State Wildlife Grants Annual Summary-2023
Pennsylvania Fish and Boat Commission

PENNSYLVANIA WILDLIFE ACTION PLAN

Douglas A. Fischer with Cisco collected at Crystal Lake. Credit: PFBC.

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April 2023

About this summary.....

This 2023 summary document highlights selected State and Tribal Wildlife (SWG) Grant projects or aspects of Pennsylvania's Wildlife Action Plan (PA WAP) administered by the Pennsylvania Fish and Boat Commission (PFBC). Previous annual summaries are available at: **State Wildlife Grants-Program Summaries**.

Support for this document and highlighted projects is provided through State Wildlife Grants administered by the U.S. Fish and Wildlife Service (USFWS), Wildlife and Sportfish Restoration Program, North Atlantic and Appalachian Office, Hadley, MA.

ABBREVIATIONS

CAT - Conservation Action Tracker
COA - Conservation Opportunity Area
PARS - Pennsylvania Amphibian and Reptile Survey
PA WAP - Pennsylvania Wildlife Action Plan
PFC - Pennsylvania Fish Commission
PFBC - Pennsylvania Fish and Boat Commission
PGC - Pennsylvania Game Commission

PNDI - Pennsylvania Natural Diversity Inventory
PNHP - Pennsylvania Natural Heritage Partnership
SGCN - Species of Greatest Conservation Need
SWG - State and Tribal Wildlife Grants
USFWS - U.S. Fish and Wildlife Service
USGS - U.S. Geological Survey

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

State Wildlife Action Plans are pro-active guidance to protect and recover 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 Mountain Madtom *Noturus eleutherus*, Longhead Darter *Percina macrocephala* (Figure 1), and Cisco *Coregonus artedi* (Figure 2), their habitats, threats, and importantly, conservation actions for their protection and recovery (see article). 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 (PGC) and PFBC jointly administer the plan on behalf of all Pennsylvanians who care about Species of Greatest Conservation Need (SGCN) and their habitats.

Figure 1. Other fish species are receiving restoration attention including Mountain Madtom *Noturus eleutherus* (top) and Longhead Darter *Percina macrocephala* (right). Credit: Mountain Madtom, Douglas A. Fischer, PFBC; Longhead Darter, Brian Zimmerman, The Ohio State University.

REDISCOVERY AND RECOVERY OF THE LOST "LAKE ERIE CISCO"

Crystal Lake. Credit: PFBC.

PURPOSE

Native species' population protection, restoration and maintenance are foundational to the Pennsylvania Wildlife Action Plan (Goal 1). Supporting this goal, the PFBC is actively assessing the feasibility of restoring native Cisco *Coregonus artedi* (Figure 2) to Lake Erie. Cisco are currently listed as endangered in Pennsylvania and are an important forage item for larger gamefishes, especially Lake Trout *Salvelinus namaycush*. In recent years, there has been a regional push to restore the coldwater fisheries in the Great Lakes and this work is in partnership with the United States Geological Survey (USGS), USFWS, and the Great Lakes Fisheries Commission.

Figure 2. Cisco *C. artedi*, collected from Crystal Lake. Credit: PFBC.

BACKGROUND

In 2016, PFBC Bureau of Fisheries staff rediscovered a wild population of Cisco in a private, inland lake in northeastern Pennsylvania. Historically, Crystal Lake was open to public fishing. In the late 1800s or early 1900s, the Pennsylvania Fish Commission (PFC), subsequently the PFBC, stocked Lake Trout and Cisco in northeastern lakes to create wild populations and angling opportunities. Through time, most of these lakes became highly developed and water quality suffered to the detriment of fish populations. However, it appears Crystal Lake was not affected by these conditions. With rediscovery of these fishes by the scientific community, local residents have told multiple stories of trophy Lake Trout caught and regularly encountering Cisco while ice fishing. In the 1960s, both Lake Trout and Cisco populations were considered extirpated from Lake Erie. Thus, presence of wild populations of both species in an inland lake prompted consideration of their potential for Lake Erie population recovery efforts. Thus, we pursued additional investigations to determine if the Crystal Lake fish populations were viable options for recovery through hatchery propagation activities supporting Lake Erie reintroduction initiatives.

STATUS

Our efforts initially focused on determining Cisco and Lake Trout source populations used by PFC hatcheries in the late 1800s or early 1900s. Historic PFC annual reports indicated that Cisco were, indeed, likely sourced from Lake Erie for propagation in hatcheries. No clear source was indicated for Lake Trout. In 2016, we collected genetic material from both species which was analyzed by the USFWS Northeast Fisheries Center. The results indicated more Cisco samples were needed for analysis. Thus, in 2021, PFBC staff returned to Crystal Lake and collected 27 Cisco specimens for traditional morphometrics (i.e., structure counts, body measurements) analysis as well as additional genetic material. Multivariate statical analyses of the Crystal Lake Cisco morphometrics aligned with the "shallow water" Cisco *Coregonus artedi albus* unique to Lake Erie. These findings further supported continued efforts for the project. The 2021 genetic material is still being processed. To estimate abundance of the Crystal Lake population, in summer 2022, USGS and PFBC personnel used hydroacoustic equipment to develop a rough estimate of the density and biomass of the Cisco population. The USGS estimates 1500-2000 Ciscoes in the lake.

