

Trout River Environmental Committee

Summer Field Report 2021

September 1st, 2021

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Introduction

The 2021 summer field season was another successful season for the Trout River Environmental Committee. This year we were able to hire our largest crew; this included our director, three returning staff, and three new additions. The team had a great dynamic this year, showing continued cooperation, organization, and support of each other. Our staff were hugely supportive of our extra projects. Showing up on the occasional weekend for outreach events and for late evenings of bat monitoring activities. The projects could not have succeeded without the dedication shown by our field crew this year.

Our field season started on May 10th with the arrival of our field supervisor (Laura MacNeil), our project manager (Kelsey MacDonald), and our watershed technician (Teodora Bujenita). The team started the season with headwater surveys, dirt road surveys, checking past restoration sites, and maintenance of our trail systems. Over the next two months, the team steadily grew with the arrival of three new team members: David MacLeod, Owen Pearce, and Charlotte Schofield. The team accomplished many of our regular restoration activities: weekly water quality monitoring of 18 sites, 33 km of riparian health assessments, planting 4577 native trees and shrubs, installation of 17 brush mats, and weekly anoxia monitoring. The crew also launched some new initiatives including headwater surveys, bat acoustic monitoring, and long-term temperature monitoring with the launch of 7 data loggers.

TREC was supported this summer by numerous organizations and individuals through training opportunities, field advice, financial donations, in-kind donations, volunteering, technical support, and community support. We cannot possibly explain how grateful we are as staff and as an organization for the continued support of our work. Many community members reached out to use this year reporting wildlife sighting, requesting tree planting, allowing us permission to enter their land, and showing up to our community events! It is this continued support within our community that makes our seasons so successful.

Our Staff



Andrew Lush
Executive Director



Laura MacNeil
Field Supervisor



Kelsey MacDonald
Project Manager



Teodora Bujenita
Watershed Technician



David MacLeod
Watershed Technician



Owen Pearce
Watershed Technician



Charlotte Schofield
Watershed Technician

Field Work

Tree Planting

Trees by Number

Tree planting is a major component of TRECs summer field restoration work. By planting native tree species within our watershed, specifically around our water courses, several benefits are achieved. These benefits include bank stabilization, improved water quality, cover for many species of wildlife, carbon capture, and cooling water temperatures. This year's planting season was extended for our crew, running from May 24th to July 5th, 2021. The enormous success is in large part due to the support of our community. Thank you to everyone who reached out to us this year about planting on their properties – even those who we could not reach this year! Due to the enthusiasm of our landowners, a total of 4577 plants (3349 trees, 828 shrubs, and 400 herbaceous plants) were planted throughout the watershed comprised of 32 different species from the J. Frank Gaudet Tree Nursery. Of these trees, approximately 750 were given away at our membership drive on July 3rd and 4th. This was our largest planting year yet! The conditions this year were conducive to our trees thriving. Most of our trees took this year when we returned in late July/early August to cage and stake our trees. Many trees we plant are given a painted, red-tipped stake to mark its location and all deciduous trees were caged. This prevents girdling by rodents and cutting by hares that damage our trees. These stakes also act as markers that help us locate each planted tree when we return to check on our tree's success year to year.

Planting Sites

Collaborating with local landowners is critical to TRECs ongoing restoration within its nine watersheds as our landowners provide our crew access to critical areas along our streams. Due to the ongoing support in our community, TREC managed to plant in 17 different sites across four watersheds this year: Hope River, Trout River, Granville Creek, and Found's Mill River. The goals of planting this year included naturalization of wet farmland areas, shoreline stabilization, hedgerow implementation, reforesting abandoned beaver ponds, increased buffer zone width, and wildlife habitat restoration.

Along Granville creek, seven sites were planted with 1555 trees and shrubs. Planting Site #1 was located along the riverbank with very wet soil present. As a result, over 400 wet-loving tree species were planted in this area including eastern white cedar and willow species (May 24th and June 6th). Planting Site #2 and #3 are located in the Punchbowl Park and include our native plant garden and our Riverbend trail. More than 100 shrubs were added to the native plant garden on May 21st and 150 mixed Acadian trees were

Table 1. Species Received from the J. Frank Gaudet Tree Nursery.

Species	Amount
Shrubs	
Aronia xmelanocarpa	18
Aronia x prunifolia	84
Bayberry	54
Red-berried Elder	162
Red Osier Dogwood	36
Rose	60
Serviceberry	168
Spirea x T	84
Spirea x L	12
Staghorn Sumac	6
Sweet Gale	48
Willow	96
Trees	
Balsam Fir	102
Black Spruce	120
Bog Birch	36
Cedar	492
Eastern Hemlock	246
Eastern larch	252
Grey Birch	6
Red Maple	213
Red Oak	145
Red Pine	36
Red Spruce	48
Sugar Maple	48
White Ash	108
White Birch	121
White Pine	378
White Spruce	474
Yellow Birch	524
Herbaceous Plants	
Swamp Milkweed	225
Clematis	85
Joe-Pye Weed	90

