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**Additions to the Checklist of Wisconsin Ground Beetles
(Coleoptera: Carabidae), Including the Adventive
Harpalus rubripes (Duftschmid) Among
Seven New State Records**

Peter W. Messer¹

Abstract

Sixteen species are added to the checklist of Wisconsin Geadephaga. Of these, seven species are reported here as new to Wisconsin. Nine taxa from the list are affected by new information resulting in the removal of six names. The Eurasian beetle *Harpalus rubripes* was discovered as early as 2009 on annually surveyed beaches along Lake Michigan in southeastern Wisconsin. This discovery greatly extends the species distribution westward from its presence in northeastern North America where it was first recorded in 1981.

There appears no end to the current accelerated pace of published faunal records and regional checklists. The vast majority of such endeavors are based arbitrarily on political geographic units rather than on well-defined natural systems. The scientific and esthetic allure of the ground beetles has contributed greatly to the surge in publications (e.g., Erwin 2007, 2011; Erwin and Pearson 2008) on Western Hemisphere Caraboidea, the catalogue of North American Geadephaga (Bousquet 2012), and the concerted effort among users of BugGuide.net to supplement the latter catalogue by archiving new records at <http://bugguide.net/node/view/744417>.

Bousquet (2012) updated all 2678 valid North American Geadephaga species-group taxa along with consolidating everything known about their geographic-political distributions. The present contribution adheres to Bousquet's nomenclature, classification, and phylogenetic order of the tribes. The relevant hierarchal classification descends according to order Coleoptera: suborder Adephaga: superfamily Caraboidea = Geadephaga: families Trachypachidae, Rhysodidae, and Carabidae. The latter family is by far the largest one, accounting for 99.55 % of the North American Geadephaga.

Messer's (2009) annotated checklist reported 489 species of Wisconsin Geadephaga. The present contribution updates that checklist with information on 25 species of Carabidae. They appear below in a list arranged phylogenetically by tribe. Each species name is followed by one of these descriptors: "add to checklist" (from a state record reported elsewhere), "new state record" (first known literature report), "confirmation" (removes prior uncertain status), "delete from checklist", or "erratum".

The collection data for each new state record follow the order of county name in bold, locality, coordinates, collection date, bionomics, collector, number of specimens, repository. Repositories include the collections of Jim Steffens

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(JSC), Peter Messer (PMC), Carnegie Museum of Natural History in Pittsburgh, PA (CMNH), and the UW-Insect Research Collection in Madison, WI (WIRC). The geographic ranges of species follow Bousquet (2012). The author determined and retained at least one specimen from each of the seven new state records.

NEBRIINI

***Nebria gyllenhalii castanipes* (Kirby) (add to checklist)**

This species occurs in Wisconsin and surrounding states Michigan and Minnesota according to Bousquet (2012).

***Nebria pallipes* Say (delete from checklist)**

This species was included in the Messer (2009) Wisconsin checklist in deference to Bousquet and Laroche (1993). Not acknowledged in that checklist is the northern Wisconsin record claimed by Wickham (1896). Bousquet (2012) considered the Wickham record probably referred to *Nebria lacustris* Casey. The occurrence of *N. pallipes* in Wisconsin has not been confirmed by any specimen or additional literature. Therefore, this species is removed from the state list.

CYCHRINI

***Scaphinotus elevatus coloradensis* Van Dyke (add to checklist)**

This species was absent from the 2009 checklist. Bousquet (2012) included Wisconsin with uncertainty based on the southeastern Wisconsin record by Rauterberg (1885) under the name, *Cychnus elevatus* Fabr. This species occurs southwestwardly from known surrounding states Iowa and Minnesota. Davidson (personal communication) reported a Wisconsin specimen from the Robert Graves Collection, now at the Carnegie Museum of Natural History.

Kenosha: Carol Beach, Chiwaukee Prairie, 20 IX 1975, marsh floor, W. Suter (1♂ det R. Davidson, CMNH).

CARABINI

***Calosoma sayi* Dejean (delete from checklist)**

This species was included on the 2009 checklist per Bousquet and Laroche (1993). That record is probably in error, based on a stray, according to Bousquet (2012). Therefore, the species is removed from the state list.

***Carabus cancellatus* Illiger (delete from checklist)**

This species was included on the 2009 checklist per Bousquet and Laroche (1993). According to Bousquet (2012) this European beetle was recorded many decades ago from North Carolina, Georgia, and Wisconsin but no specimens have been collected since then. The species is likely not established on this continent. Therefore it is removed from the state list.

SCARITINI

***Scarites quadriceps* Chaudoir (delete from checklist)**

This mostly southern species is removed from the Wisconsin checklist until a specimen can be confirmed. The basis for this decision is discussed below regarding *Scarites vicinus* Chaudoir.

***Scarites vicinus* Chaudoir (add to checklist)**

Based on Bousquet and Skelley (2010) and an online key to the species (<http://bugguide.net/node/view/2990>), all examined Wisconsin specimens formerly identified as *Scarites quadriceps* are now treated under the resurrected name, *Scarites vicinus*. This species is common and widespread throughout North America.

