



Tennessee Conservation Strategy



Tennessee Brook Trout Conservation Strategy



Background

Tennessee's brook trout resource currently consists of self-sustaining (wild) populations inhabiting about 150 miles in 107 streams in the mountains along the eastern margin of the state and one hatchery-supported tailwater fishery. Wild brook trout habitat is characterized by first and second order (headwater) streams at elevations above 2,400 ft. About 70% of this habitat occurs within the Cherokee National Forest. Another 70 miles of wild brook trout water is located in the Tennessee portion of Great Smoky Mountains National Park (GRSM). While brook trout are Tennessee's only native salmonid, they currently represent only about 25% of the state's wild trout resources. Rainbow trout and, less frequently, brown trout occupy most of the coldwater habitat that once supported brook trout. Additionally, these introduced species occur along with brook trout in over half of the existing brook trout streams. Genetic assessment of Tennessee's brook trout populations is nearly complete and has revealed that approximately 58% are native, southern Appalachian stocks. Brook trout populations in over 30 streams have been restored or enhanced by removing rainbow and brown trout during the past 25 years. This includes 11 streams (27.5 km) in GRSM. However, many of the early projects occurred prior to the genetic assessment and did not involve native populations. Native populations are now the primary focus of brook trout management efforts. Tennessee's brook trout continue to be limited or threatened by competition from introduced species, as well as urbanization and poor land use practices. Acidic deposition and stream warming associated with climate change are also threats.

The Tennessee Wildlife Resources Agency, National Park Service (GRSM), and United States Forest Service are primarily responsible for managing brook trout and their habitat in Tennessee. The Tennessee Valley Authority also provides assistance with restoration projects and helps protect brook trout habitat through its watershed restoration and reservoir release improvement programs. These agencies, in conjunction with the conservation organization Trout Unlimited, have jointly developed this brook trout conservation strategy for Tennessee. It provides goals and strategies intended to help protect, enhance, and restore populations of Tennessee's brook trout and to attain the broader goals of the Eastern Brook Trout Joint Venture. The general goal categories are prioritized, but distinctions are slight and primarily denote the likely order of completion.

Priority 1: Assessment

Short Term Goals

- 1.1 **Complete Tennessee's brook trout genetics assessment.**
Strategy: Determine the genetic identities (southern Appalachian, northern, or mixed) of all un-typed populations (about 25) by 2010.
- 1.2 **Develop a comprehensive brook trout data GIS layer.**



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Strategy: Archive and map historic and current brook trout distribution and genetic information by 2010.

Long Term Goals

1.3 Annually monitor Tennessee's brook trout populations.

Strategy: Continue (and refine as necessary) the existing monitoring programs designed to assess annual variability in brook trout abundance in allopatric and sympatric populations.

Strategy: Continue or develop cooperative long-term water quality monitoring programs that focus on key parameters (i.e., pH, anions, cations, sulfate, nitrate, temperature etc.) along elevational gradients. Relate the results of this monitoring to population monitoring results and identify areas where protection is needed.

1.4 Resurvey brook trout distribution.

Strategy: Locate and obtain GPS coordinates for the upper and lower distributional limits of each brook trout population by 2015. Map new distributions and assess changes/trends since completion of the previous surveys from the 1990s.

Priority 2: Habitat Protection

Short Term Goal

2.1 Protect brook trout habitat.

Strategy: Coordinate with the regional habitat protection biologist to verify compliance with all Clean Water Act (Section 404) and Aquatic Resource Alteration Permits issued for projects affecting waters supporting brook trout. Make appropriate recommendations to the US Army Corps of Engineers and the Tennessee Department of Environment and Conservation to ensure that permit requirements adequately protect brook trout habitat.

Long Term Goal

2.2 Improve brook trout habitat.

Strategy: Develop selection criteria for brook trout habitat improvement projects based on need, genetics and distribution information, land ownership, likelihood for success, and angling access.

