

The Soldier Beetles and False Soldier Beetles (Coleoptera: Cantharidae and Omethidae) of the George Washington Memorial Parkway

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Abstract: A 13-year field survey, and a review of collections maintained at the Smithsonian Institution, National Museum of Natural History, rendered a total of 37 cantharid species in four subfamilies, and one species of omethid beetle, from a national park site (George Washington Memorial Parkway) in Virginia. Twenty species are reported for the first time from the Commonwealth. Malaise traps proved to be the most successful capture methods of the five methods employed during the survey. Periods of adult activity, based on dates of capture, are given for each species. Relative abundance is noted for each species based on the number of captures. Notes on morphological characteristics and habitats are given for some species. A new form of *Dichelotarsus vernalis* (Green) is described along with the female of *Polemius limbatus* LeConte. An eastward range extension of 644 km (400 mi) is documented for *Trypherus pauperculus* Fender. Images of the dorsal habitus or male genitalia are provided for nine species.

Keywords: Cantharidae, Coleoptera, *Dichelotarsus vernalis*, false soldier beetles, national park, new state records, Omethidae, *Polemius limbatus*, soldier beetles, *Trypherus pauperculus*, Virginia

INTRODUCTION

Cantharidae, the Soldier Beetles

The life history and ecology of most species of Cantharidae (Coleoptera: Polyphaga) are poorly known and the larvae of most genera are undescribed (Pelletier and Hébert 2014). They are a family of soft-bodied beetles with lightly sclerotized, flexible, elytra. The adults have a membranous labrum, 11 antennomeres, and a 5-5-5 tarsal formula. The larvae have a hydrophobic vesture, and adults and larvae possess paired repugnatorial glands on abdominal tergites 1–8. The family (as currently understood) is divided into five subfamilies, four of which occur in North America north of Mexico. The subfamily Dysmorphocerinae is restricted to Australia, New Zealand, South America, and southern Africa (Ramsdale 2002a). There are more than 5000 described cantharid species found in all major zoogeographic regions of the world (Delkeskamp 1977, Ramsdale 2002a). A

total of 473 species belonging to 25 genera have been described so far in North America north of Mexico (Ramsdale 2002a). At least 114 species have been documented from eastern Canada and the northeastern United States (Pelletier and Hébert 2014). The taxonomic keys provided by Pelletier and Hébert (2014) have greatly aided species level identification for most eastern North American taxa. No cantharid species are listed as rare in Virginia (Roble 2016) and no additional inventories of cantharid beetles specific to Virginia or any surrounding states are known.

Adults are active diurnally but can be attracted to lights at night. They are often found on foliage and flowers, where they feed on insects, nectar, and pollen (Pelletier and Hébert 2014). They are active fliers and are probably important native pollinators. Many species display aposematic coloration. The paired lateral glandular pores on tergites 1–8 of adults and larvae secrete repugnatorial compounds, synthesized in part from dietary material (Dettner 1987), that reduce palatability to predators. Some species are reportedly involved in mimicry complexes with other cantharid species and other beetle families (Ramsdale 2002a).

Larvae are mostly predators and live in the soil (Fender 1973). Traugott (2003) showed that larvae of three *Cantharis* Linnaeus species fed on earthworms and on dipterous and lepidopterous larvae. The dense vestiture of hydrophobic setae is probably an adaption to microhabitats with high relative humidity such as leaf litter, loose soil, and decaying wood. They are often common in riparian areas prone to flooding. Cantharids overwinter in the larval stage. Pupation typically occurs in earthen, underground, cells. There are as many as ten instars (Ramsdale 2002a).

The earliest cantharid known was found in Lebanese amber from the early Cretaceous, however missing body parts hindered identification below familial level (Kirejtshuk and Azar 2013). A specimen preserved in Burmese amber from the upper Cretaceous was attributable to subfamily Malthininae (Hsiao et al. 2017). The austral distribution of Dysmorphocerinae indicates that it predates the breakup of Gondwana, during the early Jurassic period, more than 180 million years ago. The soft bodies and lightly sclerotized elytra of cantharids lend to improbable fossilization which is currently known only from amber and coal.

