The Atlantic Salmon Conservation Foundation

Final Report

This form has been developed to simplify the reporting of your accomplishments to the ASCF. Please use this form for your Final Report, do not send final report in other formats.

The information you provide will be used to document the specific and overall accomplishments of your project and the effectiveness of the ASCF grants and may be subject to audit.

This report is distinct, and may be different, from other final reports you may prepare for your project. The ASCF wishes to receive those reports in addition to this report.

Please note:

- Your Final Report and a statement of expenditures are due on the date provided in Schedule "C" of your contribution agreement.
- Attach copies of receipts for all ASCF funded expenditures.
- Any remaining balance of ASCF grant funds must be returned to the ASCF with the Final Report.
- Do not "refer to attachments" for information requested in this form.
- A final report is required on the date agreed top in your funding agreement. If it is not submitted, future applications to ASCF will not be considered. Amendment of the dates for reporting may be made by mutual agreement.
- Send reports, copies of receipts, photos, maps and final payment invoice to:

darla@salmonconservation.ca (NB or QC projects or project resulting from an RFP for applied scientific research)
krystal@salmonconservation.ca (NS, PEI or NL projects)

or

The Atlantic Salmon Conservation Foundation
480 Queen Street, Suite 200
Fredericton, NB E3B 1B6

Need help?
For projects that are in New Brunswick or in Québec or that resulted from an RFP for applied scientific research, please contact Darla Saunders (Darla@salmonconservation.ca).
For projects in Nova Scotia, Prince Edward Island or Newfoundland and Labrador, please contact Krystal Binns (krystal@salmonconservation.ca).

Office Numbers : Phone: 506-455-9900 Fax: 506-455-9905

Section A Project Information

Year Grant Acquired: 2017 End date: 1 December 2017

Organization: Nashwaak Watershed Association Inc.

Project title: Protecting and restoring MacPherson Brook, an important cold-water tributary to the Nashwaak River

Contact: Marieka Chaplin, Executive Director

Address: P.O. Box 314, Station A, Fredericton, E3B 4Y2

Phone: 506-261-4664 Fax: E-mail: director@nashwaakwatershed.ca

ASCF Grant Amount: $ 10,500

Section B Project Description

Category of Project (check all that apply):

A) Development of an Atlantic salmon and salmon habitat watershed plan	
B) Protection and restoration of salmon habitat	x
C) Rebuilding of stocks and restoration of salmon populations	
D) Restoration of access to critical salmon habitat	
E) Education and awareness on the importance of salmon conservation	

Summary

Please state the importance, the objectives as stated in your funding agreement and the major results of this project.

Importance

MacPherson Brook, a cold-water stream in the community of Giants Glen, was identified during a 2016 geomorphic assessment and in our 2017-2020 Action Plan as an important source of cold water that should be protected and restored. A 30 m by 3.5 m bank at mouth of the brook was eroding and releasing sediment into the Nashwaak River, degrading water quality and aquatic habitat. The brook was known as a thermal refuge for fish in mid-summer, based on conversations with locals. This was confirmed by placing temperature loggers in the brook and in the main stem of the river. The brook remained below 20°C all summer, and was the only tributary analyzed in the watershed this summer to do so, while the main stem rose to 28°C or higher in some locations. Restoration of this site would reduce sediment loading and enhance a cold-water source to the Nashwaak River - safeguarding the thermal diversity of the watershed and improving water quality and aquatic habitat for native salmonids. The 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.

Objectives
The objectives of the project were to 1) increase capacity of the NWAI to restore the Nashwaak River; 2) restore an eroding river bank at the mouth of a cold-water tributary; 3) improve water quality and salmon habitat and safeguard the thermal diversity of the Nashwaak Watershed; and 4) communicate the importance of cold-water tributaries and thermal refuges to the public.

Results
NWAI has stabilized the eroding bank at the mouth of MacPherson Brook by resloping the bank, installing a rock toe, covering the bank with geotextile fabric that will biodegrade in three years, and planting native grasses, bushes, and trees. We have also installed a rock weir at the mouth of the brook, which has reduced erosion around the mouth, channelizes the brook at low flow allowing for fish passage, and acts as grade control during high flow to prevent channel scour.