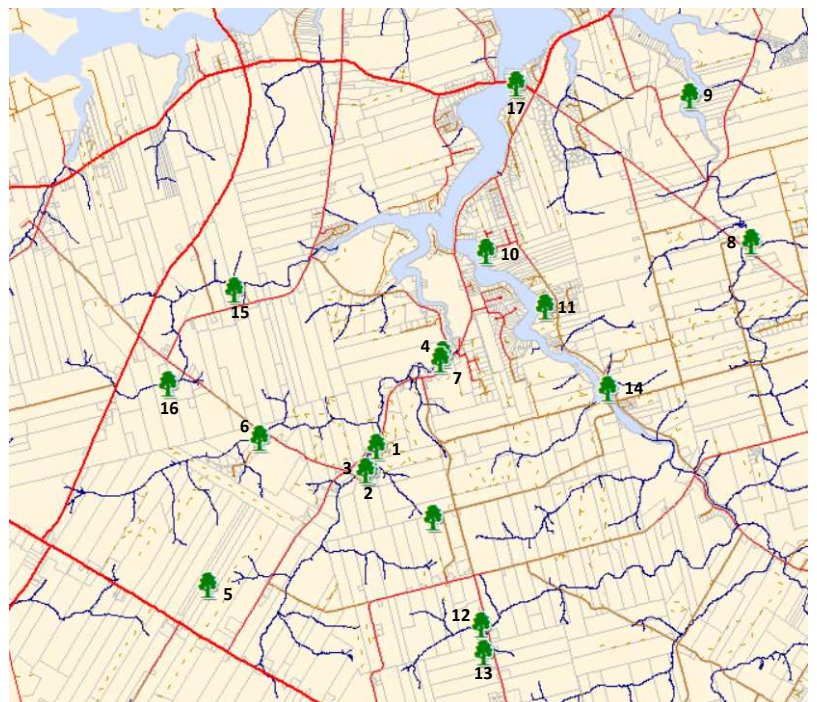
planted among the severe blowdown of this trail system. These trees will be re-assessed yearly and more added as required. Planting site #4 was located at the fish ladder in Granville. This is an open bank area, thus, to add more shade around our fish ladder 80 shrubs were planted on May 21st. Planting Site #5 was planted in a wet field site located above the headwaters of Granville Creek. This is a former agricultural field, but the section of field cannot be harvested due to extremely wet soils. A total of 400 trees, including black spruce, eastern white cedar, black ash, yellow spruce, were planted on July 06, 2021. Site #6 is located on the northern branch. The area was cut for a development, but was replanted on July 06, 2021 with 300 mixed Acadian trees. Our final planting site, Planting Site #7, on the Granville Creek was located beside the pond. To stabilize the bank, 125 mixed shrubs were planted on July 05, 2021.

Hope River had two planting sites with over 375 trees and shrubs. Planting Site #8 was located at an old beaver dam site. The abandoned beaver dam was in the summer of 2020. After slowly notching the dam, the dam was removed in late August 2020. The banks on the former pond basin were seeded for the next spring. On May 25th, 2021, over 250 trees and shrubs of various species were planted along the banks. These trees were caged and staked in late July/early August. This site will be re-assessed in coming years for more planting. The second site is a retired farm field along the Hope River Estuary. This site was planted with 125 mixed Acadian species and numerous swamp milkweed, on July 05, 2021. This site will also be revisited in 2022.

A total of five sites were planted along the Trout River. Planting Site #10 and #11 are located along the estuary. Planting Site #10 is a former development that is being reforested. A total of 250 mixed Acadian trees were planted along the 15m buffer zone. This site is considered fully planted but will be checked continuously over the next few years. Planting Site #11 is a private property that wanted a developed windbreak. A total of 150 mixed Acadian trees were planted and will be caged for future use. Planting Site #12 and Planting Site #13 is located along the upper reached of a tributary along the Smith Road. These are both agricultural sites. Each site was planted with 150 mixed Acadian species planted on June 24, 2021. More can be added in 2022. Planting Site #14 was located at Trout River Park. A mixture of shrubs and trees (100) were added to the area on May 31, 2021 to speed up the successional stages and to add more ground cover. This site will be re-assessed in the future to see if more trees are required.

Founds Mill had two planting sites in the 2021 season, Site #15 and Site #16. Planting site #15 was planted to help with a run-off issue on the property. A total of 125 trees were added in hopes to help filter the sediment and stabilize the soil. This area will be reassessed in the years to come. Planting site #16 was a riparian zone that had 100 mixed Acadian trees planted on June 11th, 2021.

Figure 1. *Tree Planting Sites Completed in the Hope/Stanley Watershed Complex in the 2021 Field Season.*



Stream Restoration

Brush Mats

Brush mats are installed to stabilize and trap sediment, a consistent issue in many streams in the Stanley/Hope watershed complex. Overabundance of sediment can fill in pools, aggrade streams, and degrade fish and invertebrate habitat. Brush mats are designed to capture the sediment flowing through the river during high flow event in order to (i) promote improved flood plain access, (ii) stabilize eroding banks, and (iii) uncover the rocky substrate of the riverbed used by salmonids for spawning. They are built from spruce bows and alder stakes pruned from the surrounding area along the inner bend of the streams natural meander.

This year TREC installed 17 brush mats along the west branch of the Hope River. This area was previously inhabited by a beaver in 2019 (dam removed in 2020). As part of the restoration of the stream (including tree planting and stream clearing), brush mat installation was recommended after consultation with Mary Finch (provincial Watershed Ecologist). Mary recommended that brush mats be installed on alternating sides with a focus to narrow the stream. As a result, these brush mats were installed strategically to improve flood plain access, to narrow the stream to its natural state, to help deposit sediment, and to improve substrate. The restoration in this area will be continually evaluated over the next years to ensure that restoration activities are effective (repairs and improvements will be made as required).

