

# FORESTS FOR FISH – A Novel Approach to Forested River Management



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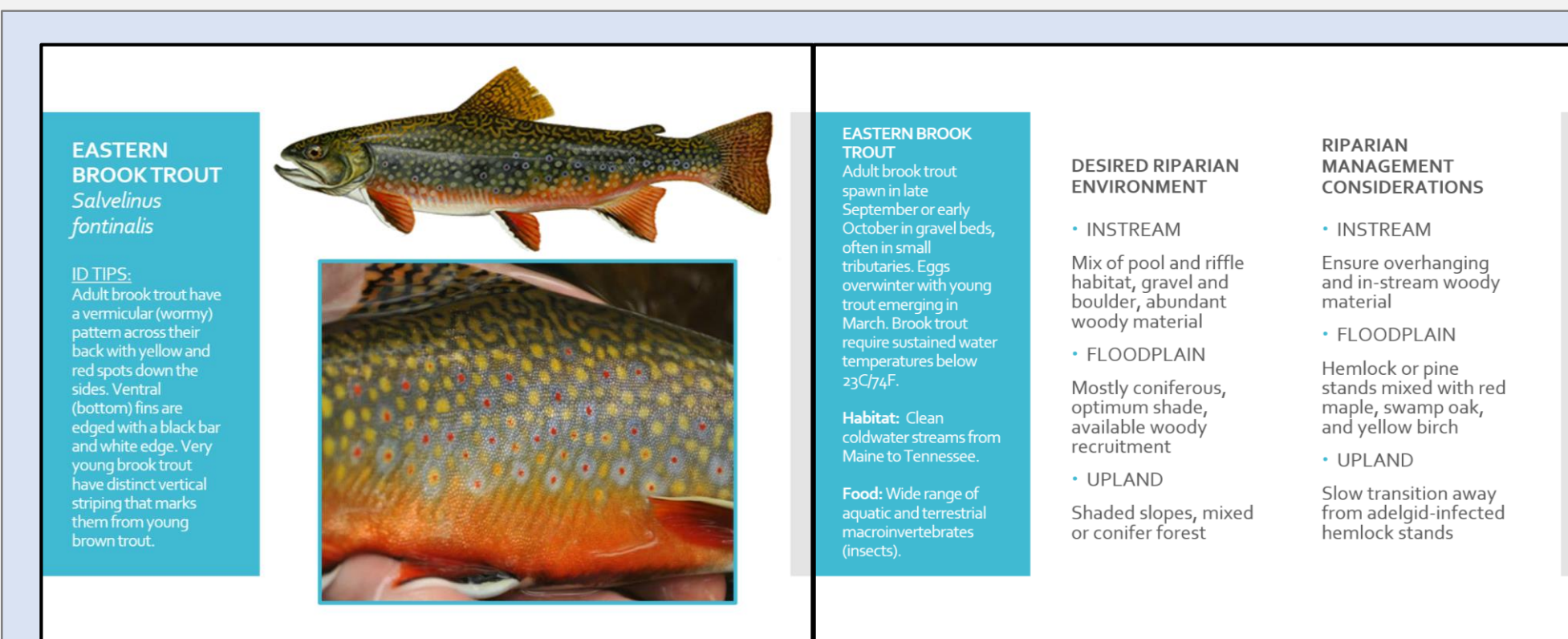


## The Toolkit

Forests for Fish tool-kit consists of three guides that disseminate information about the intersection between good forestry practices, high-quality streams and fisheries, and flood resilient stream systems. Each guide focuses on the catchment scale including: upland slope, floodplain, and active channel (Figure 3).

### *The Streamer's Dozen – Riparian Wildlife Guide*

*Protecting and enhancing coldwater stream systems for the landowner, this guide introduces 'Forests for Fish' and 12 different species of interest (Figure 1).*



**Figure 1.** Sample page of the working draft for one of three booklets in the toolkit: *The Streamer's Dozen – Riparian Wildlife Guide*.

### *"Doing the Work" – Riparian BMP's*

*For the land managers and foresters, this guide provides an assessment tools as well as management considerations or recommended actions for the upland slope, floodplain, and active channel.*



**Figure 2.** Managing for instream wood: A – Maintaining pre-existing large wood in the North River, Crowningshield property in Heath, MA; B – Chainsaw training with TU in NH, demonstrating strategic instream wood placement methods.