Omethidae, the False Soldier Beetles

The Omethidae (Coleoptera: Polyphaga) differ from the Cantharidae by possessing a well sclerotized labrum and abdominal tergites without paired lateral pores. Adult omethids are rarely encountered, poorly represented in museum collections, and almost nothing is known about their ecology (Ramsdale 2002b). Their feeding habits, larvae, and the females of several genera are unknown. Adults of most genera have been collected from foliage during the day and one genus has been found in forest floor debris. No fossil Omethidae have been found. The family was erected by Crowson (1972) and includes taxa formerly placed in Cantharidae, Drilidae (now Elateridae and Omalisidae), and Lampyridae which represent three distinct subfamilies. Thirty-three species in eight genera are described worldwide (Ramsdale 2010). Of the seven omethid genera in North America, five are restricted to California and Oregon. Only two species, in separate

genera, are found east of the Mississippi River. Of these, only *Omethes marginatus* LeConte reaches the East Coast. The family as a whole has never been adequately defined and no synapomorphies have been identified (Ramsdale 2002b).

STUDY SITE

The study site is located in Virginia (Fairfax County and the City of Alexandria) and includes lands managed by the National Park Service as units of the George Washington Memorial Parkway (GWMP). Park sites that received inventory effort included Dyke Marsh Wildlife Preserve, Great Falls Park, Little Hunting Creek, and Turkey Run Park, in Fairfax County, and Daingerfield Island, in the City of Alexandria. This area covers approximately 897 ha (2,217 ac). Great Falls and Turkey Run Parks fall within the Piedmont physiographic province while all other collection sites are on the Coastal Plain. Most sites are situated along the shore of the Potomac River, and Great Falls and Turkey Run Parks border the Potomac River Gorge, an area known for high species richness of plants and animals (Brown 2008). Turkey Run Park and Great Falls Park are dominated by maturing, second growth (although some trees are over 200 years old), primarily upland, rich, deciduous woodlands. The woodlands at Little Hunting Creek are drier, sandier, and have more pine and ericaceous shrubs. More open herbaceous habitats can be found in moist, narrow bands along the shore of Potomac River and in the emergent, freshwater, tidal marshes at Dyke Marsh Wildlife Preserve. The vascular flora of the GWMP is diverse, with more than 1,313 taxa recorded, 1,020 from Great Falls Park alone (Steury et al. 2008, Steury 2011).

MATERIALS AND METHODS

The current list of 38 species of cantharid and omethid beetles is compiled based on museum records and sporadic survey effort targeting arthropods using the following collecting techniques: yellow, blue, and white pan traps in Great Falls Park (June 2007–May 2008); Malaise traps set at Dyke Marsh (1998–1999), Great Falls and Turkey Run parks (2006–2009), and Little Hunting Creek (2017, still largely unsorted); Lindgren funnel traps set at Dyke Marsh, Great Falls Park, Little Hunting Creek, and Turkey Run Park (2010); black-light shone on sheets at Great Falls and Turkey Run Parks (2006 and 2010); beating sheets used during the Potomac Gorge BioBlitz and occasionally at other times (2006 and 2010); and sporadic collecting by hand at all sites (2010–2017).

Additionally, pit-fall traps set at Dyke Marsh (five years) and at Little Hunting Creek and Great Falls and Turkey Run Parks (three years) yielded no cantharid specimens.

Specimens were pinned and labeled and deposited in the collections maintained at the George Washington Memorial Parkway, Turkey Run Park Headquarters in McLean, Virginia. Collectors include Christopher Acosta, Edd Barrows, John Brown, Colin Davis, Art Evans, Dave Smith, Warren Steiner, and Brent Steury. The collections at the Smithsonian Institution, National Museum of Natural History (NMNH), were reviewed for records from GWMP not documented during this survey. Eighty-two undetermined cantharid specimens were borrowed from the Louisiana State Arthropod Museum (LSAM) and four from the Virginia Museum of Natural History (VMHN). These specimens were determined and compared to specimens from GWMP to determine the range of morphologic variability of some species. The type specimen of *Trypherus*

pauperculus Fender was borrowed from the Illinois Natural History Survey (INHS). New Virginia records were determined based on reviews of Green (1940), Downie and Arnett (1996), Evans (2008), Evans and Schnepp (2012), and Pelletier and Hébert (2014).