Figure 2. Image of our summer crew member, Teo, hammering in the stakes during brush mat assembly.

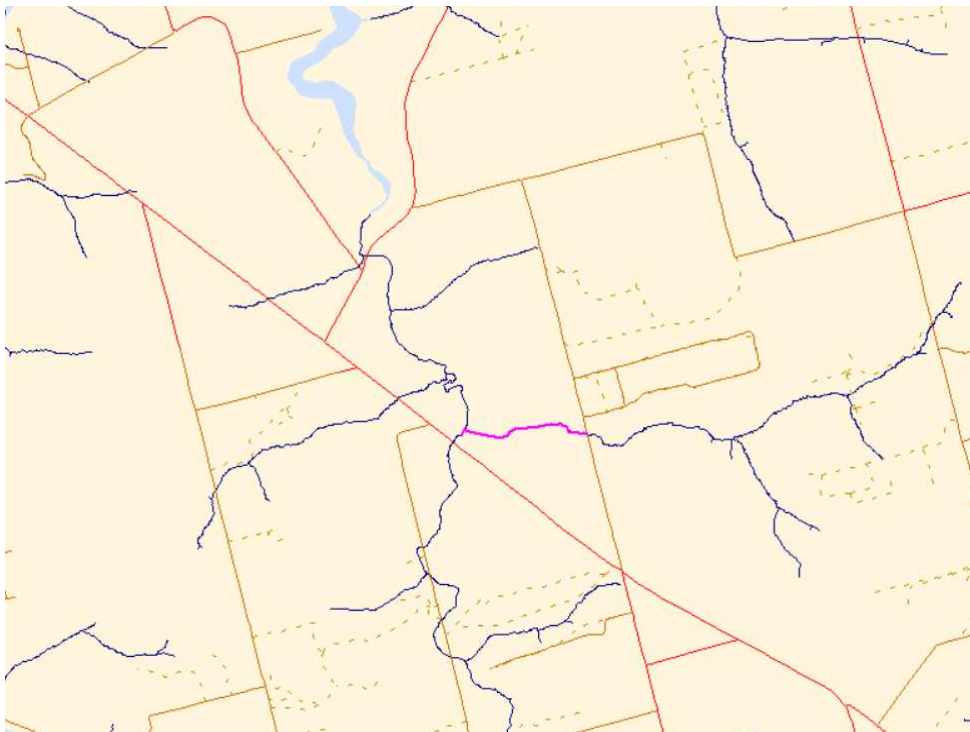


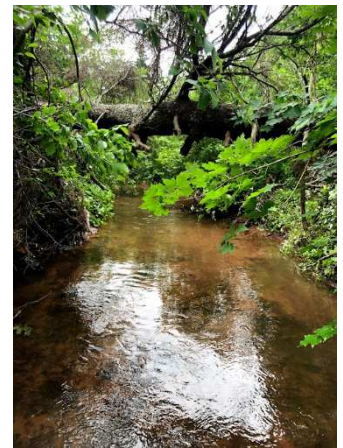
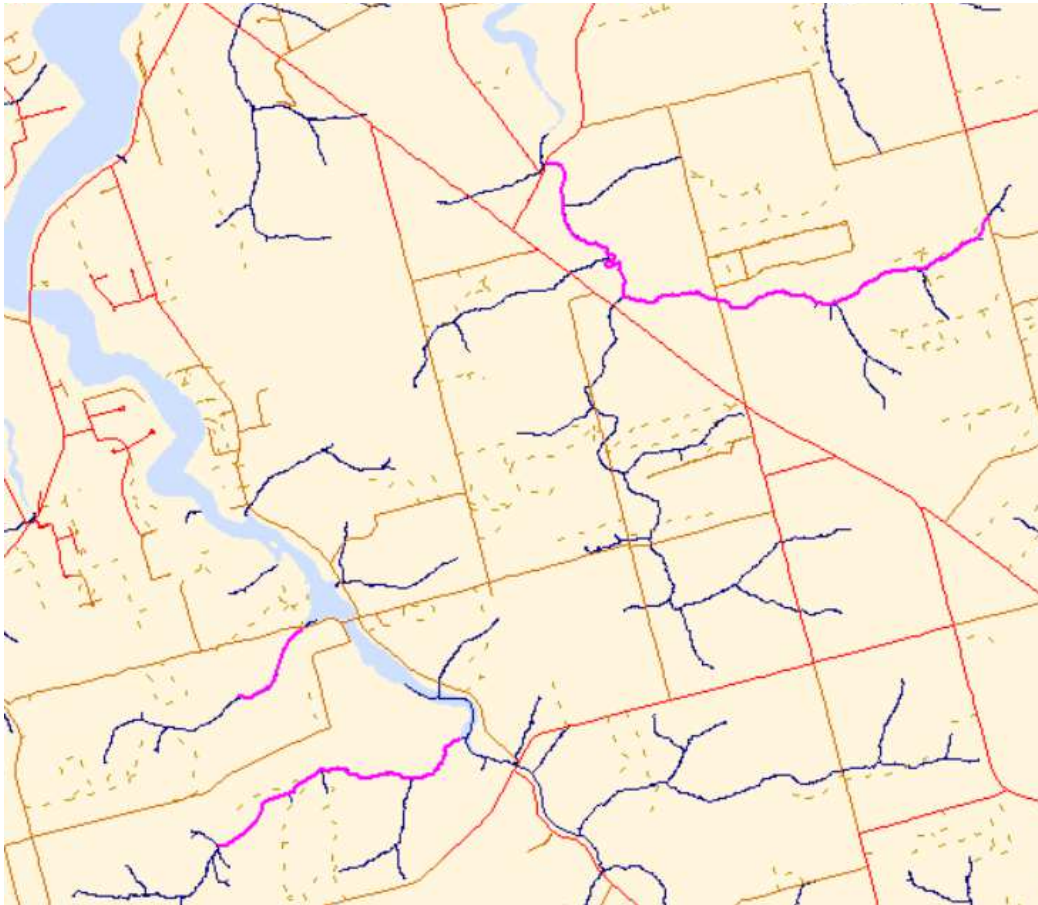
Figure 3. Map of the Region of Hope River with 17 Brush Mats Installed in August of 2021. The work completed by the summer staff is highlighted by the link line on the map.