Douglas A. Fischer

Project F17AF01054. Conservation Planning for Pennsylvania Fish Species of Greatest Conservation Need - Phase III. Douglas A. Fischer, Project Leader.

NEXT STEPS
In 2023, we plan to collect and transport Ciscoes from Crystal Lake to a state or federal hatchery for propagation. This effort is intended to create a redundant source population should a catastrophic event occur at Crystal Lake. Future work will include determining the long-term genetic viability of a Lake Erie population established with Crystal Lake brood stock.

Figure 3 (Top). Lake Erie taken from the PFBC research vessel *Perca.* Credit: PFBC. **Figure 4** (Bottom). Size groups of Cisco collected from Crystal Lake. Credit: Douglas A. Fischer.

DATA MANAGEMENT: *Supporting Vital Conservation for Fishes, Amphibians, and Reptiles*

PURPOSE

Comprehensive and accurate data are foundational for well-informed science-based resource management. This project reviewed and processed fish, amphibian and reptile observation records into the Pennsylvania Natural Heritage Program (PNHP) Biotics database and Pennsylvania Natural Diversity Inventory (PNDI) database.

Figure 5. Examples of species with updated records developed through this project. (a) Spotted Sucker *Minytrema melanops.* Credit: Frederick Johns, (b) Eastern Ribbonsnake *Thamnophis sauritus.* Credit: Tom Diez, (c) Wood Turtle *Glyptemys insculpta.* Credit: Kathy Gipe, (d) Eastern Spadefoot *Scaphiopus holbrooki*. Credit: Brandon Ruhe.

BACKGROUND

The vital tasks of environmental review and conservation planning require up-to-date, accurate information on known occurrences of SGCN (Figure 5), as well as their core and supporting habitats. Fish, amphibian, and reptile data are acquired from multiple sources including scientific collector's permits and coordinated volunteer surveys (e.g., Pennsylvania Amphibian and Reptile Survey-PARS).

To minimize and avoid harm to SGCN and their habitats, the PFBC conducts environmental reviews of proposed projects using the Pennsylvania Natural Diversity Inventory (PNDI) database. These data also support the non-regulatory, publicly accessible PA WAP-COA Tool and will be used in the forthcoming Conservation Action Tracker (CAT). Developed by the PFBC and PGC, the COA Tool provides access to 2015-2025 PA WAP SGCN information, habitats, conservation actions and more, for conservation planning and implementing the plan. The CAT, a feature associated with the COA Tool, will allow users to document planning and implementation supporting the PA WAP. These tools (i.e., COA Tool, CAT) rely on species (i.e., SGCN) data recorded statewide and housed in PNHP databases. Data transfer to the COA Tool is conducted under a separate grant.

STATUS

This project was completed in December 2022 and processed a total of 3,457 amphibian and reptile, and 1,828 fish observation records. The additional information will support the approximately 2,000 annual environmental permit reviews, the COA Tool and forthcoming CAT.

Susan Klugman and Diana Day

Project F21AF01140. PA-Processing of PA Natural Heritage Program Data for Fish, Amphibian, and Reptile SGCN (2021-2022). Susan Klugman, Western Pennsylvania Conservancy, Project Leader.

PRESCRIBED FIRE MANAGEMENT EFFECTS ON AMPHIBIANS & REPTILES

PURPOSE

In Pennsylvania, this project will assess prescribed fire habitat management impacts on Eastern Box Turtle *Terrapene carolina* (Figure 6) and Timber Rattlesnake *Crotalus horridus* (Figure 7). Other amphibians and reptiles, especially vernal pools species, will be assessed as opportunities arise. Led by the PFBC, this 5-year project is conducted in partnership with the PGC, and East Stroudsburg University.

Figure 6. Box Turtle is a target species for prescribed fire management assessment. Credit: Tom Edwards.

COLLABORATIVE CONSERVATION

For this complex work, collaboration is critical for a successful outcome. With SWG funds administered by the USFWS, Wildlife and Sportfish Restoration Program Northeast Regional Office, this project is led by Christopher A. Urban, PFBC-Chief, Natural Diversity Section. Scott Bearer, Ph.D., PGC-Chief Habitat Planning and Development Division will conduct prescribed fire management through the Prescribed Fire Program funded by the USFWS, Wildlife and Sportfish Restoration Program, Pittman-Robertson Program, Habitat Management for Wildlife, W-75-D-20. As Principal Investigator, Thomas C. LaDuke, Ph.D., East Stroudsburg University, will oversee data collection and analyses for habitat, amphibian and reptile responses to prescribed fire management.

