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**CRAWLING WATER BEETLES OF WISCONSIN
(COLEOPTERA: HALIPLIDAE)¹**William L. Hilsenhoff² and Warren U. Brigham³

Haliplidae are small water beetles, less than 5 mm long, that frequently occur in abundance in ponds, marshes, sloughs, and swamps and also along the margins of slow streams or lakes where there is not severe wave action. Adults are readily recognized by their yellow to orange ground color with black maculations on the elytra and sometimes on the head and pronotum (Figs. 1,3,4). They have a distinctive shape, being broadest at the bases of the elytra and tapered toward the posterior end. The metacoxae are covered by distinctive plates that are unique among water beetles (Fig. 2). The tarsi and tibiae of the adults are modified for swimming, and the beetles can swim quite well, although they mostly crawl among the vegetation. Adults and larvae are found among vegetation upon which they feed, filamentous algae being the primary source of food for most species, but detritus and animal material may form a portion of the diet in some species. In Wisconsin most species probably have a one-year life cycle and overwinter as adults. Eggs are laid during spring and early summer, usually in or upon algae. There are three larval instars, and pupation takes place in moist soil above the water line. Larvae have been described for only a few species, so identification is based upon adult characteristics.

In his 1912 paper on the Haliplidae of North America, Matheson recorded seven species from Wisconsin. Wallis (1933) included records of two species from Wisconsin, but these had been on Matheson's list. Recently Hilsenhoff (1972) reported two additional species from the Pine-Popple River in Wisconsin bringing the number of species reported from the state to nine.

Roberts (1913) critically reviewed Matheson's 1912 paper, which redescribed *Haliplus lewisii* Crotch 1873 from Dane County specimens in the W. S. Marshall collection. All previous records were from Texas. Wallis (1933) suggested that Marshall's specimens might have been *H. ohioensis* Wallis 1933, since this species resembles *H. lewisii* and is found in central Illinois, Indiana, and Ohio. The W. S. Marshall collection has been examined and all species reported by Matheson from that collection were present, except for *H. lewisii* and *H. triopsis* Say 1823, but many specimens from the Marshall collection have been lost. No specimens remain that fit Matheson's description of *H. lewisii*, so we will never be sure of the true identity of Matheson's species.

The present study is based mostly on more than 14,600 adult Haliplidae collected in Wisconsin since 1961. These specimens are preserved in 70% ethanol and housed in the University of Wisconsin Insect Collection, except for some specimens at the Illinois Natural History Survey. A few Wisconsin specimens have also been seen in other collections. From 1961 to 1970 lotic habitats in Wisconsin were sampled intensively, but lentic habitats were sampled only occasionally until autumn, 1970, when an effort was made to sample at least three ponds in every county of the state. After 1970, lentic habitats were sampled whenever the opportunity permitted, and in 1976 a special effort was made to collect Haliplidae from throughout the state. Almost half of the specimens were collected in 1976.

The key that follows includes all 19 species known to occur in Wisconsin and two species, *Brychius hungerfordi* Spangler 1954, which was described from the northern tip of lower Michigan, and *Peltodytes lengi* Roberts 1913, which has been found in northern Illinois. Southern species that have been found only as far north as central Illinois were not included, although they may be encountered in Wisconsin on some future date. The male genitalia of several species are distinctive and are illustrated in Figure 5, but

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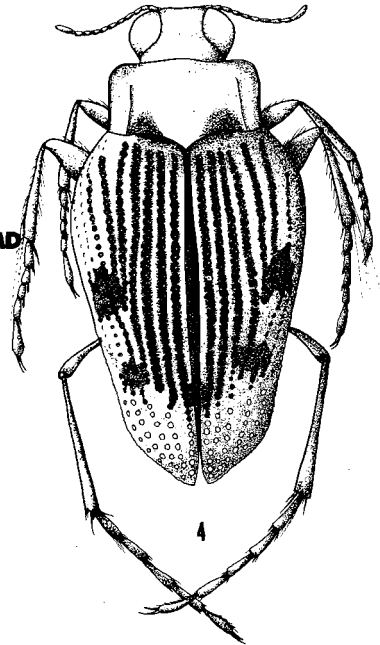
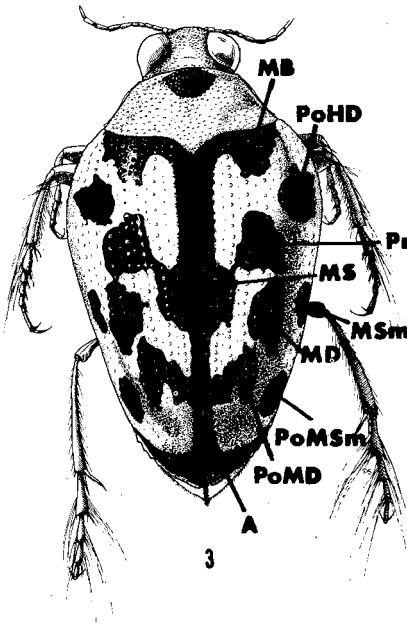
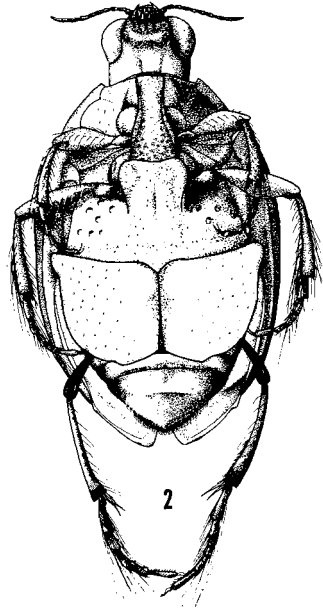
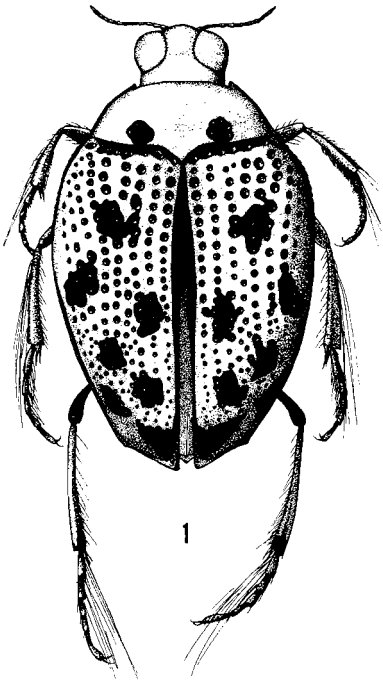




