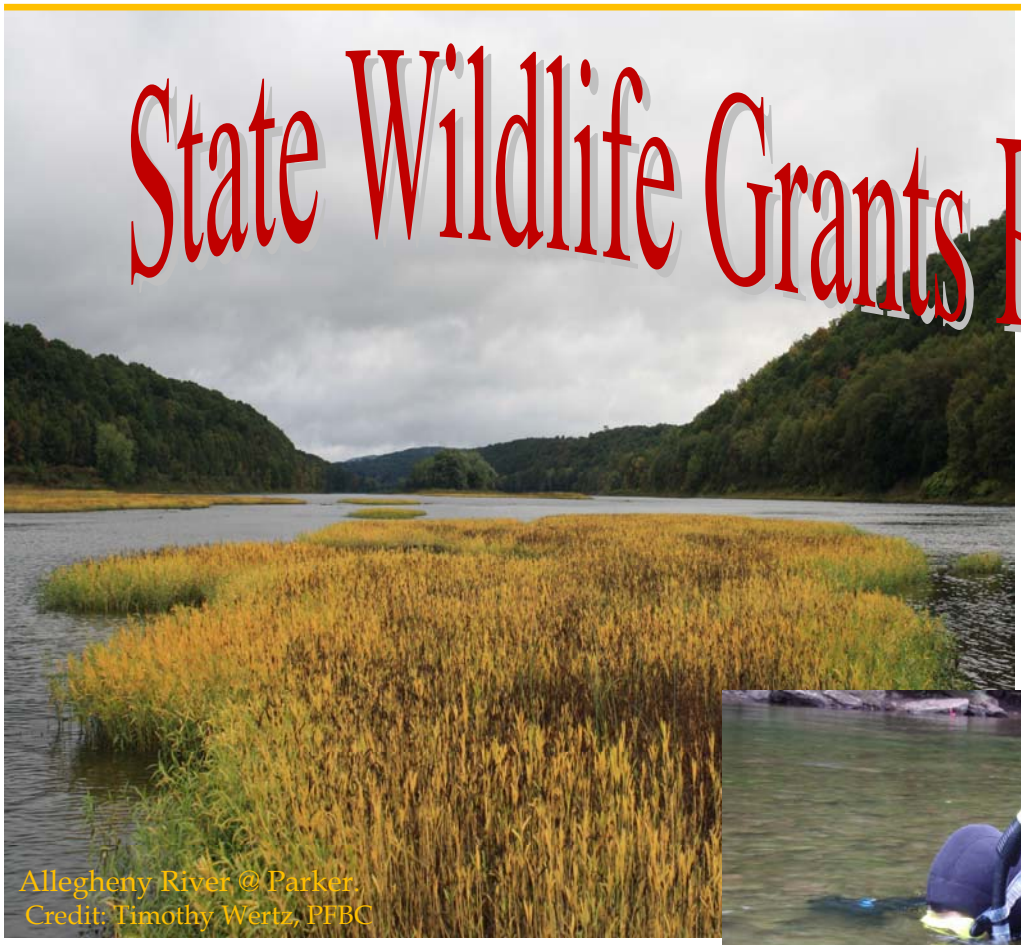
Pennsylvania Fish & Boat Commission
2012 Annual Summary

State Wildlife Grants Program



Allegheny River @ Parker.
Credit: Timothy Wertz, PFBC

Qualitative mussel sampling (above).
Siphoning freshwater mussel (below)
Credit: Western PA Conservancy

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February 2012

Aquatic Species & Habitats and the role of 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 impacts from factors such as climate change, urban sprawl and energy development. The Fish and Boat Commission has taken a 3-fold approach to addressing the aquatic resource needs.

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.

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, a targeted data collection and management initiatives for indicator or keystone species, guilds or communities (e.g., freshwater mussels) and fishes such as the paddlefish & gilt darter. SWG-funded projects are providing information on 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 the identification of Conservation Opportunity Areas, will help guide on-the-ground habitat restoration activities.

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.

