



STATE WILDLIFE GRANT PROJECT REPORT—INDIANA

Developing an Outreach Campaign to Protect Six Federally Listed Mussels in the Tippecanoe River



In-person surveys were conducted along the Tippecanoe River to measure the public's perception of endangered mussels. Those who took the survey were shown this picture of four mussels. Participants were asked about their recreational activities along the river and their knowledge about mussels. (Photo by Brant Fisher)

Current Status

First year of three-year project

Funding Sources and Partners

State Wildlife Grant Program (T7R16)
Purdue University

Project Personnel

Dr. Linda S. Prokopy, Purdue University
Dr. Rod Williams, Purdue University
Dr. Reuben Goforth, Purdue University
Belyna Bentlage (Graduate Research Assistant)

Project Assistants

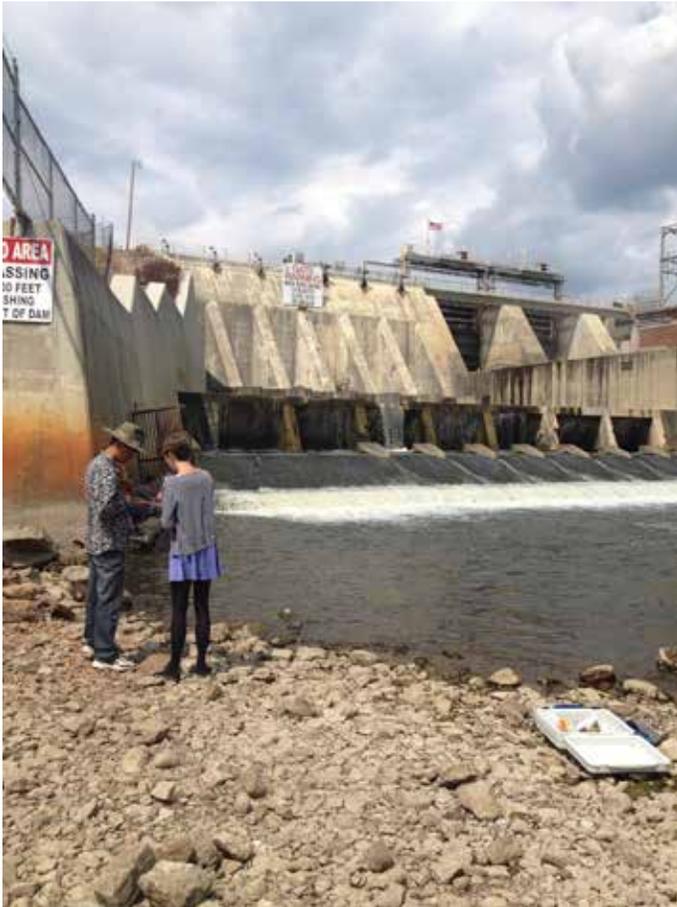
Dr. Mike Dunn (Postdoctoral Research Associate), Dr. Jessica

Ulrich-Schad (Postdoctoral Research Associate), Sophia Vela (undergraduate student), Dawn Braddock (undergraduate student), Kylie Schofield (undergraduate student), Fiona Hallett (undergraduate student), Becca Busse (undergraduate student)

Background

Water quality in North America has been declining due to human activities for the past 200 years. As a result, the continent has lost nearly 70% of its freshwater mussels. A primary cause was that native North American mussels were historically harvested by the thousands in the 19th and 20th centuries for commercial button and jewelry making, especially from Midwestern rivers.

Today, freshwater mussels are the Midwest's most imperiled animals. More than half of such species



Fiona Hallett conducts an in-person survey in summer 2014. (Photo by Belyna Bentlage)

are federally listed as endangered, threatened, or as state species of special concern. The eight states of the Midwest (Iowa, Michigan, Minnesota, Wisconsin, Illinois, Ohio, Indiana, and Missouri) range from having three to 11 federally listed species of freshwater mussels. Indiana is home to 10 federally listed freshwater mussels.

