



Is Missouri's disjunct population of Johnson's tiger beetle extirpated?

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The December 2010 issue of the journal [CICINDELA](#) came out a little over a week ago. Leading off inside is the first in a series of papers that I, along with colleagues Chris Brown and Kent Fothergill, have prepared detailing our work with several species of tiger beetles in Missouri of potential conservation interest. At the start of our surveys, Missouri's tiger beetle fauna was already fairly well characterized, at least qualitatively, due to the efforts of heavy hitters Ron Huber and Dave Brzoska, who for many years lived in nearby eastern Kansas. Despite their attentions, however, questions lingered regarding the precise distribution and status of several species of restricted geographical occurrence within the state, and our surveys over the past 10 years have sought to resolve these questions and, if necessary, recommend conservation efforts to secure the long-term survival of these species within the state.

One of these species of interest is *Habroscelimorpha circumpecta johnsonii* (Johnson's tiger beetle). This subspecies is widely distributed in inland areas of the central and south-central United States, where it is associated exclusively with barren areas surrounding saline seeps. Despite the broad occurrence of the main population, the Missouri population of this subspecies has long been of particular interest for several reasons: 1) its widely disjunct isolation, occurring several hundred miles east of the nearest populations in central Kansas, 2) its strict association with the highly restricted saline seeps of central Missouri (Fig. 1), and 3) the exclusive blue-green coloration of the adults (Fig. 2) that contrasts with the varying proportions of reddish and/or dark morphs, in addition to blue-green morphs, found in other populations. The highly disjunct and isolated occurrence of this population and its unique coloration have been considered by some workers as grounds for separate subspecific status. Another restricted, disjunct population of this species in North

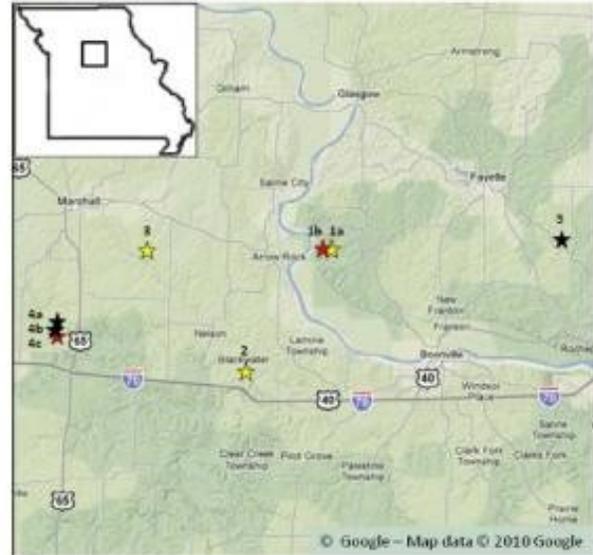


Figure 1. Saline seep survey sites (see Table 1 for key to numbers). Red stars indicate sites where *Habroscelimorpha circumpecta johnsonii* was observed during this survey, yellow stars indicate sites where the species has been recorded historically but was not seen during this survey, and black stars indicate sites from which the beetle has not been recorded at any time. Black box on inset map of Missouri denotes survey area in central Missouri.

Dakota has already been accorded subspecific status – *H. circumpecta pembina*.

Despite its restricted occurrence in Missouri, a long history of collection records exist for the subspecies. Numerous specimens are housed in the Enns Entomology Museum in Columbia, Missouri, with a majority of these coming from a single location (Boone's Lick Historic Site) and dating back as early as 1954. In more recent years (1985-1992), Ron Huber and Dave Brzoska found significant numbers of beetles at two additional locations near Boone's Lick. Despite these numerous records, the subspecies was listed as a "Species of Conservation Concern" by the [Missouri Natural Heritage Program](#) with a status of "S2S3" (vulnerable or imperiled) due to the rarity of its required saline seep habitats in Missouri. Unfortunately, this alone did not appear to be sufficient protection for the species, as my own observations beginning in the mid-1990s suggested that populations of the beetle had declined significantly from their historical levels. Concomitant with these apparent declines was the observation that the sites supporting these beetles had themselves suffered severe degradation that reduced their apparent suitability as habitat for the beetle. As a result of these observations, Chris and I initiated comprehensive surveys during the 2001

¹ Reprinted from an article posted February 21, 2011 at the author's website <http://beetlesinthebush.wordpress.com>.



Figure 2. *Habroscolimorpha circumpecta johnsonii* adults showing the blue to blue-green coloration exhibited by Missouri disjunct individuals: a) Blue Lick Conservation Area (south), 22.vii.2001; b) same locality, 7.vii.2002. Photos by CRB.

field season to assess the conservation status of the Missouri population and identify potential new sites. Our first order of business was to petition a status change to “S1” (critically imperiled), and for the next three years we regularly visited the historical sites throughout the presumed adult activity period, noting occurrence of adults and recording their numbers and the circumstances of their habitat associations. Included in these surveys also were two new sites identified using the Missouri Natural Heritage Database.

