pasture, in pitfall traps baited with human dung or pig dung, and among beach debris on the shore of Lake Superior. May-September. NW: Douglas; NE: Marinette; SC: Iowa, Sauk; SE: Jefferson, Walworth.

Aphodius hyperboreus LeConte – About a foot inside the opening of a woodchuck burrow located in open sandy grassland/oak barrens. May-September. NW: Douglas; NC: Iron; NE: Door.

Aphodius insolitus Brown – Taken in pig dung/molasses-baited pitfall traps established in pocket gopher burrow systems. August-December. NW: Burnett, Douglas, Polk; WC: Jackson, Monroe; SW: La Crosse, Richland; SC: Sauk.

Aphodius iowensis Wickham – In a Malaise trap and in pig dung/molasses-baited pitfall traps established in pocket gopher burrow systems. September-December. NW: Bayfield, Burnett, Polk; WC: Jackson; SW: Richland; SC: Sauk.

Aphodius kirini Cartwright – In window pane traps and in pig dung/molasses-baited pitfall traps established in pocket gopher burrow systems. April-December. NW: Burnett, Polk; WC: Jackson, Monroe; SW: Richland; SC: Sauk.

Aphodius lentus Horn – At light, in pitfall traps baited with human dung or pig dung, in flight intercept traps, and on deer dung. April-August. NW: Douglas; NE: Oconto; WC: Monroe; C: Waushara; SW: Buffalo, Grant, Richland; SC: Columbia, Dane, Green, Iowa, Rock.


Aphodius magnificens Robinson – In pig dung/molasses-baited pitfall traps established in pocket gopher burrow systems. August-December. NW: Polk; WC: Jackson, Monroe; SW: La Crosse, Richland; SC: Sauk.

Aphodius peculiosus Schmidt – Larvae and adults were sifted from a pocket gopher mound. September-May. WC: Monroe.

Aphodius prodromus (Braham) – Gordon (1983). In scat, under a dead raccoon, and in pitfall traps baited with carrion or human dung or pig dung. April-November. NC: Iron; NE: Oconto, Shawano; EC: Manitowoc; WC: Dunn, Monroe; C: Green Lake, Marquette, Waupaca, Waushara, Wood; EC: Sheboygan; SW: Grant, Richland; SC: Columbia, Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Racine, Walworth.

Aphodius punctissumus Brown – In pig dung/molasses-baited pitfall traps established in pocket gopher burrow systems. October. NW: Burnett.

Aphodius rubeolus Beauvois – In pig dung/molasses-baited pitfall traps in oak savanna. April-September. SC: Columbia.

Aphodius rubripennis Horn – In pitfall traps baited with human dung or pig dung, in flight intercept traps, and on deer dung. June-October. NW: Burnett, Polk; NC: Vilas; NE: Maric-
Aphodius rusicola Melsheimer – Gordon (1983). At light, in pitfall traps baited with human dung or pig dung, and in flight intercept traps. April–November. NW: Burnett, Douglas; NC: Taylor, Vilas; NE: Florence, Oconto; WC: Clark, Dunn, Eau Claire, Jackson, Monroe, Pierce; C: Juneau, Waupaca, Waushara, Wood; SW: Grant, La Crosse, Richland; SC: Columbia, Dane, Green, Iowa, La Fayette, Racine, Rock, Sauk; SE: Walworth, Waukesha.

Aphodius stercorosus Melsheimer – Gordon (1983). At light, in pitfall traps baited with human dung or pig dung, and in leaf litter near a fallen tree in mesic hardwood forest. April–August. NW: Douglas; NC: Vilas; WC: Jackson, Monroe, Pierce; SW: Grant, Richland, Vernon; SC: Dane, Green, Rock, Sauk.

Aphodius terminalis Say – On bones and hide of a deer carcass. January-April, November. SW: Grant.

Aphodius walshii Horn – In pitfall traps baited with carrion or human dung or pig dung. May-June. WC: Monroe; C: Marquette, Waushara; SW: Grant; SC: Dane, Rock.

Dialytellus dialytoides (Fall) – In rotting fungi, leaf litter, and flight intercept traps. June-August. NE: Marinette; WC: Eau Claire, Jackson; C: Waupaca.

Dialytes striatulus (Say) – In pitfall traps baited with human dung or pig dung and in flight intercept traps. June-October. NW: Burnett, Polk; NE: Florence; WC: Eau Claire, Monroe; C: Juneau, Marquette, Waupaca, Waushara, Wood; SW: Grant; SC: Iowa, Sauk.

Dialytes truncatus (Melsheimer) – Gordon (1983). In pitfall traps baited with human dung or pig dung and in flight intercept traps. June-October. NW: Burnett, Polk; NE: Florence, Oconto; WC: Monroe, Pierce; C: Juneau, Wood; SW: Grant, Richland; SC: La Fayette, Sauk.

