



2017-2018 FINAL REPORT

NEW BRUNSWICK WILDLIFE TRUST FUND

NASHWAAK WATERSHED ASSOCIATION INC.

6 MARCH 2018

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PROJECT NAME:

The Nashwaak Watershed Wetland Habitat

EXECUTIVE SUMMARY

The Nashwaak Watershed Association Inc. (NWA) received \$6,000 from the NB Wildlife Trust Fund in the 2017-2018 fiscal year for our landowner outreach and riverbank restoration program. Match funding was provided by the EcoAction Community Funding Program. The project aimed to increase awareness amongst private landowners about floodplain and wetland ecosystems and to restore a section of eroded bank using bioengineered solutions with the goal of re-establishing critical riparian habitat for wildlife species. All objectives were met or surpassed within the time frame of the grants. The project started in June 2017 and wrapped up in February 2018. Moving forward, NWA will continue the landowner outreach component of this program (with modifications based on this year's insights) and seek out additional restoration activities as funding opportunities allow.

OBJECTIVES

The project objectives are as follows:

- Increase awareness among private landowners about the importance of floodplain forest and wetland ecosystems;
- Restore a section of badly eroded bank along the City-owned Marysville Flats using bio-engineered solutions with the goal of re-establishing critical habitat for wildlife along the Nashwaak River;
- Conduct an outreach program that will encourage landowners to restore wetland habitat and reduce stressors to wetlands and wildlife on their properties;
- Prioritize possible future restoration projects identified through our outreach program;
- Build our organization's knowledge of the river, capacity to carry out restoration projects, and our ability to engage with the local community;
- Collaborate with the NB Department of Environment and Local Government, Department of Energy and Resource Development, the Nature Conservancy of Canada, and the Nature Trust of NB; and
- Demonstrate the benefits (landowner benefits and habitat/biodiversity benefits) of protecting and restoring wetland and floodplain habitat through the Marysville Flats restoration demonstration site

PERFORMANCE MEASURES

All of these objectives were met or exceeded by doing a targeted landowner outreach program and successfully restoring the identified section of riverbank. Specific performance measures were as follows:

Phase One: Landowner Outreach

- # of landowners identified and prioritized
- # of landowners contacted

- # of conversations with landowners about restoration options
- # future projects identified from the outreach program
- # landowner meetings held by the NWA
- # landowners attending the NWA's Landowner Meetings
- # new Action Items incorporated into our Technical Report and Action Plan

Phase Two: Bioengineered Riverbank Restoration

- Area (m²) of bank restored
- # volunteers involved in the restoration work
- # native tree seedlings planted
- % survivorship of planted seedlings in fall
- # willow stakes planted in spring
- % survivorship of planted willow stakes in fall
- # of landowners that visit the demonstration site

RESULTS

Phase 1: Landowner Outreach

A total of 23 landowners were identified based on GIS mapping and our previous geomorphic assessment of the river. We targeted landowners with badly eroding sections of riverbank. Each landowner was mailed a letter (see attached) and NWA staff then followed up with by phone call and/or email. From this correspondence, 9 landowners agreed to have us visit their property to discuss erosion issues, their concerns, and potential restoration options. At each property, a Site Assessment form was completed (see attached) and multiple photos of the riverbank along the property were taken. Most of the sites that we visited were experiencing extensive erosion, beyond the scale of what NWA would be able to assist with given our limited resources. However, two properties were identified as being potentially suitable for future restoration by the organization. In addition, landowners were offered native tree seedlings and willow stakes, which will be planted on at least three properties in the spring of 2018 (the fall of 2017 was too hot and dry to do any planting in the targeted areas).

Over the course of the project, we held two meetings for landowners to attend. The first was a tour of our completed bio-engineered riverbank restoration site (see Phase 2), where we demonstrated how to stake willows for erosion control and where landowners could ask questions about restoration techniques (Figure 1). Nine landowners attended this event. The second meeting was our Annual General Meeting and 42 people were in attendance (Figure 2). Bio-engineered riverbank restoration was highlighted by NWA staff during a presentation at the AGM.



FIGURE 1. TOUR OF OUR BIOENGINEERED RIVERBANK RESTORATION PROJECT



FIGURE 2. ATTENDANCE AT OUR 2017 AGM.

Based on our experiences with this program, we have incorporated one change with regards to Private Landowner Partnerships & Outreach in our Action Plan (Section 9). Whereas before our target location was limited to the area around Taymouth, the stretch of the Nashwaak between Durham and Penniac Island, and along Penniac Stream, we are now expanding it to include landowners with property anywhere along the Nashwaak river or its tributaries. This will help us get a greater number of landowners involved, as most of the landowners in the previously identified area have already been contacted. Our updated Action Plan is attached.

