



State Wildlife Grants Annual Summary-2022

Pennsylvania Fish & Boat Commission



PENNSYLVANIA
WILDLIFE ACTION PLAN



In this issue...

- **Pennsylvania's Wildlife Action Plan: *Guiding Management and Recovery of At-Risk and Imperiled Fish & Wildlife***
- **Teamwork for Turtles: *Protecting and recovering imperiled turtles of Pennsylvania and Northeast***
- **The Conservation Opportunity Area (COA) Tool: *Web-Accessible Gateway to the Pennsylvania Wildlife Action Plan***
- **Western Pennsylvania Crayfish Inventory and Conservation Assessment**



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Top. Seining for crayfish.

Credit: Kaine Diehl, West Liberty University.

Bottom. Blue crayfish.

Credit: Dr. Zachary Loughman, West Liberty University.

PENNSYLVANIA'S WILDLIFE ACTION PLAN: *Guiding Management and Recovery of At-Risk Fish and Wildlife*

State Wildlife Action Plans are pro-active guidance for protecting and recovering imperiled and declining species. The 2015-2025 Pennsylvania Wildlife Action Plan (PA WAP) accomplishes this by identifying species (i.e., Species of Greatest Conservation Need) such as the Chesapeake Logperch (*Percina bimaculata*) (Figure 1), their habitats, threats, and importantly, conservation actions for their protection and recovery. The PA WAP also includes information about monitoring, partner and public involvement, and plan maintenance and revision. The 664 species in the plan include: birds, mammals, fishes, amphibians, reptiles, freshwater mussels, and other aquatic and terrestrial invertebrates. With these extensive taxonomies, the Pennsylvania Game Commission and Pennsylvania Fish & Boat Commission jointly administer the plan on behalf of all Pennsylvanians who care about Species of Greatest Conservation Need (SGCN) and their habitats.



Figure 1. Chesapeake Logperch (*Percina bimaculata*) is a Pennsylvania fish Species of Greatest Conservation Need. Credit: Rob Criswell.

This 2022 summary document highlights selected State and Tribal Wildlife Grant projects or aspects of Pennsylvania's plan administered by the Pennsylvania Fish & Boat Commission. Previous annual summaries are available at: [State Wildlife Grants-Program Summaries](#). Support for this document is provided through a State and Tribal Wildlife Grant administered by the U.S. Fish and Wildlife Service, Wildlife and Sportfish Restoration Program, North Atlantic and Appalachian Office, Hadley, MA.

Project F16AF00394. Implementing & Coordinating the 2015 Pennsylvania Wildlife Action Plan: Pennsylvania Fish & Boat Commission. Diana M. Day, diday@pa.gov

TEAMWORK FOR TURTLES: *Protecting and Recovering Imperiled Turtles of Pennsylvania and Northeast*

SUMMARY

Over half (7 of 13) of Pennsylvania native turtle species are imperiled; listed as Species of Greatest Conservation Need (SGCN) in the 2015-2025 Pennsylvania Wildlife Action Plan. To advance recovery, Competitive State and Tribal Wildlife Grants (C-SWG) Program funding has provided crucial support for the Pennsylvania Fish and Boat Commission (PFBC) and northeast partners to actively address turtle conservation and management for Bog Turtle (*Glyptemys muhlenbergii*), Wood Turtle (*Glyptemys insculpta*), Spotted Turtle (*Clemmys guttata*), Blanding's Turtle (*Emydoidea blandingii*), and Eastern Box Turtle (*Terrapene carolina*).



For more information about these projects, check-out Conservation for Northeast Turtles:
<https://www.northeastturtles.org/>

PURPOSE

Multiple Competitive State and Tribal Wildlife Grants (C-SWG) provide Pennsylvania and other northeast states with essential resources to address a broad array of planning needs and implement conservation actions for priority at-risk turtles.

STATUS

In 2021, the PFBC and partners were actively engaged in several Competitive State Wildlife Grants projects directed at region-wide turtle conservation. This article is a snapshot of projects supporting the conservation and recovery of these species.



Figure 2 (above). Bog Turtle. Credit: Kathy Gipe, PNHP & PFBC.



Figure 3 (left). Bog Turtles are dependent on groundwater-fed wetlands with soft, mucky soils for burrowing. Credit: Kathy Gipe, PNHP & PFBC.

Bog Turtle

Through a Competitive State Wildlife Grant project, the PFBC and collaborating states of Connecticut, New Jersey, Maryland, and Massachusetts, are planning and implementing conservation actions (Table 1) to protect and maintain the northern population of Bog Turtle (Figure 2) and its habitat (Figure 3, 4). The purpose of this work is to recover the species in these states. Key partners include the Mid-Atlantic Center for Herpetology and Conservation (MACHAC), working with the PFBC as the regional project lead, and Western Pennsylvania Conservancy (WPC), assisting with conservation action implementation.

