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Background

New York State's wild brook trout resources include a large number of both stream and pond populations. Thousands of miles of small streams in New York State contain wild brook trout, most prominently in the Adirondack, Tug Hill and Catskill regions. More limited stream populations exist in western New York State, east of the Hudson, and on Long Island. Remnant anadromous "salter" populations may exist on Long Island. The primary threats to stream populations of brook trout are poor land management practices and related issues such as high water temperatures. Non-native fish species such as brown trout are also threat. These species may out-compete brook trout especially in warmer, degraded streams. As a result brook trout populations in many larger, higher order streams been lost and are now mostly relegated to smaller, headwater streams. While most of these brook trout streams contain wild fish their genetic composition is generally uncertain due to brook trout stocking that started with the widespread stocking of fingerling brook trout in the late 1800's.

New York State currently manages over 400 lakes and ponds as brook trout waters, and natural brook trout reproduction is known to occur in at least 100 of these. New York State's active brook trout management program has produced a high quality and popular fishery, with annual reports of four to five pound fish being caught by anglers. However, the current number of wild, self-sustaining brook trout ponds in New York State is very low relative to historic conditions. Gallagher and Baker (1990) reported that less than 5% of the 1,469 Adirondack lakes and ponds sampled contained unstocked, healthy wild brook trout populations. Many of these waters were likely stocked in the past. Keller (1979) listed only eleven known "heritage" brook trout strains (i.e., no stocking history) still extant in their native waters. Genetic work performed by Perkins et. al. (1993) confirmed the unique genetic character of most of these populations. Furthermore, Perkins et. al. (1993) found significant genetic differences among river basins, among drainages within basins, and even among samples within minor drainages, and suggested that individual heritage populations should be the primary ecological units on which management strategies are based.

Primary threats to lake and pond populations of brook trout include diminished water quality resulting from acid precipitation and competition and predation from introduced species. Increasing beaver populations have been identified as a threat to both pond and stream populations of brook trout in many areas. Beaver ponds and dams may increase water temperatures and block access to or eliminate spawning areas.

Priority 1: Assessment

Short Term – Five Years

- 1.1 **Goal: Determine the status brook of trout for parts of New York State for which we have no quantitative data.**



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Strategy: Conduct fisheries surveys in each of the 106 HUC level 5 watersheds classified as “Qualitative Presence” in the Status and Trends study. Utilize State partnerships with NGO’s such as Trout Unlimited and leverage local knowledge to locate likely brook trout streams.

1.2 Goal: Determine status of brook trout for parts of New York State where their status is unknown.

Strategy: Conduct fisheries surveys in each of the 89 HUC level 5 watersheds classified as “Unknown, No Data” in the Status and Trends study. Utilize State partnerships with NGO’s such as Trout Unlimited and leverage local knowledge to locate likely brook trout streams. Watersheds that should be categorized “Absent/No History” need to be identified and separated from those that are truly lacking data. In some cases it may be best to split large watersheds that contain discrete areas markedly differing in brook trout status.

1.3 Goal: Map existing wild brook trout populations in lakes and ponds.

Strategy: Create a GIS layer containing information on wild brook trout lake and pond populations, including heritage strain information, stocking history, liming and reclamation history, groundwater inputs, and a measure of natural reproduction (e.g., wild two-year old brook trout or older fish caught per net).

1.4 Goal: Use genetic research to determine appropriate management units.

Strategy: Confirm earlier allozyme genetic studies of New York brook trout with newer microsatellite DNA techniques and place the relatedness of New York strains of brook trout within the context of brook trout populations throughout their eastern range. Brook trout will be managed to prevent the loss of populations that contribute to the overall genetic variation in New York brook trout, and the selection of fish for active broodstock, propagation, and restoration efforts will be based upon this work.

Long Term – Ten Years

1.5 Goal: Use genetic techniques to identify “heritage” brook trout waters.

Strategy: Use genetic markers/techniques to determine if specific waters contain native “heritage” strain brook trout and how these populations contribute to the overall genetic diversity of brook trout in New York. Management actions would be tailored to preserve this genetic diversity.

1.6 Goal: Determine brook status for watersheds where status may have changed.

Strategy: Conduct fisheries surveys to update brook trout status in HUC level 5 watersheds, especially in areas of rapid development or other changing conditions.

Strategy: Survey for new populations in selected HUC level 5 watersheds.



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- 1.7 Goal: Map existing wild brook trout populations in streams.**
Strategy: Create a GIS layer containing information on wild brook trout stream populations. Include recent stocking history if known.

Priority 2: Habitat Protection and Improvement

Short Term – Five Years

- 2.1 Goal: Expand staff habitat improvement expertise.**
Strategy: Provide training to DEC staff to expand on their ability to identify potential habitat projects, work with contractors as needed to design projects, and coordinate and oversee contractors and local volunteers during project implementation.
- 2.2 Goal: Identify and conduct habitat improvement projects.**
Strategy: Establish relationships and partner with local non-profit groups and other government agencies to help in identifying and then implementing habitat improvement projects and projects to improve fish passage (e.g., culvert design and replacement).
Strategy: Work with permitting staff to develop and improve standards for culverts, stream crossings, storm water runoff management, and riparian buffers, incorporating natural channel principles and design to the extent possible.
Strategy: Identify dams and other structures that prevent passage from tidal habitat up into streams with native Long Island brook trout populations. Work with local government and NGO's to secure funding and install fish passage where needed.

Long Term – Ten Years

- 2.3 Goal: Protect brook trout habitat.**
Strategy: Coordinate with regional habitat protection biologists to ensure proper permitting and compliance with all federal and state regulations for projects affecting waters supporting brook trout.
Strategy: Identify waters where beavers are impacting brook trout populations and encourage actions to limit beaver populations or develop mitigative techniques to improve conditions for brook trout.
Strategy: Initiate private landowner incentive programs to protect and manage for brook trout habitat.