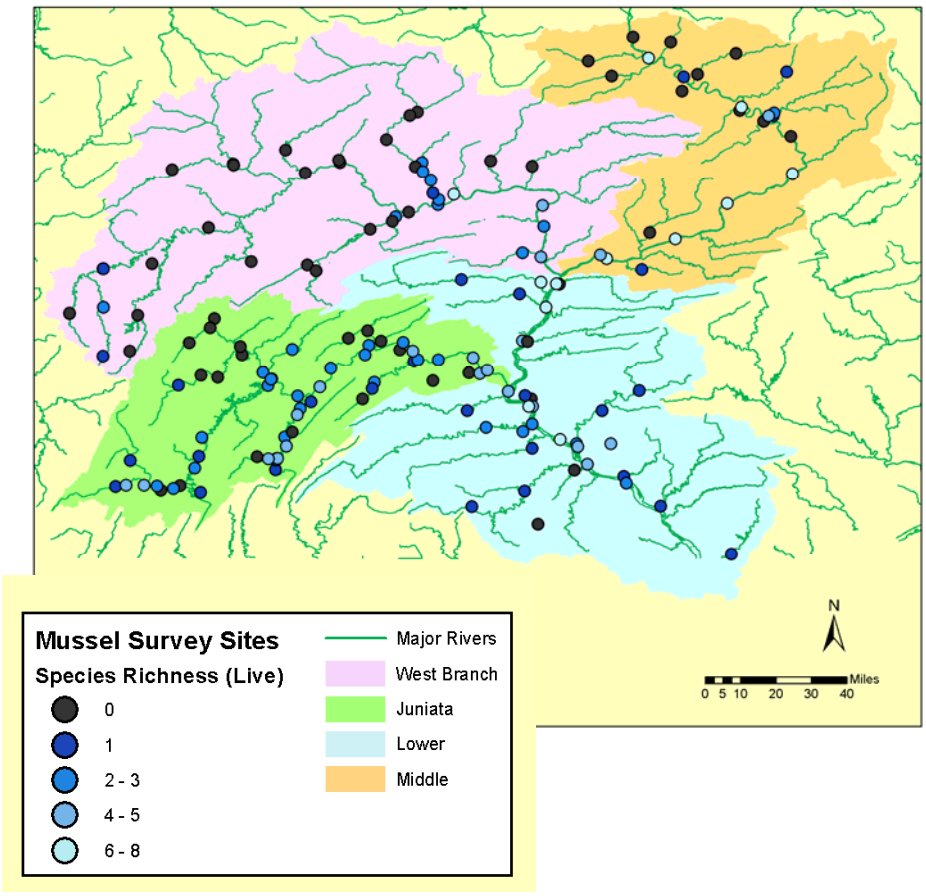
Freshwater Mussels in the Susquehanna River Basin

Summary: Two State Wildlife Grant projects are directed at assessing the mussel communities in the Lower Susquehanna River basin and the distribution of yellow lampmussel in the West Branch Susquehanna River watershed.

Goals: Based upon goals and objectives identified in the PA Wildlife Action plan, these State Wildlife Grant-funded projects are gathering information on the location of mussels, their habitat preferences, population genetics, while addressing key data gaps.

Approach: Freshwater mussels are of great interest to biologists because of their ecological role in aquatic ecosystems and economic benefits (e.g., filtering nutrients & sediment from waters), and their alarming decline. In the Susquehanna River basin mussels help reduce the amount of excess nutrients and other pollutants entering the Chesapeake Bay. Freshwater mussels are among the most imperiled group of aquatic organisms, with losses attributed to declining habitat from construction of dams and other habitat alterations, siltation, lack of access to fish hosts, and poor water quality. To find mussels, surveys are conducted by snorkeling, using qualitative and quantitative methods. By gently prying open mussels, non-lethal clips of eastern Elliptio and yellow

Brook Floater mussel (above).
Susquehanna River mussel sampling sites and species richness (below).
Credits: Western PA Conservancy



lampmussel tissue are obtained for genetic analysis. After measuring shell lengths and clipping tissue, the live mussels are returned to their habitat.

Status: Thus far, ten mussel species have been collected, with eastern Elliptio and the yellow lampmussel the most common species in the Susquehanna River basin. The yellow lampmussel, a focal species of these projects, is of particular interest and is considered a Pennsylvania Responsibility Species. While this species is declining in many other states, Pennsylvania holds a large and widely distributed population. Less common species such as brook floater, eastern lampmussel, green floater and others were also found in the 2011 field surveys. At many historical locations mussels were no longer present or the number of species was fewer than previously recorded. Habitats have been eliminated in some locations because of severe pollution (e.g., mine drainage in the West Branch Susquehanna River) and other stream degradation.

