

State Wildlife Grants Program

Pennsylvania Fish & Boat Commission 2011 Annual Summary



Eastern Spadefoot, Franklin County, PA.
Photo: Brandon M. Ruhe, ESU



Blanding's Turtle. Photo: Ryan Miller, WFC



Photographing Eastern
Spadefoot Toads in the field.
Photo: Brandon M. Ruhe, ESU

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February 2011

Overview of Aquatics and the Pennsylvania Wildlife Action Plan (PA WAP)

The State Wildlife Grants Program (SWG) represents an investment in the natural resources of Pennsylvania, and practical, tangible benefits of the program are new data and an increased understanding of the Commonwealth's species of greatest conservation need (SGCN), enhanced protection & management, and knowledge of their habitats. These data are laying the foundation for current and future conservation actions and will be especially important for addressing potentially deleterious factors such as climate

change and urban sprawl.

The Fish and Boat Commission has taken a 3-fold approach to addressing the aquatic resource needs.

First, a landscape-scale approach on major ecological systems such as the Allegheny and Susquehanna Rivers, to establish comprehensive baseline data that has previously been lacking.

Second, we have targeted data collection and management initiatives for indicator or keystone species, guilds or communities, such as the Eastern spadefoot toad, Eastern mud turtle and other species. As the articles in this document show, with SWG funds we are obtaining a better understanding of the status of many of these animals so we can be more *proactive* in their protection.

Third, we are collecting information that will greatly assist resource managers with developing conservation plans for critical species.

These resource management plans along with on-the-ground activities are restoring habitats.

Goals of the (PA WAP)

Goal 1: Improve the scientific basis for making conservation decisions for wildlife, with special emphasis on species of greatest conservation concern.

Goal 2: Plan, prioritize, and implement actions that will conserve the state's diversity of wildlife and its habitat

Goal 3: Develop a knowledgeable citizenry that supports and participates in wildlife conservation.

Goal 4: Ensure that the necessary resources are available to conserve Pennsylvania's wildlife.

Goal 5: Expand and improve coordination of the public agencies and other partners in wildlife conservation planning and implementation.



Wetland Habitat: Photo: Ryan Miller, WPC

Pennsylvania's Aquatic Habitats:

The Commonwealth lies within parts of six major river basins: Ohio, Lake Erie, Susquehanna, Potomac, Genesee, and Delaware River drainages, and contains numerous wetlands, nearly 4,000 lakes and more than 83,000 miles of waterways, ranging from high-gradient coldwater streams to large, warm-water rivers. These waters support a high diversity of fish, freshwater mussels, amphibians, reptiles, and other aquatic life, dependent upon Pennsylvania's management and protection efforts.

In Search of the Elusive Eastern Spadefoot Toad

Brandon M. Ruhe and Thomas C. LaDuke,
East Stroudsburg University (ESU)

Summary: *This project has provided information on the range of the Eastern spadefoot in Pennsylvania, collected critical habitat and life history data, to assist the PFBC in effectively managing and protecting this species.*

The Eastern spadefoot toad is a cryptic and, until recently, seldom-studied member of Pennsylvania's diverse herpetofauna. This rarely seen frog tends to inhabit rural and suburban landscapes in broad Pennsylvania valleys. Sites are often associated with areas that have been farmed for centuries suggesting that agriculture is important for our collective rural heritage and aspects of our natural heritage alike.

At the beginning of the project, the state-endangered Eastern spadefoot toad was known from only two sites in Pennsylvania. Over the past three years this project has delineated the range of the Eastern spadefoot in Pennsylvania, collected critical habitat and life history data, and ultimately aided the Pennsylvania Fish & Boat Commission (PFBC) in effectively managing and protecting this species. This study has documented new sites in counties that were previously not known to harbor this

enigmatic frog.

While the results of the study are encouraging for the long-term survival of the Eastern spadefoot in Pennsylvania, many sites are located in regions experiencing large-scale population expansion and rapid consumption of natural and agricultural habitats.

In addition to information on the Eastern spadefoot, the project has also collected data on additional species of greatest conservation need in Pennsylvania.

