

LaHave Water Rescue Project
Summary Report
April 2009 to March 2010



Project Description / Background:

The LaHave River watershed encompasses an area of approximately 1700 square kilometres, and provides a diversity of habitats for both freshwater and anadromous fish species. The watershed hosts a high level of residential, industrial, and recreational activity. Tourism, forestry, farming, and fishing (both recreational and commercial) are all common throughout the LaHave system. There are also avid boaters, cottagers, hunters, and anglers who use the LaHave system on a regular basis. These pressures have taken their toll on the watershed and the communities are starting to realize and recognize their own harmful impacts.



Scene from LaHave River watershed.

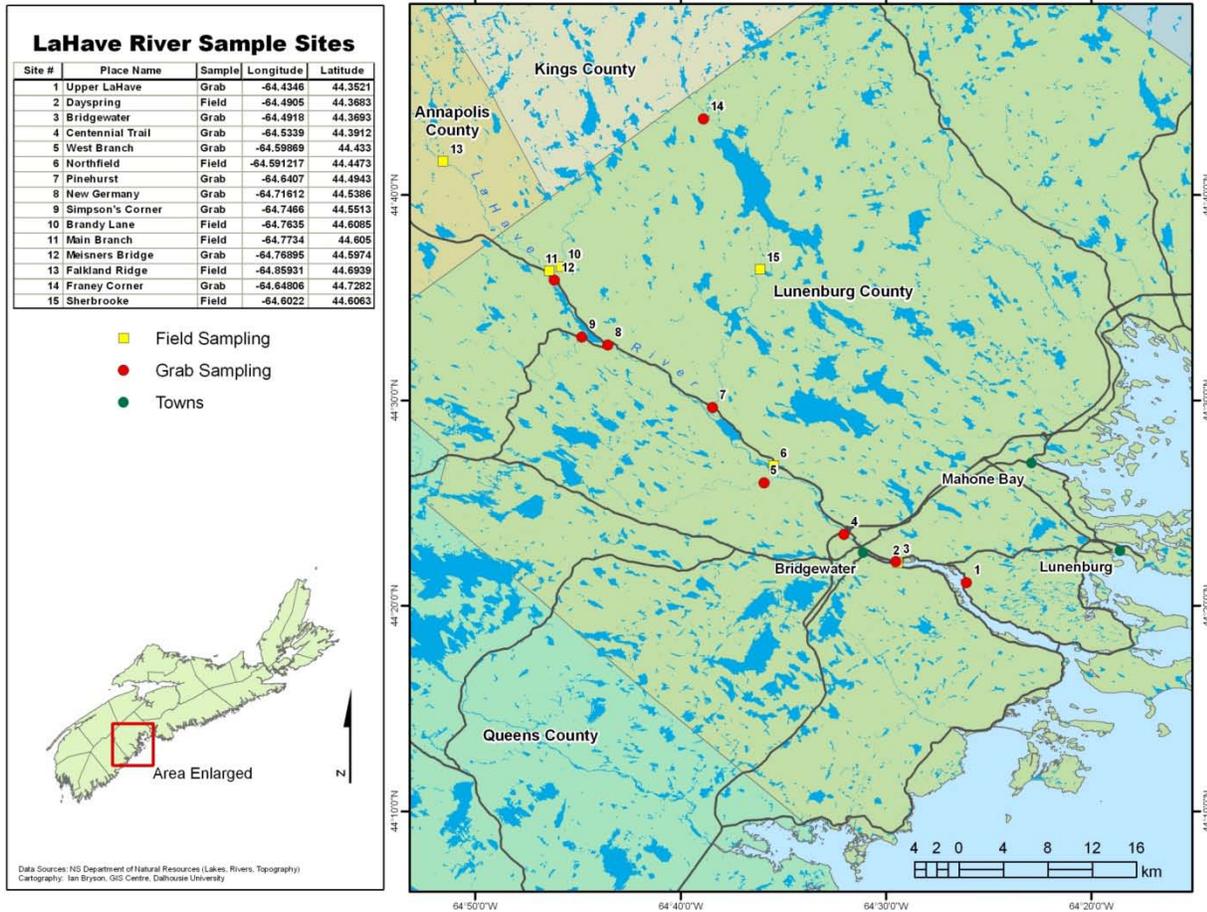
In response to these concerns, BCAF, with help from their partners, initiated a long term water quality monitoring plan for the LaHave River to determine the health of the system and identify areas of concern. An advisory committee was formed with representatives from all levels of government, the private sector, academia, non-profit organizations, and local residents in an effort to create a project that would benefit all stakeholders. Monitoring and water sampling began in August 2007, and has been extremely successful in terms of creating a record of the river's health, forming networks, and engaging the local community. Although the LaHave Water Rescue Project (LWRP) is centered around long term water quality monitoring, the main idea is to address environmental impacts on the system by providing a long term record of the river's health and proactively reducing stressors / harmful aquatic impacts by enhancing watershed education in the local community. During the 2009-10 project, the LWRP focused on four main components: (1) bi-weekly water quality monitoring at the 15 selected sites, (2) riparian restoration work with local farmers, (3) riparian health assessments within the LaHave River watershed, and (4) watershed outreach and education opportunities. This Summary Report briefly describes the accomplishments of the LWRP based on these four main components.