*Scaling Up – Riparian Systems and the Big Picture Climate Change. Resilience. Pests & Pathogens. Trout and salmon are especially vulnerable to climate change because they are dependent on an abundance of clean, cold water; Increased storm frequency and intensity will impact streams as streambanks become more susceptible to floods; And Hemlock Wooley Adelgid will deplete riparian hemlock groves that provide shade or cover and help keep coldwater fisheries cold. (Figure 4)*

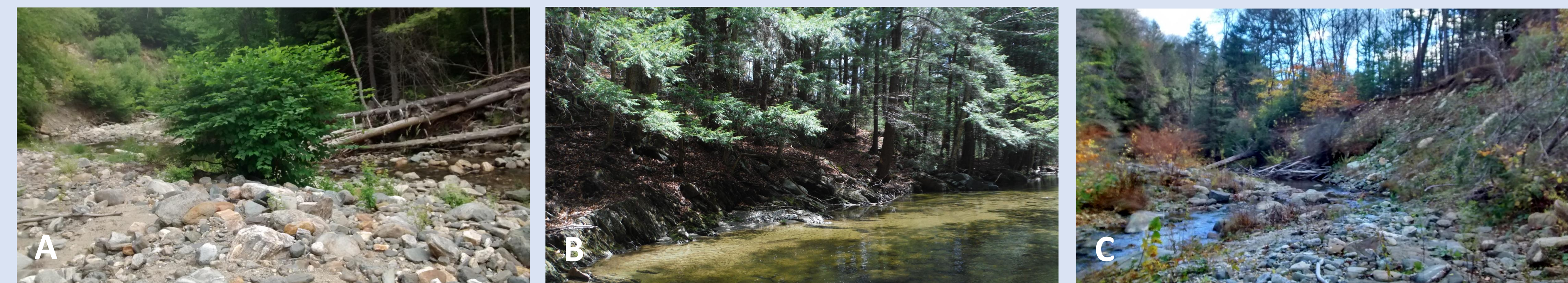
## Background

Forests for the Fish is an innovative fisheries management pilot project, modeled after the success of the Vermont and Massachusetts Foresters for the Birds program, which has been implemented across the north east region. This project is designed to enhance stream connectivity in the Deerfield River Watershed to provide habitat for cold water fish such as native brook trout which are experiencing habitat loss at an alarming rate. Franklin Land Trust (FLT), Massachusetts Woodland Institute (MWI), and Trout Unlimited (TU), supported by a variety of grants and contributions, is developing a tool kit for managing forested lands near cold water streams. This tool kit will help forest land owners, working with trained foresters and fisheries consultants, assess their forested streams. These assessments will help determine applicable practices that will enhance cold water habitats.

In the Deerfield River watershed of western Massachusetts, wild brook trout populations depend on small headwater streams and the forested landscape which provide these streams with shade, nutrients, and hydrological stability. Since the Deerfield Watershed is dominated by private land ownerships, to effectively manage the small headwaters and forested catchments that support the region's wild brook trout it is imperative to engage private landowners. By identifying areas where stream health and silvicultural goals align and equipping foresters and landowners with the tools needed to work at these intersections, the Forests for Fish program will draw the attention of private landowners to a novel wildlife habitat interest, stimulate the local forest products economy, and enhance the resilience of wild trout population.



**Figure 3.** Catchment Connectivity: A – Upland slope, mainly forested, provides hydrologic connectivity through the hillslope-riparian water table and influences other landscape features such as seeps and springs; B – Floodplain, adjacent to the upland slope, includes the area periodically flooded by the active channel; C – Active channel, typically characterized geomorphically by scour and sediment transport, enables flow of water associated with river networks.



**Figure 4.** Managing for resilience and maintaining healthy riparian systems will include: A – Removal of invasive species such as Japanese Knotweed (*Fallopia japonica*); B – Monitoring transitioning Eastern hemlock groves that are impacted by Hemlock Wooley Adelgid; C – Restoring impacts from tropical storm Irene in 2011 and providing protection to areas prone to flooding in future storms.