Stream Clearing

Blow down of vegetation and excessive dead woody material, specifically large trees, can cause significant blockages in our stream systems. Over time they may gather debris and sediment, eventually creating a barrier to water flow and potentially fish passage. Clearing this debris from the stream (or at times replacing it to more appropriate areas of the water course) can vastly improve the quality of our streams. In many cases, some of the large woody debris, like the main trunk of the tree, or the large portions, will be left as wildlife crossings or for fish cover/habitat.

Since post-tropical storm Dorian, many trees fell into our streams. The TREC team has been working for the last two years to clean up these blockages. This year, the crew cleared over 4.9km of the main and west branches of the Hope River from Simpson Mill Road to Toronto Road. Two tributaries, totalling about 3.1km of Trout River have been cleared as well. This work will slowly be continued over the next few years and cleared sections re-evaluated annually to maintain clear fish passage. After returning to these sites, the team was happy to see the changes to the river. Within a few days the flow had improved, sediment was washing away to uncover rock substrate, and water levels in a few areas had reached their normal levels.

Figure 4. Map of the total streams cleared in 2021 by the summer field crew. Two watersheds were focused on both shown in pink: Trout River (two tributaries) and Hope River (Eastern Branch). The images to the right demonstrate the changes in the stream blockages: the top image is before stream clearing began and the bottom image is after stream clearing.



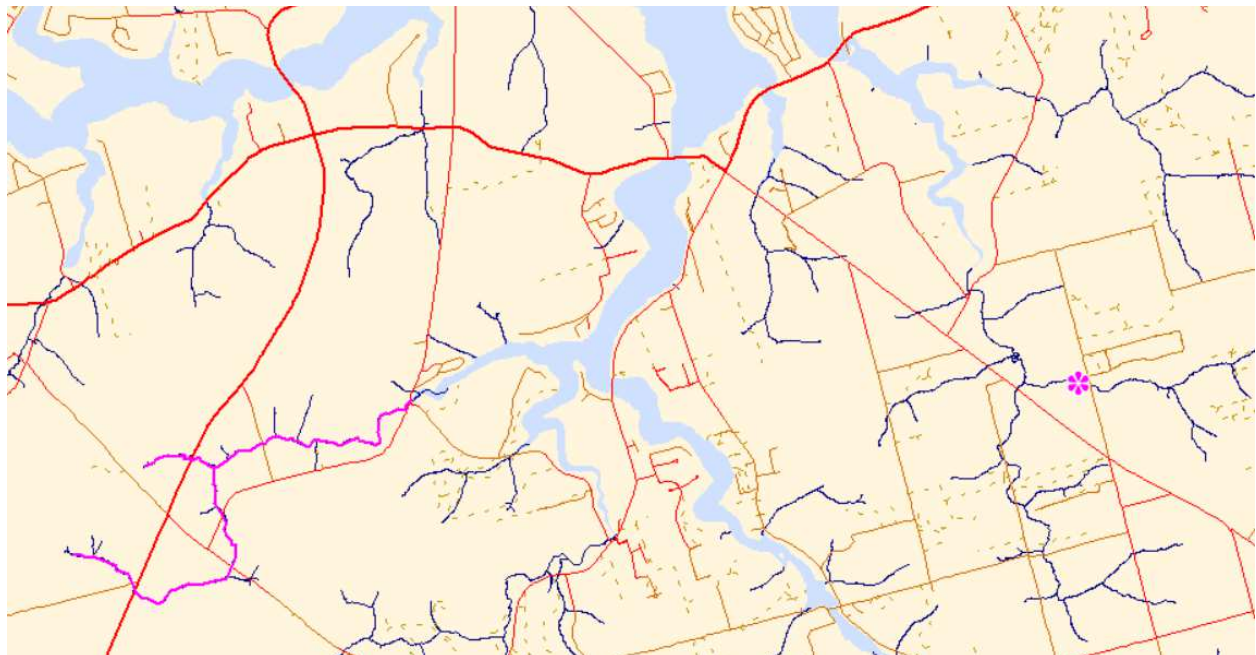
Invasive Removal

Invasive plants are a significant problem on Found's Mill River and are slowly becoming more prevalent on other streams in our watershed. As a result, a big part of the August field work is invasive removal. This year our focus was on three species: (i) Japanese Knotweed, (ii) Wild Cucumber, and (iii) Bittersweet Nightshade. Japanese knotweed was noticed in 2020 below the North Granville Community centre and we have since seen several other patches in the surrounding area. Through continued cutting over the next 10-15 years, we hope to slow the growth of this beast. Wild Cucumber, an invasive vine, is a significant problem in the upper reaches of Found's Mill. For the third year, the TREC crew has walked the entirety of Found's over two to three days pulling all the cucumber before it goes to seed. And we have been seeing massive improvements. Growth this year was much lower than in previous.