Habitat associations and notes on life history were recorded for specimens collected by hand or found only in Malaise traps set in specific habitats. The total number of each species was recorded in order to discern information on relative abundance.

RESULTS

The 490 cantharid beetles captured in GWMP during 13 years of sporadic survey effort using six collecting techniques rendered 36 species in 13 genera, seven tribes, and four subfamilies. Three specimens of the only omethid species known to occur on the East Coast were also found during this survey. An additional cantharid species, *Ditemnus bidentatus* (Say), was added based on older museum specimens at NMNH. Nineteen species, 52.8% of the 36 Cantharidae captured during this study, are represented by only two or fewer specimens. Twenty species are reported as new records for Virginia. A previously undescribed pale form female of *Dichelotarsus vernalis* (Green) is reported, described, and figured. *Podabrus pygmaeus* Green should be deleted from faunal lists of the Commonwealth until records other than Evans (2008) can be located (see entry under *Podabrus tricostatus* [Say] below). The female of *Polemius limbatus* LeConte is described and illustrated for the first time along with a description of the previously unknown habitat of the species. An eastward range extension of 644 km (400 mi) is documented for *Trypherus pauperculus*.

The GWMP sites with the highest species richness of cantharid and omethid beetles were Great Falls Park (28, 11 unique to this site), Turkey Run Park (14, 4 unique), Little Hunting Creek (12, 2 unique), and Dyke Marsh Wildlife Preserve (11, 2 unique). Malaise traps proved to be the most successful method of capturing cantharid and omethid beetles during this study, yielding 36 species, including 22 captured only using this method. The next most common method of capture was at black lights which yielded only seven species. The capture of 36 species in Malaise traps suggests that these species are strong fliers with substantial dispersal power.

The most commonly collected cantharid beetles during this study were *Podabrus rugosulus* LeConte (222 specimens; 45.4% of the total), *Rhagonycha imbecillis* (LeConte) (41), *Rhagonycha excavata* (LeConte) (28), *Polemius limbatus* (26), and *Podabrus brevicollis* Fall (24). The most common genera were *Rhagonycha* Eschscholtz (10), *Podabrus* Westwood (9), and *Atalantycha* Kazantsev (3).

LIST OF SPECIES

Taxa are listed alphabetically within families and tribes following the nomenclature and taxonomic order used by Pelletier and Hébert (2014). Twenty cantharid species new to the Commonwealth of Virginia are marked by a bold exclamation point (!). The number of specimens in the collection is indicated in parentheses after each taxon. Sites where specimens were collected are given for City of Alexandria: Daingerfield Island (DI), and Fairfax County: Dyke Marsh Wildlife Preserve (DM), Great Falls Park (GF), Little

Hunting Creek (LH), and Turkey Run Park (TR). Collection methods are listed using the following abbreviations: black light shown on sheets (bl); beating sheet (bs); hand picking (hp); Lindgren funnel (lf); Malaise trap (mt); and pan trap (pt). The periods of adult activity are given based on dates when taxa have been documented in the park. Dates separated by an en dash (–) indicate that the taxon was documented on at least one day during each month within this continuum of months, whereas dates separated by a comma represent individual observation dates. For traps set over multiple weeks, the first day of the set is used as the earliest date and the last day of the set as the latest date. Plant associations or habitats are given for taxa collected by hand. Older records of additional species from GWMP located in the collections at NMNH are included in the list of species and the date of collection, collector, and repository is listed.

Family CANTHARIDAE

Subfamily CANTHARINAE

Tribe Cantharini

Atalantycha bilineata (Say) – (8); DM, GF, TR; bs, mt; 10 Apr–5 Jun, 16–22 Aug.

Atalantycha dentigera (LeConte) – (2); GF; mt; 1–20 May.

! *Atalantycha neglecta* (Fall) – (11); GF; bs, mt; 10 Apr–5 Jun.