Dialytes ulkei Horn – Under scat, in pitfall traps baited with human dung or pig dung, and in flight intercept traps. June-September. WC: Eau Claire, Monroe; C: Waupaca, Wood; SC: Green, La Fayette, Sauk.

Tribe Didactylini

Aidophus parcus (Horn) – No ecological information available. SW: Grant.

Neopsammodius interruptus (Say) – Sifted from leaf litter and in pan traps and barrier pitfall traps in sandy oak barrens and among driftwood and beach debris along the shore of Lake Michigan. March-December. SW: Grant, Richland; SC: Sauk; SE: Milwaukee.

Aphodius terminalis Say – On bones and hide of a deer carcass. January-April, November. SW: Grant.

Aphodius walshii Horn – In pitfall traps baited with carrion or human dung or pig dung. May-June. WC: Monroe; C: Marquette, Waushara; SW: Grant; SC: Dane, Rock.

Dialytellus dialytoides (Fall) – In rotting fungi, leaf litter, and flight intercept traps. June-August. NE: Marinette; WC: Eau Claire, Jackson; C: Waupaca.

Dialytes striatulus (Say) – In pitfall traps baited with human dung or pig dung and in flight intercept traps. June-October. NW: Burnett, Polk; NE: Florence; WC: Eau Claire, Monroe; C: Juneau, Marquette, Waupaca, Waushara, Wood; SW: Grant; SC: Iowa, Sauk.

Dialytes truncatus (Melsheimer) – Gordon (1983). In pitfall traps baited with human dung or pig dung and in flight intercept traps. June-October. NW: Burnett, Polk; NE: Florence, Oconto; WC: Monroe, Pierce; C: Juneau, Wood; SW: Grant, Richland; SC: La Fayette, Sauk.

Dialytes ulkei Horn – Under scat, in pitfall traps baited with human dung or pig dung, and in flight intercept traps. June-September. WC: Eau Claire, Monroe; C: Waupaca, Wood; SC: Green, La Fayette, Sauk.

Tribe Eupariini


Ataenius imbricatus (Melsheimer) – Cartwright (1974). At light and sifted from leaf litter in sandy, oak barrens. April-September. NW: Douglas; NE: Oconto; WC: Monroe; C: Wood; SW: Grant, Richland, Vernon; SC: Columbia, Dane, Green.

Ataenius miamii Cartwright – Sifted from leaf litter in sandy oak barrens and among driftwood and beach debris along the shore of Lake Michigan. March-December. SW: Grant, Richland; SC: Sauk; SE: Milwaukee.

Ataenius punctifrons Cartwright – Cartwright (1974). At light, in pan traps and flight intercept traps, and among beach debris on the shore of Lake Michigan. April-September. NE: Door, Oconto; WC: Monroe; C: Wood; SW: Grant, La Crosse, Richland, Vernon; SC: Dane, Green, Iowa, Sauk; SE: Kenosha, Milwaukee, Ozaukee, Racine.


Ataenius spretulus (Haldeman) – Cartwright (1974). At light and hand collected in flight from cultivated grasses (sports fields, golf courses, lawns). March-September. NE: Oconto; C: Wood; SW: Richland, Vernon; SC: Dane, Green, Iowa, Sauk; SE: Kenosha, Racine.

Ataenius strigatus (Say) – Cartwright (1974). At light, in pitfall traps baited with human dung or pig dung, sifted from leaf litter, and hand collected in flight at dusk over old fields. March-October. NW: Bayfield, Douglas; NE: Door, Oconto; WC: Monroe; C: Waupaca, Wood; EC: Fond du Lac, Outagamie, Sheboygan, Winnebago; SW: Crawford, Grant, Richland, Vernon; SC: Dane, Columbia, Green, Iowa, La Fayette, Rock, Sauk; SE: Jefferson, Kenosha, Milwaukee, Ozaukee, Walworth, Waukesha.
traps, in sandy, oak barrens and in dune habitats near Lake Michigan. May-July. WC: Monroe; SW: Richland; SE: Kenosha.

*Platytomus notialis* (Cartwright) – Sifted from leaf litter and in barrier pitfall traps in oak barrens and oak savanna habitats. June-October. NW: Burnett; WC: Monroe; SW: Grant, Richland; SC: Columbia, Green, Sauk; SE: Kenosha.

*Pleurophorus caesus* (Creutzer) – Jerath (1960). In beach debris along the shore of Lake Michigan and the Wisconsin River. April-December. NE: Door; EC: Manitowoc; SC: Dane, Iowa; SE: Milwaukee.

*Rhyssenus germanus* (Linnaeus) – Among beach debris along the shore of Lake Michigan. May-August. EC: Sheboygan.

Subfamily Scarabaeinae

Tribe Canthonini

*Canthon chalcites* (Haldeman) – In pitfall traps baited with human dung or pig dung and in flight intercept traps. May-August. NW: Burnett, Douglas; NE: Oconto; WC: Eau Claire, Jackson, Monroe; C: Juneau, Washburn, Wood.


