2020 Warner River Watershed Conservation Project Update

Hello Project Partners,

We hope everyone is doing well and remain hopeful we can safely return to field work in the watershed in 2021.

Restrictions associated with the pandemic severely limited our ability to conduct surveys and engage publically with the community. Despite this, there was significant progress on two conservation projects in the watershed this year. These projects were built directly upon the information collected with support from thousands of hours of volunteer assistance since 2012. With close to 175 fish and macroinvertebrate community surveys and over 200 stream crossing structure assessments, we are fortunate to be in a unique position to identify and evaluate meaningful opportunities to protect and restore water quality and wild brook trout populations in the Warner River Watershed.

In early 2020, the Aquatic Resource Mitigation (ARM) Program at the NH Department of Environmental Services announced \$367,000 available within the Contoocook River Watershed Project Area. This funding is generated from projects which cannot avoid impacts to streams and wetlands. Information collected by the Warner River Watershed Conservation Project helped justify allocating \$340,000 from ARM Program to support culvert replacement projects in Warner and a land conservation effort in Newbury. These funds were matched with contributions from the towns of Newbury and Warner as well as Basil W. Woods, Jr. Trout Unlimited.

Ballard Brook Connectivity Restoration Project-Warner

This project will replace a 6 foot wide culvert with a 16 foot wide embedded box culvert on Red Chimney Rd during the 2021 summer. The designs to replace two additional culverts further upstream on Red Chimney Rd and East Joppa Rd will also be created during the first phase of the project. The two upstream culverts will be addressed when funding becomes available in the future.

The most downstream culvert on Red Chimney Road is a barrier to aquatic organism passage (AOP) and reoccurring flood hazard risk. The installation of an embedded box culvert will restore access to approximately 6,900 feet of stream, presuming some species can migrate through two upstream culverts scored as *reduced* passage. The width of the current



Most Downstream Culvert on Red Chimney Rd, Warner

structure is 53% of the bankfull channel, indicating a constriction during elevated flows and disruption of natural sediment conveyance. With significant channel narrowing of this magnitude, a loss of streambed materials downstream has created a culvert outlet freefall. The predicted vulnerability of this structure to overtop during the 25 year flow event is also alarming.



The Ballard Brook Connectivity Restoration Project will increase access to cold water habitat for wild brook trout and fish species when the water temperatures within the mainstem Warner River exceed tolerable levels in the summer.

We anticipate the replacement of the first targeted culvert to occur during the summer of 2021. The town of Warner is supporting this effort by providing project management and construction. Volunteers will be needed to help monitor the fisheries and aquatic macroinvertebrate responses over the next five years. Ballard Brook supports eight different fish species including wild brook trout and burbot, both identified as species of greatest conservation need in the NH Wildlife Action Plan. Aquatic macroinvertebrate surveys suggest excellent water quality.

Upon project completion, a more natural flow regime would restore aquatic ecosystem functions associated with free flowing stream channels: improved aquatic connectivity, re-engaged flood plain access, and reestablishment of an appropriate stream width to depth ratio. A properly sized structure would also encourage the re-distribution of more diverse substrates improving spawning conditions for migrating brook trout. Collectively, these new structures would reduce erosion, stabilize the stream bed and banks, and reintroduce suitable conditions for native vegetation to regrow and improve overall instream water quality.

Warner River Headwaters Land Conservation Project-Newbury

A 2009 national evaluation by the US Forest Service projects the Contoocook River Watershed to be the second highest ranked watershed predicted to succumb to the greatest alterations to water quality due to loss of private forests from housing development. Being within this area of concern, limited funding available to protect against the loss of private forests through land conservation needs to allocated most effectively as possible. This effort conserves 86 acres within the upper reaches of the West Branch Warner River Watershed. With financial support from the town of Newbury and Basil W. Woods, Jr. Trout Unlimited in conjunction with information collected by the Warner River Watershed Conservation Project, Ausbon Sargent Land Preservation Trust received ARM funding to purchase two parcels along Mountain Rd in Newbury.



The Warner River Headwaters Land Conservation Project recently protected two parcels within the headwaters of the West Branch Warner River on Mountain Rd in Newbury.

Aquatic macroinvertebrate and fish community surveys along this portion of the West Branch Warner River headwaters indicate excellent water quality and the greatest density values for both adult and juvenile wild brook trout throughout the entire West Branch Warner River Watershed. Water temperature monitoring further illustrates the high quality and suitability of the stream along the conserved parcels for wild brook trout. Stream temperatures consistently remain well within tolerable ranges for wild brook trout throughout the summer.



These conserved parcels abut already conserved forests spanning over the summit of Mount Sunapee into Goshen. The conservation of this property further secures habitat connectivity, wildlife migration and biodiversity of native plants and animal. This recent effort protects an additional 2000 feet along the western riparian corridor downstream of Mountain Rd.

Plans for 2021 Field Season

We hope to return to field work and public outreach in 2021 once health guidelines and comfort levels indicate these actions can be carried out safely. Volunteer opportunities are expected to include:

- Collecting information near culverts which have been identified as being a high priority for replacement or at other locations which may help show the aquatic value of potential land protection projects
- Returning to locations noted to be impacted by drought conditions to monitor how (or if) the fish community recolonizes these locations
- Sampling along Ballard Brook to document pre-culvert replacement conditions
- Collecting baseline information along streams identified as being good candidates for strategic instream wood installation projects
- Supporting outreach efforts during community and regional events

We continue to be grateful for the extraordinary level of support for this project and look forward to getting outside with everyone at some point in 2021.

Everyone stay safe and healthy,

George Embley Conservation Chair Basil W. Woods, Jr. Trout Unlimited Ben Nugent Fisheries Biologist NH Fish and Game