



STATE WILDLIFE GRANT PROJECT REPORT—INDIANA

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



One of the sites where in-person surveys were conducted in summer 2016. (Photo by Belyna Bentlage)

CURRENT STATUS

Third year of a three-year project

FUNDING SOURCES AND PARTNERS

State Wildlife Grant Program (T7R16)
Purdue University

PROJECT PERSONNEL

Dr. Linda S. Prokopy, Purdue University
Dr. Reuben Goforth, Purdue University
Belyna Bentlage, Purdue University
Laura Esman, Purdue University

PROJECT ASSISTANTS

Year 1

Purdue University Postdoctoral Research Associates: Dr. Mike Dunn, Dr. Jessica Ulrich-Schad

Purdue University Undergraduate Students: Sophia Vela, Dawn Braddock, Kylie Schofield, Fiona Hallett, and Becca Busse

Year 2

Purdue University Undergraduate Students: Sophia Vela, Dawn Braddock, Kylie Schofield, Katelyn Fagan, Becca Busse, Renee Wickliffe

Year 3

Purdue University Undergraduate Students: Morgan Sussman, Liz Brewer, Luke Voorheis, Deborah Williamson, Nick Walters, Hunter Johnstone, Kira Frendreis, and Cheyenne Hoffa

BACKGROUND AND OBJECTIVES

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 fresh-

water mussels. A primary cause was that native North American mussels were harvested by the thousands for commercial button and jewelry making in the 19th and 20th centuries, especially from Midwestern rivers.

Today, freshwater mussels are the Midwest's most imperiled animals. More than half of such species 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. Removing any native mussel from Indiana waters has been illegal 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 allow mussels to help indicate the health of the river in which they live. Because of the benefits mussels provide to rivers and because of these animals' 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 encourage positive public engagement with mussels.

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



Purdue undergraduate students practice the proper procedure for conducting in-person surveys at Tippecanoe River State Park. (Photo by Belyna Bentlage)

of the six endangered mussels in the Tippecanoe. The first was an in-person survey of recreational users and visitors of the river. The second survey was mailed to riverside landowners. Both surveys asked if recipients had heard of the six endangered species of mussels before, whether it is legal to remove native mussels from Indiana waters, and what they would do with mussels they found. We used the survey results and tools from other endangered species programs to develop an informational campaign and enhance mussel conservation efforts along the Tippecanoe.

Outreach efforts and campaign materials were distributed during the summers of 2015 and 2016 as part of a related project, the Heart of the Tippy campaign (Developing a Conservation Stewardship Campaign to Protect Mussel Habitat in the Tippecanoe River—E16R1). To assess the impact and effectiveness of the Heart of the Tippy outreach and education campaign, we launched a second round of in-person and mailed surveys in the summer and fall of 2016. These surveys contained identical questions from the 2014 surveys and also included questions specific to outreach materials and events.

METHODS

Surveys were conducted in Years 1 and 3. Methods for both years are described below.

Year 1

In total, 396 in-person survey responses were collected from June to August 2014. 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 on the river, 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.

Year 3

In-person survey responses of recreational users were collected from July to August 2016. The sites ranged from Winamac to Monticello. One site was removed from our sampling schedule due to low numbers of responses and was replaced with another site that received more visitors and was involved with the Heart of the Tippy campaign. Surveys took about



A Purdue undergraduate student conducts an in-person survey during summer 2016. (Photo by Belyna Bentlage)

five minutes. The surveys included questions about recreational activities, personal interactions with and knowledge about the six endangered mussels, and awareness of the Heart of the Tippy campaign. Riverside landowners received a mail survey that included questions used in the survey of recreational users, plus other questions about personal attitudes toward the mussels, local water quality and wildlife in general. Surveys were mailed to the same riverside landowners who received a survey in 2014. Mailing occurred between August to October 2016.

PROGRESS TO DATE

Survey results from Year 1 indicated that outreach efforts should focus on raising awareness about the existence of the mussels and about their federally endangered status. Overall, our surveys showed that visitors to and landowners along the river were largely unaware that the mussels lived in the Tippecanoe River and that it is illegal to remove live mussels and empty mussel shells from the waters of Indiana. We coupled our survey findings with the principles of community-based social marketing to develop our outreach and education campaign. The tools we used from community-based social marketing included getting people to commit to enhancing water quality and protecting the

mussels, prompting them about the appropriate behaviors, normalizing these behaviors, rewarding those who engaged in the specified behaviors, and removing barriers to information and action. Four undergraduate students, as part of a spring semester class, synthesized these tools with our survey information to draft outreach and education materials including:

- Campaign name—Heart of the Tippy
- Logo and slogan
- Website—*HeartoftheTippy.org*
- Mascot/Mussel costume design
- Superhero Mussel Scavenger Hunt
- Bumper stickers & fish-measuring decals
- Campaign Messages—Forget the fertilizer, plant native plants, Babies go back,
- Carry Your Canoe/Kayak—signs, pledge, stickers for boats
- Informational posters for anglers
- Giveaway items; floating keychains, string bags, bobbers
- General information brochure
- Lesson Plan
- Lake resident information specific to lowering the lake level

Draft designs and outreach materials were presented to partners at a public meeting in February 2015 to

obtain feedback. Participants of this meeting divided into small groups focusing on different audiences including anglers, youth, visitors/recreationists, and river residents. Feedback was collected on the presented designs and materials, and on any new ideas that were shared. Comments were used to further develop materials under the related project (Developing a Conservation Stewardship Campaign to Protect Mussel Habitat in the Tippecanoe River—E16R1).

Data are still being collected from the surveys mailed to riverside landowners. Responses from these surveys, along with data from the in-person surveys, will be analyzed and presented in the project's final report to be published January 2017.

COST: \$264,611 FOR THE COMPLETE THREE-YEAR PROJECT