

Restoring and Improving Water Quality in the Minesing Wetlands

Nature Conservancy of Canada

Final Report to Ontario Wildlife Foundation, August 31, 2023

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Project objectives:

The Nature Conservancy of Canada (NCC), partners, community members, and volunteers will undertake work across the Minesing Wetlands Natural Area to improve and restore water quality in these internationally significant wetlands. NCC plans to create a green infrastructure wetland on retired farmland, which will help reduce phosphorus and sediment load flowing into adjacent rivers and the wetlands. Stream bank stability and aquatic habitat will also be restored along 100 metres of stream by installing 2 woody revetments (wing deflectors) along the bank. At least 500 trees and shrubs will be planted along streambanks to help restore riparian zones, contributing to increased riparian habitat and erosion control. Volunteers will be engaged in restoration activities where they will learn about the significance of the Minesing Wetlands and the species that live there.

Final Report Update August 2023

Thank you to Ontario Wildlife Foundation for your support of our project to restore and improve water quality in the Minesing Wetlands! Over the last year we planted 1,220 native trees and shrubs, seeded 1 hectare of wetland community habitat across three sites, engaged 80 community and student volunteers, hosted 9 volunteer events, and stabilized 130 metres of streambank along Willow Creek. Thanks to the support of our donors (including OWF) and volunteers, we were able to exceed many of our goals by engaging more volunteers during more events and planting more native trees and shrubs than planned! We spent the funds from Ontario Wildlife Foundation as planned on materials for the events including trees, shrubs, planting equipment and native seeds, along with materials for installing and securing the wing deflectors.

1. **Installing Wing Deflectors in Willow Creek** - In total, we hosted five events to install additional layers on two existing wing deflectors in Willow Creek (on July 20th, 21st and 22nd, 2022 and July 20th and July 21st, 2023). Each of these wing deflectors were approximately 15 metres long and help to stabilize an additional 50 metres of streambank downstream, while also improving a natural flow regime and sediment capture. These events were hosted in collaboration with the Nottawasaga Valley Conservation Authority (NVCA), and engaged a total of 43 volunteer community members, including several students earning volunteer hours. Unseasonably high water levels during the summer 2023 events posed some challenges, however we were still able to complete two new layers on an existing, but incomplete, wing deflector from 2022. Both wing deflectors are now able to effectively capture sediment in Willow Creek and can be planted once the sediment has filled in. We have three more events planned for September 2023, to begin the installation of a new wing deflector further downstream now that the water levels have receded.



Staff, volunteers, and students transporting trees downstream (Photo by Andrea Moreau)



Placement and anchoring of the trees (Photo by Andrea Moreau)



The July 20, 2023, wing deflector event field crew (Photo by Andrea Moreau)

2. **Tree planting in riparian zones** - In May 2023, we collaborated with the NVCA to plant 1,220 native trees and shrubs, including tamarack, black willow, and silver maple. On May 16th we welcomed 25 community members to replant a riparian area that had been heavily impacted by the emerald ash borer. On May 17th and 18th, we were joined by approximately 46 students from two different Elmvale District High School classes to plant a site directly adjacent to the Willow Creek. To ensure the survival of these bare root trees, volunteers were shown proper planting techniques and guided by NVCA and NCC staff. Each conifer seedling was also planted with a coconut fibre mat that was anchored down with metal spikes and each deciduous tree was installed with a tree tube secured by a wooden stake and cable ties. The deciduous tree seedlings will retain their tree tubes for a number of years for protection from herbivory and NVCA staff will replace stakes as needed during annual monitoring.



Bare root trees, equipment, and volunteers during the safety talk (Photo by Carolyn Davies)



Students from Elmvale High School during one of the 2023 planting days along Willow Creek (Photo by Carolyn Davies)



The planting site along Willow Creek (Photo by Carolyn Davies)

3. **Green Infrastructure Wetland** - on October 28th, 2022, NCC and NVCA hosted an event to install a woody revetment along a drainage route for a field historically used for farming. Over decades, annual cropping and tilling practices have allowed sediment and excess nutrients to

flow into the Minesing Wetlands along this route, posing a risk to the wetland community. The old agricultural field was seeded with a native Ontario grassland mix in 2021 and a project to build earthen berms for wetland creation was considered. Through follow up monitoring, NCC staff determined that restoring a wetland vegetation community along the drainage routes would be more beneficial. In collaboration with the NVCA, we welcomed 9 community volunteers to build a woody revetment to slow runoff and reduce sedimentation. Volunteers helped unwrap the trees and install the revetment. Approximately 300 trees were generously donated by the Somerville Nursery for this structure. To further support this new wetland community, NCC purchased Water's Edge Seed Mix from St. William's Nursery and Ecology Centre. This mix was hand sown on Feb 13, 2023, across 3 sites that totalled 1 hectare of new wetland community. The timing of this seeding allowed for cold-stratification of the native seeds prior to the full spring thaw and a jump-start the growing season for the wetland community.



