



STATE WILDLIFE GRANT PROJECT REPORT—INDIANA

Genetic Assessment of Crawfish Frog Populations in Indiana



Though estimates vary, state-endangered crawfish frogs were once found in 23 counties in Indiana. Due to habitat loss and disease, this number has now been reduced to about seven. (Photo by Steve Kimble)

CURRENT STATUS

First year of a two-year project

FUNDING SOURCES AND PARTNERS

State Wildlife Grant Program (T7R19)
Purdue University
Indiana University
Eastern Kentucky University

PROJECT PERSONNEL

Dr. Rod N. Williams, Principal Investigator, Purdue University
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Dr. Michael Lannoo, Indiana University School of Medicine
Dr. Stephen Richter, Eastern Kentucky University
Dr. Joe Robb, U.S. Fish & Wildlife Service, Big Oaks and
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BACKGROUND AND OBJECTIVES

Disease and habitat modification are major threats faced by amphibians, including many in Indiana. Crawfish frogs (*Lithobates areolatus*), so named because they inhabit crawfish burrows, have experienced dramatic declines in Indiana since the 1970s. They used to inhabit 23 counties in Indiana, most of them in the southwestern corner of the state. They are now found in six counties (not including an isolated population in southeastern Indiana). Most of these populations are small, and just two locations account for more than half of the state's crawfish frogs. As a result, they are vulnerable to disasters such as disease outbreaks.

Little previous work has been done to study the genetics of this species, but doing so is a necessary first step in developing plans for trying to establish new populations of crawfish frogs in Indiana. Genetic diversity is what enables a species to respond to new



Crawfish frogs are so named because they inhabit crawfish burrows. (Photo by Andrew Hoffman)



Crawfish frogs usually breed in temporary ponds in early spring, laying large masses of eggs from which hundreds of tadpoles can hatch in a matter of weeks. (Photo by USFWS)

threats such as new diseases. Therefore, the objectives of this study are to:

1. Measure the genetic diversity of the current populations, especially with respect to the genetic basis for disease resistance, and
2. make recommendations for which source populations should be used in establishing new populations in Indiana.

METHODS

In early spring, we survey (by listening for calls) sites known to have had sustained crawfish frog populations within the last decade. At sites where males are heard calling, we search for adult crawfish frogs by hand, with nets or with traps. A small tissue sample is collected from each captured adult, which is then immediately released. Later in the spring, eggs and tadpoles are also sampled, if needed. We extract and sequence DNA from tissue samples and use these

data to infer genetic diversity within each population cluster.

PROGRESS TO DATE

We collected tissue samples from about 70 individuals from five population clusters. We extracted DNA from these samples and are processing it for sequencing in the lab. We will have preliminary data in spring 2017. We will collect more samples in spring 2017 in order to complete our analyses. By the end of 2017, we will submit recommendations for the best source populations from which new populations could be established.

COST: \$74,584 FOR THE COMPLETE TWO-YEAR PROJECT