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***CANTHARIS SHERALDI* STEURY (COLEOPTERA: CANTHARIDAE: CANTHARINI), A NEW SPECIES OF SOLDIER BEETLE FROM VIRGINIA, USA**

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ABSTRACT

A new species of *Cantharis* Linnaeus (Coleoptera: Cantharidae: Cantharini) is described, diagnosed, and illustrated from a national park site, Turkey Run Park, in Virginia, USA and compared to similar species in the genus. *Cantharis* (*Cantharis*) *sheraldi* Steury, **new species** was collected in a Malaise trap set in a meadow-like, powerline right-of-way bordered on both sides by eastern deciduous forest.

Key Words: biodiversity, Elateroidea, Potomac River Gorge, taxonomy

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INTRODUCTION

Cantharinae are widely distributed in the Holarctic and Oriental regions, but native species are absent from South and Central America, sub-Saharan Africa, Australia and Oceania (Ramsdale 2002). Many former subgenera of North American *Cantharis* Linnaeus have been elevated to generic status (e.g., *Cultellunguis* McKey-Fender, *Cyrtomoptera* Motschulsky, *Rhagonycha* Eschscholtz, and *Rhaxonycha* Motschulsky). Wittmer and Kasantsev (1997) summarized the taxonomic changes to *Cantharis*; however, *Cantharis* is currently divided into three subgenera (Švihla 1999) rather than four: *Cantharis* (*Cantharis*), *Cantharis* (*Taiwanocantharis* Wittmer) and *Cantharis* (*Cyrtomoptila* Motschulsky). Ramsdale (2002) provided a key to the genera and subgenera and an overview of their diversity and classification. There are currently 22 species in North America. All are in the nominate subgenus except for *Cantharis sierrae* McKey-Fender from southern California, which is in subgenus *Cyrtomoptila*. Keys to North American *Cantharis* species were provided in Fender (1962), McKey-Fender (1950), and Pelletier and Hébert (2014).

Malaise trap sampling in 2019, associated with biodiversity surveys of the George Washington Memorial Parkway (GWMP), captured a series ($n = 9$, 1♀, 8♂) of an unfamiliar soldier beetle. The trap that captured this series was located in Turkey Run Park, a National Park site in Fairfax County, Virginia, 3 km west of the Potomac River Gorge. The 2019 Malaise trap sampling site was in a previously unsampled, linear, grassy meadow, under a power line right-of-way, bordered on both sides by eastern

deciduous forest. The 2019 surveys built on previous work collecting beetles from GWMP which documented 39 cantharid species from the park (Steury 2018, 2019; Steury *et al.* 2018). Based on a review of the literature, all North American species were eliminated as possibilities. Suspecting that it might be a European species recently arrived in North America (two European *Cantharis* are already widely introduced in North America: *Cantharis livida* Linnaeus and *Cantharis rufa* Linnaeus), microscopic images of various body parts were compiled and sent to cantharid specialists familiar with the European and Chinese fauna, who confirmed that the species in question was not an introduced species from those areas.

MATERIAL AND METHODS

Specimens were collected using a 1.7-m × 1.2-m Townes-style Malaise trap. Collecting jars were two-thirds filled with 95% ethanol. The trap was set from 15 May–17 June 2019, and samples were collected on 30 May and 17 June. The trap samples were sorted for beetles by citizen scientists in the GWMP Bug Lab. These sorted subsamples were examined by the author. A male specimen of the unfamiliar cantharid beetle found in the subsamples was dissected, and the genitalia cleared in a lacto-phenol solution with glacial acetic acid in order to determine the genus. Specimen images were obtained using a Leica S8AP0 microscope mounted with a Leica MC 190 HD camera and processed using Leica Application Suite version 4.12 (Build 86) montage image building software.

Depositories. United States National Museum of Natural History, Smithsonian Institution, Washington, District of Columbia, USA (USNM); GWMP, Turkey Run Park Headquarters, McLean, Virginia, USA.