Fig. 5. Dorsal view of aedeagus and left paramere of (A) *Peltodytes duodecimpunctatus*, (B) *P. edentulus*, (C) *P. lengi*, (D) *P. sexmaculatus*, (E) *P. tortulosus*, (F) *Haliplus triopsis*, (G) *H. leopardus*, (H) *H. pantherinus*, (I) *H. connexus*, (J) *H. fasciatus*, (K) *H. tortilipennis*, (L) *H. apostolicus*, (M) *H. canadensis*, (N) *H. cribrarius*, (O) *H. subguttatus*, (P) *H. nitens* (paramere only), (Q) *H. immaculicollis*, (R) *H. borealis*, (S) *H. blanchardi*, and (T) *H. longulus*.



Fig. 1-4. 1, Dorsal view of *Peltodytes sexmaculatus*. 2, Ventral view of *P. sexmaculatus*. 3, Dorsal view of *Haliplus triopsis* showing location of blotches. (MB) Medial Basal Blotch, (PoHD) Posthumeral Discal Blotch, (PrMD) Premedial Discal Blotch, (MS) Medial Sutural Blotch, (MSm) Medial Submarginal Blotch, (MD) Medial Discal Blotch, (PoMD) Postmedial Discal Blotch, (PoMSm) Postmedial Submarginal Blotch, and (A) Apical Blotch. 4, Dorsal view of *Brychius* sp.