Volunteers: This effort has effectively mobilized a support team of field-based, citizen scientists throughout the Commonwealth. Nearly two dozen volunteers donate 3,000-4,000 hours annually to this project. Project volunteers conduct field studies, collect important observational data, and have helped to inform numerous landowners and other interested parties about the Eastern spadefoot and the



Eastern Spadefoot toad in garden of project volunteer. Photo: Brandon M. Ruhe, ESU

importance of amphibians. Eastern Spadefoot volunteers are a dedicated group with diverse backgrounds, professions, and interests, ranging from professional biologists to amateur naturalists enthusiastic about amphibians and reptiles.

With the results of this study, coordinated planning by the PFBC with all Pennsylvania stakeholders may prove to brighten the future for this imperiled species.

PA-WAP Goals: This project addresses two key goals of the Pennsylvania Wildlife Action Plan: (1) improve the scientific basis for making conservation decisions for wildlife and (2) plan, prioritize, and implement actions that will conserve the state's diversity of wildlife and its habitat.

Project: T-52: Metapopulation Analysis and Range Determination of the Eastern Spadefoot Toad (*Scaphiopus holbrookii*).

Rediscovering the Eastern Mud Turtle In Pennsylvania

Brandon M. Ruhe and Thomas C. LaDuke,
East Stroudsburg University

Summary: *The Eastern mud turtle was rediscovered in Pennsylvania and efforts are underway to protect its habitats.*

The Eastern mud turtle has been long considered an extirpated (extinct on a regional level) species in Pennsylvania. The species was formerly found in swamps, Coastal Plain ponds, streams, and marshes throughout the Coastal Plain of Pennsylvania. Unfortunately for the Eastern mud turtle, most of its historical



Pennsylvania for the first time since 1963. While no longer considered extirpated as a result of this project, the Eastern mud turtle is one of Pennsylvania's rarest species of turtle. The results of this study have shown that occupied Eastern mud turtle sites are very diverse habitats that harbor numerous plants and animals considered rare in Pennsylvania. Efforts are underway to work with landowners and the PFBC to provide the highest degree of

Top: Eastern mud turtle in Pennsylvania.

Left: Turtles in a trap.

Photos: Brandon M. Ruhe, ESU

range is now the giant urban center of Philadelphia and the lower Delaware Valley. Major field investigations were undertaken to survey for this species throughout its historical and potential range in Pennsylvania. The project recorded the presence of Eastern mud turtle populations in

protection possible, ensuring that the Eastern mud turtle is not again relegated to the list of extirpated Pennsylvania species.

PA-WAP Goals: This project addresses two key goals of the Pennsylvania Wildlife Action Plan: (1) improve the scientific basis for making conservation decisions for wildlife and, (2) plan, prioritize, and implement actions that will conserve the state's diversity of wildlife and its habitat.

Project: T-02-04. Status Assessment and Range Determination of the Eastern Mud Turtle (*Kinosternon subrubrum subrubrum*) in Pennsylvania.

Fishes of the Allegheny River

Dr. David Argent,
California University of Pennsylvania

Summary: This project has collected important fisheries data on the Allegheny River that will help guide river management.

This project provides a comprehensive assessment of the large-bodied pelagic and deep-water bottom-dwelling fishes of the middle Allegheny River, a reach that has never been systematically inventoried. In July 2009 & 2010, we surveyed an area upstream from Lock and Dam #9 to the confluence with French Creek in Franklin, PA. Fishes were collected from 100-m reaches with electrofishing gear every 1.6 km and at the mouth of each named flowing tributary identified on a USGS quadrangle map - a total of 37 collections.

During 2010, we collected 43 species (2,262 individuals) including 14 darter (percidae) species. The most numerous were the rainbow darter (*Etheostoma caeruleum*), the variegate (*E. variatum*), and fantail darters (*E. nigrum*). Rainbow darters were not only the most common species, but also the most widespread, present in 35 of the 37 stations sampled.

We also collected several species of greatest conservation need (See table). Results indicated

that this free flowing reach of the Allegheny River appears to harbor some of this state's most imperiled fishes.



Left: Processing a fish sample.

