Large Wood
Past Work & Lessons Learned

October 11, 2018 ~ BCCD Large Wood Workshop, Gunstock Mtn. Resort

Presenters

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New England Conservation Program (NECP)

Full Time Staff Overview

- Colin Lawson: New England Restoration Coordinator
  Focusing on eastern MA, NH & southern ME
- Erin Rodgers: Western NE Restoration Coordinator
  Focusing on western MA and southern VT
- Joel DeStasio: New England Field Manager
  Working primarily on Large Wood Habitat Projects
- Hiring Engineer: Stream Restoration Specialist ~ Engineering Services
  Working on Projects across MA, ME, NH, VT
- Other NE Staff: Tracy Brown (western Connecticut & Upstate NY),
  Jeff Reardon (ME), and Open Position (northern NH & VT)
The New England Conservation Project ~ What we do:

Stream Connectivity & Habitat Development

- In-stream Assessments
- Culvert Replacement & Dam Removal
- Large Wood Habitat Restorations
- Prioritization of project sites
- Stream Bank stabilization
- Restoration Monitoring

We need to focus on keeping the “Ecosystem” in balance to reduce vulnerability!

- Improve habitat connectivity
- Allow access to larger number of interconnected stream miles
- Focus on habitat ~ species diversity & productivity
How the habitat and stream channel disconnect begins...

A Well Designed Crossing

- Large size suitable for handling most flood flows
- Open-bottom arch considered optimum for most conditions
- Openness ratio needs to be $> 0.5$ ft (sqft / length)
- Bankfull width greater than $1.2 \times$ stream’s active channel
- Water depth and velocity match up and down stream
- Natural substrates create good conditions for stream biota
Ammonoosuc River ~ Assessment Prioritization & Outreach

Evaluate vulnerability of structures across the watershed...

“Pass” ✨
“Transitional” 🔵
“Fail” 🔴

Hydraulic Model Results:

Community Workshops and Outreach
The goals of habitat restoration efforts:

- Improve aquatic bio-density
- Influence spawning potential by developing pool riffle runs
- Improve mobility within this tributary to offer thermal refugia
- Re-engage floodplain access where appropriate ~ slow water velocities down
- Improve water quality & retain nutrients throughout the system

Beebe River Restoration Project
Campton & Sandwich, NH
Landowner: The Conservation Fund
- 58% of the Beebe River Watershed is now protected
- 6.5 mile boundary shared with the national forest

Made possible with a NH NRCS RCPP Grant as well as numerous other federal, state and private contributions
Beebe River
Mid-Summer
Main Stem
Water Temperatures

exceeded suitable temperatures for brook trout

Beebe River
Mid-Summer
Tributary Water Temperatures

once reconnected, trout have excellent opportunity for access to cooler thermal refugia
Beebe River ~ Undersized Crossing

Beebe River ~ Restored Crossing
High Quality Habitat Requires

- Water Depths
- Gravel Substrate
- Large Wood
- Water quality
- Structure Diversity
- Riparian Vegetation
- Cold Temperatures
- In-stream Vegetation
- Water Velocity
- Floodplain Access

Initially Worked with NRCS

- Reviewed 100 WRP properties
- Selected 30 priority sites
- Prioritized and completed 23 restorations

Overall these restorations helped but had limited impacts due to the average installation of roughly 2,000 linear feet.
**New Hampshire**

**TU’s Large Wood Projects Around the State**

1. Southeast NH – NRCS WRP: 23 Installations
2. Ashuelot River Tributaries – interested private landowners: 6 Installations
3. Beebe River; roughly 40,000 linear feet added to six major tributaries – Tin Mountain Crew
4. Working now to target watershed scale large wood restoration projects
   - Poorfarm Brook & Gunstock River: 2+ miles

- Drainage Area = 2.4 mi²
- Drainage Area = 1,523 acres
- Mean Slope = 6.4 %
- 2 Year Storm = 594 ft³/s
- 2nd Order Stream

Wood is good, but its missing...!
Pierce Brook, Acworth, NH ~ Large Wood Restoration

Field work completed 11/21/2012

Great results two years later.
Pierce Brook, Acworth, NH ~ 2 Years after restoration

Hand Placing Large Wood

- Trees felled day of or in advance
- Sections cut to length
- Placed to enhance fish passage
- Re-engage floodplain
Grip-hoist techniques

- Powerful Come-along
- Used to secure large wood
- Allows for moving whole trees
- Useful on non-channel spanning wood

Chop & Drop In-Stream Large Wood:

Graykin Easement – Lamprey River Deerfield, NH ~ Restoration Completed August 30th, 2016
Poofarm Brook Large-Wood Habitat Restoration
Gilford, New Hampshire

- Trout Unlimited conducted restoration assessment during the 2017 summer season.
- Drafted site assessment for Belknap County Conservation District (BCCD) for use in grant proposals.
- Grant funding awarded to BCCD from New Hampshire State Conservation Committee “Moose Plate” grant program & NFWF.

Poofarm Brook Large-Wood Habitat Restoration
Gilford, New Hampshire

- This particular stream reach will serve as a "conservation demonstration area", as proposed by BCCD.
- Public stream restoration workshops in 2018 & 2019 will feature this demonstration area.
- Post-project monitoring plan to be developed that can be conducted by volunteers.
Some Lessons Learned

1. Project development: landowner coordination requires patience
2. Permits: start early communicating with NHFGD & NHDES
3. Designs: best to go into the field with a plan; revise as needed
4. Field Teams: project dependent, a good field team is 4 to 6 persons
5. Sawyers are the backbone of the operation; let them set the pace
6. Safety First ~ Production Second
Andorra Forest Fish Bypass Channel, Stoddard, NH

Andorra Pond

E-fished 12” Wild Brook Trout

View of Andorra Pond looking downstream

Property access road across top of dam

Stream channel above pond

www.tu.org
Andorra Forest Fish Bypass Channel, Stoddard, NH

Original stormwater spillway

Vertical Pond Outlet

Horizontal Outlet

New Channel Roughed Out

Pond level lowered to construct in dry conditions; photos are roughed out stream bed…
Finished Stream Channel

Stream bed washed in from welcomed September rains.

Family and Volunteer Replanting Day

Over 300 woody and herbaceous plants installed.
Questions welcomed...

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