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T.J. Spilman  
*US Department of Agriculture*

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## A LIST OF THE TENEBRIONIDAE OF MICHIGAN (COLEOPTERA)

T. J. Spilman

Entomology Research Division, Agricultural Research Service,  
United States Department of Agriculture, Washington, D.C.<sup>1</sup>

The family Tenebrionidae, the darkling beetles, containing more than 14,000 species, is found primarily in the tropics and arid regions. As would therefore be expected, Michigan's cool, moist environment is not attractive to very many tenebrionids. This list contains 50 identified species and six previously recorded species that were not confirmed by me.

Previously 45 species of Tenebrionidae had been recorded in Michigan in various lists. I have not attempted to find all literature records, but I have seen the principal faunal lists of Coleoptera. The three areas of the state, Lower Peninsula, Upper Peninsula, and Isle Royale, are used here to summarize previous lists. In the Lower Peninsula, Hubbard and Schwarz (1878b) recorded 32 species, Townsend (1889) recorded three species, Andrews (1916) recorded 21 species from the Charity Islands (Arenac County) in the mouth of Saginaw Bay, and Hatch (1924) recorded 11 species from Charlevoix County. In the Upper Peninsula, Hubbard and Schwarz (1878a) recorded 16 species from the Lake Superior area, and Andrews (1923) recorded 13 species from Whitefish Point. On Isle Royale, Adams (1909) recorded one species. After duplications in these lists are accounted for, the Lower Peninsula had 34 species, the Upper Peninsula had 25, Isle Royale, of course, had only one, and the whole state had 45. Of the 45 species, six are not recorded in my list; those six are discussed in the Appendix. In my list of 50 identified species, 46 occur in the Lower Peninsula, 26 occur in the Upper Peninsula, none is recorded from Isle Royale, and one species had only a state label on the specimen.

This list is based on specimens I have examined from the following institutions: University of Michigan Museum of Zoology, Ann Arbor, lent by Richard D. Alexander; Michigan State University, East Lansing, lent by Roland L. Fischer and the late R. R. Dreisbach; U.S. National Museum of Natural History, Washington, D.C. In addition to locality records from my identifications, I have included localities published by C. A. Triplehorn in his 1965 revision of the Diaperini.

## DISTRIBUTIONAL DATA

The basic unit of distributional information is the county. Counties are numbered by tiers, beginning in the southwestern corner of the state. The counties in the Lower Peninsula are numbered from 10 to 113, those in the Upper Peninsula from 200 to 214, and Isle Royale 300. The system permits condensation of data and, after a little familiarity, easy visualization of county position in the state by its number alone (see Fig. 1). The numbering of the counties is as follows:

|               |               |               |
|---------------|---------------|---------------|
| 10—Berrien    | 25—Wayne      | 44—Shiawassee |
| 11—Cass       | 30—Allegan    | 45—Genesee    |
| 12—St. Joseph | 31—Barry      | 46—Lapeer     |
| 13—Branch     | 32—Eaton      | 47—St. Clair  |
| 14—Hillsdale  | 33—Ingham     | 50—Muskegon   |
| 15—Lenawee    | 34—Livingston | 51—Montcalm   |
| 16—Monroe     | 35—Oakland    | 52—Gratiot    |
| 20—Van Buren  | 36—Macomb     | 53—Saginaw    |
| 21—Kalamazoo  | 40—Ottawa     | 54—Tuscola    |
| 22—Calhoun    | 41—Kent       | 55—Sanilac    |
| 23—Jackson    | 42—Ionia      | 60—Oceana     |
| 24—Washtenaw  | 43—Clinton    | 61—Newaygo    |

<sup>1</sup>Mailing address: Department of Entomology, Smithsonian Institution, Washington, D.C. 20560.