RESULTS

Cantharis (Cantharis) sheraldi Steury, new species

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(Figs. 1–6)

Type Material. Holotype, male (USNM), labeled “VIRGINIA, Fairfax Co., GWMP, Turkey Run Park, 38°57'16.3"N, 77°09'17.8"W, power-line, Malaise trap, 15–30 May 2019, Brent Steury.” Paratype, dissected male (USNM), same data as holotype; GWMP, seven paratypes, 5 male and 1 female, same data as holotype; 1 paratype male, same data as holotype except 30 May–17 June 2019.

Description. Holotype male. Body length 7.0 mm. **Head** (Fig. 2A): Smooth, shiny, with small, widely spaced setose punctures; occiput black, vertex and frons yellow, clypeus yellow, slightly convex, notched at middle; maxillary and labial palpi yellow; terminal maxillary segment scalene, broadest near middle, the outer side straight, distal side convex, its length subequal to outer side, inner side one-third the length of the outer side; terminal labial segment triangular, broadest on distal side; eyes large and bulging, glabrous; gular sutures widely separated. Mandible (Fig. 2B) brown with pale base; straight edged and slightly curved at apex, untoothed. Antenna (Fig. 3A) black, pale ventrally on antennomeres 1–3; filiform, reaching to middle of elytra; with pale appressed setae, and longer, more erect, black setae scattered throughout,



Fig. 2. *Cantharis sheraldi*, new species. A) Frontal view showing frons, eyes, clypeus, and terminal palpomeres, B) Fronto-ventral view of head showing mandibles.

especially apically, all antennomeres subequal except 2 which is about one-third the length of the others; antennomeres 4–10 with white, glabrous fovea on the medial side about one-third from the apex. **Pronotum** (Fig. 3B): Smooth, shiny, with small, widely spaced, setose punctures, the setae longest on posterior corners; wider than long, widest just above posterior margin; lateral and posterior margins strongly reflexed, with two low, nearly confluent tubercles on both sides of middle of posterior half, lateral margins semi-transparent, gradating along high point of tubercles to white, brown, and finally black at center; the black central area not quite reaching the anterior and posterior edges, the brown area restricted to the lateral margins of the tubercles. **Scutellar shield:** Black, triangular, with rounded apex, smooth; punctures setose, more closely spaced than on head or pronotum. **Elytra:** Black, rugulose, with yellow sutural margin broadest at base and narrowing to apex, lateral margins yellow, broadest along humeral and anterior elytral epipleural margin, narrowing to apex; pubescence (Fig. 4A) pale, recumbent, with some erect, black hairs, especially at base and lateral margins. **Prosternum and mesoventrite:** Mostly pale. **Metaventrte:** Dark brown. **Legs:** Black dorsally with pale femoral joint; ventrally black with linear, pale blotch on femur; front and middle



Fig. 1. *Cantharis sheraldi*, new species, holotype. A) Dorsal habitus, B) Ventral habitus. Length 7.0 mm.

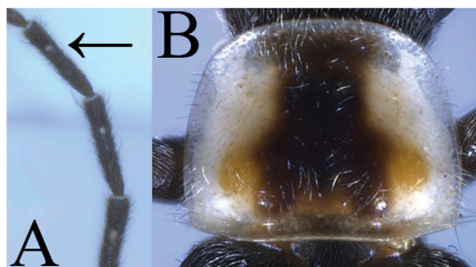


Fig. 3. *Cantharis sheraldi*, new species. A) Antennomeres 7–9 (apex up) showing glabrous foveae which occur on antennomeres 4–10, B) Pronotum.

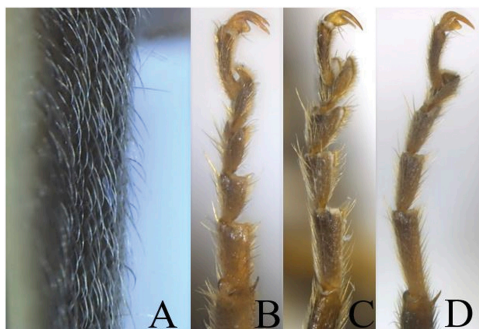


Fig. 4. *Cantharis sheraldi*, new species. A) Elytral pubescence showing pale recumbent hairs with some black, erect hairs especially basally and laterally, B) Front tarsus, C) Middle tarsus, D) Hind tarsus.

coxae pale, hind coxae pale anteriorly, brown posteriorly; tibiae slightly bowed, posterior more so than middle and anterior, with two, short, curved spines on ventral side, barely reaching tarsomere 1; anterior claw of all tarsi with broad triangular tooth (Figs. 4B–D); tarsomere 4 deeply bilobed, tarsomere 3 concave, all tarsomeres with plantar pad.