These projects will also develop a model of mussel habitats throughout the Susquehanna basin. This model is expected to provide researchers and resource managers with insights into factors associated with favorable mussel habitat and locations of potential mussel habitats. Results of the ongoing genetic analysis will help managers understand the population structure and genetic diversity of two important species within the Susquehanna Basin.

Outcomes: By documenting mussel distribution, habitat preferences and population genetics, the projects will improve the ability of resource managers to make well-informed conservation decisions regarding freshwater mussels.

Quantitative mussel sampling (above); Yellow lampmussel (below).
Credit: Western PA Conservancy

Project T-51: *Distribution of Yellow Lampmussel in the Susquehanna River Watershed.* Mary Walsh. Western PA Conservancy.

Project T-02-05R: *Mussel Community Assessment of the Lower Susquehanna River Basin.* Elizabeth Meyer. Western PA Conservancy.

Bluebreast Darter. Credit: California University of PA

Fish sampling-Allegheny River. Credit: California University of PA

Fishes of the Middle Allegheny River

Summary: This project is systematically inventorying the large-bodied and bottom-dwelling fishes of the middle Allegheny River and will summarize the number of species and their distribution, with particular emphasis on Species of Greatest Conservation Need (SGCN).

Goals: This project is implemented to address goals 1 and 2 of the PA Wildlife Action Plan (see Page 2 above). These goals provide guidance for the following practical objectives:

- Create a list of middle Allegheny River fish species, along with sampling locations that can be integrated into existing Commonwealth databases.
- Address a fish distribution information gap and allow for appropriate conservation measures.
- Create a baseline of fish community composition by which comparison of improvements or degradation in water quality can be measured.

Approach: During 2009-2011 a systematic inventory was completed for approximately 60 miles, from Lock and Dam #9 to the mouth of French Creek. Using a variety of sampling techniques, fish sampling was conducted approximately every mile, and at selected tributary confluences.

Status: (Mainstem) The mainstem Allegheny River assessment yielded 5,206 fishes representing 12 families and 60 species/hyrbids. Among these were eight "Species of Special Concern" as recognized by the Pennsylvania Fish and Boat Commission (See Table).

Common Name	PA Status	PA-WAP Status
Mountain madtom	Endangered	High-Level
Bluebreast darter	Threatened	High-Level
Spotted darter	Threatened	PA-Responsibility
Tippecanoe darter	Threatened	High-Level
Gilt darter	Threatened	High-Level
Ohio lamprey	Candidate	PA Responsibility
Hornyhead chub	Candidate	PA Vulnerable
Central mudminnow	Candidate	Maintenance

(Tributaries) From 10 tributaries, 3,197 fishes were collected, representing 41 species/hybrids, including five Pennsylvania SGCN.

In general, the fishes of mainstem sites were more similar to those of their larger tributaries than those of smaller streams. Five SGCN fishes were common to tributary and mainstem sites. No SGCN were found exclusively in tributaries; however, six of the ten sampled streams harbored these fishes and may constitute important refuge areas.

Outcomes: The similarities between the fishes of mainstem and tributary sites indicate the importance of these streams as corridors for connecting other streams sections. Therefore, such areas should receive special consideration for monitoring and assessment to enhance species conservation.

Project: T2-9-R-1: *Assessment of Large-bodied Pelagic and Deep-water Benthic Fish Assemblages of the Middle Allegheny River.* Drs. David Argent and William Kimmel, California University of PA; Rick Lorson, PA Fish & Boat Commission.

Paddlefish Population Status, Abundance, and Restoration Planning: Update

Paddlefish collected below Lock & Dam 3, Allegheny River.
Credit: California University of PA

Summary: Recovery of a viable paddlefish population continues to challenge researchers and resource managers. A fish with very specific and broad ranging habitat requirements, continuing work is assessing reproduction and stocking protocols on the Allegheny and Ohio rivers.

Goals: As expressed in the Pennsylvania Wildlife Action Plan, the project addresses Goals 1 and 2, as noted on Page 2 above.