Below: Tippecanoe darter

Photos: Dr. David Argent.
California University of PA



Common Name	Scientific Name	PA-WAP Status
Ohio lamprey	<i>Ichthyomyzon bdellium</i>	PA Responsibility
Streamline chub	<i>Eriystax dissimilis</i>	PA Responsibility
Spotted darter	<i>Etheostoma maculatum</i>	PA Responsibility
Longhead darter	<i>Percina macrocephala</i>	PA Responsibility
Hornyhead chub	<i>Nocomis biguttatus</i>	PA Vulnerable
Mountain madtom	<i>Noturus eleutherus</i>	High-Level
Bluebreast darter	<i>Ethostoma camurum</i>	High-Level
Tippecanoe darter	<i>Etheostoma Tippecanoe</i>	High-Level
Gilt darter	<i>Percina evides</i>	High-Level
Central mudminnow	<i>Umbra limi</i>	Maintenance

Project: T-02-09-P. Assessment of large-bodied pelagic and deep-water benthic fish assemblages of the middle Allegheny River.

Survey and Status Assessment of the Blanding's Turtle (*Emydoidea blandingii*) in Pennsylvania

Ryan E. Miller, Western Pennsylvania Conservancy – Pennsylvania Natural Heritage Program

Summary: This project focused on updating survey records for the Blanding's turtle, a species not documented in the state for 25 years.

Prior to this project, very little information was available on the Blanding's turtle (*Emydoidea blandingii*), which has been designated as an "Immediate Concern" species in the Pennsylvania Wildlife Action Plan. The species was last officially documented in the state in 1983 and there was dire need for current information on its presence and distribution. This study proposed to collect the necessary data to determine the status of the Blanding's turtle in the state.

With exception of two 100-year old historic records from Crawford County, the most recent Pennsylvania Natural Heritage Program records of this species are concentrated in one area on the Lake Erie coast. Lack of survey effort may have contributed to lack of documentation of the species in the state within the past 25 years. Therefore, for proper protection of the species it was considered vital that these specific surveys be conducted.

To do this, we researched historic Blanding's turtle records, contacted local experts and enthusiasts about undocumented populations, investigated areas of potential habitat with aerial imagery or field reconnaissance, and planned field surveys. Field surveys focused on areas in the Lake Erie, Pymatuning, and Conneaut watersheds in northwestern Pennsylvania where the state's extant and historic occurrences of Blanding's turtles were located. On-site trapping and glassing surveys, conducted in April, May, and

June, 2009-2010, resulted in a total of 131,448 total trap-hours at fourteen locations in Erie and Crawford Counties resulting in the capture of four (4) Blanding's turtles in Erie County at one location. We collected habitat data, turtle weight, sex and assessed their overall health. All of this information will be useful for assessing the status of the remaining population of Blanding's turtles. Further study (i.e. radio telemetry, DNA analysis) of the remaining population is needed to determine if the last population of Blanding's turtles in Pennsylvania is still viable.



Setting a trap net (upper).
Blanding's Turtle (lower).
Photos: Ryan E Miller, WPC)



Project: T-02-02. Survey and Status Assessment of the Blanding's Turtle (*Emys blandingii*) in Pennsylvania.

Mussels of the Susquehanna River

Mary Walsh, Western Pennsylvania Conservancy.

Summary: *Mussels are a vital component of the Susquehanna River aquatic fauna. Through surveys, there is a greater understanding of their distribution and habitats where they exist.*

We studied the mussels of the Lower Susquehanna River basin in Pennsylvania in order to identify mussel habitats, mussel community characteristics, population genetics and rare species distributions. The study area included the Susquehanna River and its

tributaries downstream from the confluence of the main branch of the Susquehanna River with its West Branch. In 2010 we surveyed 23 locations for mussels in the basin using snorkeling surveys which provided

searchers with a close-up view of the stream bottom where mussels reside. Using a protocol with standardized search area and effort makes the surveys repeatable so that mussels can be monitored in the future. Information about the sex and length of mussels is recorded to understand the population characteristics. Genetic analysis is completed on non-lethal clips of mussel tissue, collected from Eastern elliptio

(*Elliptio complanata*) and yellow lampmussel (*Lampsilis cariosa*).

Nine mussel species were observed in the surveys including the following species of greatest conservation need; the brook floater (*Alasmidonta varicosa*), yellow lampmussel, green floater (*Alasmidonta subviridis*), and triangle floater (*Alasmidonta undulata*). The rainbow mussel (*Villosa iris*), also a species of greatest conservation need, occurs in the study area, but is thought to have been transplanted from the Ohio River basin. The Asian clam (*Corbicula fluminea*) has invaded the Susquehanna River watershed and was found to be abundant at survey locations.