Based on our work, there will be a reduction in the amount of sediment that the Nashwaak River is receiving, which will improve water quality and fish habitat, particularly the pools directly downstream of the confluence of the brook. Fish habitat near the mouth of the brook has also be enhanced by this work. Planting native vegetation will shade MacPherson Brook and ensure that the downstream pools remain as cool as possible. This project has also served to build the capacity of the organization to restore additional, larger riverbanks in the future. The installation of signage and the coverage of the topic on our social media, newsletter, and at our AGM means that the residents of the watershed are now more informed on the topic of thermal refugia.

In the long term, we hope that this project contributes to a cleaner, cooler, Nashwaak Watershed with healthier salmon populations and better quality aquatic habitat.

Project performance and evaluation:

Please provide an evaluation and assessment of the performance of your project according to the performance measures outlined in the funding agreement. Include problems you encountered and how they were solved, unexpected outcomes, budget inaccuracies, timing changes, and recommendations for future work.

Overview of project
The engineering survey was carried out in early July by HILCON Ltd and NWAI, followed by design work with input from the Atlantic Salmon Federation. The design was stalled somewhat by the landowner who was unhappy about losing trees on the top of the bank. Therefore, a new design with a slightly steeper slope was agreed upon. The WAWA permit was issued on September 13th and the work began on September 15th.

The bank was reshaped to a 1.5:1 slope and a R50 (300 mm diameter rocks) rock toe was installed. The rock toe was buried ~0.5 m and extends ~1 m up the bank. Existing rocks were mixed in with the R50 to achieve a more natural look. Erosion control blankets were wrapped over the bank, hay was placed under the blankets and hydroseed was sprayed on top to ensure that vegetation would become

established this season. >200 live willow stakes were hammered into the lower half of the bank and on the opposing bank where the machinery had damaged some vegetation. The landowner agreed to water the bank daily. This work was completed by September 21st. Silver maple, sugar maple, red oak, and white oak seedings were planted on top of the bank in early October.

A rock weir consisting of 9 rocks that were 600 mm in diameter was placed at the downstream end of the repaired bank, close to the mouth of the brook. This weir will act as a grade control and reduce scouring of the channel bed. In low flow conditions, it will also concentrate flow to allow for fish passage into the cold-water tributary.

Photos

Previously (left), the bank was almost vertical and overhanging in places. After (right) the bank had been resloped to 1.5:1 and wrapped with erosion control blankets. The rock toe is made of R50 riprap mixed with existing brook material. Willow stakes are visible on the lower half of the hydroseeded bank.

Looking downstream at the mouth of MacPherson Brook before (left) the rock weir was installed, a gravel island had built up and was channeling water to either side, which was causing more bank erosion. After (right) the installation of the sunken rock weir, water has been channelized into the middle, which will also improve fish passage at low flow conditions.

Looking straight on the bank in November 2017 after heavy rains. The rock toe has settled and is providing erosion protection for the bank. Though it is difficult to see in the photo, the grass has grown in despite the hot, dry dummer. Over 200 willow stakes were driven into the bank, which had lost their leaves at the time of this photo.

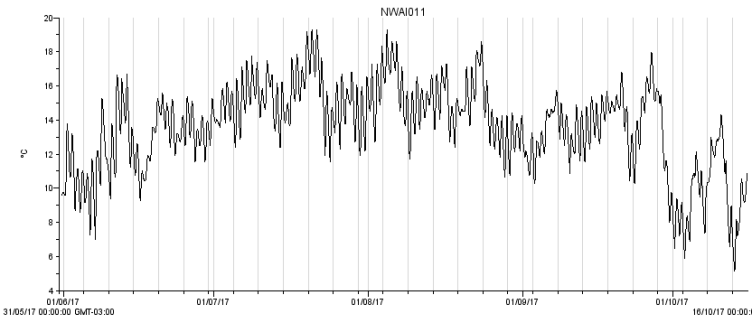
NWAI staff members Marieka Chaplin and Jillian Hudgins with ASCF staff member Darla Saunders at the site in October.

Problems encountered & how they were solved:

No major problems were encountered, though the restoration was done later in the year that we anticipated due to one of the landowners changing his mind several times about the removal of trees. We were also unable to plant as many trees as anticipated on his property due to his change of mind.

Due to weather conditions in the summer of 2017 (hot, dry, extreme low water), survival of willow stakes was low, and the grasses suffered despite being watered daily. The NWAI is committed to re-staking the willows in the spring when conditions are much better for growth, and reseeding the bank. The NWAI had hoped to partner with St Mary's First Nations Aboriginal Fisheries Strategy staff on this project, as mentioned in our letter of support; however, at the time of project the group was involved in a search for a missing person and we later unavailable due to their own project commitments. Our relationship with the St Mary's First Nation AFS staff remains strong and we partnered on other projects in 2017. Both groups have committed to continuing the partnership in 2018.