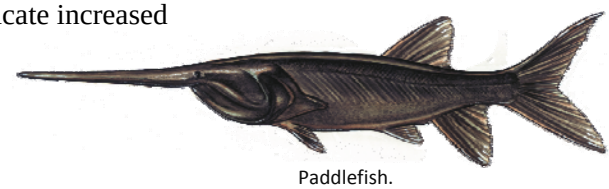
Approach: In 2011, a variety of gear types were used (e.g., gill nets, larval drift nets and benthic trawls) to try and capture various life stages of paddlefish. Surveying focused on sections of the rivers where the Pennsylvania Fish and Boat Commission (PFBC) has maintained intensive stocking since 1991. These areas included below Lock & Dams #2 and #3 in the Allegheny River and Emsworth and

Dashields on the Ohio River. Sampling was concentrated in areas occupied by juvenile paddlefish, as found during 2003 and 2004 telemetry studies and where side-scan sonar detected optimum habitat. Sampling efforts were also directed at areas where adult paddlefish were collected through SWG-funded work conducted in 2005 and 2006.

Status: A total of 2,199 gill net hours resulted in the capture of three reproductively immature paddlefish from the Allegheny River and no capture of paddlefish from the Ohio River. Even with extremely heavy river flow conditions in early spring, capture rates improved from the 2005/06 survey in the Allegheny River from one fish per 760 net-hours in 2006 to one fish per 399 net hours in 2011. A combined 58 hours of stationary and active drift netting and bottom trawling yielded no evidence of natural reproduction. However, the increase in the Allegheny capture rate in 2011 over that of 2006 may indicate increased survival as a result of a revised stocking strategy.

Outcome: Continued stocking of paddlefish (>280 mm EFL) at high densities concentrated in pools encompassing its historic Pennsylvania range should occur.

Project: T2-10-R-1: *Ongoing Paddlefish Population Status, Abundance, and Restoration Planning*. Dr. David Argent, California University of Pennsylvania; Rick Lorson, PFBC.



Paddlefish.
Drawing by Ted Walke-PFBC

Gilt Darter Restoration Efforts in the Upper Allegheny River

Gilt Darter: Credit: Douglas Fischer-PFBC

Summary: A collaborative effort between Pennsylvania and New York is working towards recovery of the gilt darter and assessment of other fish species of greatest conservation need.

G**oals:** This project is evaluating the current status of the gilt darter (*Percina evides*) and associated habitats and providing guidance on re-establishing viable populations. It addresses PA-WAP Goals 1 and 2 as noted on Page 2.

Approach: In 2008, the Pennsylvania Fish and Boat Commission (PFBC) was approached by the New York Department of Conservation with an opportunity to participate in a New York State Wildlife Grant project (T-14) to reintroduce the gilt darter to New York. In New York, the gilt darter is considered endangered and possibly extirpated from the upper

Allegheny River, presumably due to water quality and habitat degradation during the mid-twentieth century. The project objectives have been to: 1) evaluate the gilt darter's habitat requirements in areas where the species still exists, 2) determine the potential population sustainability in native NY waters, 3) assess population genetics of potential brood stocks, 4) develop a protocol for hatchery rearing, and 5) stock gilt darters in suitable locations. Support from the PFBC has been made possible by SWG (T-45) in the form of regional experience, logistics, and execution of field operations within PA.

Status: Field operations led by the PFBC have included locating and/or capturing gilt darters for habitat assessments, brood stock collection, and genetic analysis. The collaboration between PA and NY SWG-funded projects has also afforded opportunities to assess additional species of greatest conservation need within PA that occupy habitats overlapping those of the gilt darter (e.g. northern madtom, mountain madtom, spotted darter, Tippecanoe darter, bluebreast darter).

The collaboration between PA and NY SWG-funded projects has also afforded opportunities to assess additional species of greatest conservation need within PA that occupy habitats overlapping those of the gilt darter.

Spotted Darter. Credit: Timothy Stecko, PSU

Outcomes: The project is ongoing and expected outcomes are the development of recovery strategies applicable to gilt darters and other imperiled fishes, strides toward restoration of the gilt darter within NY and PA, and a better understanding of gilt darters and associated fish communities and habitats leading to more effective management in the region.

Project T-45-P-1: *Conservation Planning for Pennsylvania Fish Species of Greatest Conservation Need.* Douglas Fischer, PFBC Non-game Fish Biologist.

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