Six of Indiana's 10 species live in one river in north-central Indiana. Once found in virtually all rivers in Indiana, the clubshell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), rayed bean (*Villosa fabalis*), rabbitsfoot (*Quadrula cylindrica cylindrica*), sheepsnose (*Plethobasus cyphus*), and snuffbox (*Epioblasma triquetra*) mussels now mainly reside in the Tippecanoe River. It has been illegal to remove any native mussel from Indiana waters since 1991. Despite federal listing and legal protection, native mussel populations continue to decline.

Mussels are filter feeders. They can reside for many years in a river's substrate. These features make mussels water-quality indicator species. Their health helps indicate the health of the river in which they live. Because of the benefits mussels provide to rivers and their endangered status, the Indiana Department of Natural Resources (DNR) and Purdue University are designing an outreach and education program to increase awareness of mussels and foster positive public engagement with mussels.

Objectives

Before designing and carrying out the program, we needed to measure public attitudes and levels of awareness of mussels. Two surveys were launched in summer 2014 to empirically measure public perceptions of the six endangered mussels in the Tippecanoe River. The first was an in-person survey administered to recreational users and visitors of the river. The second survey was mailed to riverside landowners. Both surveys included questions asking if recipients had heard of the six endangered species of mussels before the survey, whether it is legal to remove native mussels from Indiana waters, and what they would do with mussels they found. We will use the survey results and tools from other endangered species programs to develop an informational campaign and enhance mussel conservation efforts along the Tippecanoe.

Methods

In total, 396 in-person survey responses were collected from June to August this past summer. Five public-access sites, two canoe-rental locations, and two parks were randomly sampled to assess recreational users' awareness of and interactions with mussels. The sites ranged from Rochester to Winamac to Monticello. Surveys took about five minutes. They included questions about recreational activities, personal interactions with, and knowledge about the six endangered mussels.

During the same timeframe, 1,048 riverside landowners were sent the mail survey. The response rate was 50.1 percent. In addition to posing questions used in the in-person survey, the mail survey asked about personal attitudes toward the mussels, local water quality, and wildlife in general.

Progress

Preliminary findings suggest that recreational users and riverside landowners differ in their awareness of and behaviors toward the endangered mussels. A large majority of recreational users, 78% of the sample, had not heard of the endangered mussels before taking the survey. In comparison, a slight majority (51%) of riverside landowners were familiar with the mussels before they took the survey. The two populations also differed in their interactions with the mussels. Recreational users were more likely than landowners to report that they know people who take mussels home with them after recreating in or along the river or do the same thing themselves. These differences highlight the need for targeted messaging for different user groups.

In early August, Tippecanoe River levels were so low that survival of the endangered mussels was threatened. Consequently, the river's southernmost lake, Lake Freeman, was lowered in order to raise river levels to its south. The lowering of Lake Freeman upset many residents in Monticello because doing so adversely affected their recreational activities and local businesses. To capture the public's reaction to the event, we conducted a second mail survey that included original questions from



The Tippecanoe River is home to six federally endangered mussel species. (Photo by Belyna Bentlage)

the first, along with questions specific to the lowering of Lake Freeman to protect the endangered mussels. We will use information from this survey to help structure outreach efforts in Monticello and potentially in other areas where local economics may be at odds with conservation efforts.

Data from all three surveys will be used to strategically develop and launch an extensive outreach and education campaign. Strategies from the Hellbender Public Attitude Project will also be used to enrich the program. Messages will be created for specific user groups such as anglers, canoers and kayakers, children, and homeowners. We will use our website and social media sites as well as outreach materials for the classroom. After the campaign, we will conduct a second wave of surveys to evaluate effectiveness. Preliminary results from this study have been presented at a national conference. Future publications are coming.

Cost: \$264,611 for the complete three-year project.