Performance measure *Please take from Attachment "A" of the Funding Agreement*	**Results**
# of NWAI staff and volunteers mentored.	3 staff members and 3 volunteer board members were mentored in bank restoration techniques by the Kennebecasis Watershed Restoration Committee. NWAI staff visited 5 restoration sites in the Kennebecasis Watershed while KWRC staff visited the Nashwaak Watershed to discuss restoration potential here.
Stamped engineering drawing produced Length (m) and area (m^2) of bank restored # of willow stakes planted # of native tree seedlings planted Area (m^2) re-vegetated with native tree seedlings	A stamped engineering drawing was produced by HILCON Ltd on August 14th. Input from the Atlantic Salmon Federation was incorporated. The restored bank was 30 m long by 4.5 m high. The area restored was 135 m^2 (reshaped area is now ~300 m^2). ~200 live willow stakes were planted in the lower half of the reshaped bank. They were also planted in the surrounding areas that had sustained some damage from machinery or that were experiencing lesser degrees of erosion. 5 native tree seedlings were planted on the top of the bank (maple and oak). We anticipate planting additional maple seedlings in the spring when conditions are better. ~200 m^2 were re-vegetated with native grasses, trees, and willow stages

3 temperature loggers deployed and collected	3 loggers were deployed in May and were collected in late October. They were checked on regularly. MacPherson Brook is the only tributary of 10 analysed this summer to remain below 20°C.
Graphs of seasonal temperature variations produced	Graphs will have been produced and will be included in our annual "report card". 
# of water quality analyses taken over the duration of the project	One pre-restoration sample was taken in MacPherson Brook in August. A post-restoration sample was taken in October. Results can be made available to ASCF if required.
Comparison of the change in water quality (before vs after)	Water quality improved slightly from August to October. Total dissolved solids dropped but it is difficult at this stage to draw conclusions.
Comparison of the quality of habitat (before vs after)	Fish (juvenile brook trout and black nosed dace) were noted swimming through the rock weir almost immediately upon completion of work. Visual inspection after a heavy rainfall revealed that there was much less fine suspended sediment and the rock weir was slowing the velocity of the water around the mouth. As of November, finer substrate had begun infilling gaps in the rock weir and rock toe, which will provide additional support. 

Report is shared with project funders, partners, and with the public.	This final report will be made public on our website.
# of people reached through social media posts and newsletters.	During the work, we made 5 social media posts. Over 2,200 people were engaged on Facebook by these posts. The project recieved special mention in our 2017 newsletter and was the topic of the key note presentation at our November AGM.
# of new volunteers engaged because of this work.	We had one dedicated volunteer join us for 2 days on this project and 2 additional volutneers join us for one day. 3 landowners were engaged in volunteering on their respective properties. Due to the nature of the work, only a small number of volunteers were needed. We hope that through social media and public attention on this project, we have engaged new volunteers for future projects, but it is still too early to tell.

Section C Project Results

1.

Stream(s) or river(s) where project took place: MacPherson Brook, Nashwaak Watershed
Total length (km) of stream if known: ~5.0 km, we worked on a 100 m stretch
Geographic area inventoried, mapped or assessed (km^2): N/A
UTM/GPS coordinates: 46.2990, -66.7836

If applicable, please provide the following information as they apply to your project. *Please include only new achievements that have not been reported to ASCF in past projects.*

Check	Indicator	Measure	Project Achievement
Development of Atlantic salmon and salmon habitat watershed plan			
☐	Watershed plans developed/implemented	Number of watersheds involved	
		Number of plans	
		Km^2 of watershed under planning and priority setting	
Restoration of salmon habitat			
x	In-stream habitat restored	Area (m^2)	Rock weir 3m x 3m = 9m^2 plus improvement of downstream habitat due to less sediment