*Canthon viridis* (Beauvois) – In pitfall traps baited with human dung or pig dung and in flight intercept traps. April-June. SW: Grant, Richland; SC: Sauk.

*Melanocanthon nigricornis* (Say) – Williams and Kriska (2001). In pitfall traps baited with human dung or pig dung, on a dead lizard, observed rolling a ball of carrion, and observed breaking down, bundling, and rolling away pieces of a gill cap mushroom. May-September. NW: Burnett, Douglas; NE: Oconto, Shawano; WC: Monroe; C: Marquette, Portage; SW: Grant, Richland; SC: Columbia, Dane, Iowa, Sauk.

Tribe Coprini

*Copris fricator* (Fabricius) – Matthews (1961). Hand collected from tall grass stems at night, at light, in pitfall traps baited with carrion or human dung or pig dung, and in flight intercept traps. April-October. NW: Burnett; NE: Oconto; WC: Eau Claire, Monroe, Pierce; C: Green Lake, Wood; SW: Crawford, Grant, Richland,Vernon; SC: Columbia, Dane, Iowa, Rock, Sauk; SE: Kenosha, Walworth, Waukesha.

*Dictotomius carolinus* (Linnaeus) – No ecological information available. August. SC: Dane.

Tribe Onthophagini

*Onthophagus hecate* (Panzer) – Howden and Cartwright (1963). At UV light, in pitfall traps baited with carrion or human dung or pig dung, and in flight intercept traps. March-October. NW: Burnett, Douglas, Polk, Washburn; NC: Vilas; NE: Florence, Marinette, Oconto, Menominee, Shawano; WC: Clark, Eau Claire, Jackson, Monroe; C: Adams, Juneau, Marquette, Portage, Waushara, Wood; EC: Brown, Sheboygan; SW: Buffalo, Grant, La Crosse, Richland, Vernon; SC: Columbia, Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Jefferson, Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Waukesha.

*Onthophagus nuchicornis* (Linnaeus) – Howden and Cartwright (1963). At UV light and in pitfall traps baited with human dung or pig dung. April-October. NW: Burnett, Douglas; NE: Door, Oconto, Shawano; WC: Clark, Eau Claire, Jackson, Monroe; C: Adams, Juneau, Marquette, Waushara; SW: Grant, Richland; SC: Columbia, Dane, Iowa, Rock, Sauk.

*Onthophagus orpheus* (Panzer) – Howden and Cartwright (1963). In deer dung, pitfall traps baited with human dung or pig dung, flight intercept traps, and Lindgren funnel traps. April-September. NW: Burnett, Douglas, Polk; NE: Oconto; WC: Eau Claire, Jackson, Monroe; C: Adams, Juneau, Marquette, Waushara, Wood; SW: Grant, La Crosse, Richland; SC: Columbia, Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Walworth.

*Onthophagus pennsylvanicus* Harold – Howden and Cartwright (1963). In deer dung, pitfall traps baited with human dung or pig dung, flight intercept traps, and Lindgren funnel traps. April-September. NW: Burnett, Douglas; NE: Oconto; WC: Eau Claire, Jackson, Monroe; C: Adams, Juneau, Marquette, Waupaca, Waushara, Wood; SW: Grant, La Crosse, Richland; SC: Columbia, Dane, Green, Iowa, La Fayette, Rock, Sauk; SE: Walworth.

*Onthophagus striatulus* (Beauvois) – In flight intercept traps, in pitfall traps baited with human dung or pig dung, and in a jug trap baited with pinene and 75% EtOH. May-July.
**Tribe Phanaeini**

*Phanaeus vindex* MacLeay – In pitfall traps baited with human dung or pig dung. April-September. WC: Monroe; SW: La Crosse, Richland; SC: Dane, Green, La Fayette, Sauk; SE: Walworth.

**Tribe Dichelonychini**

*Dichelonyx albicollis* (Burmeister) – At UV light, in flight intercept traps and Lindgren funnel traps, and hand collected feeding diurnally on needles of *Pinus strobus* Linnaeus (white pine) in sandy oak/pine forest. May-July. Cornell (unpublished Ph.D. thesis, 1972) also listed this species from Wisconsin. NW: Burnett, Douglas, Sawyer; NC: Oneida; NE: Marinette, Oconto; WC: Clark, Jackson, Monroe; C: Marquette, Waushara; SW: Grant, Richland; SC: Iowa, Sauk; SE: Waukesha.

*Dichelonyx canadensis* (Horn) – No ecological information available. May-July. C: Waushara.


*Dichelonyx subvittata* (LeConte) – At UV light. May-July. Cornell (unpublished Ph.D. thesis, 1972) also listed this species from Wisconsin. WC: Jackson; SW: Grant, La Crosse, Richland, Vernon; SC: Dane, Green, Sauk; SE: Walworth.