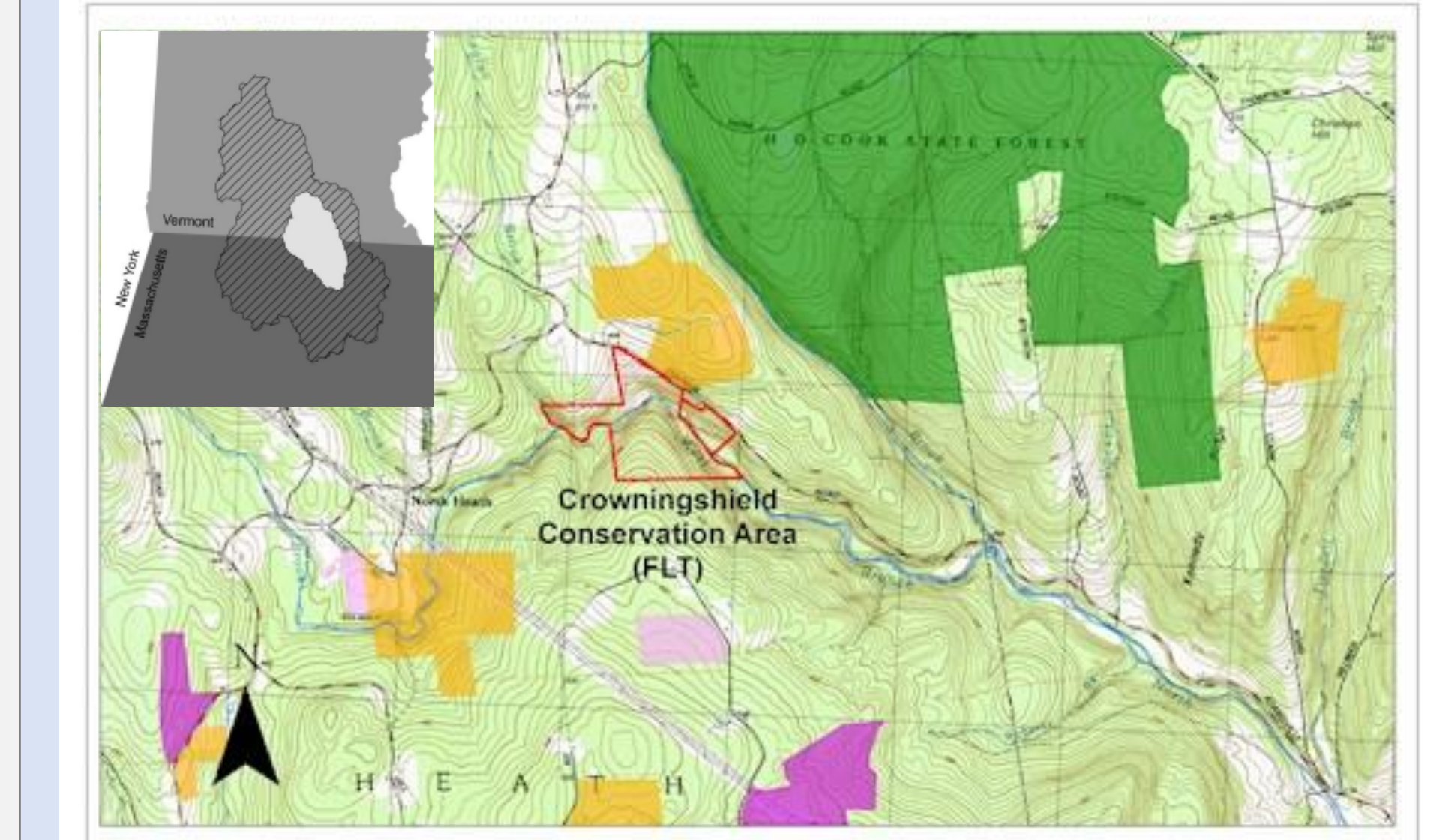
## Next Steps

- Adapting Forested Watersheds to Climate Change Workshop - <http://forestadaptation.org/water>
- Completion of 'Forests for Fish' toolkit
- 2017 Field Season – North River pilot project (Crowningshield Property and H.O. Cook State Forest)
- Continued monitoring before and after forest management and instream manipulations

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## Case study

North River watershed (NRW), a subwatershed within the Deerfield River basin, includes Whitingham and Halifax in Vermont and Heath and Colrain in Massachusetts. Crowningshield Conservation Area, a pilot site in Heath, MA, has begun monitoring instream temperature and pre-existing large wood in the active channel of the North River (Figure 5-6). The second site is a tributary to the North River that runs through H.O. Cook State Forest (Figure 5.).



**Figure 5.** Site locations within the NRW for piloting Forests for Fish program.

## Project Goals

- Enhance in-stream habitat conditions and stream connectivity for native cold water fish in the Deerfield River Watershed
- Provide high-quality education and riparian forest management tools for landowners and land management professionals
- Provide climate change adaptive stream management techniques to community members which increase resilience of built infrastructure
- Support economic viability of forest and stream related businesses in the region



**Figure 6.** Monitoring photos: A-B – Installation of HOBO temperature sensors; C – Tagged logs that have been measured (DBH and length) and recorded with GPS location.