Rhagonycha angulata (Say) – (1); LH; mt; 10–30 Jun.

Rhagonycha antennata (Green) – (10); DM, GF; mt; 21 May–19 Aug. (Figures 1–2).

Distinguished from similar species found during this study (*R. excavata* and *R. imbecillis*) by the following combination of characteristics: tooth of claw broadly triangular; pale lateral, sutural, and apical margins of elytra; clypeus emarginated and with oblique sides, dark, or in one specimen more pale (though always contrasting with black head that lacks pale spots behind eyes); pronotum with wide dark mid-stripe, nearly as wide at the anterior edge as the posterior edge, and pronotum with paired, crescent-shaped tumidities on the posterior half, but not extending onto the anterior half; all femora dark, at least basally, tibia and tarsi pale; antennal segments reported as longer by Green (1940). It is similar to *R. excavata* but with pale sutural margins of the elytra, wider mid-stripe of the pronotum, paler tibia and tarsi, and generally more robust dorsal habitus. Although not included in the key provided by Pelletier and Hébert (2014) of northeastern cantharids it has been documented as far north as Minnesota and Connecticut. It was also reported from New Jersey, Illinois, Ohio, Pennsylvania, Maryland, Virginia (Arlington County), North Carolina, and Georgia (Green 1940). Poole and Gentili (1996) listed *R. antennata* as a synonym of *R. angulata*, a synonymy with which the authors and G. Pelletier (in litt., 7 December 2017) disagree. Pelletier and Hébert (2014) state that *R. angulata* is “a very distinct species with no significant variations.”

! *Rhagonycha cruralis* (LeConte) – (7); DM, GF, TR; mt; 17 May–30 Jun. Males of this species resemble some male forms of *R. recta* (Melsheimer) but differ in having shorter, more stout antennomeres, abdominal sterna with pale apical borders, and a more glossy pronotum. Three female specimens from Great Falls Park have entirely black ventrites, as described for *R. recta*, but are included here based on their biarcuate (rather than truncate) clypeus and smooth and glossy pronotum. All seven specimens have pale lateral and sutural margins of the elytra.



Figures 1–2. *Rhagonycha antennata* (Green). Left: dorsal habitus, length 6.4 mm (0.25 in); Right: magnified view of head and pronotum. Great Falls Park, 21 May–18 June 2009, B. Steury and D. Smith.



Figures 3–4. *Dichelotarsus cinctipennis* (LeConte), male genitalia. Left: ventral aspect; Right: dorsal aspect. Turkey Run Park, 10–30 April 2009, B. Steury and D. Smith.

Rhagonycha excavata (LeConte) – (28); GF, LH; bl, mt; 23 Apr–22 Aug. This species has dark legs and sutural margins of the elytra, the lateral margins are pale. The black central stripe of the pronotum occasionally reaches the anterior margin. One specimen has the front and middle tibia and tarsi paler than the femur. Fifteen (53.6%) of these specimens were captured in a Malaise trap set from 23 May–5 June 2008.

! *Rhagonycha hirticula* (Green) – (1); GF; mt; 1–20 May. Specimens of this species with pale lateral margins of the pronotum and a broad dark midline (as in this specimen) are similar to *R. cruralis* (both species have a biarcuate clypeus) but it can be distinguished from that species by the broader apices of the elytra which lack a pale sutural margin.

! *Rhagonycha imbecillis* (LeConte) – (41); DM, GF, LH; bs, mt; 21 May–9 Aug (20 specimens captured at GF from 19–30 June). This is a highly variable species. Ten specimens are the pale form with an orange pronotum illustrated by Pelletier and Hébert (2014). Twenty-eight specimens have an orange pronotum with a complete dark midline. Three specimens possessed a dark spot in the middle of an orange pronotum. Consistent characters include pale lateral, sutural, and apical margins of the elytra; an emarginated clypeus with oblique sides; claws that are widely cleft, the tooth slender and acute; and legs that are all pale (although five specimens have the anterior tip of the femora darkened); basal tumidities of pronotum which do not extend beyond the midline. Color of the clypeus ranges from dark to pale (23 variably dark, 18 pale), the pale color sometimes extending onto the frons. Nineteen specimens have pale spots behind the eyes, the spots varying from faint to bold. Nine of ten pale form specimens have a dark clypeus.