**Tribe Diplotaxini**

*Diplotaxis frondicola* (Say) – Vaurie (1956). At UV light and hand collected at night from *Coreopsis* sp. (tickseed). May-October. WC: Pierce; SC: Crawford, Grant, Richland; SC: Sauk.


*Diplotaxis obscura* LeConte – At UV light. June-August. NW: Burnett, Douglas; WC: Jackson; C: Waushara.

*Diplotaxis soridea* (Say) – Vaurie (1956). At UV light and in pig dung/molasses-baited pitfall traps. May-August. NW: Burnett, Douglas; NE: Oconto; WC: Monroe; C: Marquette, Waushara, Wood; SW: Grant, Richland; SC: Dane, Iowa, Sauk.

*Diplotaxis tristis* Kirby – Vaurie (1956). At light and found under a stone partially buried in the sand in oak savanna habitat. May-August. NW: Douglas; NE: Door, Oconto; WC: Clark, Monroe; C: Wood; SW: Grant, La Crosse.

**Tribe Hopliini**

*Hoplia modesta* Haldeman – Hardy (1977). Found amongst beach debris on the shore of Lake Michigan and hand collected from *Rosa* sp., *Sambucus racemosa* Linnaeus (red elder), *Rhus* sp. (sumac), and *Cornus racemosa* Lamarck (dogwood). June-July. NW: Bayfield, Burnett, Douglas; NE: Oconto; WC: Jackson, Monroe; C: Juneau, Washburn, Wood; EC: Manitowoc; SW: Grant, Richland, Vernon; SC: Dane, Iowa, Sauk.


*Hoplia trivialis* Harold – Hardy (1977)*. No ecological information available. May-July.

**Tribe Macrodactylini**

*Macrodactylus subspinosus* (Fabricius) – Carrillo and Gibson (1960). In dung-baited pitfall traps, hand collected feeding diurnally on *Rosa* sp. (rose), *Salix* sp. (willow), *Quercus* sp. (oak), *Apocynum* sp. (dogbane), *Verbascum* sp. (mule-ein), and on ornamental composites in a flower garden, and a mating aggregation was observed during late summer on common milkweed (*Asclepias* sp.). June-July. NW: Burnett; NC: Onei-
Phyllophaga barda (Horn) - Luginbill and Painter (1953). At UV light; larvae were the only Phyllophaga species occurring in Wisconsin cranberry beds (Katovich 1995; Katovich et al. 1998), and they were also found in turf grasses and irrigated sivicultural sites (balsam fir and white pine plantations). March-August. NW: Barron, Bayfield, Douglas, Polk; NC: Ashland, Marathon, Price, Vilas; NE: Door, Florence, Forest, Oconto; WC: Jackson, Monroe; C: Waupaca, Wood; EC: Brown, Fond du Lac; SW: Crawford, Grant, Richland; SC: Dane, Green, Iowa, La Fayette, Sauk; SE: Jefferson, Milwaukee, Racine, Waukesha.

Phyllophaga balia (Say) - Luginbill and Painter (1953). At UV light. April-July. WC: Monroe; C: Washburn; SW: Grant, Richland; SC: Dane, Iowa, Rock.

Phyllophaga barda (Horn) - Luginbill and Painter (1953)*. No ecological information available. April-July.

Phyllophaga bipartita (Horn) - Luginbill and Painter (1953). No ecological information available. May-July. NW: Barron.


Phyllophaga crassissima (Blanchard) - Luginbill and Painter (1953)*. No ecological information available. March-August.

Phyllophaga crenulata (Froelich) - Luginbill and Painter (1953). At UV light, in flight intercept traps, and feeding on oak leaves at night in sandy, oak barrens and savanna habitat. March-August. NW: Barron, Douglas; WC: Jackson, Monroe, Pierce; C: Waushara, Wood; EC: Fond du Lac; SW: Grant, Richland, Vernon; SC: Columbia, Dane, Green, Iowa, Rock, Sauk; SE: Washington.

Phyllophaga drakii (Kirby) - Luginbill and Painter (1953). At UV light and in flight intercept traps; larvae were found in turf grass and sivicultural sites (Katovich 1995; Katovich et al. 1998). March-July. NW: Burnett, Douglas, Polk; NC: Iron; NE: Florence, Oconto; WC: Jackson, Monroe, Pierce; C: Adams, Juneau, Marquette, Washburn, Waushara, Wood; EC: Fond du Lac, Sheboygan, Sheboygan, Green, Rock, Sauk; SE: Ozaukee, Waukesha.


Phyllophaga fusca (Froelich) - Luginbill and Painter (1953). At UV light and found feeding on Cornus racemosa Lamarc (dogwood); larvae of P. fusca are the primary species responsible for damage to turf grass (Katovich 1995; Katovich et al. 1998). March-July. NW: Polk; NC: Marathon; NE: Door, Florence, Marinette, Oconto; WC: Chippewa; C: Marquette, Waupaca, Waushara, Wood; EC: Fond du Lac; SW: Crawford, Grant, La Crosse, Richland; SC: Columbia, Dane, Green, Iowa, Rock, Sauk; SE: Kenosha, Milwaukee, Washington, Waukesha.