Left: BCAF staff collecting monthly grab samples for analysis at Maxxam Analytics. Right: BCAF staff and volunteers tree planting within riparian areas as part of the riparian restoration efforts with local farmers.

Water Quality Monitoring:

The goal of this project component is to monitor and analyze the water quality of the LaHave River watershed through the bi-weekly sampling of 15 sites located at strategic locations throughout the LaHave system. BCAF staff first implemented this sampling regime in August 2007, when a water quality monitoring program was established to obtain data, identify trends from that data, and provide a warning of potential problem areas. Fifteen sample sites were carefully chosen to provide an accurate reflection of the entire watershed. Careful planning was used for the site selection concentrating on year round accessibility, confluences of major tributaries and the main river, as well as the outflows of the three sewage treatment plants located on the river. On a bi-weekly basis these 15 sites are sampled using an YSI 600QS water quality sonde. The sonde measures parameters such as conductivity, pH, dissolved oxygen, total dissolved solids, and salinity. On a monthly basis, water quality grab samples are taken from 10 of these 15 sites. The samples are transferred to the Maxxam Analytical Lab in Bedford where they are tested for phosphorous, nitrates, nitrites, ammonia, fecal coliform, chloride, bio-chemical oxygen demand, total suspended solids, and total dissolved solids. Furthermore, every six months to coincide with high and low river water levels, a metals test is carried out checking for 25 parameters including uranium, lead, cadmium, arsenic, and aluminum.



Map showing the location of the 15 sample sites along the LaHave River.

A complete fully detailed water quality report will be available for the 2009 calendar year shortly. As soon as this report is finalized, copies will be provided to all project partners.



Water sampling – Summer 2009.

Riparian Health Assessments:

The LaHave watershed is approximately 1700 km² with roughly 60 km of the river running through agricultural land, 1240 km through forested land, and 400 km through human development such as roads and towns. Presently, the Lunenburg/Queens Federation of Agriculture has completed riparian health assessments for all of the waterways running through agricultural land and BCAF would like to continue where the Federation left off, to one day complete the assessments for the watershed as a whole.



Example of a healthy riparian area in the Faulkland Ridge area, LaHave River watershed.

To continue the riparian assessments in the LaHave system, BCAF used a tool designed by the Nova Scotia Department of Agriculture, Nova Scotia Department of Natural Resources, and AgraPoint which assesses riparian area health by answering 13 questions that look at specific parameters. The riparian health assessments involved walking the length of the river and making observations as to vegetation, utilization, channel characteristics, and stream gradient. In each event that the characteristics of the riparian area changed; a new assessment was started. This technique will continue to be used until the entire river system has been completed.