			from eroding bank
	Estuarine habitat restored	Area (m^2)	
	Lake habitat restored	Area (m^2)	
x	Riparian area restored or stabilized	Area (m^2)	300
x	Trees and shrubs planted	Number of trees/shrubs	250
		Area (m^2)	200
x	In-stream structures installed	Number of structures	1 rock weir
	Non-native species removed	Number of species	
	Other species protected or restored	Number of species	
Rebuilding of stocks and restoration of salmon populations			
	Fry released/raised	Number of fish	
	Parr released/raised	Number of fish	
	Smolts released	Number of fish	
	Grilse released	Number of fish	
	MSW released	Number of fish	
	Fish tagged	Number of fish tagged	
	Total fish released	Number of fish	
	Stock assessment	Number of fish	
Restoration of access to salmon habitat			
	Restored access to habitat	Area (m^2)	
	Debris removed	Tonnes	
Education and Awareness on the importance of salmon conservation			
	Type of project	Community stewardship	
		Education and awareness	
		Volunteer training	
	Target Audience and participants	Number of Grade k-12	
		Number of Post Secondary	
		Number of Landowners contact	2 – both landowners adjacent to the eroding bank were cooperative
x		Number of Volunteers	6 for this project
		Number of Public presentations	1 – MacPherson Brook / Cold Water was the topic of the key note presentation at our AGM
		Number of Community planning	
Other indicators of success			
		Value or unit of measure	
		Value or unit of	

		measure	

Section D Communications and Media

1. Did you use the ASCF logo or sign? Yes [x] _Often_____ No [ ]
   If No, please explain why not: quantity
   -

2. Did you provide recognition to the Foundation for its grant? Yes [x] No [ ]
   Please explain the nature of the recognition:
   ASCF is recognized on signage at the site of the project. The ASCF logo was included on a signboard with our other funders' logos displayed at all of our community events; we displayed the ASCF sign at our AGM and thanked the Foundation verbally; the ASCF logo was included on our annual newsletter that was distributed to 10,000 households and business in the watershed; a number of social media posts also thanked ASCF for helping to fund our work; a staff participated in a tasting event at an NB liquor store; and, finally, the ASCF sign is displayed daily in our office.

3. Please indicate which communication tools were used to highlight the project as well as the quantity (check all that apply). Be sure to attach any news clippings to the Final Report.

Newspaper		_____ quantity
Interview		_____
Brochure	x	10,000 newsletters were distributed to landowners and businesses in the watershed and Fredericton (attached)_____
Website	x	_www.nashwaakwatershed.ca
Other	x	The project was highlighted in a presentation at our AGM (PDF attached). It was also featured on our social media channels

4. Are you submitting a project report (other than this one)? Yes [x] No [ ]
   If yes, please be sure to send the foundation a pdf copy.

5. Did you send your data and results to another organization or data warehouse where people can access the information? Please state the organizations:

   Water quality information was shared with DELG for inclusion on the data portal. Temperature data will be shared with the Nature Conservancy of Canada for inclusion in their Classification and Blueprint for the Maritimes.

Section E Partner and Funding Information

1. Please list <u>all</u> involved partners in the project and their contributions.
   *Please verify that the total below matches the total presented in **Part 5 of the Budget**.*

Organization name	Type of group*	Description or function of partner	Amount	
			Cash	In-kind

ASCF	NG	Funding partner	$10,500	
Atlantic Salmon Federation	NG	Technical support and project planning		$1,280
Nashwaak Watershed Association Inc.	NG	Management & oversight by NWAI board of directors (10 people@$30/hr for 7.5 hrs) and in-kind contribution of tree seedlings and tree planting equipment valued at $6,600		$8,850
Community volunteers	NG	Bank restoration & tree planting, water of grasses and trees (40 hrs total)		$600
Kennebecasis Watershed Restoration Committee	NG	Technical support and mentorship		$1,000
Department of Fisheries and Oceans Recreational Fisheries Conservation Partnerships Program	G	Funding partner to cover engineering and contractor costs, restoration materials.	$15,585	
NB Wildlife Trust Fund	G	Funding partner to cover water quality analyses and temperature loggers	$5,000	
		Sub-total	$31,085	$11,730
		Total (Cash + In-kind Sub-totals)	$42,815	

**Government (g), non-government (ng)*

2. Total number of staff paid through ASCF grant: _2_full time__ and staff paid through other organizations: __1 full time_____.

3. Total number of volunteers involved in the project _6__ and their total hours worked for the project __40_____.

4. Statement of Expenditures
   Please provide a detailed financial statement of ASCF grant expenditures, in-kind and other funds using the Budget spreadsheet.

   Be sure to attach copy of receipts for ASCF expenditures only to this Final Report.

Section G Recommendations to ASCF

To assist us in improving our process, please provide any comments or suggestions you may have on your experience with the ASCF.

We recommend that the ASCF change their final reporting deadline slightly so not to co-incide with grant request deadlines from ETF & WTF as it is a very busy time of year environmental groups.