

Evidence of Native Lamprey Parasitism on the Eastern Hellbender

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The eastern hellbender (*Cryptobranchus alleganiensis alleganiensis* Daudin, 1803) is a large, fully aquatic salamander that inhabits river systems in the United States from southern New York, to northern Georgia, and west to Missouri. In New York, the hellbender is only found in two drainages: the Allegheny and Susquehanna Rivers. Hellbenders play an important role in stream ecosystems as both a predator and prey species (Humphries and Pauley, 2000). Like the hellbender, the Ohio lamprey (*Ichthyomyzon bdellium* Jordan, 1885) is native to the Allegheny River drainage. It is a parasitic, jawless fish that predominately parasitizes stream fishes (Cochran and Jenkins, 1994). In New York State, the lamprey is listed as a species of greatest conservation need, while the hellbender is listed as a species of concern (Carlson, Daniels and Eaton, 1999; Hansen and Ramm, 1994; New York State Department of Environmental Conservation, 2014a; b).

During a rock turning survey on 08 August 2012, we captured an adult hellbender (total length = 560 mm, snout-to-vent length = 363 mm, weight = 1,080 g) with a fresh lamprey laceration (~14 mm diameter) on the right ventral side of the body (Fig. 1). The animal was captured in the mainstem of the Allegheny River in New York. According to the New York State Department of Conservation (NYSDEC) Natural Heritage Program, the Ohio lamprey is the only parasitic lamprey species native to the Allegheny River, and the invasive sea lamprey has not been detected in the drainage (Kenneth Roblee, pers. comm.). In addition, several Ohio

lampreys were observed and captured in nets during the hellbender survey at this site. In one instance, a hellbender and Ohio lamprey were captured at the same time from under the same rock.

To our knowledge, there is no previous record of lamprey parasitism on eastern hellbender salamanders. This finding may have important implications for the species given the recent declines of the eastern hellbender, including in the Allegheny drainage of New York (Foster, McMillan, and Roblee, 2009). There are numerous potential and realized threats to hellbender populations across their range (Mayasich, Grandmaison, and Phillips, 2003). Lamprey parasitism adds to this list of potential threats and may be a confounding factor in hellbender declines since open wounds from lamprey bites may lead to secondary infections (e.g. fungal infections, see Foster, 2006). Chytrid fungus (*Batrachochytrium dendrobatidis*) and *Ranavirus* are two infections of interest in declining hellbender populations. However, Souza et al. (2012) suggest that open wounds are not linked to contraction of these particular infections. Future research is needed to determine the rate of lamprey parasitism on hellbenders and if these wounds increase the chances of contracting disease or infection.

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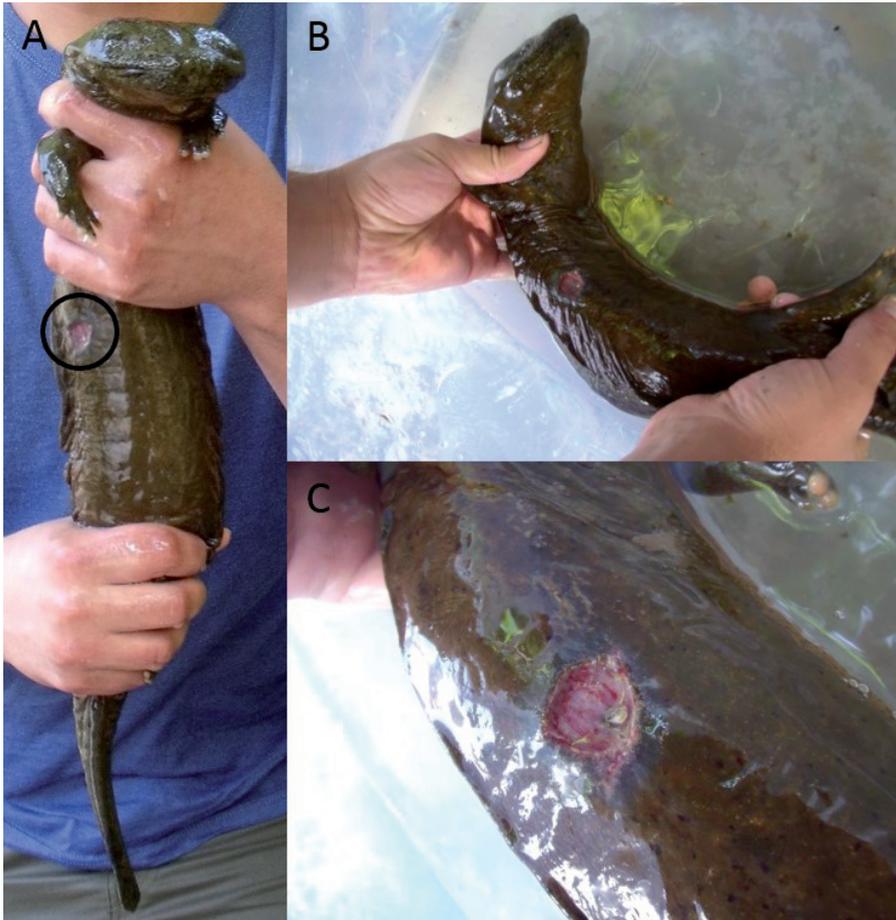


Figure 1. A: Full ventral view of adult hellbender (*Cryptobranchus alleganiensis alleganiensis*) with lamprey bite captured on 08 August 2012 in the Allegheny River in New York. B: Side view of adult hellbender with lamprey wound. C: Close-up of lamprey wound on right side of an adult hellbender. Photographs: Meghan Jensen.

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