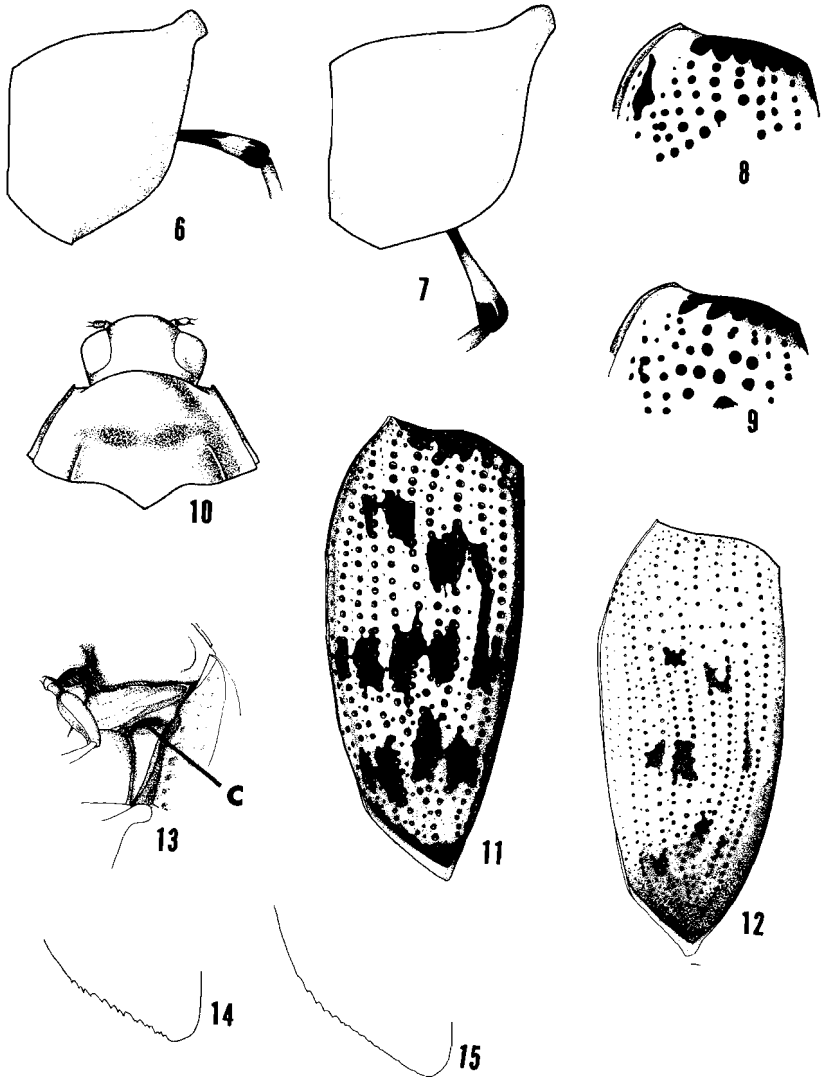


Fig. 6-15. 6, Left metacoxal plate and metafemur of *Pelodytes duodecimpunctatus*. 7, Left metacoxal plate and metafemur of *P. lengi*. 8, Black humeral mark on left elytron of *P. duodecimpunctatus*. 9, Obscure black humeral mark on left elytron of *P. duodecimpunctatus*. 10, Pronotum of *Haliphys longulus*. 11, Left elytron of *H. canadensis*. 12, Left elytron of *H. nitens*. 13, Infusate carina (C) on left metepisternum of *H. pantherinus*. 14, Apical margin of left elytron of *H. connexus*. 15, Apical margin of left elytron of *H. tortilipenis*.

characters of the genitalia have not been included in the key because they are not essential for identification of Wisconsin species. They can, however, be very helpful in separating males of certain species and in confirming identifications.

KEY TO HALIPLIDAE OF WISCONSIN (ADULTS)

1. Pronotum with sides of basal 2/3 nearly parallel (Fig. 4); 4.0-4.5 mm *Brychius hungerfordi*
- 1'. Pronotum with sides widest at base, convergent anteriorly 2
- 2(1'). Last segment of maxillary palp as wide and as long or longer than next to last; pronotum with a pair of black basal impressions (Fig. 1) *Peltodytes* 3
- 2'. Last segment of maxillary palp narrower and much shorter than next to last; pronotum without surface pigmentation or with anteromedial black mark, but without paired basal black impressions (Fig. 3) *Haliplus* 7
- 3(2). *Peltodytes*—Apical 2/3 of metafemur black with pale subapical band (Figs. 6,7) 4
- 3'. Apical 2/3 of metafemur uniformly black or tan 6
- 4(3). Vertex of head with a broad, crescent-shaped infuscation; 3.3-4.0 mm *P. edentulus*
- 4'. Head unicolorous 5
- 5(4'). Metacoxal plate distinctly angulate, margin concave just laterad of apex (Fig. 6); small black spot or dash at base of tenth stria (Figs. 8,9): 3.5-3.9 mm *P. duodecimpunctatus*
- 5'. Metacoxal plate subangulate, margin linear just laterad of apex (Fig. 7); no black spot or dash at base of tenth stria: 3.4-4.0 mm *P. lengi*
- 6(3'). Metafemur very dark brown or black (Fig. 2); 3.5-3.9 mm. *P. sexmaculatus*
- 6'. Metafemur tan; 3.9-4.5 mm *P. tortulosus*
- 7(2'). *Haliplus*—Small beetles, 3.4 mm or less in length (front of head to apex of elytra); if near 3.4 mm elytral maculations are indistinct. 8
- 7'. Larger beetles, 3.5 mm or more in length; if near 3.5 mm maculations are distinct 11
- 8(7). Vertex deeply infusate or black; pronotum without basal plicae; 2.5-3.0 mm *H. borealis*
- 8'. Vertex unicolorous or slightly infusate; pronotum with basal plicae (Fig. 10) . . 9
- 9(8'). Pronotal plicae more than 1/3 length of pronotum (Fig. 10) (measured on line of plicae); elytral maculation absent from basal half and mostly coalesced in distal half into a large postmedial sutural blotch; 2.7-3.4 mm *H. longulus*
- 9'. Pronotal plicae less than 1/3 length of pronotum; each elytron with 4 or 5 distinct blotches 10
- 10(9'). Apical margin of elytron strongly sinuate; pronotal plicae about 1/4 length of pronotum; 2.5-3.1 mm *H. blanchardi*
- 10'. Apical margin of elytron not sinuate; pronotal plicae about 1/5 length of pronotum; 2.5-3.1 mm *H. immaculicollis*
- 11(7'). Anterior margin of pronotum with a dark medial blotch 12
- 11'. Anterior margin of pronotum without a dark medial blotch. 18
- 12(11). Base of pronotum with deep, black, or fuscous punctures; elytral maculations on disc elongate and mostly confined to area between 2 striae (Figs. 11,12) . . . 13
- 12'. Punctures at base of pronotum not infusate or black; elytral maculations irregular, broad, and usually covering 3 striae (Fig. 3) 16
- 13(12). Mid-metasternum widely and strongly margined between mesocoxae 4.2-4.4 mm *H. apostolicus*
- 13'. Mid-metasternum not distinctly margined between mesocoxae 14
- 14(13'). Length 4.4-4.9 mm *H. cribrarius*
- 14'. Length less than 4.2 mm 15
- 15(14'). Color pale yellow; elytral maculations small, indistinct (Fig. 12); medial triangular projection at base of pronotum not infusate; 3.5-4.0 mm *H. nitens*
- 15'. Color reddish-yellow; elytral maculations large and distinct (Fig. 11); medial triangular projection at base of pronotum infusate; 3.6-4.1 mm *H. canadensis*