Our final invasive is proving much harder to tackle. Bittersweet nightshade is seen choking out many of our streams and blocking flow. As a trial, we have tarped one section of the stream on Hope River where the nightshade has just started to grow and explode. We will leave the tarp on the area for two years, checking on it multiple times a year. In 2023, the tarp is ready to be removed. The future TREC staff will remove the tarp, re-seed the area, and re-plant with native tree species to stabilize the root systems. We are hopeful this strategy will eradicate the nightshade problem, but only time will tell.

We are in the process of developing an Invasive Species Management Plan. Invasive removal is a long process that takes many years of consistent work and monitoring. We would like to thank every landowner who continues to allow us access to their properties to do this work! Your continued support is vital to our success, and we recognize that contribution. We also would like to thank the invasive species council, Simon Wilmot and Cassidy Matheson. They held a workshop on Oriental Bittersweet and have provided our crew with technical help in designing our invasive removal plans. Their knowledge and expertise have been extraordinarily helpful.

Figure 5. *Invasive Removal Sites in the 2021 Field Season.* Wild cucumber removal took place along Found's Mill River for the third consecutive year (shown by the pink line). A trial plot of bittersweet nightshade was attempted along a site in Hope River (shown by the pink flower).



Monitoring and Assessments

Riparian Health Assessments

Riparian health assessments were adapted from an Albertan protocol for use in Atlantic Canada. The assessment attempts to balance the need for a simple, quick index of health with the large number of variables required to get a complete picture of health. Using these assessments will allow our crew to make informed decisions on how to prioritize our resources to create the best restoration plans for the area as a whole. This year the TREC crew completed approximately 33 km of stream assessments in Hope River, Trout River, Granville Creek, and Bayview. With over 80% of our streams assessed in the last two years, this has been a successful project that will act as both a marker of success (to see improved health scores into the future) and as an information bank on our streams to guide our work going forward. So far TREC has received permission from 457 landowners to perform assessments on their properties.

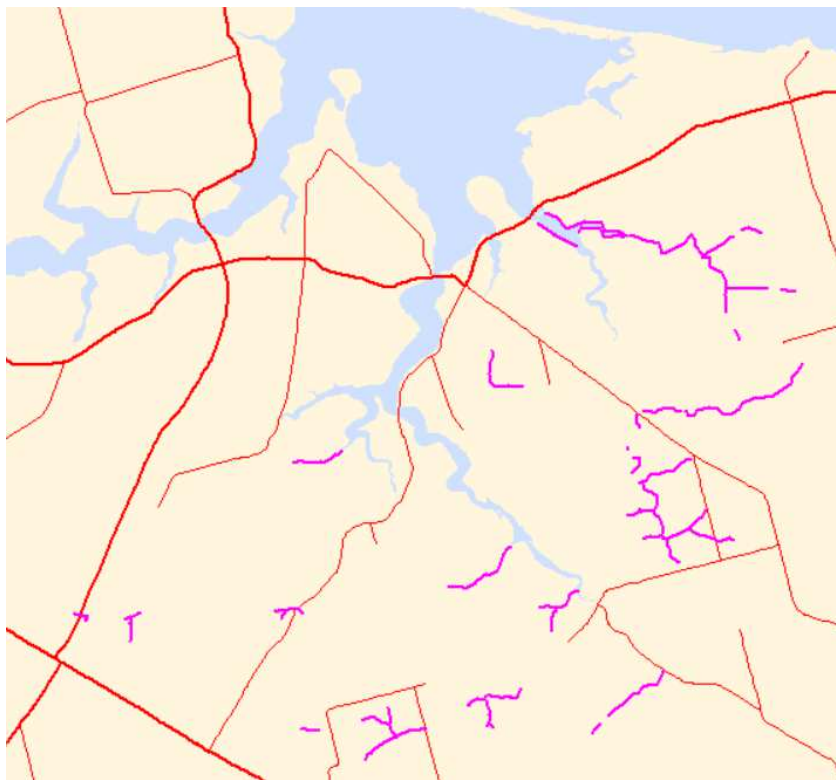


Figure 6. Map of the total area assessed during the Riparian Health Assessments. All area marked in pink was walked under landowner permission obtained orally or in writing by TREC staff.

Headwater Surveys

Following the proposed methodology for surveying PEI headwater streams (D. Cody, Q. Li, and S. Hill, 2014), stream mapping will commence for all nine sub-watersheds within the Stanley/Hope Watershed. Given the importance of headwaters as the breeding grounds for many species, and as the source of water that feeds our streams, it is important to gain continued insight into the changes in our first order streams. This can change seasonally and annually across PEI, based on the precipitation and the pressure on water resources within the watershed. The goals of these surveys are to develop headwater stream mapping, to monitor long term changes, and to help identify key areas of pressure to target recovery efforts.

This year our team has assessed the headwaters in both Granville Creek and Found's Mill during the critical high flow period of May 1st to May 15th. In the fall, from September 1st to September 15th, low flow periods will be assessed. The goal is to complete the rest of the tributaries in the coming years. As our team continues to develop an understanding and increased capacity, we hope all headwaters will be surveyed yearly.