Although not listed as a performance measure, we also worked to increased our social media presence as a means of engaging landowners by creating educational content, sharing information, and

engaging with our ‘followers’. Examples of this include our “Watershed Wednesday” (Figure 3) & “Wildlife In The Watershed” (Figure 4) post series. In doing so we have managed steadily increase our social media followers:

- Facebook: 643 followers (up from 495 in April 2017)
- Instagram: 109 followers
- Twitter: 401 followers



WATERSHED WEDNESDAY

The Canada lynx (*Lynx Canadensis*) is a regionally endangered species in New Brunswick.

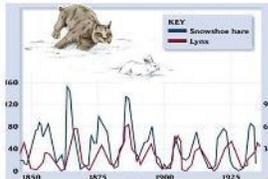
The Canada lynx – snowshoe hare cycle:

- The main food source of the lynx is the snowshoe hare, meaning that their **population cycles** are linked.
- When hares are abundant, lynx populations will increase, until hare populations decline; this lack of prey causes lynx populations to decline.
- This is a classic example of **population dynamics!**



Did you know...

- The Canada lynx is easily recognized by the tufts of fur that stick upright from its ears.
- The lynx's large paws act like snowshoes so they can easily walk on the snow.
- The Canada lynx makes sounds similar to that of a house cat: purring, meowing, hissing and growling!





WATERSHED WEDNESDAY

The Canada warbler (*Wilsonia canadensis*) is a migratory bird that spends its summers along the Nashwaak river.

Fun Facts:

- The Canada warbler is monogamous: male-female pairs stay together year round!
- Canada warblers are one of the first warblers to fly south in the autumn, and one of the last to return north in the spring; they spend a very short season with us!
- The oldest recorded Canada warbler was 8 years old
- Canada warblers build their nests on the ground out of dried grasses and leaves.



The Canada warbler is listed nationally as a **threatened species**, and is considered **at-risk** in New Brunswick.

- The most prominent threat to the Canada warbler is **habitat loss**. In both its summer habitat and its wintering grounds
- It is also thought that the **decrease in spruce budworm** outbreaks has contributed to the decline in warbler populations.

FIGURE 3. TWO EXAMPLES OF OUR “WATERSHED WEDNESDAY” SOCIAL MEDIA POSTS.

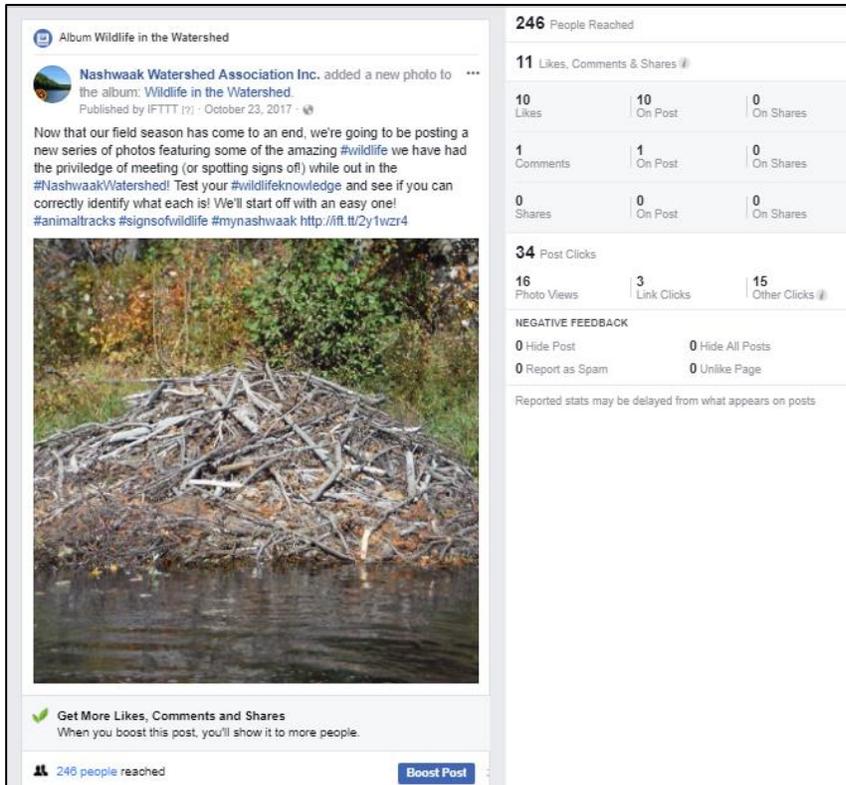


FIGURE 4. EXAMPLE OF OUR “WILDLIFE IN THE WATERSHED” SOCIAL MEDIA POSTS.