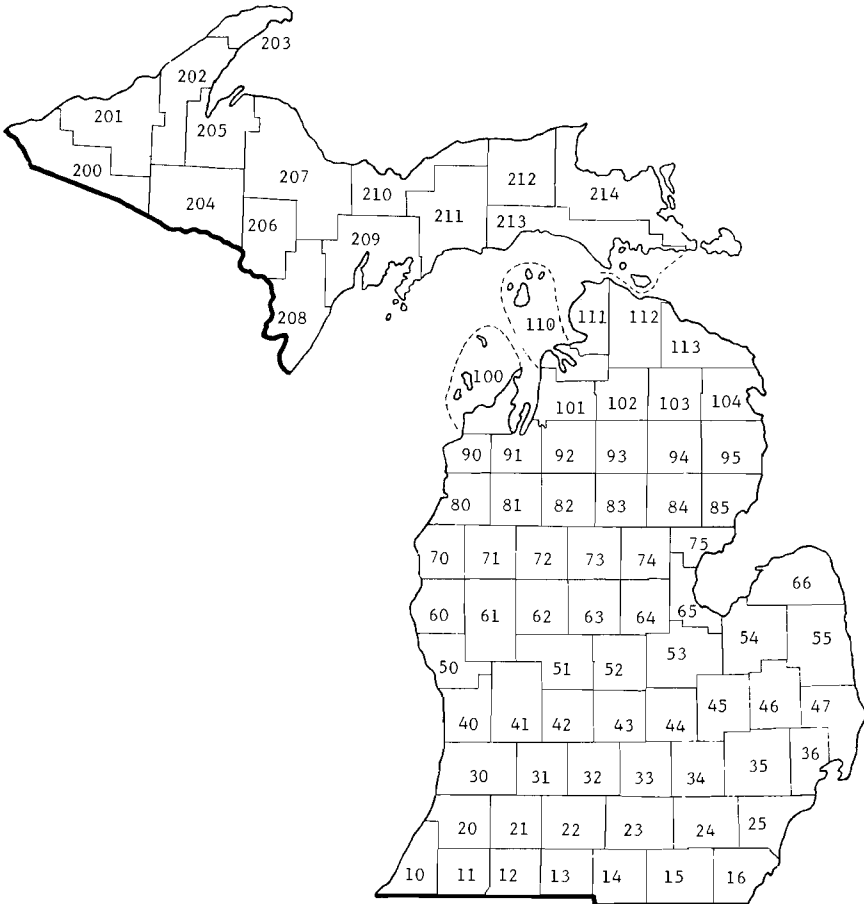


Fig. 1. The counties of the State of Michigan indicated by numbers. For explanation, see text page 85.

- |             |                   |                 |
|-------------|-------------------|-----------------|
| 62—Mecosta  | 75—Arenac         | 93—Crawford     |
| 63—Isabella | 80—Manistee       | 94—Oscoda       |
| 64—Midland  | 81—Wexford        | 95—Alcona       |
| 65—Bay      | 82—Missaukee      | 100—Leelanau    |
| 66—Huron    | 83—Roscommon      | 101—Antrim      |
| 70—Mason    | 84—Ogemaw         | 102—Otsego      |
| 71—Lake     | 85—Iosco          | 103—Montmorency |
| 72—Osceola  | 90—Benzie         | 104—Alpena      |
| 73—Clare    | 91—Grand Traverse | 110—Charlevoix  |
| 74—Gladwin  | 92—Kalkaska       | 111—Emmet       |

|                  |               |                 |
|------------------|---------------|-----------------|
| 112—Cheboygan    | 204—Iron      | 210—Alger       |
| 113—Presque Isle | 205—Baraga    | 211—Schoolcraft |
| 200—Gogebic      | 206—Dickinson | 212—Luce        |
| 201—Ontonagon    | 207—Marquette | 213—Mackinac    |
| 202—Houghton     | 208—Menominee | 214—Chippewa    |
| 203—Keweenaw     | 209—Delta     | 300—Isle Royale |

## Subfamily ASIDINAE

## Tribe ZOPHERINI

Genus **PHELLOPSIS** LeConte

**obcordata** (Kirby). 112 207 214. July 5 to September 16. Habitat: under bark of dead trees.

## Subfamily TENEBRIONINAE

## Tribe PEDININI

Genus **BLAPSTINUS** Dejean

The species are often found in debris on ground, also in grasses. Some species in other parts of the United States occasionally build up in great numbers and damage truck crops.

**metallicus** (Fabricius). 10 25 31 35 47 66 83 85 93 95 100 110 213. April 24 to September 3.

**moestus** Melsheimer. 10 25. July 24.

## Tribe BOLITOPHAGINI

Genus **BOLITOTHERUS** Candèze

**cornutus** (Panzer). 10 20 21 24 25 33 34 35 36 40 44 45 66 75 91 100 110 200 201 204 207 210 211 213 214. April 5 to September 26 (Liles, 1956, found adults in all months; the adult overwinters.). Habitat: in, on, or near bracket fungi, which are the sporophores of polyporoid fungi; *Ganoderma applanatum* (Persoon) is the most common host. Life history studies have been published by Liles, 1956, and Pace, 1967.

Genus **BOLITOPHAGUS** Illiger

**corticola** (Say). 10 35 53 60 64 103 110 207 210 213 214. April 15 to September 29. Habitat: in woody fungus or under bark of dead trees.

Genus **ELEATES** Casey

**depressus** (Randall). 207 214. June 28 to July 29. Habitat: in woody fungus or under bark of dead trees.

## Tribe RHIPIDANDRINI

Genus **RHIPIDANDRUS** LeConte

**paradoxus** (Palisot). 25 32. No collecting dates. Habitat: usually in fungi attached to dead trees.

## Tribe DIAPERINI

Genus **DIAPERIS** Müller

**maculata** Olivier. 10 12 21 24 25 32 33 35 44 45 53 60 64 66 83 84 91 94 100 111 112 203 207 211 213 214. April 17 to September 26. Habitat: in fungus.