In 2021, with sites prioritized by an analysis of the northeast states, the PFBC and contract herpetologists conducted population monitoring surveys for eleven (11) known Bog Turtle populations in Pennsylvania. Many of these populations are considered the most robust Bog Turtle populations in the world. Surveys were conducted in spring, prior to the June nesting season, with turtles measured and marked for individual identification, then returned to their habitat. To detect population and habitat trends, surveys are repeated at a 5-7 year frequency.

Table 1. Key components and activities of the Competitive State Wildlife Grants, Bog Turtle Conservation Project.

- Habitat management implementation
- Landowner outreach/engagement
- Continue use of a multi-state database
- Implement standardized population monitoring protocols
- Survey potential and historic wetlands
- Draft best management practice
- Expand and refine recently developed Bog Turtle conservation plan

BOG TURTLE (Continued)

In the turtle surveying “off-season”, the project team will shift their focus to monitoring and maintaining Bog Turtle habitat. Favored by Bog Turtles, open emergent wetlands (Figure 4) are vulnerable to succession by woody and invasive plant species. Biologists have developed plans to manage priority sites and are implementing these conservation actions in the winter of 2021-22. Project funding continues through 2025.



Figure 4. Teams of experienced Bog Turtle surveyors explore wetland habitats. Credit: Kathy Gipe, PNHP & PFBC.

Wood Turtle

A 2021-2023 project is implementing key components of the Wood Turtle Conservation Plan developed through a 2014 Competitive State Wildlife Grant. The current grant addresses a wide range of important Wood Turtle conservation needs (Figure 6, Table 2). Through regional Wood Turtle assessment and conservation efforts numerous peer-reviewed articles, as well as a comprehensive book (Jones and Willey, 2021), have been published. (See highlight on next page).



Figure 6. Wood Turtle. Credit. Kathy Gipe. PNHP & PFBC.

Spotted Turtle

In 2021, a status assessment and conservation plan development concluded for an expansive (i.e., Maine to Florida) Spotted Turtle project (Figure 5). Find out more at Conservation for Northeast Turtles: <https://www.northeastturtles.org/>



Figure 5. Spotted Turtle. Credit. Kathy Gipe, PNHP & PFBC.

Table 2. Key activities directed at Wood Turtle Conservation through a Competitive State Wildlife Grant.

- Restore key nesting areas
- Standardize population assessments in data-deficient areas
- Conduct long-term studies of survivorship and population dynamics
- Centralize data analysis
- Implement intensive studies of animal movements and resource use at key sites
- Expand range-wide genetics studies and genetic assignment capability
- House and support confiscated turtles
- Expand & standardize PIT use



Figure 7. Inspecting a tagged Blanding's Turtle.
Credit. Kathy Gipe. PNHP & PFBC.

Blanding's Turtle

Additionally, PFBC continues to implement a Competitive State Wildlife Grant funded conservation plan for the Blanding's Turtle (Figure7). In Pennsylvania's portion of the Lake Erie watershed, this species is barely hanging on, and is actively managed for long-term securement as part of the Commonwealth's natural history.

SUMMARY

These vital projects allow resource managers in Pennsylvania and the Northeast region to implement the conservation goals and priorities for these turtle species. This work is improving knowledge of their distribution and population parameters, to establish and implement conservation and management actions that will prevent further decline. We are already seeing results from the broadened interest and investment in all five of these species across the Commonwealth. Keep the turtle love going!

REFERENCE

Jones, M. T. and L. L. Willey (editors). 2021. *Biology and Conservation of the Wood Turtle*. Published by the Northeast Association of Fish and Wildlife Agencies, Inc., Petersburg, NY, 235 pp.