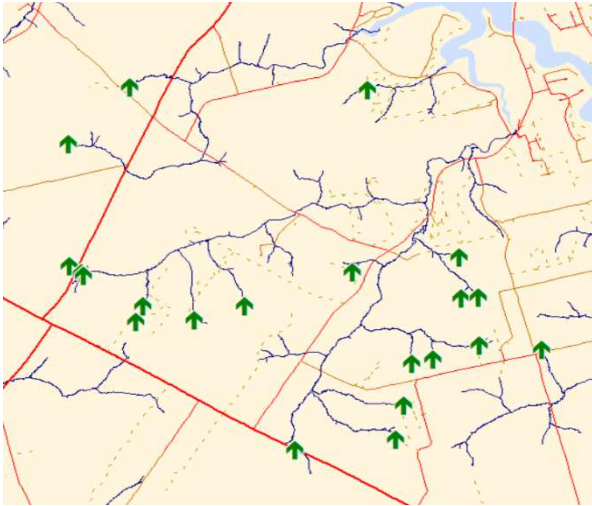


Figure 7. High-flow headwaters assessed through the field season of 2021. These sites were reassessed in the fall of 2021. This data is not available yet.

Dirt Road Survey

Every year the TREC crew drives the dirt roads in our watershed in the early spring. At this time of year, due to snow melt and increased precipitation, there is a higher number of run-off events. By driving our dirt roads, the TREC team can identify priority road repairs and report these to the Department of Transportation. The relationship between TREC and the Department of Transportation helps to mitigate the influence of sediment on our streams by prioritizing repairs. These repairs include diversion ditch maintenance and installation, road grading, ditching, and check dam maintenance and installation.



Figure 8. Silt run-off caught in large ditches after heavy rain fall to allow the silt to settle out of the water. In areas without management, this water carrying silt will run into our streams, damaging fish habitat.

Data Loggers

Typically, TREC has launched two DO loggers into the Trout River and the Hope River yearly. However, this year our team launched seven temperature loggers in addition to the two DO loggers. Since having conversations with Mike Van den Heuvel over the winter, our executive director recognized there is a need for long term temperature data. Thanks to the collaboration between the TREC crew and board member, Don Maynard, it was decided that these loggers would be best placed above the ponds, below the dams, and in the estuaries of the Trout River and Granville Creek. Our weekly temperature monitoring indicates our streams run cold; however, we are targeting to see how the water warms as it enters the pond, leaves the pond, and moves through our estuaries. Based on research, the team discovered that estuaries are the most at risk bodies of water to face pressure of warming.

The four loggers on Trout River and the three loggers on Granville Creek were launched between June and August of 2021. These loggers will be left in the stream for the next five years (to be offloaded every few months). The DO loggers were launched with the temperature loggers in the upper estuaries of Granville and Trout River. These areas are known to be impacted by anoxic events, thus data from these areas will be most valuable. Wrapped in copper to prevent fouling, these DO loggers were launched in the summer and will remain in stream until the fall. Like the water quality monitoring, all data will be made available on Atlantic DataStream, an on-line portal for water quality data.

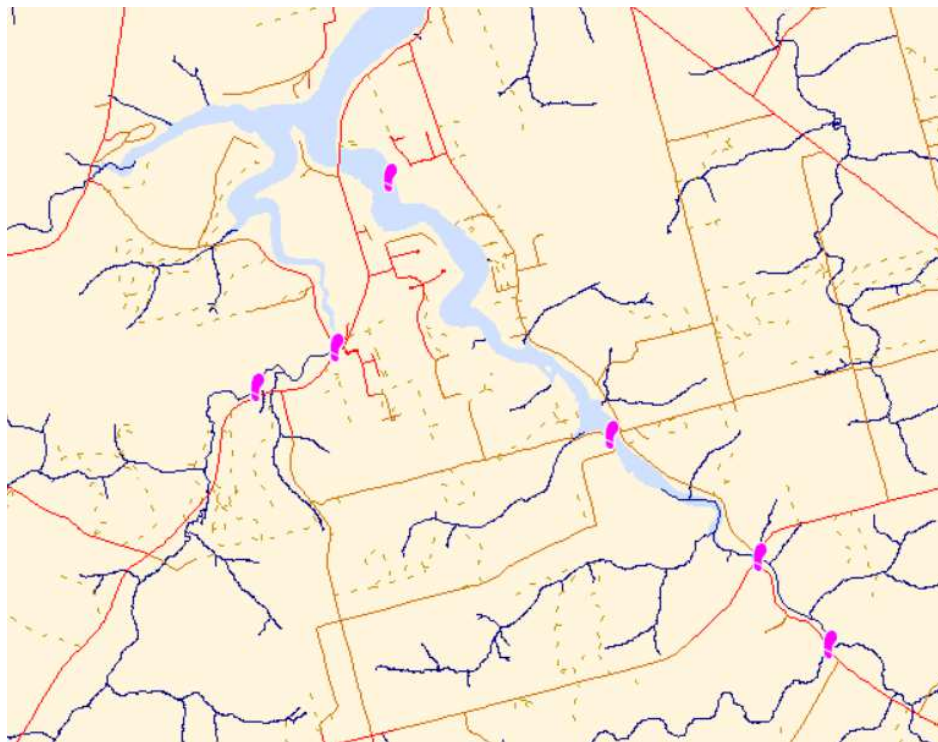


Figure 9. Map of temperature logger deployment along Granville Creek and Trout River. The location of each logger is marked by the pink footprint. The picture to the top is two of our staff, Laura (right) and Kelsey (left) installing our loggers in the spring of 2021.

