

Natural Infrastructure Learning Day: Inland Flooding and Erosion Workshop Report

Background:

In October 2018, Nature NB and the New Brunswick Environmental Network (NBEN) hosted a natural infrastructure learning day to provide various sectors (e.g. municipal staff, engineers, NGOs, planners, and government officials) with an opportunity to visit natural infrastructure projects and learn about their advantages, challenges to implementation, as well as their value in enhancing community resilience to climate change. The event attracted twenty-three (23) workshop participants who had the opportunity to:

1. Visit 2 natural infrastructure projects in Southeastern NB focused on reducing riverine erosion, managing storm water, and improving water quality;
2. Develop a greater understanding of the role natural infrastructure can play in increasing our resilience to climate change;
3. Learn about the common challenges related to implementing natural infrastructure projects and how to overcome them;
4. Discuss key questions and connect with experts in the natural infrastructure field.

Introduction to the Natural Infrastructure Approach:

Adam Cheeseman (Nature NB) opened the workshop with an introduction to Nature NB and the Maritime Natural Infrastructure Collaborative (MNIC). The MNIC is a collaborative of over twenty organizations from across the Maritime region working to encourage the adoption of natural climate change adaptation solutions. Coordinated by Nature NB, the Collaborative pursues a number of information sharing, action, and education projects throughout the Maritimes.

Emanuel Machado (CAO - Town of Gibsons, BC) then presented on the value of working with natural assets to increase community resilience. Emanuel also shared insights into the unique process undertaken by the Town of Gibsons which saw the community's natural assets (e.g. aquifer, shoreline) become integrated into their municipal asset management framework. To learn more about ground breaking work please visit: <https://gibsons.ca/sustainability/natural-assets/gibsons-natural-asset-management-journey/>.



Photo 1: Adam Campbell (Ducks Unlimited Canada) answers questions about the construction and maintenance of the Fairview Knoll naturalized stormwater pond.

Urban Flooding and Water Quality:

After these introductory talks, Elaine Aucoin (City of Moncton) and Adam Campbell (Ducks Unlimited Canada) provided participants with a presentation and on-site tour of a naturalized stormwater pond project in the City of Moncton at Fairview Knoll. Naturalized stormwater ponds mimic the function of natural wetlands through the use of engineered and natural infrastructure. During the walking tour, participants were able to explore different aspects of the pond's construction and learn about

the history of the project, key challenges, and the value of this approach for both humans and nature.

The naturalized stormwater pond at Fairview Knoll was constructed to reduce flood risk and improve storm water quality in this urbanized area of Moncton. The natural wetland vegetation planted here is establishing along the pond boundary and provides key water filtering services, mimicking a natural wetland environment.

Despite the rainy visit, we encountered a number of residents walking along a trail that circles the pond, demonstrating its importance as a recreation area for families, seniors, and other citizens. During the tour, participants learned about the types of plants used to remove contaminants from the water, the challenges and solutions implemented to manage Canada Goose at the site (e.g. fencing along water's edge), and the many benefits this natural asset provides to local community members.



Photo 2: Residential and institutional buildings border the pond and benefit from increased recreation space and reduce overland flood risk.

To learn more about this project, please visit: <https://www.ducks.ca/stories/atlantic/from-bathtubs-to-wetlands/>

Inland Stormwater and Erosion Regulation:

After lunch, participants travelled from Dieppe to Sussex to learn about innovative natural restoration approaches being pursued by the Kennebecasis Watershed Restoration Committee (KWRC). Following a brief introduction to the organization and their projects on the bus, participants disembarked to visit a rain garden project that was completed by KWRC at their office in Sussex.

Rain gardens are designed to filter and clean stormwater as it moves across the landscape. These gardens are typically planted with species that are known to help filter stormwater as it seeps back into the earth. During the tour, Ben Whalen described the advantages of rain gardens, ranging from increased water quality to reduced flood risk and also offered tips for those considering rain gardens as a natural approach to flooding in their region. Participants also asked many questions about the rain garden design, size, plant selection, project challenges, etc.



Photo 3: The KWRC rain garden in Sussex helps to store stormwater and filter it slowly back into the ground.