CLIVININI

***Clivina acuducta* Haldeman (add to checklist)**

This species is recorded in southwestern Wisconsin (Grant Co., CMNH) and nearby states Illinois and Indiana according to Bousquet (2012).

DYSCHIRIINI

***Dyschrius sublaevis* Putzeys (add to checklist)**

Bousquet (2012) alluded to one old specimen labeled "Milwaukee WIS" in the Museum of Comparative Zoology (Cambridge, MA). This species did not appear on the 2009 checklist. It is known in states along the Atlantic and Gulf of Mexico coasts, far removed from Wisconsin where its status remains uncertain.

BEMBIDIINI

***Bembidion petrosum petrosum* Gebler (erratum)**

This species should have its "rare" status removed from the 2009 checklist because it was learned later that many specimens of this species were previously misidentified as *Bembidion obscurellum* (Motschulsky). The latter species now appears to be relatively uncommon in Wisconsin.

***Elaphropus dolosus* (LeConte) (erratum)**

Although Bousquet and Larochelle (1993) and Bousquet (2012) recorded Wisconsin within the geographic range, no specimen has been confirmed by this author. The single specimen associated with Iowa County in the 2009 checklist is now confirmed to represent *Elaphropus ferrugineus* (Dejean), cited below as a new state record.

***Elaphropus ferrugineus* (Dejean) (new state record)**

Iowa: Ridgeway Pine Relict SNA, N43° 00.683', W89° 59.641', 8-16 VI 2004, Lindgren funnel trap baited with ipsdienol in remnant *Pinus resinosa* and *Pinus strobus* stand adjacent southern dry-mesic forest, J.J. Dorshorst (1, PMC). This species occurs both eastwardly and southwardly from known surrounding states Iowa and Illinois.

***Tachys (Paratachys) oblitus* Casey (new state record)**

Ozaukee: Mequon, N43.2106°, W88.9649°, 13 VII 2000, evening blacklight on suburb lawn, P. Messer (1♀, PMC). This species occurs mainly eastward and southward from known surrounding states Iowa and Illinois.

PTEROSTICHINI

***Pterostichus adoxus* (Say) (confirmation)**

Without record confirmation this species was included on the 2009 checklist on the basis of Bousquet and Laroche (1993). Subsequently, the author confirmed a single specimen from Ashland County (photographed and documented at <http://bugguide.net/node/view/887457>).

***Pterostichus punctatissimus* (Randall) (add to checklist)**

Mayry et al. (2014) recently documented a specimen taken from Langlade County in 2013. The species occurs throughout Canada and eastwardly from known surrounding states Minnesota and Michigan.

ZABRINI

***Amara crassispina* LeConte (add to checklist)**

This species occurs in Wisconsin and surrounding states Illinois, Michigan and Minnesota according to Bousquet (2012).

OODINI

***Oodes brevis* Lindroth (new state record)**

Sauk: Spring Green, 2 V 2010, 5 V 2010, 10 VIII 2010, moist wooded area along Wisconsin River, J. Steffens (1♂ PMC, 3♂2♀ JSC). Leopold Reserve, 4 VIII 1987, pitfall, L.F. Goodman (1, WIRC). This species occurs in Ontario and both eastwardly and southwardly from known surrounding states Illinois and Michigan.

HARPALINI

***Agonoleptus thoracicus* (Casey) (add to checklist)**

Bousquet and Messer (2010) discussed this species under the name *Stenolophus thoracicus* and cited several records from south-central Wisconsin. It occurs throughout the roughly northeastern quadrant of USA.

***Anisodactylus opaculus* (LeConte) (add to checklist)**

The Wisconsin state record was reported by Bousquet (2012) from a personal communication with Robert Davidson of the Carnegie Museum of Natural History (Pittsburgh, PA). This is the northernmost record for the species. The species range is a disjunct between Wisconsin and the span Kansas-Missouri-Kentucky from which the range continues southward. Davidson conveyed to this author the collection data for the single specimen from south-central Wisconsin.

Sauk: Prairie du Sac, N43° 17.748', W89° 44.772', 17-22 VII 2009, C. Barksdale (1♂ det R. Davidson, CMNH).

***Harpalus rubripes* (Duftschmid) (new state record)**

Ozaukee: Mequon, Lake Michigan shore at Seacroft Ct., N43.23344°, W87.90932°, 7 VI 2009 (1♀), 20 V 2012 (1♀), 26 V 2014 (1♂), 31 V 2014 (3♀), daytime under driftwood on sandy beach, P. Messer (6, PMC). Mequon, Lake Michigan shore at Sheridan Dr., N43.19730°, W87.89620°, 28 V 2014 (1♂), 4 VI 2014 (1♂), daytime under driftwood on sandy beach, P. Messer (2, PMC).