- 16(12'). Mesotrochanter elongated distally with coarse, deep punctures ventrally 4.1-4.6 mm. *H. leopardus*
- 16'. Mesotrochanter rounded, without or with only very small punctures 17
- 17(16'). Carina on anterior of metepisternum infusate (Fig. 13); protarsal claws long, more than 0.15 mm; 3.3-4.1 mm. *H. pantherinus*
- 17'. Carina on anterior of metepisternum not infusate, although it may appear darker than rest of sclerite; protarsal claws short, less than 0.13 mm; 3.5-4.2 mm *H. triopsis*
- 18(11'). Elytral maculations elongate and mostly confined to area between 2 striae; base of pronotum with deep, black punctures; 3.8-4.2 mm *H. subguttatus*
- 18'. Elytral maculations large and irregular, often covering 3 striae; base of pronotum without deep, black punctures 19
- 19(18'). Apical margin of elytron not denticulate; sutural black stripe reaching first stria anterior to medial sutural blotch; 3.8-4.2 mm *H. fasciatus*
- 19'. Apical margin of elytra distinctly serrate-denticulate (Figs. 14,15); sutural black stripe narrow, not reaching first stria anterior to medial sutural blotch 20
- 20(19'). Denticulations at apex of elytra distinct and extending to mesal edge (Fig. 14); postmedial submarginal blotch on elytron close to apical blotch, separated from it by a distance less than width of postmedial submarginal blotch; 3.5-4.2 mm. *H. connexus*
- 20'. Serrations at apex of elytra becoming indistinct mesally and not reaching mesal margin (Fig. 15); postmedial submarginal blotch separated from apical blotch by a distance as great or greater than width of postmedial submarginal blotch; 4.2-4.5 mm. *H. tortilipensis*

SOUTHERN SPECIES THAT COULD OCCUR IN WISCONSIN

Haliplus ohioensis Wallis 1933 will key to couplet 8, but does not have the deeply infusate vertex and sinuate elytral apices of *H. borealis*, and does not have the distinct pronotal plicae of species that key through couplet 8'. Also, the extremely small size (less than 2.5 mm) is distinctive.

Haliplus variomaculatus Brigham and Sanderson 1973 will key to *H. triopsis* but is smaller than that species (less than 3.5 mm). It can be further separated from *triopsis* by its fuscous basal blotch and pronotal maculation (black in *triopsis*), posthumeral discal blotch and premedial discal blotch usually broadly joined (separated or narrowly joined in *triopsis*), and by the evenly curved aedeagus of males, which differs markedly from the abruptly bent aedeagus of *triopsis* (Fig. 5F).

Peltodytes dunavani Young 1961 will key to *P. sexmaculatus*, but the medial sutural blotch is coalescent with the sutural stripe.

Peltodytes pedunculatus (Blatchley) 1910, like *P. dunavani*, will key to *sexmaculatus*, but has the medial sutural blotch coalescent with the sutural stripe. In *P. pedunculatus* the posthumeral blotch is elongate, whereas it is broadly triangular in *P. dunavani*. The aedeagus in *P. dunavani* is toothed; in *P. pedunculatus* it is not.

Peltodytes litoralis Matheson 1912 will key to couplet 6, but the metafemora are yellow and it is distinctly smaller than *P. tortulosus*, which has tan femora.

STATUS AND IDENTIFICATION OF WISCONSIN SPECIES

Genus **BRYCHIUS** Thomson 1860

Four species of *Brychius* are currently recognized from North America, and the genus is easily distinguished from *Haliplus* and *Peltodytes* by characters in the key.

hungerfordi Spangler 1954. Not yet collected in Wisconsin but found in the Maple River, Emmet County, Michigan, which is across Lake Michigan from Door County, Wisconsin. It is to be looked for in lotic habitats among plant roots. **Identification:** Very unlike any other Wisconsin haliplid in general appearance (Fig. 4), this species is easily separated by the piceous elytral stripes and characters in the key.

Genus **PELTODYTES** Regimbart 1878

Eighteen species are recognized from North America north of Mexico; four have been collected in Wisconsin. A fifth species has been found in northern Illinois and may occur in Wisconsin.