Further mussel surveys are planned in 2011 and will also include more intensive surveys to

document population density at select locations. Models of mussel habitats and an assessment of population genetic structure for Eastern elliptio and yellow lampmussel will be

developed. The results of this project will be added to our mussel studies in the other the major sub-basins of the Susquehanna River in Pennsylvania. We anticipate that more informed management of Pennsylvania's mussels will occur as a result of this project, particularly the conservation of mussel habitats.



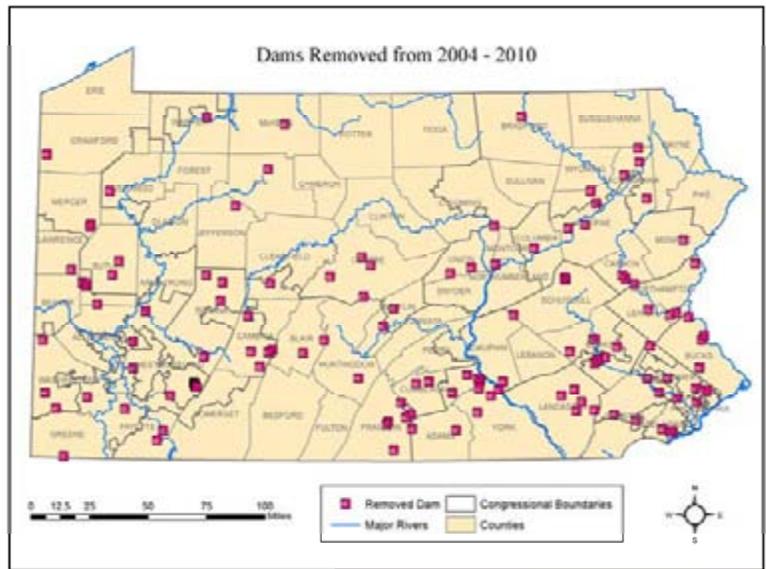
Yellow lampmussel in substrate.
Photo: Mary Walsh, WPC

Project: T-02-05: Mussel Community Assessment in the Lower Susquehanna River Basin: Conservation and Genetics Analysis.

Pennsylvania Success Stories

Stream Habitat Restoration through Dam Removal

The Pennsylvania Fish & Boat Commission is recognized as a national leader in habitat restoration, especially in dam removal. Old and non-essential dams inhibit movement of aquatic animals, degrade habitat and water quality, and can be potential recreational hazards. Through its proactive program, working with the PA Department of Environmental Protection and American Rivers, over 155 dams have been removed since 2004 (see figure) resulting in the restoration of hundreds of miles of stream habitat throughout the Commonwealth.



Removal of Reedsville Dam on Tea Creek (Mifflin County)

Project T-41: Planning, Coordination, and Management of Pennsylvania Fish & Boat Commission's Habitat Initiatives.

SWG: Providing Critical Data for Assessments

State Wildlife Grant funded projects provide critical data for ensuring the accurate assessment of species populations. Consequently, with these projects, the PFBC has removed from the state Endangered, Threatened, or Candidate Species list, ten (10) fish species. These include: smallmouth buffalo, river redhorse, longnose gar, longhead darter, channel darter, skipjack herring, mooneye, goldeye, brook silverside, and silver chub. SWG funded projects have also identified an additional ten (10) species (fish, amphibian and mussels) requiring listing or upgrading in their status. Consequently, greater effort can be directed at increasing protection and management of these species in order to recover the populations and remove them from this state list.

State Wildlife Grants also support Species Action Plans which provide guidance for recovery of species. Currently, plans are being developed for the bog turtle, Eastern massasauga, Eastern pearlshell mussel, Eastern spadefoot, and timber rattlesnake.

These data are vital for accurate environmental reviews. Since 2003, the Natural Diversity Section has conducted approximately 3,000 reviews annually (total of 27,000 reviews) for species of greatest conservation need!

Project T-45: Conservation Planning for Pennsylvania Fish Species of Greatest Conservation Need.



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