Strategy: Develop a prioritized list of brook trout habitat improvement projects employing various stream restoration techniques as necessary (e.g., livestock exclusion, site re-vegetation, and in-stream channel modification). Seek project funding through established sources such as stream mitigation programs and State and Federal agricultural incentive programs.



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Priority 3: Outreach

Short Term Goal

3.1 Create/enhance public interest in brook trout.

Strategy: Produce and employ educational materials (e.g., maps, brochures, posters, articles, videos, live fish displays, etc.) highlighting the importance of Tennessee's brook trout and associated management activities (particularly those directed at native, southern Appalachian brook trout). Venues include agency websites, magazines, newsletters, school programs, stakeholder meetings, and fishing shows.

Strategy: Promote the Eastern Brook Trout Joint Venture (EBTJV) on websites and through other media outlets.

Long Term Goals

3.2 Increase landowner participation in habitat improvement programs.

Strategy: Publicize information regarding all current Federal and State grants and programs available to private landowners for protecting and improving water quality and habitat in brook trout streams. Provide technical assistance as needed.

Strategy: Publicize the application of BMPs, as well as the benefits of protecting and improving water/habitat quality, by presenting success stories (in local newspapers, on websites, magazines, newsletters etc.) that show how entire communities benefit, not just fish and anglers.

3.3 Develop relationships that foster brook trout conservation.

Strategy: Facilitate achievement of brook trout conservation goals by establishing relationships with non-governmental organizations (NGOs), city and county governments, land trusts, and other organizations.

Priority 4: Brook Trout Protection, Restoration, and Enhancement

Long Term Goals

4.1 Conserve Tennessee's native, southern Appalachian brook trout.

Strategy: Implement the management actions and guidelines recommended by the American Fisheries Society's Southern Division Trout Committee in its position statement on managing southern Appalachian brook trout (SDAFSTC 2005). This document provides guidance regarding issues such as protecting biodiversity, genetic integrity and conducting restoration and enhancement projects.



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Strategy: Identify candidate streams for southern Appalachian brook trout restoration or enhancement. Consider streams or brook trout populations for such projects based on criteria including need (population status, relative abundance of other native brook trout populations in the area, etc.), the presence of fish barriers, the quality/popularity of existing trout fisheries, and the likelihood for success.

Strategy: Produce a prioritized list of five to ten streams for native, southern Appalachian brook trout restoration or enhancement projects and begin implementation of these projects by 2010. If possible, this list will include restorations in at least two of the 16 subwatersheds where brook trout have been extirpated (EBTJV assessment) and two third-order (or larger) stream segments, such as lower Sycamore Creek on the Cherokee National Forest in Monroe County and Lynn Camp Prong in GRSM.

Strategy: Monitor restored or enhanced brook trout populations to evaluate project success.

4.2 Maintain Tennessee's other brook trout fisheries

Strategy: Periodically monitor the status of other brook trout populations (hatchery or hybrid origin) that provide significant fisheries, particularly where there is (or could be) encroachment by introduced rainbow or brown trout.

Strategy: Conduct restoration/enhancement projects or other management actions as necessary to protect these resources.

Priority 5: Recreational Fishing

Long Term Goals

5.1 Provide or Enhance Recreational Fishing Opportunities for Brook Trout

Strategy: Provide and maintain recreational fishing opportunities for native Southern Appalachian brook trout.

Strategy: Provide some brook trout fisheries in waters that are readily accessible (e.g., tailwaters and larger hatchery-supported streams with road access) so that most anglers, including those with handicaps, have the opportunity to catch and develop an appreciation for brook trout.

5.2 Comprehensively manage brook trout fisheries.

Strategy: Periodically conduct creel surveys on selected brook trout streams to document angler use, exploitation rates, and preferences. Use this information,



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along with brook trout population monitoring data, to adjust angling regulations if necessary or provide special fishing opportunities.

Reference:

Southern Division American Fisheries Society Trout Committee (SDAFSTC). 2005. Managing southern Appalachian brook trout: a position statement. *Fisheries* 30(7):10-20.