- duodecimpunctatus** (Say) 1823. (seven collections, 11 individuals) Rare, with a probable statewide distribution (Fig. 16). All specimens were collected from margins of streams. **Identification:** The lack of an infuscation on the vertex readily separates it from *edentulus*, which also has a black metafemur with a pale subapical band. It closely resembles *lengi*, from which it can be most readily separated by characters in the key. The black posthumeral spot or dash at the base of the tenth stria is sometimes obscure (Fig. 9). The pale band near the apex of the metafemur is much narrower than the black middle band (Fig. 6), while in *lengi* it is as wide or wider than the dark middle band (Fig. 7).
- edentulus** (LeConte) 1863. (452 collections, 2946 individuals) It was very common throughout the southern half but uncommon in the extreme north (Fig. 16). Most specimens were collected from ponds, although several were found in a variety of other lentic habitats and along margins of streams. It was most abundant from August through November. **Identification:** The conspicuous crescent-shaped infuscation of the vertex is distinctive, especially in conjunction with the dark metafemur with a pale subapical band.
- lengi** Roberts 1913. This species has not been collected in Wisconsin, but has been found in northern Illinois and may occur sparingly in the southern counties. **Identification:** Similar to *duodecimpunctatus*, it can be separated from that species by characters in the key and its much wider subapical band on the metafemur.
- sexmaculatus** Roberts 1913. (four collections, five individuals) Although considered a southern species, three of the five specimens were collected as far north as Rusk County (Fig. 16). All collections were made from streams or river-bottom ponds. **Identification:** This is the only Wisconsin species in which the apical two-thirds of the metafemur is black.
- tortulosus** Roberts 1913. (107 collections, 211 individuals) Although fairly common statewide (Fig. 16) it was never found in numbers at any site. It was most frequently found from June through September, usually being collected from ponds, and only occasionally from other lentic habitats or margins of streams. **Identification:** Its very large size, pale metafemur, and pronounced mesal depression of the basal portion of the elytra are distinctive. The vertex may be somewhat infuscate in some individuals, but does not have the black crescent-shaped infuscation of *edentulus*.

Genus **HALIPLUS** Latreille 1802

Forty-six species of *Haliphus* are currently recognized from North America north of Mexico. Fourteen have been collected from Wisconsin in the present study and a fifteenth, *nitens*, was reported by Matheson (1912) from Bayfield County.

- apostolicus** Wallis 1933. (nine collections, nine individuals) All were collected from lentic habitats in the northwest half (Fig. 16). **Identification:** *H. apostolicus* closely resembles *cribrarius* and *canadensis*, but the broad elevated margin of the mid-metasternum between the mesocoxae is distinctive. It is generally smaller than *cribrarius* and larger than *canadensis* and *nitens*. The infuscation on the anterior of the pronotum is rectangular and only 1½ times as wide as long, while in *cribrarius* and *canadensis* this mark is wider mesally and about 3 times as wide as long. Elytral maculations are broader, the posthumeral discal blotch and postmedial submarginal blotch covering three or four striae.
- blanchardi** Roberts 1913. (61 collections, 272 individuals) Most were collected in August and September from ponds and swamps; none were found in streams. Although possibly statewide in distribution (Fig. 16), most were found in the northwest. **Identification:** The sinuate elytral apex separates it from all other small haliplids in Wisconsin, except *borealis*, which has no pronotal plicae and has an infuscate vertex. It most closely resembles *immaculicollis*, and can be further separated from that

