

An Amendment to the Pennsylvania Wildlife Action Plan

Addition of the Eastern Brook Trout as a Species of Greatest Conservation Need

Submitted to:

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INTRODUCTION

The Pennsylvania Fish and Boat Commission (PFBC) is requesting the addition of the Eastern Brook Trout (*Salvelinus fontinalis*) to the Pennsylvania Wildlife Action Plan. As identified by the U.S. Fish and Wildlife Service, this document and attachment provide information on how this amendment addresses the eight elements which formed the foundation for the original Wildlife Action Plans.

ELEMENTS

ELEMENT 1:

Information on the distribution and abundance of species of wildlife, including low and declining populations as the state fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the state's wildlife; and,

The 17 states that form the native range extend along the Appalachians from Georgia to Maine, and the area represents 25% of the species native range and 70% of the native range in the United States. Intact stream populations of brook trout (where brook trout occupy 90-100% of their historical habitat) exist in only 5% of subwatersheds. In subwatersheds where self-sustaining populations were present, 45% have lost over half of the habitat supporting brook trout. Furthermore, brook trout were documented as extirpated from 20% of the subwatersheds. The majority of the intact populations are located in Maine, New

Hampshire, New York, Vermont, and Virginia (Hudy et al. 2005).

Of the Mid-Atlantic states (Maryland, New Jersey, Pennsylvania, and West Virginia), Pennsylvania contains 16 of the 24 subwatersheds documented as intact (90-100% of the habitat occupied) during the EBTJV assessment. Additionally, Pennsylvania contains 118 of the 151 subwatersheds classified as reduced (50-90% of the habitat occupied) in the Mid-Atlantic region. These data show that Pennsylvania is a stronghold for brook trout populations in the Mid-Atlantic region and that the Commonwealth plays an important role in conserving and managing the species.

Based on stream data collected by the Pennsylvania Fish & Boat Commission since 1976, wild brook trout populations have been documented in 1,524 stream sections covering a total of 5,044 miles of streams. This figure provides a conservative estimate of the stream miles inhabited by wild brook trout in Pennsylvania, as it includes only those waters where wild brook trout populations have been confirmed via stream survey information. Overall, wild brook trout are the only species of salmonid that inhabit 607 sections of stream covering 1,730 miles of water in Pennsylvania. Brook trout often occur in combination with wild brown trout (596 sections, 1,984 miles) and to a much lesser degree in combination with wild rainbow trout populations (22 sections, 61.61 miles). However, it is currently unknown as to the miles of stream that may have been lost since they were originally inventoried.

ELEMENT 2:

Descriptions of locations and relative condition of key habitats and community types essential to conservation of species identified in (1).

Within Pennsylvania, results of the assessment conducted by Hudy et al. (2005) showed that intact (90-100% of the habitat occupied) brook trout populations occur in only 1% of the subwatersheds. In subwatersheds where self-sustaining populations were present, 39% have lost over half of the habitat supporting brook trout. Furthermore, brook trout were documented as extirpated from 34% of the subwatersheds (Hudy et al. 2005).

Year-round cool water temperatures (< 20 C) are probably the number one limiting factor for brook trout in Pennsylvania. Key habitats in Pennsylvania include upland lotic systems that contain cool, clean water, minimal siltation, and good physical habitat. Many studies have reported that pool habitat of adequate depth, low velocity, and overhead cover is the preferred habitat of brook trout. Tail outs of pools and shallow glides are important spawning areas, especially when associated with upwelling groundwater. Headwater streams throughout northern Pennsylvania, specifically those in the upper Allegheny River, Genessee River, West Branch Susquehanna River, North Branch Susquehanna River, and upper Delaware River watersheds, contain most of the relatively healthy brook trout subwatersheds (EBTJV 2006).

ELEMENT 3:

Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats.

