

# *New Hampshire Brook Trout Conservation Strategies*

## **Background**

Approximately 7% of New Hampshire's subwatersheds are known to contain a high percentage (>90%) of historic habitat occupied by self-sustaining (wild) brook trout populations, which are primarily concentrated in northern New Hampshire, including the Upper Connecticut and Dead Diamond River systems and the Magalloway River. Wild brook trout are present throughout a majority of the state but there is insufficient data available to quantitatively classify the current distribution and status of these populations in 70% of the subwatersheds.

Like most of New England, New Hampshire endured intensive timber harvest during the period of early European settlement. The resulting deforestation, log drives, and sediment runoff caused the loss of many wild brook trout populations through habitat degradation. While the state has become reforested to a large extent, suburban and urban development, acid deposition from airborne sources, habitat fragmentation resulting from dams and poorly designed road crossings, and sediment from roadways yield high levels of threat to New Hampshire's wild brook trout.

## **Priority 1: Protection**

### **Short Term Goal**

#### **1.1. Identify native populations of brook trout in New Hampshire.**

**Strategy 1.1.1.** Collect tissue from brook trout in different watersheds throughout the state for genetic analysis.

**Strategy 1.1.2.** Map brook trout families and determine if these are from hatchery or native stocks.

#### **1.2. Develop a comprehensive wild brook trout database.**

**Strategy 1.2.1.** Create GIS data layers that delineate the stream miles occupied by wild brook trout and identify threats to their habitat.

### **Long Term Goals**

#### **1.3. Implement actions that protect brook trout populations and their habitat.**

**Strategy 1.3.1.** Review New Hampshire's water quality standards and usage classifications to determine if they provide adequate protection to brook trout habitat and develop revisions if necessary.

**Strategy 1.3.2.** Work with bordering states to develop strategies to increase funding and staffing to insure landowner compliance with water quality regulations.

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**Strategy 1.3.3.** Verify that dredge and fill activities that can affect brook trout habitat are in compliance with permit conditions and Section 404 of the Clean Water Act.

**Strategy 1.3.4.** Promote the use of Best Management Practices for silvicultural and other soil-disturbing activities in areas that can affect brook trout habitat.

**Strategy 1.3.5.** Evaluate road crossings of streams within subwatersheds containing wild brook trout to determine if they are degrading habitat and/or obstructing fish passage. Develop plans to replace road crossings as needed.

**Strategy 1.3.6.** Conduct environmental reviews of all plans and applications for new highway corridors, bridge and road replacement and maintenance projects, stream diversion and channel changes, dam construction, dam removal, installation of hydroelectric production facilities on existing dams, and disposal of municipal, residual and hazardous wastes located within subwatersheds containing wild brook trout and provide comments and alternatives to state and federal regulatory agencies to prevent damage to brook trout habitat.

**Strategy 1.3.7.** Communicate brook trout habitat protection needs to pertinent policy and decision-making arenas.

**Strategy 1.3.8.** Identify lands and riparian areas where providing critical protection to brook trout habitat requires obtaining fee title or permanent conservation easements and collaborate with other agencies and land conservation organizations to protect these lands.

**Strategy 1.3.9.** Develop and use metrics that describe progress in protecting the status and distribution of wild brook trout in New Hampshire.

**Strategy 1.3.10.** Prevent the spread of exotic species that can negatively affect wild brook trout populations.

**Strategy 1.3.11.** Limit the use of hatchery-reared trout in subwatersheds of streams that contain intact populations of wild brook trout.

### **1.4. Identify changes in threats to brook trout populations and their habitat.**

**Strategy 1.4.1.** Evaluate acidification in sensitive areas of subwatersheds containing wild brook trout.

**Strategy 1.4.2.** Develop a partnership with New Hampshire Department of Environmental Services personnel and Volunteer Lakes Program (VLAP) members to collect water samples annually.

**Strategy 1.4.3.** Monitor summer stream temperatures in sub-watersheds containing wild brook trout.

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**Strategy 1.4.4.** Screen for changes in land and water use practices that impact brook trout.

**Strategy 1.4.5.** Continually update geographically explicit threat data in the wild brook trout database.

### **Priority 2: Assessment**

#### **Short Term Goal**

##### **2.1. Prioritize subwatersheds for quantitative data collection.**

**Strategy 2.1.1.** Create a GIS data layer that delineates the stream miles in subwatersheds where qualitative data indicates the presence of wild brook trout.

**Strategy 2.1.2.** Create a map using GIS layers of the various threats and habitat occupied by wild brook trout and rank subwatersheds by priority need for quantitative assessment of wild brook trout status and distribution.

#### **Long Term Goal**

##### **2.2. Obtain quantitative data on the status and distribution of wild brook trout.**

**Strategy 2.2.1.** Collect quantitative data on the distribution of wild brook trout populations and use the data to classify its status at the subwatershed level.

**Strategy 2.2.2.** Validate the models Hudy et al. (2005) developed to predict wild brook trout population status by subwatershed.

### **Priority 3: Enhancement and Restoration**

#### **Short Term Goal**

##### **3.1. Determine suitability of subwatersheds for enhancement or restoration of wild brook trout.**

**Strategy 3.1.1.** Identify and prioritize subwatersheds that are least likely to change with climate and contain suitable habitat for increased occupancy by wild brook trout.

#### **Long Term Goal**

##### **3.2. Increase the percentage of historic habitat occupied by wild brook trout.**

**Strategy 3.2.1.** Identify and use effective habitat restoration/enhancement techniques.

**Strategy 3.2.2.** Evaluate brook trout habitat enhancement and restoration actions and monitor the use by wild brook trout.

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**Strategy 3.2.3.** Expand the range of wild brook trout into enhanced and restored habitat through the process of natural recolonization. When natural recolonization cannot occur, wild brook trout donor populations within the same subwatershed or if necessary, an adjacent subwatershed will be used.

### **Priority 4: Recreational Fishing**

#### **Short Term Goal**

##### **4.1. Identify waters capable of sustaining wild brook trout fisheries.**

**Strategy 4.1.1.** Monitor selected waters to determine if water temperatures are a limiting factor for brook trout.

**Strategy 4.1.2.** Evaluate the quality and quantity of brook trout habitat in selected waters not limited by water temperatures.

**Strategy 4.1.3.** Derive wild brook trout population estimates in suitable waters.

#### **Long Term Goal**

##### **4.2. Provide wild brook trout fisheries in suitable waters.**

**Strategy 4.2.1.** Manage for wild brook trout fisheries in waters that support self-sustaining populations at densities  $\geq 13$  lbs/acre.

**Strategy 4.2.2.** Sustain and improve wild brook trout fisheries through the use of appropriate angling regulations and habitat management that maintain or enhance wild population levels and/or fish size.

**Strategy 4.2.3.** Determine angling effort directed towards wild brook trout fisheries and evaluate the affects of angling regulations.

### **Priority 5: Outreach**

#### **Long Term Goal**

##### **5.1. Build strong coalitions that support the conservation of wild brook trout.**

**Strategy 5.1.1.** Establish partnerships with federal, state, and public angling, environmental, and watershed organizations that seek to meet the conservation needs of New Hampshire's wild brook trout.

**Strategy 5.1.2.** Build strong grass root support that places conserving wild brook trout high on the public agenda and brings sustained attention to the need for action.

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**Strategy 5.1.3.** Develop an understanding of and support for protecting brook trout habitat among policy makers with an educational and public awareness campaign.

**Strategy 5.1.4.** Develop educational programs and material that teach youths the connection between good water quality and wild brook trout and how to preserve both.