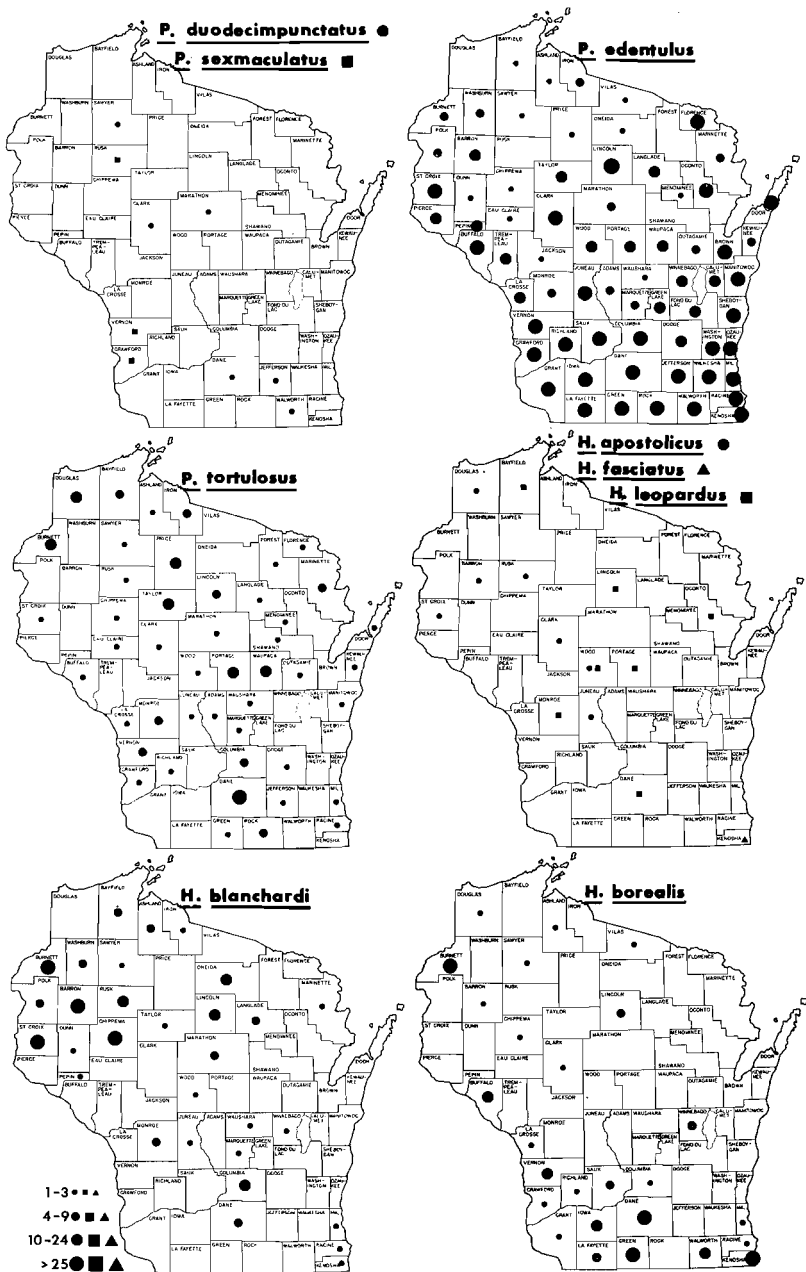


Fig. 16. Wisconsin distribution of *Petodytes* and five species of *Haliphus*.

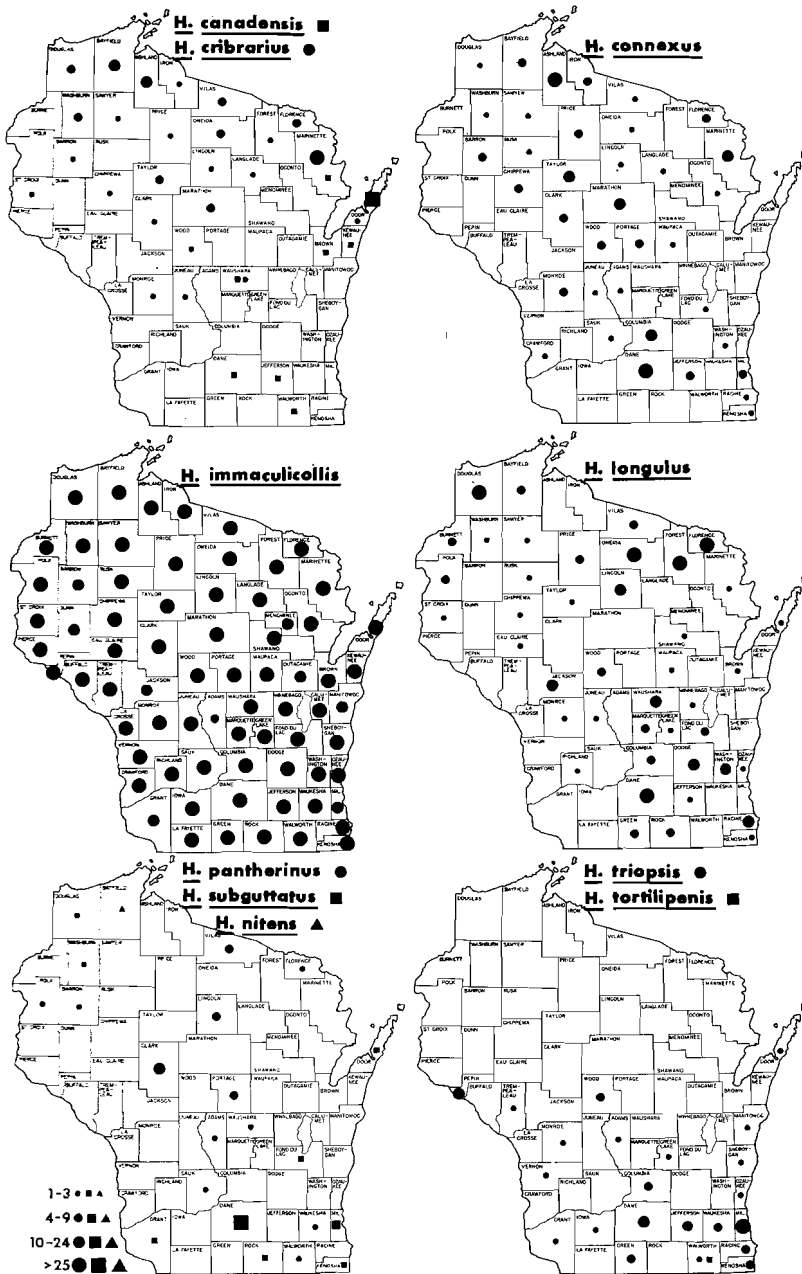


Fig. 17. Wisconsin distribution of ten species of *Halipus*.