Historically, brook trout occurred throughout Pennsylvania, probably inhabiting nearly all of the streams (MacCrimmon and Campbell 1969), but their historic range has been considerably reduced due to pollution, siltation, habitat degradation, and increased water temperatures, mostly stemming from human-induced perturbations and changes to the landscape. The result of widespread logging in the late 1800's and early 1900's led to increased erosion and elevated water temperatures, which undoubtedly caused many streams to become unsuitable for brook trout. Pennsylvania has also been a leading producer of coal which, following extraction, often resulted in chronic pollution from acid mine drainage. Currently, approximately 2,500 miles of flowing water are affected by acid mine drainage in Pennsylvania. Many of the streams affected by acid mine drainage historically supported wild brook trout.

Although Pennsylvania supports a considerable wild brook trout resource, much of this resource is fragmented and primarily exists in first and second order headwater streams. Major threats to wild brook trout populations in Pennsylvania include poor land use practices stemming from agriculture and urbanization, sedimentation from road construction and dirt and gravel roads, water temperature elevations stemming from storm water runoff and the loss of riparian vegetation along the stream corridor, and the presence of non-native species. Other threats include acid precipitation and acid mine drainage that continue to have a negative impact on water quality on a regional basis across the state.

Increasing global temperatures may similarly contribute to elevated water temperatures, thus degrading habitats which support brook trout and potentially reduce the reproductive capacity of the species.

ELEMENT 4:

Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions.

The following conservation, management, and enhancement goals and objectives were derived from Pennsylvania's Brook Trout Conservation Strategy. The objectives outlined are designed to focus on improving conditions for wild brook trout populations on a statewide basis. These include preserving conditions for existing populations and enhancing conditions to allow wild brook trout to expand beyond their current range of waters. We have identified the following goals and objectives:

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

Strategic Objective 1.1. Inventory unassessed waters to confirm presence of brook trout.

Operational Objective 1.1.1. Collect baseline data and document the status of brook trout populations in waters that have not been inventoried to date but are expected to support wild brook trout. Priority should be given to identify brook trout populations in those streams where current Water Quality Standards are below the Pennsylvania Department of Environmental Protection's High Quality-Cold Water Fishes designation.

Strategic Objective 1.2. Monitor status of existing brook trout populations.

Operational Objective. 1.2.1. Develop sampling protocols to periodically monitor a random set of representative brook trout

streams. Build on existing data sets to monitor trends in brook trout populations.

Strategic Objective 1.3. Develop a comprehensive GIS brook trout data layer.

Operational Strategy 1.3.1. Map current statewide brook trout distribution by 2010.

Strategic Objective 1.4. Develop brook trout genetic assessment.

Operational Objective 1.4.1. Partner with researchers to characterize the genetic identity of Pennsylvania's wild brook trout resource. Efforts should focus on identifying genetic composition with sampling conducted within each major drainage basin in Pennsylvania by 2015.

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

Strategic Objective 2.1. Protect brook trout habitat.

Operational Objective. 2.1.1. Coordinate with state and federal regulatory agencies to provide maximum protection of brook trout habitat within current regulatory standards.

Operational Objective. 2.1.2. Incorporate recommendations and establish goals within local and regional watershed planning documents (river conservation plans, Chesapeake Bay Program, Delaware Estuary Program, etc.) to increase awareness and advance wild brook trout habitat protection.

Strategic Objective 2.2. Improve brook trout habitat.

Operational Objective. 2.2.1. Pursue conservation easements on private property to provide protection to high value wild brook trout habitat.

Operational Objective 2.2.2. Coordinate with owners to implement conservation practices to protect wild brook trout habitat on private lands.

Operational Objective 2.2.3. Coordinate with appropriate state and federal agencies and local governments to implement conservation practices to protect wild brook trout habitat on public lands.

PROTECTION, RESTORATION, AND ENHANCEMENT

Strategic Objective 2.3 Protect existing brook trout populations from future degradation.

