

## **Pennsylvania's Brook Trout Conservation Strategies**

### **Background**

Brook trout are the only native stream dwelling salmonid to Pennsylvania waters and are the official state fish. They are important to Pennsylvania not only from the many hours of recreational angling opportunities they provide but also as a symbol of our state's rich outdoor heritage. Despite numerous changes that have occurred in Pennsylvania's landscape since the pre-colonial era, brook trout continue to be distributed over a broad range of the state. Based on stream examination information 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 miles of stream 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. There are numerous miles of first and second order streams in Pennsylvania that have not been inventoried to date.

Over time, industrialization and urbanization have altered the distribution and abundance of brook trout across the Commonwealth. Pennsylvania was once dominated by vast stands of hemlock trees; these were essentially eliminated during the lumbering era during the late 1800's and early 1900's. The result of widespread lumbering 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.

The primary strongholds for wild brook trout populations occur within the Northern Tier and Center regions of Pennsylvania. For example, 1,875 miles of wild brook trout streams exist within the West Branch Susquehanna River basin, followed by 942 miles of stream within the upper Allegheny River basin, and 936 miles of stream within the North Branch Susquehanna River basin. Collectively, these three major drainage basins support 74.4% of the documented miles of wild brook trout streams in the state.

Overall, wild brook trout are the only species of salmonid that inhabit 607 sections of stream covering 1,730 miles of water. Currently, 247 stream sections and 679 miles of Pennsylvania streams have been designated as Class A wild brook trout waters. Class A wild brook trout waters are defined as those stream sections that support a minimum of 30 kg/ha of wild brook trout with a minimum of 0.1/kg/ha of wild brook trout less than 15 cm, and where brook trout biomass must comprise a minimum of 75% of the wild trout biomass within the stream section.

In Pennsylvania streams, wild 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). Of the 5,044.3 miles of stream that support some level of brook trout reproduction, a total of 299 sections and 1,268.65 miles are also stocked with hatchery 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 such as, brown trout. 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.

The strategies outlined in this report are designed to focus on improving conditions for wild brook trout populations on a statewide basis. These should include preserving conditions for existing populations and enhancing conditions to allow wild brook trout to expand beyond their current range of waters.

## **Priority 1: Habitat Protection**

### **Short Term Goal**

#### **1.1. Protect brook trout habitat.**

**Strategy 1.1.1.** Coordinate with state and federal regulatory agencies to provide maximum protection of brook trout habitat within current regulatory standards.

**Strategy 1.1.2.** 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.

### **Long Term Goal**

#### **1.2. Improve brook trout habitat.**

**Strategy 1.2.1.** Pursue conservation easements on private property to provide protection to high value wild brook trout habitat.

**Strategy 1.2.2.** Coordinate with owners to implement conservation practices to protect wild brook trout habitat on private lands.

**Strategy 1.2.3.** Coordinate with appropriate state and federal agencies and local governments to implement conservation practices to protect wild brook trout habitat on public lands.

## **Priority 2: Assessment**

### **Short Term Goals**

#### **2.1. Inventory unassessed waters to confirm presence of brook trout.**

**Strategy 2.1.1.** 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.

#### **2.2. Monitor status of existing brook trout populations.**

**Strategy 2.2.1.** 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.

#### **2.3. Develop a comprehensive GIS brook trout data layer.**

**Strategy 2.3.1.** Map current statewide brook trout distribution by 2010.

### **Long Term Goal**

#### **2.4. Develop brook trout genetic assessment.**

**Strategy 2.4.1.** 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.

## **Priority 3: Brook Trout Protection, Restoration, and Enhancement**

### **Short Term Goal**

#### **3.1. Protect existing brook trout populations from future degradation.**

**Strategy 3.1.1.** 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.

**Strategy 3.1.2.** 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.

### **Long Term Goal**

#### **3.2. Restore and Enhance Brook Trout Populations.**

**Strategy 3.2.1.** 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.

**Strategy 3.2.2.** 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.

**Strategy 3.2.3.** Add additional qualifying watersheds to the Wilderness Trout Streams program.

**Strategy 3.2.4.** 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.

#### **Priority 4: Outreach**

##### **Short Term Goal**

#### **4.1. Enhance public interest and knowledge about brook trout and the importance of protecting, enhancing and restoring wild brook trout populations.**

**Strategy 4.1.1.** Develop, present and distribute a multi-media program describing the history of brook trout in Pennsylvania.

**Strategy 4.1.2.** 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.

**Strategy 4.1.3.** 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.

**Strategy 4.1.4.** 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.

**Strategy 4.1.5.** Take the EBTJV and NFHI informational materials to sportsmen shows and meetings with watershed associations and sportsmen's groups for distribution.

**Strategy 4.1.6.** Provide copies of EBTJV and NFHI informational materials and the Pennsylvania Trout newsletter to all school and public libraries in Pennsylvania.

### **Long Term Goal**

#### **4.2. Develop relationships that foster brook trout enhancement, protection and restoration.**

**Strategy 4.2.1.** 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.

**Strategy 4.2.2.** Engage public officials at all levels.

**Strategy 4.2.3.** 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.

### **Priority 5: Recreational Fishing**

#### **Short Term Goal**

##### **5.1. Increase angler awareness of brook trout angling opportunities**

**Strategy 5.1.1.** Focus on existing angling opportunities through the various Pennsylvania Fish and Boat Commission information and media outlets. Include an emphasis on the special nature of brook trout and why they are important. Encourage conservation angling practices when fishing for wild brook trout.

## **Long Term Goal**

### **5.2. Comprehensively manage brook trout fisheries.**

**Strategy 5.2.1.** 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.