Phyllophaga grisella (LeConte) - Luginbill and Painter (1953). At UV light and in flight intercept traps, in oak barrens and savanna habitat. June-August. NW: Douglas; WC: Monroe, Pierce; SW: Grant; SC: Dane.


Phyllophaga hornii (Smith) - Luginbill and Painter (1953)*. No ecological information available. March-June.

Phyllophaga ilicis (Knoch) - Luginbill and Painter (1953). At UV light. April-July. WC: Pierce, Wood; SW: Crawford, Grant; SC: Dane, Iowa, Sauk.

Phyllophaga implicata (Horn) - Luginbill and Painter (1953). At UV light. March-July. SW: Crawford, Grant, La Crosse, Richland; SC: Dane, Green, Iowa; SE: Jefferson.


Phyllophaga micaea (Knoch) – Luginbill and Painter (1953)*. No ecological information available. March–June.


Phyllophaga prunina (LeConte) – Luginbill and Painter (1953). At UV light in sandy oak barrens and oak savanna habitat. March–July. WC: Monroe; C: Wood; SW: Grant, Richland; SC: Columbia, Dane, Iowa, Sauk.


Phyllophaga spreta (Horn) – Luginbill and Painter (1953). No ecological information available. April–May. SW: Crawford.


Phyllophaga vehemens (Horn) – Luginbill and Painter (1953)*. No ecological information available. March–June.

Phyllophaga vilifrons (LeConte) – Luginbill and Painter (1953). At UV light. April–June. NW: Bayfield; SC: Dane, Green, Iowa; SE: Oziel.

Polyphylla hammondii LeConte – Young (1988). At UV light in mid-summer, active from 11 p.m. to about 2 a.m., in sandy oak savanna habitats near the Mississippi and Wisconsin rivers. May–September. SW: La Crosse; SC: Sauk.

Tribe Sericini


Serica gregani Leng – Dawson (1932). At light and in flight intercept traps in sandy oak barrens and savanna. May–August. NW: Bayfield, Douglas, Sawyer; NC: Lincoln; NE: Brown, Oconto; WC: Clark, Eau Claire, Jackson, Monroe; C: Juneau, Marquette, Wood; SW: Buffalo, La Crosse, Richland; SC: Columbia, Dane, Sauk; SE: Waukesha.


Serica mystaca Dawson – At UV light in sandy oak barrens and savanna habitats. April–June. SW: La Crosse, Pierce; SC: Dane, Sauk.

Serica parapella Casey – Dawson (1922a). At UV light, in flight intercept and unbaited Lindgren funnel traps, and observed feeding and mating on leaves of Quercus velutina Lamark (black oak), Prunus serotina Ehrhart (black cherry), and an aster at night. April–July. NE: Brown, Oconto; WC: Jackson, Monroe, Pierce; C: Juneau, Portage, Wood; SW: Grant, La Crosse, Richland, Vernon; SC: Dane, Green, Sauk; SE: Walworth, Waukesha.
Serica sericea (Illiger) – Dawson (1922a). At UV light, in flight intercept and unbaited Lindgren funnel traps, and observed feeding and mating on leaves of *Prunus serotina* Ehrhart (black cherry) at night. April-August. NW: Burnett, Douglas, Washburn; NC: Taylor, Vilas; NE: Door, Florence, Langlade, Oconto; WC: Chippewa, Clark, Jackson, Monroe, Pierce; C: Adams, Juneau, Marquette, Waupaca, Waushara, Wood; SW: Crawford, Grant, La Crosse, Richland; SC: Dane, Green, Sauk; SE: Kenosha, Milwaukee, Racine, Walworth, Waukesha.

Serica sponsa – Dawson (1919b). At UV light, in flight intercept traps, and observed feeding on leaves of *Acer rubrum* Linnaeus (red maple) and *Prunus serotina* Ehrhart (black cherry). April-July. SW: Crawford, Grant, Jackson, Monroe, Pierce; C: Adams, Green, Lake, Marquette, Portage, Waushara, Wood; SW: Crawford, Grant, La Crosse, Richland; SC: Dane, Green, Sauk; SE: Racine, Waukesha.


Serica vespertina (Gyllenhal) – Dawson (1921). At UV light in sandy oak barrens and savanna habitats. May-June. WC: Pierce; C: Wood; SW: Crawford; SC: Sauk.

Subfamily Rutelinae

Tribe Anomalini

Anomala binotata (Gyllenhal) – Potts (1977). In pitfall and flight intercept traps, found along sandy hiking trails, found in the mound of a pocket gopher push-up, and observed nectaring on flowers of *Prunus* sp. (cherry). May-July. WC: Monroe; C: Marquette, Wood; SW: Grant, Pepin, Richland; SC: Columbia, Dane, Iowa, Rock, Sauk.

