



## ENDANGERED SPECIES GRANT PROJECT REPORT—INDIANA Surveys for the Eastern Massasauga in Indiana



*An adult massasauga in its natural wetland habitat. (photo by Sasha Tetzlaff)*

### CURRENT STATUS

First year of a three-year project

### FUNDING SOURCES AND PARTNERS

Endangered Species Grant Program (E17R1)  
Indiana University-Purdue University Fort Wayne

### PROJECT PERSONNEL

Principal Investigator: Dr. Bruce Kingsbury, Department of Biology, Indiana University-Purdue University Fort Wayne  
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### BACKGROUND AND OBJECTIVES

The eastern massasauga (*Sistrurus catenatus*) is a small rattlesnake considered in decline through much of its range and is listed as endangered in Indiana. In Indiana, massasaugas were historically distributed across much of the northern half of the state but now are only known to be found in a limited number of

locations. Declines have been attributed to habitat loss, intentional killing, and land management for other purposes.

Surveys to assess the status of the massasauga have not been conducted in nearly two decades. This void has created the need to understand where massasauga populations remain, the status of those populations, and their habitat. It is also important to know where they no longer occur, either so those areas may be more aggressively managed for other needs, or so they can be targeted as a site for potential reintroduction.

Our primary objective of this project is to conduct baseline surveys to assess the current distribution of the massasauga in Indiana. In particular, we are interested in identifying which sites historically holding massasaugas no longer have them. After that, we will give priority to exploring lower-quality sites that had not had observations of the species for a long time. Over a three-year period, we plan to extensively examine at least 15 sites to find out if massasaugas are still present.

## METHODS

We are surveying high and medium-priority management units first. Sites with recent, valid observations of massasaugas were given a low priority because we knew the species was likely still present. High-priority sites had observations between five and 15 years ago and remnant suitable habitat. Medium-priority sites had observations between 15 and 30 years ago and also retained suitable habitat.

To understand the extent of populations and discriminate between them, sites were first mapped in GIS, based on estimated population boundaries. We then prioritized these habitat blocks according to the availability of suitable habitat and the date of the last massasauga observation.

Surveys occurred mainly in areas that we believed to be open-canopy wetlands based on the available aerial imagery and other data. Such habitat was surveyed because the species prefers it. Other habitats were surveyed less intensively, unless preferred habitat was locally uncommon. During surveys, all reptile and amphibian species that were observed were recorded along with environmental conditions such as temperature and cloud cover.

## PROGRESS TO DATE

The first of three survey seasons was completed. Survey teams searched for massasaugas at 13 management units

scattered throughout northern Indiana. Despite the extent of these surveys, evidence of massasaugas was observed at only two locations. One specimen was found dead on a mowed trail, and another was found on private property. Low observation rates were anticipated given the lower quality of the high-priority sites. In addition, three specimens were found outside of survey activities and reported to the researchers. Two of these specimens were dead.

Despite these mixed results, two units not previously known to support massasaugas had verifiable sightings. Both units were in Steuben County, which is known to support many of Indiana's historical and current massasauga populations. One of these units had two massasauga observations. Unfortunately, both snakes were found dead on a road.

We also made progress in the use of GIS to characterize habitat. Use of aerial imagery and visual data to detect suitable habitat was not as obvious for open, transitional habitats as for forested areas. Consequently, we will adjust future surveys to include areas that were found to be suitable during habitat evaluation or during visual encounter surveys. To minimize any bias caused by extensive seasonal flooding and temperature extremes, surveys will continue next year at the 13 management units surveyed in 2015.

**COST: \$77,507 FOR THE COMPLETE THREE-YEAR PROJECT**



*An area of suitable habitat where one massasauga was found. (photo by Taylor Lehman)*