Rhagonycha parvicollis (Green) – (1♀); TR; mt; 1–15 Jul.

Rhagonycha scitula (Say) – (2); GF, LH; mt; 2 Jun–30 Jul. This species is easily confused with *R. imbecillis*, but is distinguished from that species by the much smaller eyes of male specimens and the truncate clypeus.

Rhagonycha sylvatica (Green) – (22); GF, LH, TR; mt; 1 May–30 Jun.

Rhagonycha walshi (LeConte) – (2); TR; mt; 19 Jun–21 Jul. These two specimens have entirely yellow legs, rather than having the basal femora black as is reported for this species (Pelletier and Hébert 2014).

! *Rhaxonycha carolina* (Fabricius) – (1); GF; mt; 30 Jun–13 Jul.

Tribe Podabrinii

! *Dichelotarsus cinctipennis* (LeConte) – (4); TR; mt; 18 Mar–22 May. (Figures 3–4). These dates of capture are earlier than those cited for this species in the northeast by Pelletier and Hébert (2014) who reported the first emergence during the first week of May, peaking the third week of May until the second week of June, and ending the second week of July.

Dichelotarsus vernalis (Green) – (11♂, 2♀); GF, TR; mt; 18 Mar–20 May. (Figures 5–7). This beetle had not been documented outside of Maryland (Plummers Island), Virginia, and South Carolina (Green 1948, Downie and Arnett 1996), until Steury (2018) reported it from North Carolina and Tennessee. Pelletier and Hébert (2014) did not include this species in their list of northeastern North American cantharids, but it was included for this area by Downie and Arnett (1996). The type specimen deposited at NMNH is from GWMP: Turkey Run Park (Dead Run), 14 April 1914, collected by R. Shannon (Green 1948). The following variations from the type



Figures 5–6. *Dichelotarsus vernalis* (Green), male. Left: dorsal habitus, length 8.5 mm (0.33 in); Right: magnified view of head and pronotum. Turkey Run Park, 18 March–9 April 2009, B. Steury and D. Smith.



Figure 7. *Dichelotarsus vernalis*, male genitalia. Ventral aspect. Great Falls Park, 10–30 April 2009, B. Steury and D. Smith.

description (Green 1948) were noted: length 5.5–12 mm (0.2–0.5 in) rather than 7.5–9.5 mm (0.3–0.4 in); elytra entirely black (in all specimens examined, including those from North Carolina and Tennessee in the LSAM collection), lacking the “faintly paler” lateral marginal bead basally (elytra all black on the type specimen as well); femora and coxae reddish orange (when fresh) rather than reddish yellow; head color of females more variable than described. Green (1948) noted that females differ from males in that the “dorsal dark area of the head not attaining eyes”. During this study, including material examined from LSAM, a total of six female and 13 male specimens were examined. Three females had entirely orange heads (Figures 8–9), two had the frons and vertex black (attaining the eyes), and one was intermediate in head color with the frons and vertex orange and the occiput dark. These six female specimens measured 8.5–12 mm (0.3–0.5 in), with the smallest orange headed specimens being 10.5 mm (0.4 in). The male specimens measured 5.5–8.5 mm (0.2–0.3 in). The percentage of females (31.6%) is low in *D. vernalis* compared to sex ratios of closely allied species cited by Pelletier and Hébert (2014): *Dichelotarsus punctatus* (LeConte) (n = 42, 92% female) and *Dichelotarsus* n. sp. 1 (near *fumiganus* Green) (n = 59, 94% female). The species has an early flight period. Malaise traps set at two-week intervals in Virginia and Tennessee documented it between 13 March and 22 May, peaking in late March and early April. Male *D. vernalis* have smaller eyes than other closely allied species (*D. cinctipennis* and *D. fumiganus*). It is also the only *Dichelotarsus* species in eastern North America with the coxae and femora colored reddish-orange, the femora with a black apex. *Dichelotarsus fumiganus* occasionally has the femora pale (tan to yellowish) but never reddish-orange or with a distinct transition in color to the black apex.

