

**CRYPTOBRANCHUS ALLEGANIENSIS ALLEGANIENSIS (Eastern Hellbender). LARVAL PREDATION.** Salmonids have been identified as dominant predators of larval amphibians, particularly salamander larvae (Barr and Babbitt 2007. *Freshw. Biol.* 52:1239–1248). The presence of trout in lakes has been linked to lower survival in *Gyrinophilus porphyriticus* (Spring Salamander; Resetaaris 1995. *Oikos* 73:188–198) and reduced larval salamander densities for *Ambystoma macrodactylum* (Long-toed Salamander; Tyler et al. 1998. *Conserv. Biol.* 12:94–105). In some extreme cases, the presence of *Oncorhynchus mykiss* (Rainbow Trout) led to nearly zero survival of larval *A. macrodactylum* (Pearson 2009. *Can. J. Zool.* 87:948–955). Larval salamanders such as *Salamandra salamandra* (Fire Salamander) may increase their use of refuge habitat in the presence of *Salmo trutta* (Brown Trout; Bylak 2018. *Can. J. Zool.* 96:213–219). Indeed, larval *Cryptobranchus alleganiensis bishopi* (Ozark Hellbender) can actively retreat into interstitial spaces when disturbed (Pitt et al. 2016. *Herpetol. Bull.* 138:36–37). However, they may show altered, weak anti-predatory behavioral responses to introduced non-native or naturalized predators such as *O. mykiss* (Gall 2009. *Ethology* 116:47–58).

On 8 April 2020, angler Austin Hall discovered a partially digested, gilled larval *C. a. alleganiensis*, inside the stomach contents of an *O. mykiss* (ca. 30 cm total length) he had caught on private property in Hatchery Supported Trout Waters of the South Toe River, Yancey County, North Carolina, USA (794 m elev.; specific GPS point is withheld but is on file with the North Carolina Wildlife Resources Commission, NCWRC). The NCWRC, as well as private groups, routinely stock trout in this system at numerous bridge and roadside access points throughout the year, and self-sustaining populations of both *O. mykiss* and *S. trutta* occupy the river.

The NCWRC's most recent stocking event in the South Toe River prior to the date of capture was on 26 March 2020, when an estimated 520 *O. mykiss* were released along with 10 *S. trutta* and 1,970 *Salvelinus fontinalis* (Brook Trout). The closest known upstream and downstream stocking points to this capture are ca. 4.3 and 1.6 km linear stream distance away, respectively. A recent study in western North Carolina found that 71% of radio tagged,

stocked trout remained within 1.6 km of stocking locations, whereas 6% migrated 9.7 km or more (Flowers et al. 2019. *Trans. Am. Fish. Soc.* 148:3–20).

Upon discovery of the recently digested larval salamander, it was carefully examined, photographed, and later identified as a larval *C. a. alleganiensis* by the overall size, dark color pattern, and overall body morphology (Fig. 1). This record is the first reported evidence for predation of *O. mykiss* on larval *C. a. alleganiensis*. We expect predation on hellbender larvae has the potential to be most prevalent in spring (similar to this observation) when they are emerging from adult shelters and trout are often stocked in high numbers. In North Carolina, opening day of Hatchery Supported Trout Waters is always the first Saturday in April, and in 2020, opening day fell on 4 April, just prior to this capture. Typically, stocked trout are harvested quickly with short periods of residency; however, early spring provides a unique situation as fish released in March (when Hatchery Supported Trout Waters are closed) may have longer residency times until they are harvested compared to stocking events other times of the year.

A recent study in western North Carolina comparing stomach contents of stocked versus wild trout (harvested September through May) revealed that wild trout ate more often and were more selective of prey items such as fish, insects, and gastropods, while stocked trout ate less often, if at all, and were less selective; no amphibians were reported among stomach contents (Fischer et al. 2019. *Trans. Am. Fish. Soc.* 148:771–784). We recommend further examination of this potential, and significantly understudied, source of predation as well as potential behavioral responses (predator avoidance) of larval and juvenile *C. a. alleganiensis* in the presence of salmonids.

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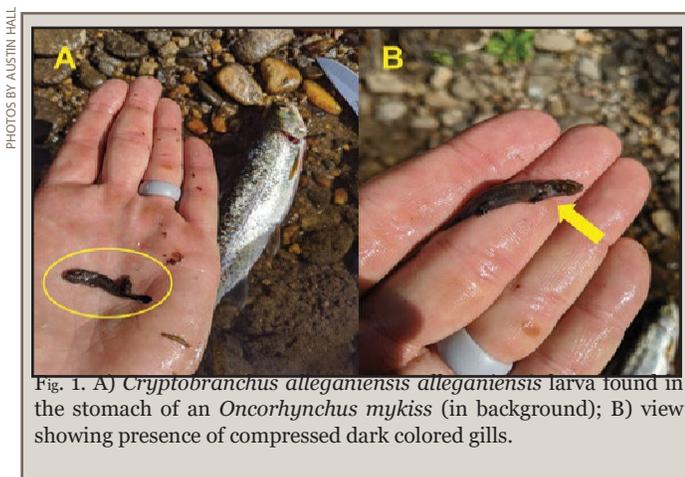


Fig. 1. A) *Cryptobranchus alleganiensis alleganiensis* larva found in the stomach of an *Oncorhynchus mykiss* (in background); B) view showing presence of compressed dark colored gills.