

## THREE-TOED AMPHIUMA (*AMPHIUMA TRIDACTYLUM*) IN SOUTHWESTERN INDIANA

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**ABSTRACT.** No specimen of the genus *Amphiuma* has been recorded in Indiana since 1880, although habitat potentially suitable to species of this genus is present along riparian corridors in southern sections of the state. We recovered a dead three-toed amphiuma (*Amphiuma tridactylum* Cuvier) in a slough adjacent to Pigeon Creek, Warrick County, Indiana, on 18 May 2000. Based on snout-to-vent length (21 cm), the specimen was likely immature. A portion of the tail appeared to have been bitten off and total body length could not be measured. A single gill slit was present on each side of the body. The number of toes varied from three to two, with the rear limbs damaged and toes likely removed. This observation represents a possible range extension for *A. tridactylum* ca. 200 km to the northeast of the known distribution. Due to the reclusive nature of this species, we suggest that it may easily go undetected and that more intensive survey efforts might identify other locations where this species is present in the state.

**Keywords:** *Amphiuma tridactylum*, three-toed amphiuma, distribution, Indiana, Pigeon Creek, range extension

The three-toed amphiuma (*Amphiuma tridactylum* Cuvier) is a relatively large salamander with four small limbs each possessing three toes (Petranka 1998) that is closely related to the two-toed amphiuma (*A. means* Garden) based on electrophoretic analyses of proteins (Karlin & Means 1994). The species inhabits sloughs, swamps, drainage ditches, slow moving streams and shallow ponds (Baker 1945; Cagle 1948; Chaney 1951). Historical records indicate that an amphiuma was recorded in Indiana sometime between 1879 and 1880, but was described as *A. means* (Hay 1892). Minton (1972) suggested that the observation was likely of an *A. tridactylum*, but questioned the location of the observation based on existing habitats in the general vicinity where the specimen was recorded. Regardless, *A. tridactylum* is no longer believed to occur in Indiana (Minton 1972), and the species is not listed as part of the rare fauna of Indiana (Anonymous 1970). Published distributional ranges of *A. tridactylum* show the species to occur throughout the lower Mississippi River valley, with the distribution reach-

ing as far north as southeastern Missouri and southwestern Kentucky (Conant & Collins 1998; Petranka 1998). In this paper we report an observation of a three-toed amphiuma in southwestern Indiana.

### RESULTS

While conducting biological surveys on 18 May 2000 along Pigeon Creek, Warrick County, Indiana, one of the authors (MJL) recovered a dead *A. tridactylum* lying on a downed tree in a slough dominated by buttonbush (*Cephalanthus occidentalis* L.) and a variety of aquatic emergents, including lizard's tail (*Saururus cernuus* L.) and swamp dock (*Rumex verticillatus* L.). The specimen was situated on a downed tree that was ca. 25 cm in diameter, with a third of the stem lengthwise exposed to full sunlight above water. The specimen was 21 cm in snout-to-vent length and partially decomposed, with the tail from the vent posteriorly bitten off or otherwise removed. The specimen was black on the dorsal surface and gray beneath, with numerous cuts or bite marks across the costal grooves. The

number of toes ranged from three to two, but the rear limbs were damaged and toes likely removed. A single gill slit was present on each side of the body.

Our observations suggest that this salamander was attacked and killed by a predator. Known predators of *A. tridactylum* include the cottonmouth, *Agkistrodon piscivorus* Lacépède (Liner 1954), and the mud snake, *Farancia abacura* Holbrook (Ernst & Barbour 1989); however, neither of these two predators have been observed in this locality despite nine years of survey (J. Hummer unpubl. data). The salamander was recorded within 50 m of a great blue heron (*Ardea herodias* L.) rookery, and snapping turtles (*Chelydra serpentina* L.) are common in the sloughs along Pigeon Creek (J. Hummer unpubl. data). Regardless, the specific predator of this salamander remains unclear. Petranksa (1998) indicated that the tail represents 20–25% of the total length of the body in *A. tridactylum*. Given these estimates, the length of the recorded specimen when alive was likely somewhere between 25.2–26.2 cm, below the 46 cm minimum for breeding adults of this species (Petranksa 1998).

This observation represents a possible range extension for *A. tridactylum* ca. 200 km to the northeast of the known distribution of this species (Conant & Collins 1998; Petranksa 1998). This specimen was located roughly 140 km due west of the original find by George Spangler of an amphiuma in Indiana at Jeffersonville (Minton 1972). A reported observation of a *A. tridactylum* in Tennessee, outside of the known distribution of the species, has also been called into question (Redmond & Scott 1996). Perhaps additional survey efforts for this species in suitable habitats will produce other records outside the known distribution. Because of a paucity of recent studies of *A. tridactylum* and the reclusive nature of this species (Petranksa 1998), we suggest that it is likely that isolated populations do occur elsewhere. Further, our observation indicates that the specimen in Warrick County, Indiana, was an immature is suggestive of a breeding population in the area. Given that this species was found in a slough, habitats known to harbor populations of the protected copperbelly water snake (*Nerodia erythrogaster neglecta* Conant) in southern Indiana (Lacki et al. 1994), conservation efforts in

place to conserve the copperbelly water snake may fortuitously also benefit sympatric populations of *A. tridactylum*.

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