Brian MacCulloch, of the NS Department of Agriculture, supplied the GPS systems and trained BCAF employees on how to use the GIS tool to conduct the riparian health assessments within the LaHave watershed. The goal of the riparian assessments is to map the entire LaHave River watershed using a uniform scoring system in order to identify areas of highest risk. The scoring system takes into account and assigns certain number values to parameters such as areas of erosion, intrusive plant species, flood plains, etc. Riparian assessments on the LaHave watershed began where the North Branch enters Wentzell's Lake and continued up this branch to sample site 15, just short of Sherbrooke Lake. The data was collected and given back to Brian MacCulloch, along with the GPS systems, to analyze and enter into their GIS database.



Above shows an example of the end product of conducting riparian health assessments (not the LaHave River watershed). RHAs can provide an easy to understand picture of a watershed highlighting the good (green), poor (red), and at risk (yellow) areas.

Riparian Restoration Efforts with Farmers:

BCAF partnered with the NS Department of Agriculture and the Lunenburg/Queens Federation of Agriculture to start addressing the agricultural issues associated with water quality within the LaHave River watershed. In previous years, the Lunenburg/Queens Federation of Agriculture funded a study to determine the affects of all agricultural land on the river system. A report was completed stating the landowner, problems affecting the water quality, and solutions to remediate these issues. With BCAF already engaged in monitoring, as well as

community awareness, it was fitting to expand into remediation of the river as well. BCAF staff initiated work with three local farmers to restore non-functioning riparian areas and enhance the quality of the LaHave system in 2009-10.



Examples of agricultural problems associated with water quality within the LaHave River watershed.

BCAF staff were trained by Amy Weston, NS Adopt-A-Stream Program, in conducting in-stream habitat surveys. Staff conducted these habitat surveys in Rhodenizer Brook starting in early June, before any riparian restoration efforts were started. The surveys were completed to gain a better knowledge of the stream and its surroundings. Survey results identified many of the same problems that were diagnosed by the riparian health assessments and recorded data such as stream bank erosion, pool depth, and riffle length.



BCAF staff conducting in-stream habitat surveys within LaHave River watershed.

In late May – early June, individual meetings were set up with each of the three farmers to explain about BCAF and the project. After this initial meeting, follow-up sessions were scheduled at each farm to begin producing a riparian restoration plan for each property. Using the same GPS system as was used for the riparian health assessments, BCAF staff began mapping the current fencing existing on each property. This information was used to gain a better understanding of how each farmer used their land and moved their livestock.

Riparian restoration work completed to date includes:

- A section of the Silver Mill Brook, which flows through Kevin Veinotte's land, was fenced on October 5th, 2009. All work was completed by hand, no machinery was used during the installation of the fence. Cedar fence posts were purchased from New Brunswick; the cedar posts are non toxic and durable. The posts were placed approximately every 20ft and driven at least 2 ft in the ground. The wire for the electric fence was 12 gauge high tensile galvanized wire. Insulated plastic clips were used to hold the wire to the fence posts, these clips were held in place by 2 screws. The electric fence on the Veinotte Farm consisted of 2 wires placed at approximately 20" and 36" from the ground.



BCAF employee, Ben Brown, working on the fence installation at Kevin Veinotte's farm.

- A trail was cleared to allow for the installation of a new section of electric fencing along Rhodenizer Brook in the fall of 2009. Approximately 30 cedar fence posts over a 600ft area were installed at Claude Meisner's farm, West Northfield, in December 2009. Upgrades were also made to Mr. Meisner's electric fence system in an attempt to keep his cattle out of a section of Rhodenizer Brook.



Claude Meisner helping BCAF staff, Andy Breen, with the installation of new fencing on his farm.

- The third farmer BCAF worked with during the 2009-10 project was Blair Zinck. Mr. Zinck opted to wait until spring to initiate the proposed fencing project for his West Northfield farm. All plans and materials have been finalized and secured for work on Mr. Zinck's property. Proposed work dates are May – June 2010.

Education and Outreach:

Public outreach and community education efforts are an extremely important component of the LWRP. Watershed residents must become stewards for the river in order to ensure continued aquatic health and positive water quality results throughout the LaHave River watershed. During the 2009-10 LWRP, BCAF committed to increased public education and outreach efforts within the LaHave River community, as well as developing more youth friendly materials to be delivered at school presentations and local festivals / events.