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Priority 3: Brook Trout Protection, Restoration, and Enhancement

Short Term – Five Years

- 3.1 Goal: Restore lake and pond populations of naturally reproducing brook trout.**
Strategy: Through survey work and large-scale GIS analysis, identify suitable candidate lakes and ponds for restoration.
Strategy: Continue chemical reclamation and liming efforts followed by restocking with suitable strains of brook trout.
Strategy: Conduct studies to assess the relative reproductive success of various strains of brook trout.
Strategy: Work with the Adirondack Park Agency to support work by DEC fisheries personnel to preserve, protect, enhance and restore brook trout in ponded waters including designated wild forest and wilderness areas of the Adirondack and Catskill Parks.
- 3.2 Goal: Protect native brook trout populations from introductions of exotic species.**
Strategy: Increase penalties for illegal fish introductions to brook trout waters. Illegal introductions and unpermitted stockings of exotic and native but widely introduced species into brook trout lakes and ponds are a major threat. Current penalties for these introductions need to be substantially increased, possibly coupled with a generous reward program for tips leading to convictions.
Strategy: Where needed, maintain and construct barrier dams to prevent the spread of unwanted brook trout competitors.
Strategy: Evaluate stocking policies in streams where stocked brown and rainbow trout may be impacting wild brook trout populations. Consider the termination of stocking if feasible given the current fishery and if publicly acceptable.

Long Term – Ten Years

- 3.3 Goal: Preserve the genetic diversity of brook trout in New York State.**
Strategy: Tailor stocking, restoration, and habitat protection programs to preserve known heritage populations as distinct entities, thereby maximizing the overall genetic diversity of brook trout in New York.
Strategy: Based on genetic characteristics, continue propagation of selected, representative strains of heritage brook trout. This will entail developing adequate broodstock waters and coordinating with the state, county and private hatcheries. Pursue the development of broodstock waters, particularly on new state land acquisitions and private lands. Cooperation with NGO's that manage private waters will be essential.



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Strategy: Pursue land-acquisition projects that will help to preserve overall genetic diversity of brook trout.

3.4 **Goal: Restore Stream populations of naturally reproducing brook trout.**

Strategy: Through survey work, large-scale GIS analysis, and constituent interest, identify suitable candidate streams for restoration.

Strategy: Where biologically feasible and publicly acceptable, remove competing fish species.

Strategy: Restock as needed with suitable strains of brook trout.

3.5 **Goal: Conduct research into the control of black bass and other competitors in large lakes.**

Strategy: Explore biological and other methods for controlling black bass and other competitors in large lakes. Most of the large lakes that were formally excellent brook trout waters have been severely impacted by the introduction of these competitors, and are too large for chemical reclamation.

3.6 **Goal: Research the feasibility of "salter" brook trout restoration to Long Island tidewaters.**

Strategy: Determine habitat requirements of tidal trout in waters where they are established, such as Cape Cod, and determine if Long Island tidewaters provide suitable habitat.

Strategy: Once barriers have been removed, increase protection of brook trout in tidal waters by extending the Long Island brook trout catch and release only regulation to the tidal waters.

Strategy: If/when returning tidal brook trout are identified, seed other suitable locations by transporting returning trout to suitable habitat in other streams.

Strategy: If no tidal trout are identified, consider establishing populations by stocking using genetically appropriate local or sea run strains.

Priority 4: Outreach

Short Term – Five Years

4.1 **Goal: Enhance angler and public awareness of wild brook trout.**

Strategy: Produce printed material and web content that fosters awareness and respect for wild brook trout and angling opportunities.

Strategy: Expand existing trout in the classroom programs. NGO's are likely to take the lead on this strategy.

Strategy: Produce information on the impacts of baitfish and other introduced species, landuse practices, and examples of habitat improvement projects.

Strategy: Cooperate with the communication efforts conducted by NGO's such as Trout Unlimited.



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Priority 5: Recreational Fishing

Short Term – Five Years

- 5.1 Goal: Manage selected stream sections as experimental “special brook trout management areas”.**
Strategy: Establish an experimental management regime on selected streams that exhibit good brook trout survival and growth (greater than ten inches) and that are sizable enough to support a fishery. Restrictive brook trout harvest regulations would be established in these areas and all stocking (state and private) would be eliminated. Harvest of brown and rainbow trout would be encouraged in these areas. Collect information on other state’s experiences with similar efforts – criteria for selecting streams, regulations enacted, and success.
- 5.2 Goal: Establish trophy brook trout lakes or management areas.**
Strategy: Select lakes and ponds with good trout survival and growth potential (greater than 16 inches) and manage these waters as trophy brook trout waters through reduced stocking and/or special regulations, and other management actions. Consider establishing trophy brook trout zones within selected state land units. An assessment of similar regulations/management actions and their results in New York and other states (Maine) will be considered.

References

- Gallagher, J., and J. Baker. 1990. Current status of fish communities in Adirondack lakes. Pages 3-11 to 3-48. In: Adirondack Lakes Survey: An Interpretive Analysis of Fish Communities and Water Chemistry, 1984-87. Adirondack Lakes Survey Corporation, Ray Brook, NY.
- Keller, W. T. 1979. Management of Wild and Hybrid Brook Trout in New York Lakes, Ponds, and Coastal Streams. New York State Department of Environmental Conservation, Division of Fish, Wildlife, and Marine Resources, Albany, New York.
- Perkins, D. L., C. C. Krueger, and B. May. 1993. Heritage Brook Trout in Northeastern USA: Genetic Variability within and among Populations. Transactions of the American Fisheries Society 122:515-532