Electrofishing

This year TREC conducted electrofishing surveys again with the help of the Department of Fish and Wildlife. Two technicians, Matt Sheidow and Danielle Jordan, and the Western watershed coordinator, Taylor Sheidow, came out over two days in August to help our team conduct three index sites. These three sites, located on Hope River, Found's Mills, and Granville Creek, are surveys for fish presence and abundance. By conducting these index sites yearly, our hope is to continue to gain an understanding of fish population and to survey our streams for the presence of any unrecorded/invasive species into the future. A couple of our stream sites will need to be re-evaluated over the fall/spring as they were considered non-ideal. Our goal is to have a long-term index site on all of our streams at some point.

Figure 10. *Electrofishing baseline sites within the Hope/Stanley Watershed Complex.* The electrofishing sites monitored in August of 2021 (shown in green) and sites historically monitored (shown in red) along four watersheds: Hope River, Trout River, Found's Mill, and Granville Creek. The photos attached at the bottom of the map demonstrate the staff netting and running the electrofishing instrument (bottom left) and of a brook trout captured during our survey prior to release (bottom right).



Water Quality

TREC has continued with its water quality assessment into the 2021 field season. This year 18 new sites were added to the protocol to ensure all tributaries are covered once every two years (at least). To create baseline data, the 18 new sites were monitored weekly over the course of 4 months along the Hope River, Trout River, and Bayview Creek. Each week, we recorded the stream characteristics (width, depth, sediment depth and flow) as well as its physical and chemical characteristics (temperature, pH, turbidity, conductivity, dissolved oxygen, TDS/TSS, nitrogen content, specific conductance, and salinity). This effort was greatly supported by the Watershed Alliance equipment manager, Rebecca Ramos, who coordinated our weekly pickups. The goal of this program is to allow for continued success and monitoring of all streams to create baseline reports. All data will be uploaded to Atlantic DataStream to allow for continuity with the historical data.



Figure 11. Summer watershed technician, David, out during a heavy rainfall to monitor our streams for suspended solids.

In addition to the weekly water quality monitoring, the TREC crew completed bi-weekly nitrate testing in coordination with Bedeque Bay Environmental Management Association. BBEMA allowed us to borrow their spectrometer in order to confirm our nitrogen levels in the lab. This greatly enhanced our understanding of both the physical properties (turbidity, stream depth, water flow and temperature), and chemical properties (nutrient, metals, minerals and pollutants).

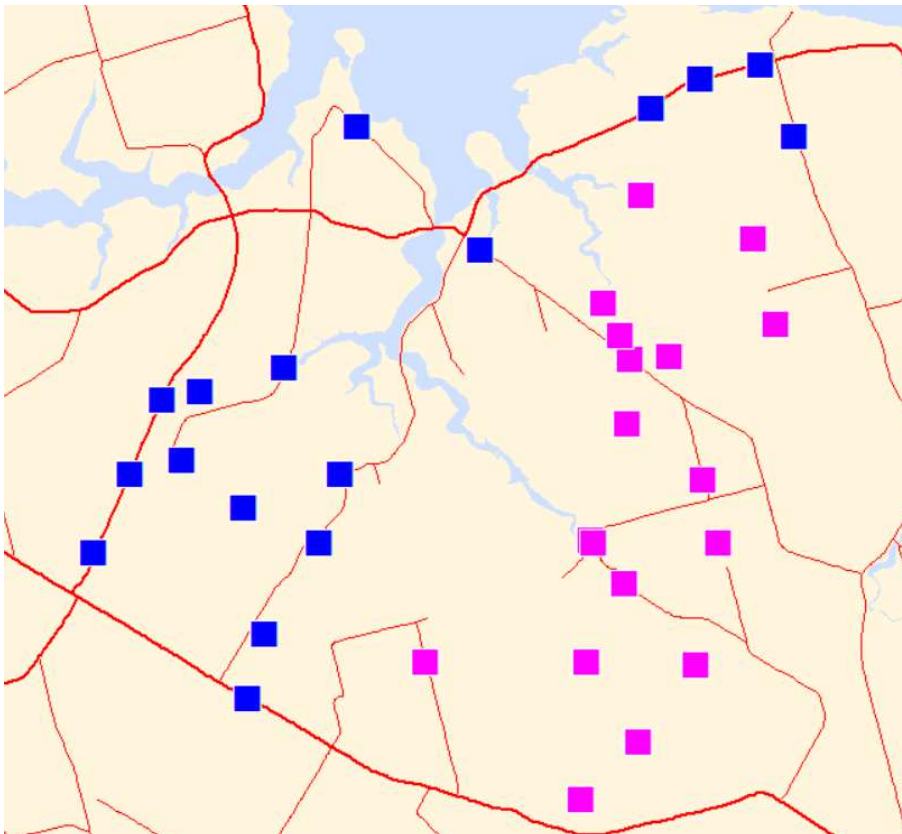


Figure 12. Location of 18 water quality sites monitored during the 2021 field season. All 36 sites are shown on this map; blue sites were not monitored in 2021, pink sites were monitored in 2021.

Estuary Watch

Used to track anoxic events, estuary watch protocol and booklet is a standardized program used across the province. TREC conducts these assessments every Monday afternoon at 5 locations within the Hope/Stanley watershed complex. This year, we expanded this program with the help of three volunteers. Knowing where anoxic events are happening and the duration of these events in our estuaries provides valuable data to us and the Department of Environment, Energy and Climate Action.