Measured and mixed seeds ready to be spread onsite during a mid-winter thaw (Photo by Carolyn Davies).



Seeds hand sown on a patch of remaining snow (Photo by Carolyn Davies).



Mid-winter thaw at seeding site with the woody revetment in the background (Photo by Carolyn Davies).

Interim Update December 2022

We are pleased to share that we've made great progress on the three project activity areas in 2022 and we have already met our engagement targets! 40 community volunteers were engaged in four Conservation Volunteers events in 2022, and we have more events planned for 2023. We have included brief updates in each of the project areas below along with our plans for 2023.

We are also thrilled to share that we received confirmation of funding from the federal Environment and Climate Change Canada's EcoAction grant! This will help us to expand the project beyond 2023 and complete the full suite of work planned. We have made some slight modifications to the work plan and schedule now that we know we have ongoing funding for the project for multiple years.

- 1. Installing Wing Deflectors in Willow Creek** - on July 20th, 21st and 22nd, we hosted three events to install additional layers on two existing wing deflectors in Willow Creek. Each of these were approximately 15m long and help to stabilize an additional 50m of streambank downstream while also improving a natural flow regime and sediment capture. These events were hosted in collaboration with the Nottawasaga Valley Conservation Authority (NVCA), and engaged a total

of 31 volunteer community members, including several students earning volunteer hours. In summer 2023, we plan to host at least two volunteer events to install two new wing deflectors at sites further downstream and add layers on existing wing deflectors that need updated woody material, as identified by the NVCA. Preparation for this work will occur in the spring and early summer and installation will occur once water levels are low enough to safely work in stream. We will also replace some custom wing deflector installation equipment that was broken during the in 2022 installation events.

2. **Tree planting in riparian zones** - In spring 2022 we completed riparian tree planting activities with volunteers, prior to the start date of the OWF grant so they are not detailed in this report. In May 2023, we will again be working with the NVCA to plant at least 500 native trees and shrubs in new riparian locations. While we hope to include volunteers for these events, there are some challenges as these sites are further downstream into the Minesing Wetlands and materials and equipment will either need to be hiked in a fair distance or be boated in on canoes to reach the planting sites. Plans are already underway for this work.
3. **Green Infrastructure Wetland** - on October 28th, 2022, we hosted an event to install a woody revetment along a drainage route for a field historically used for farming. Over decades, annual cropping and tilling practices have allowed sediment and excess nutrients to flow into the Minesing Wetlands along this route, posing a risk to the wetland community. The old agricultural field was seeded with a native Ontario grassland mix in 2021 and a project to build earthen berms for wetland creation was considered. Through follow up monitoring, NCC staff determined that restoring a wetland vegetation community along the drainage routes would be more beneficial. In collaboration with the NVCA, we welcomed nine community volunteers to build a woody revetment to slow runoff and reduce sedimentation. Volunteers helped unwrap the trees and install the revetment. Approximately 300 trees were generously donated by the Somerville Nursery for this structure. To further support this new wetland community, NCC has ordered the Water's Edge Seed Mix from St. William's Nursery and Ecology Centre and will seed the wetland areas with this native grass and forb mix to ensure nutrient and sediment capture prior to entering the Minesing floodplain. In fall 2023, we plan to continue with this project by holding another event to plant a greater diversity of wetland forbs, grasses and shrubs and will consider if an additional woody revetment will be beneficial to ensure the stability of the soil during annual high-water flows.

2022 Photos



Sharing of knowledge between a first-time volunteer and a long-standing volunteer and board member of the Friends of Minesing Wetlands group.



The team of volunteers and students show off the completed western wing deflector in Willow Creek.



Lots of smiles, despite the challenges of biting insects, difficult terrain, and weather conditions.



Despite the biting red ants at this site, these volunteers enjoyed completing the eastern wing deflector in Willow Creek.



These volunteers are co-workers from an engineering firm who were recognized for a team accomplishment and won a day off work to volunteer.



With frost still covering the trees, the team got right to work removing the plastic mesh and tags from each tree in October 2022.



A volunteer unwrapping and removing the plastic tags from the trees prior to woody revetment installation.



These two graduate students volunteered for the woody revetment installation day.



Completed woody revetment with the team involved in the installation.