



2021-2022 FINAL REPORT

NEW BRUNSWICK WILDLIFE TRUST FUND PROJECT #301-221

NASHWAAK WATERSHED ASSOCIATION INC.

17 FEBRUARY 2022

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PROJECT NAME:

Assessing and Restoring the Connectivity of the Nashwaak Watershed

EXECUTIVE SUMMARY

The Nashwaak Watershed Association Inc. (NWA) received \$9,000 from the NB Wildlife Trust Fund in the 2021 fiscal year for our aquatic connectivity project. Match funding was provided by the Atlantic Salmon Conservation Foundation. The project deliverables were as follows: 1) conduct a preliminary field survey of at least 50 culverts in the central watershed, 2) clean up garbage and debris from all assessment sites; 3) prioritize them for remediation in terms of barriers to fish using The Nature Conservancy's Barrier Assessment Tool (A GIS-add on); 4) update our aquatic connectivity map of the watershed, 5) remediate at least one priority culvert, using a local hydraulic engineering company's expertise as a guide; 6) conduct electrofishing surveys; and 7) share results with NBDTI and other partners.

The objectives of the project were met and surpassed, with the exception of the number of culverts surveyed, which was 40. The reduced number surveyed was due to a number of factors including: lack of access to culverts, an unusually wet July and a dam removal that we conducted, which took up more staff time than anticipated.

All deliverables were completed within the time frame of the grant; however, the project was set up to be a multi-year project. Therefore, the deliverables will carry over into the 2022 field season and beyond.

No permits were required for the field surveys or monitoring. NBDTI's permission was obtained and Watercourse and Wetland Alteration (WAWA) permit applications were granted for the projects on Limekiln Brook and Campbell Creek. NBDTI's permission has also been sought to move forward on a new culvert removal project on Porter's Brook.

Project funding in 2021 allowed us to build on our last three successful field seasons. We believe that the project had, and will continue to have, the intended socio-economic and environmental impacts. By remediating barriers to fish passage, we have facilitated fish passage through these barriers and increased the amount of available upstream aquatic habitat for migratory fish, especially Species of Concern such as the Endangered Atlantic salmon.

IMPORTANCE

Significant urbanization has occurred in the lower Nashwaak watershed in the last decade, leading to an increase in roads and associated stream crossings. Aquatic organisms require access to a variety of habitats to spawn, feed, & find cool water. Poorly designed or undersized culverts and aging dams can fragment aquatic populations, alter stream hydrology by changing water velocity & sediment transport, degrade water quality by increasing erosion & cause flooding.

Additionally, culverts can change water velocity, river hydrology, and become blocked with debris causing flooding and costly damage to infrastructure. Climate change & altered land use practices are shifting the timing & flow of streams. Older culverts, built decades ago, are now too small to handle the amount of water flowing through them. Remediation & debris clean-ups will improve water quality, restore stream hydrology & improve access for aquatic organisms.

Habitat fragmentation is a prolific issue in the Maritimes. The Clean Annapolis River Foundation found that 70% of culverts they assessed were barriers to fish passage and 80% of the culverts surveyed by the Petitcodiac Watershed Alliance in 2015 were either partial or full barriers to fish passage.

Prior to 2017, the aquatic connectivity of the Nashwaak Watershed was unknown. Therefore, the NWAJ requested funds to conduct multi-year project to assess, prioritize, and restore barrier culverts in the Nashwaak watershed from the mouth of the river working up, to re-establish salmon access to important upstream habitat. 2021 was our fifth field season on this multi-year project.

Nashwaak River is an important salmon-producing tributary of the Saint John River and is one of DFO's priority rivers for restoration under their 2014 "Recovery Potential Assessment". This work is also in line with Atlantic Salmon Federation's 2013 "Recovery Strategy for Wild Atlantic Salmon". Habitat fragmentation and blocked access to cold-water or spawning habitats have been recognized as limiting factors for salmon populations.

OBJECTIVES

The objectives of the project were:

- 1) to increase the capacity of the NWAJ to survey for aquatic connectivity,
- 2) to increase our knowledge of the aquatic connectivity and fragmentation of the watershed,
- 3) an overall decrease in habitat fragmentation within the Nashwaak watershed and an overall increase in habitat availability for fish, and
- 4) to communicate the connectivity of the river to the public.

RESULTS

A full summary project can be found in the attached PDF entitled "2021 Aquatic Connectivity Report". We have also attached an excel file detailing each barrier culvert surveyed in 2017-2021.

PROMOTION OF THE NB WILDLIFE TRUST FUND

We have acknowledged the NB Wildlife Trust Fund as a funder of this project on several occasions, including on our annual newsletter, which is distributed to 10,000 households and businesses; on social media; at our annual general meeting held in November attended by over 40 members; and on a sign, which we display at all organization events.

Our Instagram channel reaches over 922 people and Twitter also reaches over 804 people. Our Facebook page has 1,218 followers. We posted over 10 times on the topics of aquatic connectivity and water quality. Water Health and Temperature and Aquatic Connectivity were topics featured several times over the course of the field season. We use the #MyNashwaak and #EauNBWater tag to track engagement on posts.

PUBLICATION OF RESULTS

All documents and maps will be available to the public on our website shortly. We will also prepare printed copies, which will be available for loan at our office, on request. We have shared our GIS data with other organisations on request including the Canadian Aquatic Barrier Database group and the University of New Brunswick Warm Lab.

ATTACHED DOCUMENTS

Document	Summary
Nashwaak Watershed Culvert Data_2021	Database for all surveyed culverts
Engineering sketches	Sketches of fish passage remediation by HILCON Ltd. for culverts to be remediated in 2021
NWAI 2021 Aquatic Connectivity Summary Report	PDF summary of our 2021 aquatic connectivity project
DTI approval letters	Letters of approval from DTI for 2021 projects
WAWA permits	WAWA permits for fish passage remediation work and structures installed in 2021

Submitted by: Natalie Deseta, NWAI Project Coordinator