BCAF staff attended the following public events where the LWRP was showcased and project outreach / education materials handed out.

- Mahone Bay Classic Boat Festival
- Bridgewater Children's Fair
- Acadia University Opportunities Festival
- Keji Youth Empowerment Conference
- BCAF Annual General Meeting
- Indian Point Mussel Festival
- Pleasant River Species at Risk Day
- White Point Beach Resort Summer Family Programming Activities and March Break Programming Activities

- Species at Risk Stewardship Workshop: Working Together for Species at Risk Recovery in Atlantic Canada
- MoDL Public Meeting in LaHave regarding sewage management options for the area

LWRP presentations were made to the following groups during the 2009-10 fiscal year:

- Bridgewater Public Service Commission monthly meeting
- South Shore Naturalists monthly meeting
- BCAF Board of Directors
- LaHave River Salmon Association monthly meetings
- LaHave River Salmon Association Annual General Meeting
- NS Federation of Agriculture meeting
- Municipality of the District of Lunenburg's Wastewater Committee monthly meeting

LWRP news articles were written for the following publications:

- Municipality of the District of Lunenburg's Municipal Matters newsletter
- Kingsburg Coastal Conservancy membership newsletter
- Atlantic Salmon Federation Journal

Other public outreach / education efforts included:

- Updated project information on the BCAF website
- Riparian restoration information disseminated to local farmers
- Work with a graphic designer on the development of new LWRP specific education / outreach products (design not yet finalized). Products include:
 - Development of main project logo and theme – “Watershed Warriors”
 - Youth activity booklets (2 books – Grades P-3 and Grades 4-6)
 - Stickers
 - T-shirt design
 - Program giveaways (incl. frisbees, lip balm, and yo-yos)



Draft design of “Watershed Warriors – Brook Bass and Rocky Reed”.

Project Partners:

BCAF would like to acknowledge and thank our many LWRP partners and supporters. Without the generous contributions of these groups and individuals, BCAF would not be able to deliver all the various components of the LaHave Water Rescue Project.

A special thanks to the dedicated members of the LWRP Advisory Committee who help guide the project through their combined knowledge, expertise, and advise; as well as brainstorm new ideas for future project components and funding opportunities. Committee members include:

- LaHave River Salmon Association – Carroll Randall, Lowell Demond, Paul Fogarty
- Nova Scotia Salmon Association – Amy Weston
- Lunenburg/Queens Federation of Agriculture – Peter Morine
- South Shore Naturalists – Catherine Pross
- Municipality of the District of Lunenburg – Doug Reid, Pierre Breau
- Town of Bridgewater – Greg Ritcey
- Environment Canada – Denis Parent, Todd Smith
- Fisheries and Oceans Canada – Mike Wambolt, Thomas Wheaton
- Nova Scotia Environment – Mike MacDonald
- Nova Scotia Fisheries and Aquaculture – Anthony Heggelin
- Nova Scotia Agriculture – Brian MacCulloch
- Nova Scotia Natural Resources – Reg Newell
- Abitibi Bowater – Allan Smith
- Dalhousie University – James Boxall
- Concerned Watershed Residents – David Maxwell, Barrie Clarke
- South Shore Chapter, Council of Canadians – Richard McBride, Marion Moore
- Native Council of NS – Cory Francis

Thank you to all our 2009-10 LWRP funding partners, making it possible to complete all the activities outlined in this report. Funders include:

- LaHave River Salmon Association
- NS Adopt-A-Stream Program
- Environment Canada's Science Linkages
- Unilever Evergreen Aquatic Stewardship Grants
- Shell Environmental Fund
- Sage Environmental Program
- Municipality of the District of Lunenburg
- Donations from residents/volunteers

BCAF would also like to thank all the many volunteers and in-kind partners for their generous support throughout the duration of the project. Your hard work and generosity does not go unnoticed or

underappreciated. The list is too long to include in this report; however, you know who you are and BCAF thanks you.



Pictures of LWRP volunteers. Left: Fencing volunteers from the LaHave River Salmon Association. Right: Volunteer helping with the bi-weekly water quality sampling on the LaHave.