At our final stop, participants visited two natural river restoration sites that feature KWRC's innovative bioengineering geo-roll technology. Geo-rolls are fibrous mats that have been used by KWRC to stabilize river banks and to facilitate the establishment of native vegetation along the slope. These methods have been effective at reducing erosion along river and stream banks, providing a variety of benefits. On the property visited during the tour, the KWRC has successfully slowed rates of erosion and increased riparian habitat through the installation of geo-rolls and planting of native species well adapted to the riparian zone (e.g. willow). Ben shared lessons learned from these projects and provided participants with information on ideal plant species to consider for riparian enhancement projects. Finally, Ben spoke to the importance of developing partnerships with landowners, local business, and volunteers to help achieve success in restoration projects. Participants regularly noted the value of this restoration work

not only in its benefits to the landowner (decreased erosion), but also to wildlife (increased water quality, higher-quality habitat).



Photo 4-5: Participants explore a river restoration project coordinated by the KWRC. The project focused on using bioengineering methods (georolls) to help native grasses and shrubs re-establish on the slope and protect the riverbank from erosion. Additional benefits included enhanced riparian habitat and water quality.



Natural Asset Management

During the trip back to Dieppe, participants heard from James Bornemann with the Southeast Regional Service Commission who spoke about a new project being undertaken in partnership with the Municipal Natural Assets Initiative (www.mnai.ca). The work aims to explore how natural assets can be incorporated into municipal decision-making in the Southeast New Brunswick region, and specifically, on understanding the condition of key assets (e.g. water supply areas, wetlands) in the Town of Riverview and Village of Riverside-Albert. For more information on this project, please visit <https://mnai.ca/pilot-communities/>

Summary

Participant evaluations showed that the Natural Infrastructure Learning Day was valuable in providing hands-on learning and opportunities for training on the benefits, challenges, and opportunities for natural infrastructure in the region. Nature NB and the NBEN would like to thank all the participants who registered for the event and our speakers from the Town of Gibsons, Ducks Unlimited Canada, the City of Moncton, Kennebecasis Watershed Restoration Committee, and the Southeast Regional Service Commission. Any questions related to the event can be directed to climate@naturenb.ca.

APPENDIX 1: Workshop Agenda

Natural Infrastructure Learning Day: Inland Flooding and Erosion

Monday, October 29

St. Anselme Rotary Park, Dieppe, NB
505 Melanson Rd.

9:00am – 5:00pm

Purpose: To provide municipal staff, engineers, NGOs, planners, and government officials with an opportunity to visit natural infrastructure projects and learn about their advantages, common implementation challenges, and their value in enhancing community resilience to climate change.

Objectives: By the end of the workshop participants will have:

1. Visited 2 natural infrastructure projects in Southeastern NB focused on reducing riverine erosion, managing storm water, and improving water quality;
2. Developed a greater understanding of the role natural infrastructure can play in increasing our resilience to climate change;
3. Learned about the common challenges related to implementing natural infrastructure projects and how to overcome them;
4. Discussed key questions and connected with experts in the natural infrastructure field.

Agenda

9:00AM: Registration at Rotary Park

9:15AM: **PRESENTATION 1:** Overview of Schedule and Nature NB (Adam Cheeseman, Nature NB)

9:25AM: **PRESENTATION 2:** Introduction and Importance of Natural Assets (Emanuel Machado, Town of Gibsons)

10:00AM: **PRESENTATION 3:** Introduction to Naturalized Stormwater Ponds (Elaine Aucoin, City of Moncton / Adam Campbell, Ducks Unlimited Canada)

10:20AM: Break

10:30AM: Travel to Fairview Knoll project

10:45AM: **TOUR 1:** Tour Naturalized Stormwater Pond

11:45PM: Travel to Lunch at Rotary Park

12:00PM: Lunch

1:00PM: Travel to Sussex

PRESENTATION 4: Introduction to KWRC, Rain Gardens, and River Erosion (Ben Whalen, KWRC)

2:00PM: Washroom Break & Tour of Rain Garden (5 Moffet Avenue)

2:15PM: Travel to River Restoration site (Magnolia Ave)

2:30PM: **TOUR 2:** Tour River Restoration project

3:30PM: *Travel to Rotary Park, Dieppe*

PRESENTATION 5: Municipal Natural Assets Initiative and Southeast RSC (James Bornemann, SERSC),

4:30: Thank you, Evaluations & Closing

4:45PM: Arrive at Rotary Park and Participants Depart