Genus **NEOMIDA** Latreille

**bicornis** (Fabricius). 10 16 20 21 24 25 33 35 51 64 73 75 80 85 103 110 112 213. March 23 to October 23. Habitat: in fungi on old tree stumps. This species and other

members of the genus appeared under the generic name *Hoplocephala* Laporte and Brullé until Triplehorn (1965: 374) discovered that *Neomida* was the older name.

Genus **PLATYDEMA** Laporte and Brullé

The species of this genus are usually found in fungi, most commonly in fungi on dead trees; they are also found under the bark of dead trees.

**americanum** Laporte and Brullé. 10 24 25 33 40 47 53 75 110 112 203 207 212 214. May 30 to October.

**ellipticum** (Fabricius). 24. No collecting date.

**excavatum** (Say). 15 21 23 24 25 33 35 43 50 51 63 64. April 9 to October 23.

**pencilabrum** Melsheimer. 24 25. May 25.

**ruficornis** (Sturm). 10 16 21 24 25 33 35 36 44 52 65. April 4 to October 23.

**subcostatum** Laporte and Brullé. 12 14 21 23 24 25 34 35 36 47 213. May 1 to October 2.

**teleops** Triplehorn. 23 25 33 51 64 73. April 4 to September 5.

Genus **SCAPHIDEMA** Redtenbacher

**aeneolum** (LeConte). 25 207. No collecting dates. Habitat: usually under bark of dead trees.

Genus **PENTAPHYLLUS** Dejean

**pallidus** LeConte. 25 32. July 22 to August. Habitat: usually under bark of dead trees.

Tribe **ULOMINI**

Genus **CYNAEUS** LeConte

**angustus** (LeConte). (Larger black flour beetle.) 21 33 95. May 18 to July 26. This species is often a pest of dried stored food products; it is also found under bark of dead trees.

Genus **LATHETICUS** Waterhouse

**oryzae** Waterhouse. (Longheaded flour beetle.) 25. No collecting dates. This species is usually a pest of dried stored food products. It is found in many parts of the world.

Genus **TRIBOLIUM** MacLeay

**audax** Halstead. (American black flour beetle.) 203 207. June 14 to July 7. Habitat: often a pest of dried stored food products; also under bark, in leaf mold under logs, and in beehives. This species was formerly known as *T. madens* (Carpentier), but the latter does not occur in the United States. All former records of *T. madens* in North America apply to *T. audax*.

**castaneum** (Herbst). (Red flour beetle.) 14 33. February 1 to July 30. Habitat: usually a pest of dried stored food products; also under bark of dead trees. It occurs in many parts of the world.

**confusum** Jacquelin Duval. (Confused flour beetle.) 14 24 25 33 41 64. January, April to July, October, December. Habitat: usually a pest of dried stored food products; also under bark of dead trees. It occurs in many parts of the world.

Genus **DIOEDUS** LeConte

**punctatus** LeConte. 25. August. Habitat: under bark of dead trees.

Genus **PALORUS** Mulsant

**ratzeburgi** (Wissmann). (Smalleyed flour beetle.) 70. July. Habitat: usually a pest of dried stored food products. It is found in many parts of the world.

Genus **ULOMA** Dejean

The species are usually found under the bark of dead trees.

**imberbis** LeConte. 25. April 20 to May 30.

**impressa** Melsheimer. 21 25 60 66 93 102. April 10 to October.

**mentalis** Horn. 24 25 35 60. April 22 to July 23.

**punctulata** LeConte. 21 34 35. June 8 to July 22.

Genus **ALPHITOBIVS** Dejean

**diaperinus** (Panzer). (Lesser mealworm.) 33 73. May 2 to June 27. This species is usually a pest of dried stored food products. It is found in many parts of the world.

Genus **CORTICEUS** Piller and Mitterpacher

**parallelus** (Melsheimer). 47 207 210. June 21. Habitat: under bark of dead trees, usually in galleries of Scolytidae. The generic name *Hypophloeus* Fabricius was used in old catalogues.

Tribe **TENEBRIONINI**  
Genus **CENTRONOPUS** Solier

**calcaratus** (Fabricius). 10 11 21 23 24 25 35 52 60 64 66 72 102 103 112. June 15 to October 11. Habitat: under bark of dead trees. The generic name *Scotobates* was used until recently.

Genus **MERINUS** LeConte

**laevis** (Olivier). 10 20 24 25 33 36 75 207. April 20 to September 21. Habitat: under bark of dead trees.

Genus **XYLOPINUS** LeConte

The species are usually found under the bark of dead trees.