Anomala innuba (Fabricius) – Potts (1977). Occurring in prairie habitats, on *Apocynum* sp. (dogbane) and in tall grass. June-July. SW: Crawford; SC: Rock.

Anomala ludoviciiana Schaeffer – Potts (1977). In sandy blows and on sandy trails in oak barrens and savanna habitats. June-July. NW: Burnett; WC: Jackson, Monroe; C: Portage, Wood; SW: Richland; SC: Columbia, Dane, Iowa, Sauk.

Anomala undulata Melsheimer – Potts (1977). At UV light in sandy oak barrens and savanna habitats, and in a mound of a pocket gopher push-up. March-May. WC: Monroe; C: Wood; SW: Grant, Richland; SC: Dane, Sauk.

Exomala orientalis (Waterhouse) – A series of adults was collected in a Japanese beetle trap. June-August. SE: Milwaukee.

Popillia japonica Newman – Large series collected in Japanese beetle traps, and found feeding on ornamental flowers in gardens and nurseries. June-August. NW: Polk; NE: Door; WC: Eau Claire; SW: Grant; SC: Dane, Rock; SE: Kenosha.

Strigoderma arboicola (Fabricius) – Blackwelder and Arnett (1974). In pan, flight intercept, and barrier pitfall traps, all in sandy, open habitats, and observed feeding on flowers of *Monarda* sp. (horsemint), *Rosa* sp. (rose), and nectaring on flowers of *Asclepias* sp. (milkweed). June-July. NW: Barron, Burnett, Douglas, Washburn; NC: Ashland; NE: Oconto, Shawano; WC: Dunn, Eau Claire, Jackson, Monroe; C: Adams, Green Lake, Juneau, Portage, Waushara, Wood; SW: Crawford, Grant, Pepin, Richland; SC: Columbia, Dane, Green, Iowa, Rock, Sauk; SE: Jefferson, Kenosha, Waukesha.

Tribe Rutelini

Cotalpa lanigera (Linnaeus) – Saylor (1940). At UV light and found dead on sandy trails and roads. April-July. NW: Bayfield, Burnett, Douglas, Sawyer; NC: Ashland; NE: Door, Marinette, Oconto; WC: Monroe; C: Adams, Green Lake, Juneau, Marquette, Portage, Waushara, Wood; SW: Crawford, Richland, Vernon; SC: Columbia, Dane, Sauk; SE: Milwaukee, Ozaukee, Waukesha.

Pelidnota punctata (Linnaeus) – Hardy (1975). At light, and three adults reared from pupae found in an unidentified, advancedly decayed tree stump. June-August. NE: Oconto; EC: Fond du Lac, Winnebago; C: Wood; SW: Buffalo, Crawford, Grant, Richland; SC: Dane, Rock; SE: Racine, Walworth, Waukesha.

Subfamily Dynastinae

Tribe Oryctini

Tribe Pentodontini

*Aphonus tridentatus* (Say) – Gill and Howden (1985).
At UV light. June-August. NW: Burnett, Douglas; NE: Oconto; WC: Jackson, Monroe; C: Juneau, Wood; SW: Crawford; SC: Columbia, Dane.

*Ligyrus gibbosus* (DeGeer) – Endrödi (1985). At UV light and found dead on sidewalks and under gas station lights. April-October. WC: Monroe; C: Marquette, Waushara, Wood; SW: Grant, La Crosse, Richland; SC: Columbia, Dane, Sauk; SE: Jefferson.

*Ligyrus relictus* (Say) – Endrödi (1985). At UV light. April-October. NW: Polk; WC: Clark, Jackson, Monroe; C: Wood; SW: Grant, Richland; SC: Columbia, Dane, Sauk, Jefferson, Racine, Waukesha.

Subfamily Cetoniinae

Tribe Cetoniini

*Euphoria fulgida* (Fabricius) – Ratcliffe (1991a). In flight intercept traps and hand collected in flight through a sandy oak savanna site. May-July. NW: Polk; NC: Iron; NE: Door; WC: Monroe; SW: Crawford; SC: Dane, Iowa, Rock; SE: Racine.


*Euphoria selpulchralis* Fabricius – No ecological information available. May-September. SE: Racine.

Tribe Cremastocheilini

*Cremastocheilus castaneus* Knoch – Alpert (1994).
Observed in flight in oak savanna, found on the surface of *Formica* sp. nests, and a single adult reared from a sandy mound of a pocket gopher burrow. April-September. NW: Bayfield; NE: Oconto; WC: Monroe; C: Marquette, Waushara; SC: Rock.

*Cremastocheilus harrisii* Kirby – One adult reared from a pupa taken in a soil sample, and hand collected in flight over a small sand dune in oak barrens habitat. April-September. WC: Monroe; C: Wood.


*Cremastocheilus wheeleri* LeConte – Found atop a *Formica obscuripes* Forel thatch nest, the surface of the nest swarming with ants. June-August. C: Waushara; SC: Iowa.