Operational Objective 2.3.1. Provide maximum water quality protection for streams identified as supporting brook trout populations by seeking the highest applicable Pennsylvania Department of Environmental Protection Chapter 93 Water Quality Standards for these streams.

Operational Objective 2.3.2. Partner with other public agencies such as, the Pennsylvania Department of Conservation and Natural Resources, the United States Forest Service, the United States Fish and Wildlife Service, the Pennsylvania Game Commission, the National Park Service, and stakeholder groups such as, Trout Unlimited, local watershed associations and sportsmen's groups to develop riparian habitat protection and stewardship practices as a model for private landowners.

Strategic Objective 2.4. Restore and Enhance Brook Trout Populations.

Operational Objective 2.4.1. Through database review, develop a prioritized list of streams for brook trout protection, restoration, and enhancement projects. Consider streams or brook trout populations based on criteria, which may include, population status, potential gain in angling

opportunity, and the likelihood for success. Partner with groups such as, Trout Unlimited, local watershed associations and sportsmen's groups to define limiting factors and develop sound restoration and enhancement plans to address identified limiting factors.

Operational Objective 2.4.2. Produce a prioritized listing of five waters where brook trout populations have been extirpated and implement wild brook trout restoration efforts by 2015. Periodically monitor these waters to examine progress of restoration efforts.

Operational Objective 2.4.3. Add additional qualifying watersheds to the Wilderness Trout Streams program.

Operational Objective 2.4.4. Develop partnerships with groups such as, Trout Unlimited under the Coldwater Heritage Partnership, to advance the implementation of brook trout habitat protection, restoration, and enhancement projects. Seek project funding through federal, state and private grants, mitigation settlements, and other sources.

ELEMENT 5:

Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions.

Strategic Objective 2.5. Comprehensively manage brook trout fisheries.

Operational Objective 2.5.1. Conduct creel surveys on randomly selected brook trout populations to collect angler use and harvest data on these waters. Combine these data with biological data to make adjustments in regulations, if necessary.

Brook trout populations will be monitored to evaluate long-term trends in populations. Ideally, reference sites will be established on a regional basis throughout the Commonwealth. Specific criteria will be developed to aid in the selection of reference sites to ensure that a representative sample of the stream size and types, habitats, and population densities are sampled. We anticipate monitoring frequency to be conducted on an annual or biennial basis to facilitate identification of long-term trends. The PFBC is currently in the process of drafting sampling and monitoring protocols.

Unassessed waters, or a sub-sample, will be inventoried to determine brook trout status and waters that contain brook trout populations should continue to be re inventoried periodically as part of the PFBC's annual sampling operations. Additionally, streams within the 218 subwatersheds identified by the EBTJV as unknown/no data should be surveyed to determine brook trout status in these watersheds. We expect to manage brook trout populations in a proactive manner based on the best available scientific data. Angler-use and harvest studies should be conducted periodically on randomly selected wild brook trout populations. These data should be used in conjunction with biological data to make adjustments in angling regulations, if necessary.

We anticipate that brook trout populations will continue to be enhanced through habitat improvement and restoration projects. Additionally, restoration projects will be conducted on waters where brook trout populations have been extirpated when conditions improve and become favorable for recolonization.

ELEMENT 6:

Descriptions of procedures to review the plan at intervals not to exceed ten years.

This element is relevant to the original plan and this amendment would be subject to this review.

ELEMENT 7:

This element requires coordinating the development, implementation, review, and revision of the plan with federal, state, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats.

To address this element and gather recommendations from our partners, the Fish and Boat Commission will be distributing this Amendment and Species Account to the following agencies and organizations. As partners, these entities provide essential support to the implementation of the PA-WAP. Comments will be compiled and included with materials to the U.S. Fish and Wildlife Service.