Phase 2: Bioengineered Riverbank Restoration

The NWA has been working on a retired hayfield on PID#75457440 owned by City of Fredericton Parks and Trees (hereby known as Marysville Flats) for a number of years. Until 2017, restoration activities have included only planting species of native trees and shrubs to restore the hay field back to a floodplain forest. Surveys were conducted in late 2016 and early 2017 to look for a suitable section of bank to restore. We chose a 30 m long section located just upstream from a Provincially Significant Wetland (PSW) (Figure 5). Reducing erosion in this area will benefit the downstream PSW as it will reduce the amount of sediment coming off the eroding bank and therefore improve water quality.

In April 2017, we finalized a Wood Turtle Protection Plan in collaboration with Dr Maureen Toner at DERD and Dr Connie Browne. The document is titled “An Evaluation of the Wood Turtle Habitat and Probable Locations and Timing of their Activity in the Marysville Flats Restoration Project Management Zones” and is available by contacting the NWA office. During our restoration activities we adhered to the protection plan and all NWA staff and contractors were trained to survey for Wood Turtles. A permit was issued (see below) that allowed NWA staff to move any turtles that would have been in harm’s way. Our restoration activities involving heavy machinery were timed around Wood Turtle nesting season in order to prevent fatalities to adults or eggs. In addition, we installed protective netting over the bank intended to be restored to prevent turtles from nesting in the soil. This was done on the recommendation of Dr Toner at DERD. During our restoration activities we did not find any Wood Turtles in the area and a report was sent to Dr Toner after the work was completed.



FIGURE 5. THE BANK IN MAY 2017 AFTER THE PROTECTING NETTING HAD BEEN INSTALLED.

A local hydraulic engineering company, HILCON Ltd., surveyed the bank along with NWA staff on 9 June 2017. A stamped engineering drawing was produced (see attached) and circulated to six local contractors for bidding. The winning bid was Malcolm Foster Ltd. and a contract was signed between the two parties.

The restoration happened over two days in August 2017. A sediment control fence was installed the day prior to the work and the area was carefully inspected for the presence of Wood Turtle. Day 1 involved the heavy machinery work, which consisted of digging a trench ~0.5 – 1.0 m deep at the toe of the slope and placing R250 mixed rip-rap along the toe (Figure 6). These large rocks will prevent undercutting of the bank and they were keyed into existing rocks on either side of the restoration area. The rock toe extended ~ 1 to 1.5 m up the bank. The hydraulic engineer from HILCON Ltd. inspected the work on both days.



FIGURE 6. LEFT: THE EXCAVATOR PLACING THE FIRST SECTION OF R250 MIXED RIP-RAP IN THE TRENCH AT THE TOE OF THE SLOPE. THE SEDIMENT FENCE IS PROTECTING THE WATERCOURSE FROM SEDIMENTATION. RIGHT: THE EXCAVATOR PLACING THE FINAL SECTION OF R250 RIP-RAP AT THE TOE OF THE SLOPE.

On Day 2, NWAJ arranged for ~10 volunteers to assist with placing the geotextile blankets (Figure 7). Volunteers were provided with hardhats, safety vests, gloves, and asked to wear steel toes boots. The geotextile material (Terrafix C200 Erosion Control Blanket) is made of coconut jute fibres and will biodegrade in approximately three years. The upper 2/3 of the bank was re-sloped at a 2:1 slope over four steps or terraces that were 0.5 m high and 1 m wide (see General Arrangement for detailed drawing). The first section of blanket was placed on the rock toe, soil was added by the excavator and packed down. Native grass seed was sprinkled on top of the soil, the blanket was wrapped over the soil and stapled in place (using sod staples) by the volunteers. Soil was then added on to the first terrace and the process was repeated four times. Straw was spread over any exposed soil as per our WAWA permit (Figure 8).



FIGURE 7. VOLUNTEERS ASSIST WITH THE INSTALLATION OF THE C200 EROSION CONTROL BLANKETS.



FIGURE 8. IMMEDIATELY AFTER COMPLETING THE EROSION CONTROL BLANKETS AND BEFORE ANY PLANTING WORK WAS DONE. THE SEDIMENT FENCE WAS MOVED TO THE TOP TO PREVENT PEOPLE FROM TAMPERING WITH THE SITE.

Over the course of the next week, native tree seedlings and willow stakes were planted on the terraced section and on top of the bank. Due to the hot, dry weather, the grasses and trees were watered approximately every three days for the first 2 weeks after planting.