- species by a deep sulcus in the prosternal process at the anterior bend (*immaculicollis* has a shallow sulcus) and usually a more distinctly marked posthumeral discal blotch.
- borealis** LeConte 1850. (64 collections, 359 individuals) This species was most common in the southern fourth, but also occurred in some northern and western counties (Fig. 16). It was not found in the northeast. Most were collected in August and very few were found before June. It was found mostly in ponds, but also occurred along margins of lakes, sloughs, and streams. **Identification:** This is the only small *Haliphys* in Wisconsin with a deeply infuscate vertex and no pronotal plicae.
- canadensis** Wallis 1933. (10 collections, 43 individuals) Found only in lentic habitats, 29 were from a pond in Door County on 3 August, 1976. Its distribution in Wisconsin is apparently confined to the east (Fig. 17). Wallis (1973) found it in Manitoba, but not in Minnesota. **Identification:** *H. canadensis* is readily separated from the very similar *cribrarius* by its much smaller size and the wide, dark (usually black) band around the middle of the metafemur. It can be distinguished from the paler *nitens* by its larger, more elongate, and more pronounced maculations (Fig. 11), but there is great variation in both species. There is a black mark that runs forward from the medial sutural blotch along the second stria and usually connects with the premedial discal blotch. The medial basal blotch is usually distinct, although sometimes reduced. In *nitens* the medial basal blotch and medial sutural blotch are obscure or absent (Fig. 12). The triangular projection of the pronotum at the base of the elytral suture is infuscate in *canadensis* but not in *nitens*. Punctures on the elytral striae are slightly larger in *canadensis* and more deeply impressed, causing some stria rows to be impressed on the disc. There are usually less than 50 infuscate punctures on the base of the pronotum, while in *nitens* there are about 60.
- connexus** Matheson 1912. (84 collections, 209 individuals) It apparently occurs throughout the state (Fig. 17) mostly in ponds and swamps, but also in other lentic habitats and along margins of streams. It was not collected from any of the counties bordering on Minnesota, and Wallis (1973) reported only one specimen from that state. **Identification:** Distinct denticulations on the apex of the elytra readily separate it from the similar *fasciatus*, which has no denticulations. It closely resembles *tortilipenis*, but the denticulations are stronger and extend mesally to the elytral suture, although they become weak in this region. The postmedial submarginal blotch in *connexus* is much closer to the apical blotch than in *tortilipenis*, the separation generally being much less than the width of the postmedial submarginal blotch.
- cribrarius** LeConte 1850. (61 collections, 139 individuals) Most were collected in July and August from swamps and ponds; a few were found along streams. While fairly common in the northern third, none were found in the southern third (Fig. 17). **Identification:** Its very large size usually separates it from all other *Haliphys*. Separation from related species is discussed under those species. Wallis (1933) discusses the confusion over separation of *apostolicus*, *canadensis*, *nitens* and *subguttatus* from *cribrarius*, so many early literature records of *cribrarius* may be erroneous.
- fasciatus** Aubé 1838. (one collection, one individual) This southern species was collected only from Bong Flowage, Kenosha County, 3 August, 1971 (Fig. 16). It probably occurs only in the extreme south, where it is rare. **Identification:** The lack of denticulations at the apex of the elytra separates it from the similar *connexus* and *tortilipenis*. Also, the black sutural stripe anterior to the medial sutural blotch is much wider, extending to the first striae.
- immaculicollis** Harris 1828. (616 collections, 9639 individuals) Easily Wisconsin's most abundant haliphid, 84% of the *Haliphys* collected were this species. It was found in every county (Fig. 17) and was frequently encountered in a wide variety of lentic and lotic habitats. It was most abundant in August and September, but was numerous from April through November. **Identification:** It can be separated from other small *Haliphys* as discussed under *blanchardi*, *borealis*, and *longulus*. The intensity of elytral maculations varies, but they are never as obscure as in *longulus* and rarely as intense basally as in *blanchardi*.
- leopardus** Roberts 1913. (eight collections, 10 individuals) Collected mostly from ponds and sloughs, its distribution may be statewide (Fig. 16). Published records of *leopardus* include Massachusetts, Connecticut, New York, Virginia, and South Carolina