The results were not good – during the 3-year survey, only a single beetle was observed at the historical location of Boone’s Lick, and none were observed at the two other locations discovered by Ron Huber and Dave Brzoska. More significantly, all three sites had suffered severe degradation due to vegetational encroachment, cattle trampling, or other anthropogenic disturbance. Moreover, of the two potential new sites identified, only one of these (Blue Lick Conservation Area) was found to support a small population of the beetle. Three apparently suitable saline seeps exist at this latter site; however, beetles were observed at only one of them. During the final year of the survey,



Figure 3. Saline seeps where *Habroscolimorpha circumpecta johnsonii* was found: a) cattle-trampled saline seep along creek adjacent Boone’s Lick State Historic Site, 11.viii.2001; b) cattle in area of saline seep adjacent Boone’s Lick State Historic Site, 26.vii.2003; c) Blue Lick Conservation Area (south), 30.vi.2002; d) Blue Lick Conservation Area (south) under chronic inundation, 9.viii.2003; e) Blue Lick Conservation Area (south) drained and dry, 15.vii.2005; f) Blue Lick Conservation Area (south) flooded and overgrown, 15.vii.2008. Photos by CRB.

prolonged flooding occurred at this site (frustratingly, a result of earth-moving operations by site personnel), which was followed in subsequent years by significant vegetational encroachment (Fig. 3). No beetles were observed at this site during the final year of the survey, nor has the species been seen there in multiple visits to the site in the years since.

Is the Missouri disjunct population of Johnson’s tiger beetle extirpated? There is little reason to be optimistic. What is clear is that the beetle is now below detectable limits, and with the loss of suitable habitat at all sites known to have supported the beetle in the past and little chance that new, high-quality sites will be identified, prospects for an unaided comeback are dim. The saline seep habitats at the three historic sites appear to have suffered irreparable degradation and offer little restoration potential to the degree required to support viable beetle populations; however, there are still two saline seeps at Blue Lick that do offer at least a semblance of suitable habitat. It is imperative that these last remaining examples of Missouri’s critically imperiled saline seeps habitats receive the highest priority for protection if the beetle (should it still exist) is to have any chance of surviving in Missouri.

Johnson's tiger beetle is only one of several tiger beetle species whose presence in Missouri appears to be in jeopardy (others being *Dromochorus pruina* – loamy ground tiger beetle, and *Cylindera celeripes* – swift tiger beetle). I end this post with our closing admonition in the paper:

The loss of this beautiful and distinctive beetle from Missouri's native fauna would represent a significant and tragic loss to this state's natural heritage. We urge the Missouri Department of Conservation, the Missouri Department of Natural Resources, and other conservation organizations within the state to identify and allocate the resources needed to develop and implement a recovery plan for the species in Missouri.

REFERENCE:

Brown, C. R. and T. C. MacRae. 2011. Assessment of the conservation status of *Habroscelimorpha circumpecta johnsonii* (Fitch) in Missouri *CICINDELA* 42(4) (2010):77-90.

Postscript. On a happier note, I am pleased to be joining the editorial staff for *CICINDELA*. While my role as layout editor is more functional than academic, I am nevertheless thrilled with the chance to “rub shoulders” with the likes of Managing Editor Ron Huber and long-time cicindelid experts Robert Graves and Richard Freitag. I hope my contributions to the journal's production on the computer end of things will be favorably received by its readership.

Shaw Nature Reserve Requests Help from Experienced Birders

*James C. Trager*¹

Shaw Nature Reserve is in the process of applying for USFWS moneys for songbird habitat improvement (mainly through invasive shrub removal). We are seeking volunteers from among the experience birders of St. Louis Audubon Soc. and Webster Groves Nature Study Soc. to conduct point count surveys in the proposed treatment area

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at Shaw. Since the birding season is upon us, it would be great to get some baseline data as soon as possible before beginning the honeysuckle removal treatment. Basically, the technique is to record all birds seen or heard in a spot for 10 minutes, then move on to the next spot that is >250m away. Protocols will be provided to those interested in helping with this study. An abstract of the study being performed can be found at <http://www.jstor.org/stable/4493689> . If you are interested in helping with this study, please contact James Trager, Shaw Nature Reserve, at James.Trager@mobot.org or the following address:

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Great River and Clarence Cannon National Wildlife Refuges Launch Facebook Page

*Carolyn Gregory*²

Great River and Clarence Cannon National Wildlife Refuges recently became one of over 500 million users of Facebook, the online social networking website. Each week, updates are posted on various refuge topics, along with pictures taken from the refuge units. The goal is to reach out to people that may be unfamiliar with the refuges and encourage them to visit, whether they reside in the local area, across the United States, or around the world.

Refuge Manager Jason Wilson states, “We hope that when folks visit our Facebook page, it makes them want to come out to the refuges for a visit. The pictures and videos that we post on there are great, but in no way do they replace the experience that one can get from viewing the wildlife we have in person.”

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