PROJECTS

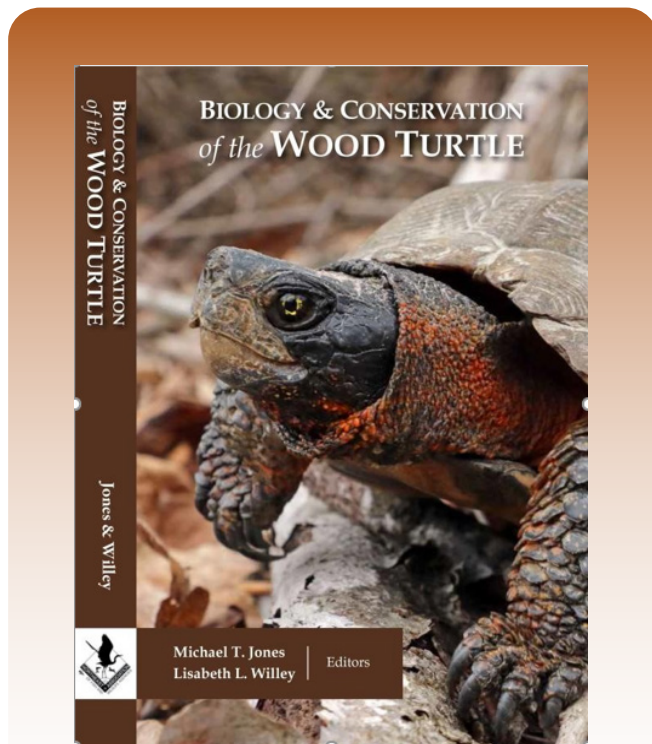
F17AP00112, 2017-2021. Adaptive Implementation of the Regional Conservation Plan for the Blanding's Turtle and Associated Wetland SGCN Species in the Northeast, PA Population.

F18AP00184, 2018-2021. Conservation and management of the Spotted Turtle (*Clemmys guttata*) and seasonal wetland habitats in the Eastern U.S.

F20AX11718-00, 2020-2025. Implementation of the Bog Turtle Conservation Plan for the Northern Population, with Benefits to Associated Headwater Wetland Species of Greatest Conservation Need.

F21AP01400, 2021-2023. Regional Conservation for Wood Turtles and Related Emydine Turtles in Pennsylvania.

Article author: Kathy Gipe Herpetologist, Pennsylvania Natural Heritage Program (PNHP) and Pennsylvania Fish & Boat Commission.



Supported, in part, through regional State Wildlife Grants (i.e., Regional Conservation Needs) this semi-technical and richly illustrated 235-page publication will be of interest to natural resource professionals and land managers.

THE PENNSYLVANIA CONSERVATION OPPORTUNITY AREA (COA) TOOL: WEB-ACCESSIBLE GATEWAY TO THE PENNSYLVANIA WILDLIFE ACTION PLAN

The Pennsylvania Wildlife Action Plan Conservation Opportunity Area (COA) Tool is a free, web-accessible resource to learn about Pennsylvania's Species of Greatest Conservation Need, their habitats, and conservation actions, to support these at-risk species (Figure 8).

- **Unsure how to get started?** Users can review the step-by-step “[Quick-Start](#)” instructions and detailed “[Help](#)” on the website, or simply dive-in at <https://wildlifeactionmap.pa.gov>.
- **What's new?** Data are updated approximately quarterly, with the most current update noted on the site ([data info](#)). User's are encouraged to update reports for the most current information. Go to “My Projects”, access the report, then “Update Report”.

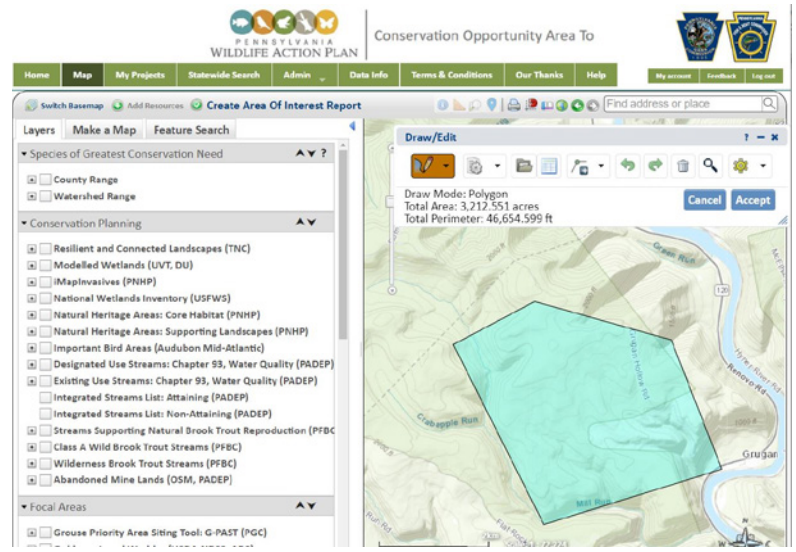


Figure 8. Conservation Opportunity Area (COA) Tool map with Area Of Interest (AOI). Credit. PFBC.