- ! *Podabrus appendiculatus* Fall – (2); DM, LH; lf, mt; 10 May–16 Jun. Considered rare in the Southeastern United States Coastal Plain zone (Pelletier and Hébert 2014).
- ! *Podabrus basilaris* (Say) – (17); DM, GF, LH, TR; bl, hp (at light on building), mt; 28 Apr–29 Jun.
- Podabrus brevicollis* Fall – (24); DM, GF, TR; bl, mt; 1 May–13 Jul.
- ! *Podabrus brunnicollis* form *brunnicollis* (Fabricius) – (3); GF, LH; bl, mt; 31 May–30 Jun.
- ! *Podabrus flavicollis* LeConte – (2); GF, TR; bs (riverside prairie), mt; 14 Apr, 19–30 Jun.
- ! *Podabrus frater* LeConte – (10); GF, LH; bl, mt; 21 May–13 Jul. This species was captured only near freshwater swamps and marshes with an abundance of lizard's tail, *Saururus cernuus* L. (Saururaceae).
- ! *Podabrus rugosulus* LeConte – (222); DM, GF, LH, TR; bl, bs, mt; 1 May–9 Aug.
- ! *Podabrus tomentosus* (Say) – (2); LH, TR; mt; 19 May–6 Jul.
- Podabrus tricostatus* (Say) – (1♂, 1♀); GF; bl, mt; 23 May–5 Jun. The female specimen measured 14.5 mm (0.6 in) and the male 11.5 mm (0.5 in). The smaller male specimen was determined by dissection of the genitalia (Figure 10) which was compared to Figures 1 and 2 in Green (1948) in order to distinguish it from *P. pygmaeus*. Reports of *P. pygmaeus* from Great Falls Park in Evans (2008) are based on misidentified *P. rugosulus*.



Figures 8–9. *Dichelotarsus vernalis* pale form female. Left: dorsal habitus, length 11.0 mm (0.43 in); Right: magnified view of head and pronotum. Turkey Run Park, 18 March–9 April 2009, B. Steury and D. Smith.

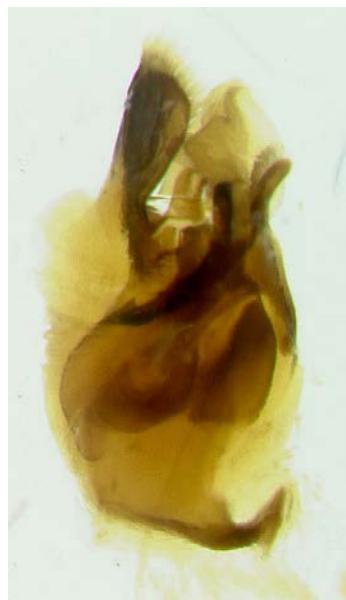


Figure 10. *Podabrus tricostatus* (Say), male genitalia. Lateral aspect. Body length is 11.5 mm (0.45 in). Great Falls Park, 24 May 2008, J. Brown.

Subfamily SILINAE

Tribe Silini

Ditemnus bidentatus (Say) – (2♂, NMNH); GF; 27 Aug [no year stated; probably pre-1920], Schwarz and Barber; 4 Sep 1910, E. Shoemaker.

! *Ditemnus latilobus* (Blatchley) – (2♂); GF; mt; 10–30 Apr, 31 Jul–17 Aug. Reported as rare in Southeastern United States Forest Plain zone (Pelletier and Hébert 2014). Not recorded from any state on the East Coast or those surrounding Virginia. Earliest date of adult flight period recorded by Pelletier and Hébert (2014) is 1 May.

! *Polemius laticornis* (Say) – (2); GF; mt; 15–29 Jun.