BACKGROUND

Prescribed fire (Figure 8) can create diverse patches of forest in different stages of succession which increases biodiversity in a region; helps conserve fire-adapted species which may become rare in regions where wildfires are suppressed; and curbs the spread and abundance of non-fire-adapted species of invasive plants. Despite these many advantages, prescribed fire can have negative impacts, such as loss of wildlife. Specifically, the effects of prescribed fire on reptiles and amphibians are relatively poorly understood.

Figure 7. Timber rattlesnake *Crotalus horridus* (indicated in red elipse) will be radio-tagged to track movements in response to prescribed fire management activities. Credit: PFBC.

Figure 8. Pennsylvania Game Commission burn crew conducting prescribed fire habitat management. Credit: PGC.

This project will conduct qualitative and quantitative surveys and assess survival and distribution on Box Turtle and Timber Rattlesnake in response to fire management activities. As opportunities allow, species associated with vernal (seasonal) pools (e.g., Marbled Salamander *Ambystoma opacum*, Jefferson Salamander *Ambystoma jeffersonianum*, Wood Turtle *Glyptemys insculpta*, and Spotted Turtle *Clemmys guttata*, and their habitats will also be assessed. Beyond these species assessments, extensive habitat (i.e., vegetation) evaluations will be conducted both pre- and post- prescribed fire management activities. Project outcomes are anticipated to provide, or better inform, best management practices to minimize negative impacts to amphibians and reptiles while supporting the many beneficial habitat goals achieved through prescribed fire management conducted by resource management agencies and non-governmental organizations.

STATUS

The project began in the fall 2022 and early efforts will focus on determining locations to be treated (i.e., with prescribed fire) (Figure 9), establishing habitat and herptile survey plots, mapping, early capture of Box Turtles and Timber Rattlesnakes, and surveying habitats prior to burning.

Christopher Urban and Scott Bearer

Figure 9. Burn crew members conducting prescribed fire management. Credit: PGC.

Project F22AF01673. The Effects of Fire-based Management Activities on Amphibians and Reptiles in Pennsylvania's State Game Lands. Christopher A. Urban, PFBC-Project Leader, Scott Bearer, Ph.D., PGC; Thomas C. LaDuke, Ph.D., East Stroudsburg University-Principal Investigator.

USER-GUIDED TOOLS SUPPORTING PENNSYLVANIA'S SPECIES OF GREATEST CONSERVATION NEED AND THEIR HABITATS

The PA WAP COA Tool (Figure 10) is a free, web-accessible resource to learn about, and help plan conservation actions for Pennsylvania's SGCN and their habitats.

- **Getting started.** Users can review basic step-by-step tasks in the "Quick-Start" instructions. More advanced features are available in the detailed "Help" on the website, or simply dive-in at **https://wildlifeactionmap.pa.gov**.

- **CAT Arriving** *Soon!!* Later in 2023, the PGC and PFBC will launch additional functionality for the COA Tool allowing users to track projects through the **CAT**. Watch the COA Tool site for updates.
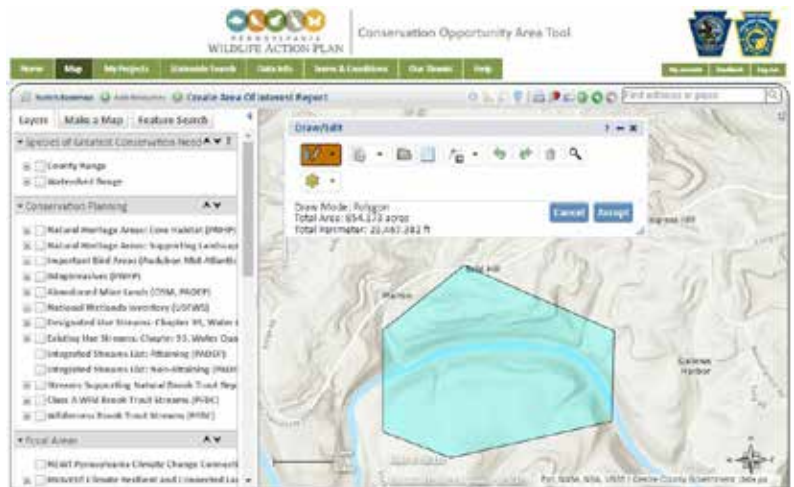
Figure 10. Snapshot of the COA Tool map feature with Area of Interest. Credit: PFBC & PGC.

These tools and PA WAP are administered by Catherine Haffner, PGC-Wildlife Biologist, Conservation Planning Coordinator and Diana Day, PFBC-Conservation Coordinator.