*Psilocnemis leucosticta* Burmeister – One specimen found dead in a backyard swimming pool and another found alive on a sandy road, adjacent to a subterranean nest of the ant *Doli-choerus taschenbergi* (Mayr). May-July. WC: Jackson; C: Waushara.

Subfamily Trichiinae

Tribe Osmodermini

*Osmoderma eremicola* (Knoch) – Howden (1968).
At light; larvae commonly encountered in large, rotted stumps and fallen tree trunks. March-September. NW: Burnett, Washburn; NE: Oconto; WC: Monroe; SW: Crawford, Grant, Richland; C: Green Lake, Wood; SC: Dane, Sauk; SE: Jefferson, Kenosha, Racine, Walworth.

*Osmoderma scabra* Beauvois – Howden (1968).
Found on a gravel road in northern mesic hardwood forest, and reared from larvae found in a large rotted stump. April-September. NW: Bayfield; NC: Oneida, Vilas; WC: Monroe; SW: Crawford; SC: Dane, Sauk.

Tribe Trichiini

*Gnorimella maculosa* (Knoch) – Howden (1968). In Lindgren funnel traps in forested areas, and a single adult was observed nectaring on ninebark (*Physocarpus opulifolius* (Linnaeus)) in an area of northern mesic hardwood forest. May-July. WC: Jackson, Monroe; C: Wood; SC: Sauk.

*Trichiotinus assimilis* (Kirby) – Howden (1968).
In Malaise traps and observed feeding on flowers of *Monarda* sp. (horsemint), *Phlox* sp. (phlox), *Prunus* sp. (cherry), and *Rosa* sp. (rose). June-July. NW: Polk, Rusk, Sawyer, Washburn; NC:
Oneida, Vilas; NE: Marinette, Oconto; WC: Monroe, St. Croix; C: Wood; EC: Manitowoc; SE: Milwaukee.

*Trichiotinus piger* (Fabricius) — Howden (1968). Observed feeding on a raspberry flower. May-August. NW: Polk; WC: Monroe; C: Portage, Waupaca, Wood; SW: Grant; SC: Columbia, Dane, Iowa, Sauk; SE: Milwaukee, Outagamie.

*Trichiotinus viridans* (Kirby) — Observed feeding on flowers of *Anemone* sp. (anemone), *Asclepias* sp. (milkweed), *Physocarpus* opulifolius (Linnaeus) (ninebark), *Ceanothus americanus* Linnaeus (New Jersey tea), *Cornus racemosa* Lamarck (dogwood), *Rosa* sp. (rose), and *Rhus* sp. (sumac). May-July. NVV: Burnett, Polk; WC: Eau Claire, Jackson, Monroe; C: Juneau, Wood; SW: Grant, La Crosse; SC: Dane, Iowa, Sauk.

The following species have distributions that could potentially extend into Wisconsin. This list is based on known distributions, published literature, and specimens examined during the course of this study. The most pertinent literature relating to the development of this list includes Cornell (1972), Endrödi (1985), Gordon (1983), Gordon and Cartwright (1980), Howden (1955, 1968), Luginbill and Painter (1953), Ratcliffe (1991a), and Vaurie (1956). Each species listed is followed by the state(s) and province(s) from which it is currently known that show a reasonable proximity to Wisconsin.

**Family Bolboceratidae**

*Bolboceras simi* (Wallis): Indiana, Michigan, Minnesota.


**Family Scarabaeidae**

**Subfamily Aphodiinae**

*Tribe Aegialiini*  
*Aegalia humeralis* Brown: Michigan.

*Tribe Aphodiini*  
*Aphodius concavus* Say: Iowa.  
*Aphodius manitobensis* Brown: Southcentral Canada (Ontario, Manitoba), possibly in northern Michigan, Minnesota.  
*Aphodius pinguis* Haldeman: Michigan, Minnesota, North Dakota.  
*Aphodius serval* Say: Illinois, Indiana, Iowa.  
*Aphodius vittatus* Say: Illinois, Indiana.

**Tribe Psammoediini**  

**Subfamily Scarabaeinae**

**Tribe Ateuchini**  

**Tribe Canthonini**  
*Canthon pilularius* (Linnaeus): Illinois, Indiana, Iowa, Michigan, Minnesota.

**Subfamily Melolonthinae**

**Tribe Dichelonychini**  
*Dichelonyx diluta* (Fall): Michigan.  
*Dichelonyx fuscula* (LeConte): Illinois.  
*Dichelonyx macclayi* Fraser: Illinois, Indiana.

**Tribe Diplotaxini**  
*Diplotaxis atlantis* Fall: Illinois, Iowa.  
*Diplotaxis basalis* Fall: Illinois, Indiana.  
*Diplotaxis Blanchardi* Vaurie: Illinois, Iowa.