! *Polemius limbatus* LeConte – (16♂, 10♀); DM; mt; 28 May–11 Oct. (Figures 11–12). The habitat of this species has never been recorded (Pelletier and Hébert 2014). The Dyke Marsh specimens came from a tidal, freshwater, narrowleaf cattail (*Typha angustifolia* L. [Typhaceae]) marsh. Although not previously documented, *P. limbatus* is sexually dimorphic. Males have a nearly quadrate pronotum with a notch near the middle of each side. Females have a more broadly transverse pronotum, wider at the base, with unnotched sides or rarely with a slight indentation. Claws of females are untoothed, sometimes with a swollen base. Hind claws of males have a short broad tooth on the outer side.

! *Silis spathulata* LeConte – (3♀, 1♂); GF; bs, mt; 10 Apr–20 May.

Subfamily MALTHININAE

Tribe Malthinini

! *Caccodes granicollis* (Fender) – (1); GF; mt; 5–25 Aug. (Figures 13–14). This species has been previously reported only from Maryland and North Carolina (Fender 1951).

! *Malthinus occipitalis* LeConte – (2); LH; mt; 19 May–20 Jun.

Tribe Malthodini

Malthodes captiosus LeConte – (1); GF; mt; 19–30 Jun. This rare beetle is documented from only a few records in Maryland, North Carolina, and Virginia.

Tribe Ichthyurini

Trypherus frisoni Fender – (1♂); DM; mt; 14–24 Jun. (Figure 15). This species and *T. latipennis* (Germar) are the only North American *Trypherus* with the mesofemora distinctly dilated in males. *Trypherus frisoni* is distinguished from *T. latipennis* by its less transverse pronotum, elytra that are black rather than brown in the basal half (Pelletier and Hébert 2014), and characteristics of the tergal lamina and aedeagus (Brancucci 1985).

! *Trypherus pauperculus* Fender – (1♂); TR; mt; 7–21 Jun. (Figures 16–18). Determined by dissection and comparison with the type specimen loaned from the INHS and Figure 101 in Brancucci (1985). This collection represents an eastern range extension of over 644 km (400 mi) from Columbus, Ohio. It was previously documented only from Illinois, Ohio, and Indiana. Other Ptterygota documented from GWMP have shown similar range extensions. For example, the sawfly, *Kerita fidala* Ross (Hymenoptera: Tenthredinidae), was previously known only from Illinois and Indiana until it was documented from GWMP in 2007 (Smith 2009).



Figures 11–12. *Polemius limbatus* LeConte. Left: male, length 5 mm (0.20 in); Right: female, length 5.3 mm (0.21 in). Dyke Marsh Wildlife Preserve, 2–18 July 1999, E. Barrows.



Figures 13–14. *Caccodes granicollis* (Fender). Left: dorsal habitus, length 2.7 mm (0.11 in); Right: magnified view of head and pronotum. Great Falls Park, 5–25 August 2008, B. Steury and D. Smith.



Figure 15. *Trypherus frisoni* Fender. Length 5.1 mm (0.20 in). Dyke Marsh Wildlife Preserve, 14–24 June 1998, E. Barrows.



Figure 16. *Trypherus pauperculus* Fender. Length 5.5 mm (0.22 in). Turkey Run Park, 7–21 June 2006, B. Steury and D. Smith.



Figures 17–18. *Trypherus pauperculus*, male genitalia. Left: external ventral view; right: internal view. Both images are of the specimen shown in Figure 16.

Subfamily CHAULIOGNATHINAE

Tribe Chauliognathini

Chauliognathus marginatus (Fabricius) – (10); DM, GF; hp (on common buttonbush,

Cephalanthus occidentalis L. [Rubiaceae], and narrowleaf mountainmint,

Pycnanthemum tenuifolium Schrad. [Lamiaceae]), mt, pt; 5 Jun–23 Jul. One specimen lacked dark markings on elytra; all other specimens had dark markings restricted to apical third.

Chauliognathus pensylvanicus (DeGeer) – (2); DI, GF; hp (both on wingstem, *Verbesina alternifolia* [L.] Britton ex Kearney [Asteraceae]); 27 Aug–2 Sep.

Family OMETHIDAE

Subfamily OMETHINAE

Omethes marginatus LeConte – (3); GF, TR; mt; 1 May–18 Jun. Evans and Schnepf (2012) documented the first record of this beetle from Virginia.

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