(Roberts, 1913; Wallis, 1933; Matta, 1976). Additional records (Brigham, unpublished) include New Jersey, Pennsylvania, North Carolina, Georgia, and Louisiana. Thus, the Wisconsin records presented here represent a substantial discontinuity in the known distribution of *leopardus*. Critical examination of Wisconsin and coastal specimens revealed no differences between the two populations. **Identification:** *H. leopardus* is usually larger than *triopsis* and *pantherinus*, which it resembles. It is most readily separated from these species by the elongate, deeply punctured mesotrochanter; the mesotrochanter is rounded and at most weakly punctured in *pantherinus* and *triopsis*. The metepisternal carina is not infuscate as in *pantherinus*.

longulus LeConte 1850. (100 collections, 441 individuals) This species was found statewide (Fig. 17), mostly in ponds, but occasionally along streams. Unlike most other haliplids, which reach peak abundance in late summer, *longulus* was usually collected in May and June and only sparingly after July. Since ponds in many parts of the state were sampled only in late summer, the uneven distribution of *longulus* in Fig. 17 probably represents a sampling bias. **Identification:** *H. longulus* is generally larger and more elongate than either *blanchardi* or *immaculicollis*. Elytral maculations are indistinct and in most specimens consist of a very large postmedial sutural blotch and a smaller postmedial submarginal blotch on each elytron. In *blanchardi* and *immaculicollis* there are four or five small blotches on each elytron.

nitens LeConte 1850. (no collections) Although described by LeConte from St. Ignace Island in northern Lake Superior and also collected in Bayfield, Wisconsin, (Matheson, 1912), we have seen no specimens from Wisconsin. Wallis (1973) did not report it from Manitoba or Minnesota; it probably occurs infrequently in extreme northern Wisconsin. **Identification:** The pale straw color, extremely small, sometimes indistinct, elytral maculations (Fig. 12) and smaller size readily separate it from *cribrarius* and *apostolicus*. The pale coloration and reduced maculation readily distinguishes most specimens, but separation from *canadensis* may sometimes be difficult and is discussed under *canadensis*.

pantherinus Aubé 1838. (18 collections, 47 individuals) Most specimens were collected in October. It was found in ponds, lakes, and the margins of streams (Fig. 17) in scattered areas throughout the state. **Identification:** It is readily separated from the similar *leopardus* and *triopsis* by the infuscate metepisternal carina (Fig. 13) and longer protarsal claws. It most closely resembles *triopsis*, and can be further distinguished from that species by the prosternal process, which is about as wide posteriorly as anteriorly and is constricted between the procoxae. In *triopsis* the prosternal process is gradually widened anteriorly.

subguttatus Crotch 1873. (24 collections, 83 individuals) This species was collected only from ponds in the southeast third (Fig. 17). **Identification:** Because of its elongate elytral maculations and large black punctures at the base of the pronotum it resembles *apostolicus*, *canadensis*, *cribrarius*, and *nitens*, but it does not have the anterior mesal infuscation of those species. It also has no depressions of the metasternum behind the mesocoxae, and no basal elytral maculation or infuscation. The elytral maculations are frequently rather obscure. Roberts (1912) in his description mentions an apical pronotal infuscation, but there was no hint of this in any Wisconsin specimen. Wallis (1933) states that specimens may or may not have a pronotal infuscation, and both he and Roberts mention wide variations in maculation.

LeConte first used the name *subguttatus* in a manuscript for a series of specimens from Lake Superior that he felt were distinct from *cribrarius*. The name *subguttatus* was first published by Crotch (1873) under *cribrarius* with the comment that "other specimens marked *H. subguttatus*, Lec. MSS. are darker in color but not otherwise distinct." Blatchley (1910) further described *subguttatus*, with credit to the LeConte manuscript and specimens, and included it as a subspecies of *cribrarius*. Roberts (1913) described *subguttatus* from Massachusetts, believing that the species had not yet been described, but may have been looking at a species that is different from that described by LeConte, Crotch, and Blatchley. This perhaps accounts for the wide variation in *subguttatus* noted by Roberts (1913) and Wallis (1933).

tortilipenis Brigham and Sanderson 1972. (one collection, one individual) One female collected from a pond in Walworth County, 4 August, 1975, is the only Wisconsin

record (Fig. 17). **Identification:** *H. tortilipenis* is very similar in appearance to *connexus*. It is generally larger, but small individuals are the same size as large *connexus*. The serrations at the apex of the elytra are less distinct than those of *connexus*, and do not extend to the mesal margin as in *connexus*. The postmedial submarginal blotch is separated from the apical blotch by a distance equal to or greater than the width of the postmedial submarginal blotch; in *connexus* these blotches are usually much closer together.

triopsis Say 1823. (45 collections, 162 individuals) In Wisconsin, this species is confined to the southern half of the state where it is fairly common (Fig. 17). Almost all specimens were collected from ponds or sloughs; only one was collected from a stream. **Identification:** *H. triopsis* resembles the generally larger *leopardus* from which it can be readily separated by its rounded unpunctured mesotrochanter. It closely resembles *pantherinus*, but does not have an infuscation on the metepisternal carina, has shorter protarsal claws, and has a differently shaped prosternal process as mentioned under *pantherinus*.

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