Western Pennsylvania Crayfish Inventory and Conservation Assessment

SUMMARY

From 2017 to 2020, >1,500 sites in western Pennsylvania were sampled for crayfishes, resulting in the collection of >9000 crayfish from 14 species (includes 3 non-native species). The Rock Crayfish (*Cambarus carinirostris*) and the Allegheny Crayfish (*Faxonius obscurus*) were common across much of western Pennsylvania. The Digger Crayfish (*Creaserinus fodiens*) was collected from Pennsylvania for the first time and a potentially undescribed species was discovered in the Lake Erie basin. The Digger Crayfish, Calico Crayfish (*Faxonius immnis*), and the potentially undescribed species were the rarest crayfishes encountered.

BACKGROUND

Crayfish serve important ecological roles yet are also increasingly imperiled and recognized by the International Union for Conservation of Nature (IUCN) as one of the most critically endangered animal groups on Earth and, in 2015, as the fourth most imperiled group of organisms (Richman et al. 2015). In Pennsylvania, establishing crayfish management priorities has been confounded by a lack of current information on species' distribution and abundance, especially in western Pennsylvania. In the 2015 Pennsylvania Wildlife Action Plan, six species were characterized as “data deficient”, indicating more information is needed for a scientifically valid status assessment. Currently, only the Spinycheek Crayfish (*Faxonius limosus*) is a Species of Greatest Conservation Need (SGCN) in the 2015-2025 Pennsylvania Wildlife Action Plan.



Figure 9. Digger Crayfish. Credit. Dr. Zachary Loughman, West Liberty University.

APPROACH

All major western Pennsylvania watersheds including the Erie, Genesee, Ohio, and Potomac River drainages were comprehensively surveyed for crayfishes (Figure 10). Historic sites (mostly from Ortmann 1906) were surveyed where possible, with new sample locations selected semi-randomly, and determined through Geographic Information Systems (GIS), available landowner permission, and remote ground-truthing. Stream-dwelling crayfish were captured using seines, dip nets and hand collections during baseflow conditions. Burrowing crayfish were collected via excavation, baited lines and nocturnal visual encounter surveys.

Figure 10. Map of area sampled (shaded) for the Western Pennsylvania Crayfish Inventory and Conservation Assessment project.



STATUS

From 2017 to 2020, >1,500 sites were sampled for crayfishes in the Ohio River, Potomac River, Genesee River, and Lake Erie Basins. This sampling resulted in collection of >9000 crayfish from 14 species (includes 3 non-native species). The Rock Crayfish (*Cambarus carinirostris*) was the most widespread and dominant species in western Pennsylvania and in headwater (i.e., smaller) streams. In the Ohio River drainage, the Allegheny Crayfish (*Faxonius obscurus*) was found in most named, wadable streams. This species is tolerant of pollution and was even collected within the Pittsburgh city limits but was not generally found in headwater streams. The Digger Crayfish (*Creaserinus fodiens*) was collected from Pennsylvania for the first time and a potentially undescribed species was discovered in the Lake Erie basin. In anthropogenically modified landscapes green spaces, including parks and state game lands, were important refugia for crayfishes (especially burrowing species).



Figure 11. Upland Burrowing Crayfish. Credit: Dr. Zachary Loughman, West Liberty University.

CRAYFISH STATUS (Continued)

Based on NatureServe® conservation criteria, eight species were ranked Critically Imperiled (S1), Imperiled (S2), or Vulnerable (S3), and were recommended for SGCN status. The Digger Crayfish, Calico Crayfish (*Faxonius immunitis*), and the potentially undescribed species were the rarest species with each found at <15 sites occupying <6 square miles, indicating a high degree of imperilment and risk of extirpation from the state. These distribution and population status findings will be especially important to guide management decisions.

REFERENCES

Ortmann, A. E. 1906. The crawfishes of the state of Pennsylvania. *Memoirs of the Carnegie Museum* 2:343-523.

Richman, I. N., et al. 2015. Multiple drivers of decline in the global status of freshwater crayfish (Decapod: Astacidae). *Philosophical Transactions of the Royal Society*. 370 (1,662): [DOI: 10.1098/rstb.2014.0060](https://doi.org/10.1098/rstb.2014.0060).

Article author: David A. Lieb, Ph.D., Pennsylvania Natural Heritage Program and Pennsylvania Fish & Boat Commission.

Project: F16AF00447. Western Pennsylvania Crayfish Inventory and Conservation Assessment. Dr. Zachary Loughman (West Liberty University), Dr. David A. Lieb (Western Pennsylvania Conservancy), Christopher A. Urban (Pennsylvania Fish & Boat Commission).



Figure 12 (top). Little Brown Mudbug. Credit: Dr. Zachary Loughman, West Liberty University.

Figure 13 (left). Crayfish identification and recording data. Credit: Dr. Zachary Loughman, West Liberty University.