Abdominal ventrites: Dark brown with pale posterior margin except on ventrite 7 which is all brown; caudal ventrite small and subtriangular with blunt apex (Fig. 5A). **Male genitalia** (Figs. 6A–C): Parameres long and straight, reaching to apex of lateral margins of dorsal plate, the tips entire and unexpanded; dorsal plate deeply notched; laterophyses pointing toward dorsal plate and slightly hooked at tip, shorter than parameres.

Allotype Female. Body length 8.0 mm. Dorsally identical to males (including antennomeres 4–10 with white, glabrous fovea on the medial side about one-third from the apex). Ventrally similar to males (including anterior claws of all tarsi with broad triangular tooth equally developed in both sexes); differing in the shape of the caudal abdominal ventrite (Fig. 5B), which is convex, sinuate, and notched at the apex, and by having a slightly wider pale posterior edge on each ventrite.

Diagnosis. *Cantharis sheraldi* is unlike all other native *Cantharis* in eastern North America in having toothed anterior claws (rather than simple claws) in



Fig. 5. *Cantharis sheraldi*, new species, caudal ventrites. A) Male, B) Female.



Fig. 6. *Cantharis sheraldi*, new species, male genitalia. A) *In situ* lateral view, B) Dissected USNM paratype, ventral view, C) Dorsal plate.

both sexes. It can be further separated from all North American *Cantharis* by the foveate depressions (sometimes referred to as “pores” or “sensory grooves/pits”) on antennomeres 4–10 (in males and females) and its unique dorsal coloration.

Variation. This species shows very little color variation among males or between males and females. Male ($n = 8$) length is 6.1–7.0 mm, female ($n = 1$) is 8.0 mm. Differences in caudal abdominal ventrites are discussed above and shown in Figs. 5A–B.

Etymology. *Cantharis sheraldi* is named in honor of James Sherald, former Chief of Natural Resources of the National Capital Region, for his career-long devotion to the protection of the natural resources of the Potomac River Gorge.

Distribution and Natural History. *Cantharis sheraldi* is currently known from one female and eight male specimens collected from the Piedmont physiographic province of Virginia, USA. Adults were collected in Malaise traps operating between 15 May–17 June ($n = 8$ captured 15–30 May; $n = 1$ captured 30 May–17 June). Traps were deployed under a power line in linear, grassy, meadow-like habitat with abundant common milkweed (*Asclepias syriaca* L.), hemp-dogbane (*Apocynum cannabinum* L.), and goldenrod (*Solidago* L.) near eastern deciduous forest dominated by oaks (*Quercus* L.), hickory (*Carya* Nutt.), American beech (*Fagus grandifolia* Ehrh.), and some Virginia pine (*Pinus virginiana* Mill.).

DISCUSSION

As pointed out by Ramsdale (2002), North American *Cantharis* and its subgenera are probably non-monophyletic assemblages and are in need of revision. Interestingly, *C. sheraldi* shows features in common with North American and European *Cantharis* species, as well as with *Atalantycha* Kazantsev (especially the tarsal claws and shape of the pronotum). However, the anatomy of the male genitalia of *C. sheraldi* places it in *Cantharis*, since the three known species in *Atalantycha* possess a reduced dorsal plate and laterophyses and have parameres with a bifid apex (Kazantsev 2005).