**Tribe Melolonthini**  
*Phyllophaga congrua* (LeConte): Illinois, Indiana, Iowa.  
*Phyllophaga ephilida* (Say): Illinois, Indiana, Iowa.  
*Phyllophaga fervida* (Fabricius): Illinois, Indiana, Iowa, Michigan, Minnesota.  
*Phyllophaga hirtiventris* (Horn): Indiana, Iowa.  
*Phyllophaga lanceolata* (Say): Iowa.  
*Phyllophaga praetermissa* (Horn): Illinois.  
*Phyllophaga rubiginosa* (LeConte): Michigan.
Subfamily Dynastinae

Tribe Cyclocephalini

*Cyclocephala borealis* Arrow: Illinois, Indiana
*Cyclocephala lurida* Bland: Illinois, Indiana, Iowa
*Dyscinetus morator* (Fabricius): Illinois, Iowa, Indiana

Subfamily Cetoniinae

Tribe Cetoniini

*Stephanuca pilipennis* Kraatz: North Dakota, Minnesota.

Subfamily Trichiinae

Tribe Trichiini

*Trichiotinus affinis* (Gory and Percheron): Illinois, Indiana, Michigan
*Trichiotinus bibens* (Fabricius): Illinois, Indiana, Michigan

Discussion

The scarabaeoid fauna of Wisconsin ranges from common, widespread species to species which are uncommonly encountered and strongly influenced by Wisconsin’s unique abiotic and biotic features, such as physical geography, climate, natural boundaries of the Great Lakes and Mississippi River, vegetation, and soils. Many Wisconsin species are widespread throughout the United States, but there are many species representing northern, southern, eastern, or western faunas whose ranges include Wisconsin.

Certain portions of the state host a greater number of species because of the vegetational and soil components occurring there, particularly oak barrens and oak savanna with sandy and silty loam soil. Of the 177 Wisconsin species, 108 were collected in areas containing oak barrens or savanna habitat; 27 of those 108 species include new state records. The "dung beetles" (subfamilies Aphodiinae and Scarabaeinae) not only comprise the majority of new state records, but they comprise the majority of species encountered in the barrens and savanna habitats. Many of these species are tied to the mammals and birds that inhabit these areas. One such mammal, *Geomys bursarius* (Shaw), the pocket gopher, is endemic to the rich, sandy soils associated with these habitats. These gophers rely on the deep soils for tunnelling, and they feed on roots of grasses in shallow feeding tunnels. Numerous subspecies of pocket gophers in the United States are associated with aphodiine dung beetles endemic to their tunnel systems. Wisconsin pocket gopher populations not only host five of these aphodiine species (*Aphodius insolitus*, *A. iowensis*, *A. kirni*, *A. magnificens*, *A. peculiosis*), but numerous other scarabaeoids take advantage of the microhabitat provided by the pocket gophers in the form of sandy mounds or "push-ups" created when the gophers clear out their tunnels. The investigation of these unique habitats and associations using particular collecting methods contributed significantly to this survey, and it provides a springboard for further studies both in Wisconsin as well as surrounding regions.

Acknowledgments

We thank our lab colleagues (Craig Brabant, Jim Dunford, Jeff Gruber, Kerry Katovich, Michele Price, Alistair Ramsdale, and Andrew Williams) for assistance and contribution of material to this study. We also acknowledge curators and staff at the University of Wisconsin-Madison Insect Research Collection (Steven Krauth), Milwaukee Public Museum (Gary Noonan), and Field Museum of Natural History (Alfred Newton Jr. and Margaret Thayer) for assisting us during examination of the collections under their care. Several scarab colleagues throughout the United States provided assistance with species identifications and nomenclatural issues; we specifically acknowledge Bruce Gill and Robert Gordon (scarabaeines and aphodiines), Henry Howden (bolboceratids and geotrupids), Paul Lago (Serica), Chris Marshall (passalids), Scott McCleve (Diplopaxis), Paul Skelley (aphodiines), and William Warner (Cremastocheilus). The private collections of Byron Buchli, Herb Grimek, Michael Sabourin, Walter Suter, and Daniel Young proved to be very valuable sources of new state records and numerous county records. Several private landowners (Richard and Mary Norman, Ted and Donna Spencer, and Eric Strickler), allowed access to their property to collect data. We thank Thomas Meyers, Wisconsin Department of Natural Resources (WDNR), for assisting us with acquiring permits to sample in Wisconsin’s State Natural Areas, and other WDNR employees (especially Kathy Kirk) who brought in scarabaeoids for identification. A special thanks to Dave Almquist and...
Paul Skelley for reviewing this manuscript and offering helpful feedback. This research was supported in part by a Hatch grant (WIS-4056) to Daniel K. Young. Additional agencies provided funding to cover much-needed supplies and travel expenses, in particular, Lois Almon Small Grants Program, Milwaukee Zoological Society, and Natural History Museums Council Small Grants. Funding for the specimen-level database and web-based material came, in part, from a WDNR (ATRI: Aquatic and Terrestrial Resource Inventory) grant to Daniel K. Young; for these resources we are grateful.

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