FIGURE 9. THE RESTORED SECTION AFTER ~1 MONTH OF GROWTH. THE SEDIMENT FENCE WAS REMOVED IN NOVEMBER 2017.

The project received a lot of media coverage including articles in the Daily Gleaner and interviews on CBC TV, CBC news, and Global TV. Links are as follows:

<https://www.nashwaakwatershed.ca/2017/08/17/marysville-flats-riverbank-restoration/>

<http://www.cbc.ca/news/canada/new-brunswick/nashwaak-river-watershed-erosion-textile-solution-1.4249088>

The NWA is currently working on developing bilingual signage for the area along with the City of Fredericton.

EVALUATION

Phase One: Landowner Outreach

- 270 PIDs identified
- 22 landowners contacted by mail
- 9 landowners involved in site visits and conversations about restoration options
- 2 large restoration project identified and 3 willow staking projects identified
- 2 Landowner Meetings held
- 53 landowners attending meetings
- 1 new Action Item added to our Action Plan and at least 4 Action Items updated based on the outcome of our projects.

Phase 2: Bank Restoration

- 150 m² restored
- 10 volunteers involved in restorations
- 50 native trees planted

- 80% survivorship in the fall
- 250 willow stakes planted
- Survivorship was not calculated by appeared to be at least 50%
- 11 landowners visited the demonstration site during the formal tour but the site is in a heavily used recreational area and it is certain that many more landowners visited the site.

TIME FRAME OF PROJECT

The original timeframe of the project was to be June 1st 2017 to May 31st 2018. This project was completed well in advance of the project end-date.

PERMITS

A Watercourse and Wetland Alteration Permit was obtained from the Department of Environment and Local Government. The permit number was 42319'17 and was valid from 31 July to 30 September 2017 for the bank restoration at the Marysville Flats. Additional permits covering tree planting and willow staking at the Marysville Flats (permit 39796'16 valid from 12 October 2016 to 30 September 2017) and tree planting within 30 m of a watercourse between the Fort Nashwaak Bridge on Route 105 and McLaggan Bridge on Route 107 (permit 41065'16 valid from 5 October 2016 to 2 October 2021).

A Scientific Permit (SAR17-018) was issued by NB-DERD to the NWAI giving permission to 1) move Wood Turtles out of harms way and 2) collect and transport dead or injured turtles to the nearest DERD office. This permit was valid until 30 November 2017.

All permits are attached to this report.

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 (see attached), which is distributed to 11,000 households and businesses; on social media; at our annual general meeting held in November attended by over 70 members; and on a sign, which we display at all organization events. We also hand out NBWTF pencils to students and at events.

CONCLUSIONS

Overall the NWAI is extremely happy with the outcomes of our first bank restoration project and with the landowner outreach program. Despite the hot, dry summer the bank stabilized and vegetated quickly, and no one tampered with the site after work was completed. We followed our Wood Turtle Protection plan and no Wood Turtles were found during the work. We had a positive response from the Landowners involved our Outreach program and we have identified private properties where projects can be developed in the future. In addition, we have identified at least three properties where we will be planting trees and shrubs in the spring of 2018. We are committed to monitoring the restored bank for at least three years until it is fully established.

We have achieved our short-term goals of increasing the capacity of our organization to complete restoration project; we have increased awareness amongst landowners about the importance of riparian habitat on their property; and we have developed a network of interested and engaged

landowners within the watershed. These represent steps towards our long-term goals of 1) developing a sense of shared identity amongst the users and residents of the watershed; 2) restoring public and private land using bio-engineered techniques; and 3) increasing the amount of floodplain and wetland habitat available to native wildlife.

ATTACHED DOCUMENTS

Document	Summary
Landowner Outreach Letter	Sent to the 23 landowners that were identified as having property with need for restoration
Landowner Site Visit Form	Filled out by NWA staff at each landowner site visit.
Bioengineered Riverbank Tour Poster	Promotional poster for our landowner event.
AGM Poster	Promotional poster for our AGM
2017 Newsletter	Summary of the work done by the NWA in 2017 with thanks to our funders
Updated Action Plan	Action Plan with updates to Private Landowner Partnership & Outreach
General Arrangement	Stamped Engineering Drawing for the Marysville Flats Restoration Site
SAR10-018	Wood Turtle Scientific Permit
42319'17	WAWA permit for bank restoration
39796'16	WAWA permit for tree planting and willow staking
41065'16	5 year WAWA permit for tree planting

Submitted by: Kristin Elton, NWA Outreach Coordinator and Jillian Hudgins, NWA Project Coordinator