Cantharis sheraldi is more similar to some European *Cantharis* (most of which have a variously shaped tooth on the anterior claws of each tarsus, often greatly reduced in females) than to any North American species. The following European species share some characteristics with *C. sheraldi*: *Cantharis figurata* Mannerheim has foveate antennomeres 4–10 but has yellowish elytra, females with a greatly reduced anterior claw tooth, male aedeagus with shorter parameres, and with the lateral margins of the dorsal plate more convergent to the narrower, notched rim; *Cantharis decipiens* Baudi has a very similar head and pronotal coloration but has entirely yellowish elytra, antennae, and front and middle legs; *Cantharis rufa tenuilimbata* Ballion (eastern “form”) has a similar elytral pattern but no black spot on the pronotum, is larger than 8.0 mm, lacks the antennal foveae, has the claw tooth differing in shape in males and females, and parameres that extend further beyond the rim of the dorsal plate. The aedeagus and elytral pubescence of *C. sheraldi* are most similar to those of the European *Cantharis cryptica* Ashe, which has a similar dorsal plate, but shorter parameres, and also differs in having the head, pronotum and elytra always entirely reddish-testaceous.

Cantharis sheraldi is the second new species of Cantharidae described from the 297 ha Turkey Run Park, a National Park site situated on the Virginia shore of the Potomac River Gorge, an area long heralded for its biodiversity (Brown 2008; Cohn 2004). The other species with a type locality in Turkey Run Park is *Dichelotarsus vernalis* (Green), described by Green (1948) as *Podabrus vernalis* Green.

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REFERENCES CITED

- Brown, J. W. 2008.** The invertebrate fauna of Plummerville Island, Maryland. Contribution XXX to the natural history of Plummerville Island, Maryland. Bulletin of the Biological Society of Washington 15: 1–226.
- Cohn, J. P. 2004.** The wildest urban river: Potomac River Gorge. BioScience 54: 8–14.
- Fender, K. M. 1962.** Family Cantharidae [pp. 44–68]. In: Beetles of the Pacific Northwest. Part III. Pselaphidae and Diversicornia I (M. H. Hatch, editor). University of Washington Press, Seattle, 503 pp.
- Green, J. W. 1948.** New eastern American species of *Podabrus* II (Coleoptera: Cantharidae). Transactions of the American Entomological Society 74: 75–82.
- Kazantsev, S. V. 2005.** A review of *Ancistronychia* Märkel with the description of *Atalantycha*, a new Nearctic genus (Coleoptera: Cantharidae). The Coleopterists Bulletin 59(2): 204–210.
- McKey-Fender, D. 1950.** Notes on *Cantharis* III. The Pan-Pacific Entomologist 26: 25–33, 61–79.
- Pelletier, G., and C. Hébert. 2014.** The Cantharidae of eastern Canada and northeastern United States. Canadian Journal of Arthropod Identification 25: 1–246. DOI: 10.3752/cjai.2014.25.
- Ramsdale, A. S. 2002.** Cantharidae Imhoff 1856 [pp. 202–218]. In: American Beetles, Volume 2. Polyphaga: Scarabaeoidea through Curculionoidea (R. H. Arnett, Jr., M. C. Thomas, P. E. Skelley, and J. H. Frank, editors). CRC Press, Boca Raton, FL, xiv + 861 pp.
- Steury, B. W. 2018.** Four longhorned beetles (Coleoptera: Cerambycidae) new to Virginia and additional new park records (Coleoptera: Anthicidae, Buprestidae, Cantharidae, Carabidae, Cerambycidae, Chrysomelidae) for the George Washington Memorial Parkway. Banisteria 50: 29–31.
- Steury, B. W. 2019.** Two beetles new to Virginia (Coleoptera: Cantharidae, Erotylidae). Banisteria 52: 50–51.
- Steury, B. W., W. E. Steiner, Jr., and F. W. Shockley. 2018.** The soldier beetles and false soldier beetles (Coleoptera: Cantharidae and Omethidae) of the George Washington Memorial Parkway. The Maryland Entomologist 7: 11–27.
- Švihla, V. 1999.** Contributions to the knowledge of genera *Cantharis* L. and related genera from Turkey and adjacent regions (Coleoptera, Cantharidae). Entomologica Basiliensia 21: 135–170.
- Wittmer, W., and S. Kasantsev. 1997.** On the classification of the genus *Cantharis* Linné (Coleoptera: Cantharidae). Entomologica Basiliensia 20: 367–372.

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