- PA Game Commission
- PA Department of Conservation and Natural Resources
- PA Department of Environmental Protection
- PA Biological Survey
- PA Chapter of Trout Unlimited
- PA Chapter of The Nature Conservancy
- U.S Forest Service

This element is relevant to the original plan and this amendment would be subject to this review.

ELEMENT 8:

Congress also affirmed that broad public participation is an essential element of developing and implementing these plans, the projects that are carried out while these plans are developed, and the species in greatest need of conservation that Congress has indicated such programs and projects are intended to emphasize.

For this element, the Pennsylvania Fish and Boat Commission will provide information regarding this amendment for public review and comment. This will be accomplished through: (1) A press release announcing the proposed addition of this species to the Pennsylvania SGCN list. The Fish and Boat Commission maintains a list of over 1700 e-mail recipients who have requested to receive all Fish and Boat Commission press releases. This list includes: legislators, sportsmen's groups, organizations, and interested citizens. (2) Associated with this press release, during a minimum 30-day comment period, an electronic comment can be sent to a Fish and Boat Commission representative. These comments will be compiled and provided to the U.S. FWS as part of the amendment. Further, upon approval of the amendment, this element will be further addressed through the following goal.

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

Strategic Objective 3.1. Enhance public interest and knowledge about brook trout and the importance of protecting, enhancing and restoring wild brook trout populations.

Operational Objective 3.1.1. Develop, present, and distribute a multi-media program describing the history of brook trout in Pennsylvania.

Operational Objective 3.1.2. Partner with the Pennsylvania Outdoor Writers Association, and numerous other organizations that publish a newsletter (or other media access), to communicate the imperative to protect brook trout and their habitats.

Operational Objective 3.1.3. Publicize and promote the results of protecting, enhancing and restoring water quality and aquatic habitat that demonstrate how all citizens benefit not just the fish and sporting interests.

Operational Objective 3.1.4. Use internet-media sources such as the Pennsylvania Fish and Boat Commission, Pennsylvania Council of Trout Unlimited and National Trout Unlimited websites to post information on the Eastern Brook Trout Joint Venture and the National Fish Habitat Initiative.

Operational Objective 3.1.5. Take the EBTJV and NFHI informational materials to sportsmen shows and meetings with watershed associations and sportsmen's groups for distribution.

Operational Objective 3.1.6. Provide copies of EBTJV and NFHI informational materials and the Pennsylvania Trout newsletter to all school and public libraries in Pennsylvania.

Strategic Objective 3.2. Develop relationships that foster brook trout enhancement, protection and restoration.

Operational Objective 3.2.1. Work with municipal officials and policy decision makers to promote and improve water quality. For example, The Center for Dirt and Gravel Roads to reach out to municipalities and counties and tie in water quality and habitat enhancement with their work.

Operational Objective 3.2.2. Engage public officials at all levels.

Operational Objective 3.2.3. Encourage natural resource agencies (Pennsylvania Fish and Boat Commission, Pennsylvania Game Commission, Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry, United States Forest Service, and United States Fish and Wildlife Service) to conduct workshops and demonstrations for private landowners to promote protection, enhancement and restoration of wild brook trout habitat and populations.

COORDINATION

PA Fish and Boat Commission
PA Department of Environmental Protection
PA Department of Conservation and Natural Resources
Susquehanna River Basin Commission
Delaware River Basin Commission
U.S. Fish and Wildlife Service
U.S. Forest Service
U.S. Geological Survey
Watershed associations
Water authorities/municipal governments
Industries and utilities
Colleges and universities
Land conservancies and foundations

REFERENCES

Hudy, M., T. M. Thieling, N. Gillespie and E. P. Smith. 2005. Distribution, status and perturbations to brook trout within the eastern United States. Final report to the steering committee of Eastern Brook Trout Joint Venture.

MacCrimmon, H. R., and J. S. Campbell. 1969. World distribution of brook trout, *Salvelinus fontinalis*. Journal of the Fisheries Research Board of Canada 26:1699-1725.

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