This medium-sized beetle is native to much of Europe, Russia, Anatolia, Central Asia, and China (Löbl and Smetana 2003). Its earliest known presence in North America, specifically 1981 in New Hampshire, was first reported by Bell and Davidson (1987) who felt confident that the accidental introduction was recent. Bousquet (2012) cited the distribution in North America to be Canada: NB, NS, ON, PE, QC and USA: CT, MA, ME, NH, NY, PA, RI, VT in which eastern Ontario and central Pennsylvania (Davidson et al. 2011) defined the western limit of the range. Steury and Messer (2014) extended the southern limit to northern Virginia (Fairfax Co.) with the capture of one beetle on May 20, 2013 under leaf litter in a parking lot. See the discussion below for remarks on the apparent disjunct nature of the Wisconsin populations.

PLATYNINI

Agonum ferreum Haldeman (delete from checklist)

Bousquet (2012) cited Wickham (1896) for the single record from northern Wisconsin along Lake Superior. This author believes this is likely in error, hence, the species is removed from the state list.

Agonum galvestonicum (Casey) (new state record)

Dane: Madison, Arboretum facing Curtis Prairie, 15 VI 1967, black light, D. Schwehr (1♀, PMC). This species occurs in southernmost Ontario and both eastwardly and southwardly from known surrounding state Michigan.

Agonum punctiforme (Say) (delete from checklist)

This species was included on the 2009 checklist solely on the basis of the record in northern Wisconsin along Lake Superior by Wickham (1896). Bousquet (2012) felt the record was probably in error and so the species is removed from the state list.

LEBIINI

Apenes lucidula lucidula (Dejean) (new state record)

Dane: Cross Plains, 23 IX 2012, attracted to lights, Ilona L. Cross Plains, 24 IX 2012, at lights, I. Loser (1, PMC). The author confirms this record by means of habitus photographs (<http://bugguide.net/node/view/694424>) that corresponded to an examined specimen. The species occurs both southwardly and eastwardly from known surrounding states Iowa and Illinois.

Coptodera aerata Dejean (new state record)

Iowa: T6N R5E S1, 12-21 VII 1976, "Gypsy Moth -M.T." (1, PMC). This species occurs eastwardly and southwardly from known surrounding states Iowa, Illinois, and Michigan.

Discussion

This update of Messer (2009) presents new information on 25 species of which sixteen names are added to the checklist of Wisconsin Geadephaga. The seven new state records all come from southern Wisconsin: *Elaphropus ferrugineus*, *Tachys* (*Paratachys*) *oblitus*, *Oodes brevis*, *Harpalus rubripes*, *Agonum galvestonicum*, *Apenes lucidula lucidula*, and *Coptodera aerata*. Five species are removed from the 2009 list based on dubious old records according to Bousquet (2012). In addition, *Scarites quadriceps* is removed as a result of

new revisionary research (Bousquet and Skelley 2010). The net effect is $489 + 16 - 6 = 499$ ground beetle species are now confirmed to inhabit Wisconsin. It is noteworthy that several other species listed in 2009 (not cited here) have not yet been verified by the author from known state specimens. However, those species are retained on the list because Bousquet (2012) included Wisconsin in the known distribution, even if some are acknowledged as being uncertain.

Most surprising among the new state records is the westward range extension of the Palearctic *H. rubripes* to the shores of Lake Michigan in southeastern Wisconsin. The author hand-collected adult specimens under driftwood widely scattered on two sandy beaches during the daytimes of 7 June 2009 (one female), 20 May 2012 (one female), and from 26 May to 4 June 2014 (three each of male and female). The narrow beaches lie about three miles apart against a continuous high bluff of dense vegetation on clay soil. These sites are routinely visited by the author mostly during the spring months during which any collecting day produced abundant individuals of the gregarious carabids *Chlaenius cordicollis* Kirby and *Stenolophus ochropepus* (Say). The two isolated specimens of *H. rubripes* from 2009 and 2012 remained unidentified until the author was alerted by the discovery of several individuals during the spring of 2014.

Evidence for an established, breeding population of *H. rubripes* in southeastern Wisconsin is supported by the sampling of several individuals of both sexes that occupied the same area during the past five years. The actual first appearance of *H. rubripes* is surmised to be either 2009 or the previous year because no additional specimens were taken from these routinely checked beaches in several preceding springs. Most collecting days during the spring months failed to produce such specimens. Adults of *H. rubripes* apparently have a narrow window of beach activity that would permit their capture.

It is possible that the Wisconsin populations of *H. rubripes* resulted from a recent accidental introduction into the immediate area, since the Wisconsin populations appear to be widely disjunct from other known North American populations. Perhaps more likely the species spread westward from the nearest currently reported populations in eastern Ontario (Bousquet 2012), and Ulster County, New York (west of the Hudson before the year 2000) and central Pennsylvania (Davidson et al. 2011). Widespread occurrence of this common beetle in Europe and Asia indicates successful adaptability to varied environments. Laroche and Larivière (2003) relate that the natural history of *H. rubripes* includes occurrence on open sandy soil covered by sparse vegetation with frequent sightings in seashore drift, which indicates flight ability. The species apparently has a strong attraction to human-modified environments and activities. Therefore, it is likely that *H. rubripes* has used the shores of the Great Lakes in northeastern North America as a corridor to the west. Further collecting should elucidate whether the Wisconsin populations are truly disjunct, or whether this species has moved undetected through Ohio, Indiana and Illinois.

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