**aenescens** LeConte. 60. July 7.

**saperdioides** (Olivier). 10 21 24 25 32 34 35 50 60 75 83 85 91 103 110 112 207 214. April 14 to September 14.

Genus **HAPLANDRUS** LeConte

The species are found under the bark of dead trees.

**concolor** LeConte. 75 110 111 112 207 209 211 213 214. May 30 to August 1.

**fulvipes** (Herbst). 21 60 207. July 11 to August 11.

Genus **IPHTHINUS** Truqui

**opacus** LeConte. 66 70 75 93 100 102 111 112 200 205 207 210 211 213 214. April 5 to September 25. Habitat: under bark of dead trees.

Genus **ALOBATES** Motschulsky

The species are found under bark of dead or dying hardwood trees.

**morio** (Fabricius). 24 60 66 90 103 112 207. July 8 to July 26. This species is usually known as *Alobates barbata* (Knoch). Blair (1914:487) showed that its correct name is *morio*.

**pennsylvanicus** (DeGeer). 10 12 15 20 21 24 25 31 33 35 41 43 46 51 52 54 61 66 75 80 81 83 84 90 101 102 103 110 111 112 200 201 207 210 211 213 214. April 4 to November 12.

Genus **UPIS** Fabricius

*ceramboides* (Linnaeus). 25 35 53 62 66 75 90 92 93 95 102 103 110 112 200 201 202 207 209 210 211 213 214. May 1 to October 26. Habitat: under bark of dead trees.

Genus **IDIOBATES** Casey

*castaneus* (Knoch). 10 21 35 52 53. May 23 to September 3. Habitat: under bark of dead trees.

Genus **TENEBRIO** Linnaeus

*molitor* Linnaeus. (Yellow mealworm.) 10 21 24 25 33 34 35 44 45 60 65 66 75 80 83 85 90 91 102 103 112 207 209 210 211 213. April 15 to August 17. Habitat: usually a pest of dried stored food products; also under bark of dead trees. It occurs in many parts of the world.

Genus **NEATUS** LeConte

*tenebrioides* (Palisot). 10 15 16 21 23 24 25 31 32 33 34 35 42 43 45 50 51 52 53 54 63 64 65 66 74 75 81 84 85 91 93 101 110 112 200 207 210 211 214. April 5 to September 1. Habitat: under bark of dead trees. This species has often been included in the genus *Tenebrio* and has often been considered a synonym of *N. picipes* (Herbst), a palearctic species.

Genus **BIUS** Mulsant

*estriatus* (LeConte). 207. June 29. Habitat: under bark of dead trees.

Tribe **HETEROTARSINI**Genus **PARATENETUS** Spinola

The species are found under bark of dead trees and in plant debris.

*fuscus* LeConte. 25 35 64. June to October.

*punctatus* Spinola. 25 207. May to July 3.

Tribe **MERACANTHINI**Genus **MERACANTHA** Kirby

*contracta* (Palisot). 10 16 21 23 24 25 33 34 35 42 44 66 75 91 207 210. May 15 to September 21. Habitat: under bark of dead trees.

Tribe **STRONGYLINI**Genus **STRONGYLUM** Kirby

The species are found under the bark of dead trees.

*tenuicolle* (Say). 10 20 21 23 24 25 33 34 35 44 47 60 64 73 74 85 110 112 207 208 210. June 9 to August 9.

*terminatum* (Say). 21 25 45. July 22.

## APPENDIX

As stated in the introduction, most of the species in the foregoing list were recorded in previous Michigan lists. However, some of those species had been recorded under different generic and/or specific names. I have indicated recent synonymies; other synonymies will be found in the Leng Catalogue of the Coleoptera of America north of Mexico.

The following species appeared in previous lists but do not appear in my list:

*Blapstinus interruptus* (Say), of the Pedinini, was recorded by Hubbard and Schwarz (1878a and 1878b) and Andrews (1916). I cannot separate this species from *B. metallicus* (F.) in my identifications. A generic revision will undoubtedly resolve this confusion.

*Platydema flavipes* (Fabricius), of the Diaperini, was recorded by Andrews (1916).

*Platydema laevipes* Haldeman, of the Diaperini, was recorded by Andrews (1916).

*Gnatocerus maxillosus* (Fabricius), of the Ulomini, was recorded by Hubbard and Schwarz (1878b). This species is often a pest of dried stored food products; it is found in many parts of the world.

*Tenebrio obscurus* Fabricius, of the Tenebrionini, was recorded by Hubbard and Schwarz (1878b) and Andrews (1916 and 1923). This species is usually a pest of stored dried food products; it is found in many parts of the world.

*Paratenetus gibbipennis* Motschulsky, of the Heterotarsini, was recorded by Hubbard and Schwarz (1878b).

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