Figure 13. Estuary watch locations within the Hope/Stanley Watershed Complex. Red markers indicate sites retired from monitoring. Yellow markers represent sites that are proposed as good future alternative sites. Green sites were monitored in 2021 by staff and volunteers.

Erosion Stakes

Coastal erosion is a concern in many areas of PEI. In an effort to understand the long-term changes and impacts of erosion related to climate change, the UPEI Climate Lab resurrected the 1984 coastal erosion monitoring program that was abandoned in the 1990s. Since 2014, the Climate Research Lab has been measuring over 100 sites using peg-line measurements and unmanned aerial systems (drones) annually. This year, our watershed technician, David, worked with the Climate Lab to install four peg-lines along a coast within our watershed. Our team joined Climate Lab MSc students for a morning learning how these pegs are installed and hearing more about the work the Climate lab is doing. We look forward to seeing how this data informs our community going forward.



Figure 14. Map of the erosion stake locations established through the UPEI climate lab. These sites are marked by a pink marker; checked and maintained by the UPEI climate lab.

Photos below represent (i) the stakes that were set up for long term monitoring (left) and (ii) staff member, Kelsey, hammering in these rebar stakes (right).



Bat monitoring

The PEI watershed alliance, under the Habitat Stewardship Program, initiated a bat monitoring program under the NABat framework. This project will last three years with a major focus on detecting bats. Since the fungus that causes white nose syndrome was accidentally introduced to North America, bat populations have been devastated across much of the eastern coast. The fungus causes the hibernating bats to emerge too early from hibernation to search for food, leaving the bats to die of exposure. NABat framework aims to standardize bat monitoring efforts across North America by creating standards of practice and GRT grids with randomized prioritization. TREC was given one GRT grid square to monitor over the 2021 field season. Using acoustic monitors that detect the high frequency echolocation calls of bats, we can determine bat presence or absence.

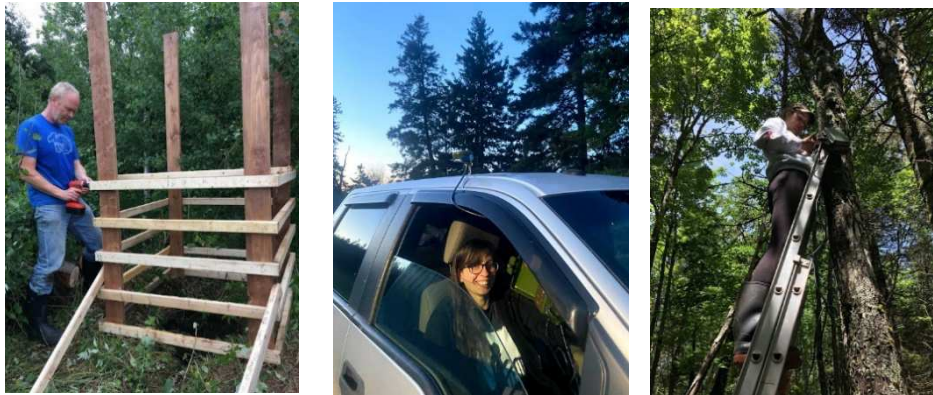
As a result, TREC participation has involved running both mobile and stationary monitoring in July of 2021. Over the course of seven days, two mobile transects were driven. Mobile transects are driven at a slow speed along a pre-defined route. They must be driven at 32km/hr as that is just slightly faster than the commuting flight speed of a bat. As a result, each “bat pass” can be considered an individual bat. Using this technique relative abundance of bats in our watershed can be detected. However, mobile transect may only detect bats that use roadside habitat. So, stationary monitoring is also used. Stationary point surveys are used to measure bat activity but cannot differentiate between individual bats. By setting up our acoustic monitors at specific, pre-determined habitat types for 4-7 nights, we can determine species present and remove the habitat bias related to mobile transects.

In addition to monitoring for bats this year, TREC was involved in several colony counts with the Canadian Wildlife Health Cooperative and in monitoring two hand-dug wells throughout the fall and winter. Stone wells may be used as hibernaculum for cave-dwelling bats on PEI or for mating swarms. By

monitoring the activity of these sites with acoustic monitors and the humidity of the wells throughout the winter, TREC will learn if these sites are ideal bat habitat. If this is the case, TREC plans to design and implement permanent, bat friendly covers for these well-sites.

Thank you to Rebecca Ramos (Watershed Alliance) for collaborating with us and coordinating equipment and to Jordi Segers and Tessa McBurney (CWHC) for answering technical questions, for training our team, and for allowing us to participate in your colony counts.

Figure 15. *Photos of our bat monitoring projects completed in 2021.* These include (i) our Director, Andrew, building a temporary well cover (left), (ii) our summer field technician, Teo, next to our mobile acoustic bat monitor (middle), and (iii) our field supervisor, Laura, setting up a stationary acoustic monitor (right).



Spruce Budworm Monitoring

Spruce budworm is a native insect to this region that feeds on the needles of white spruce and balsam fir. The defoliation that is related to these insects can be problematic during population explosions or outbreaks. Since it only takes five years of feeding for these insects to kill a singular tree, during population explosions significant areas of forests have been killed in eastern Canada (upwards of 50,000 hectares!).

By trapping these moths and monitoring their dispersal, scientists can track and predict outbreaks. TREC has joined a community science program organized by the Healthy Forest Partnership to monitor for these insects. Using a pheromone lure, the trap is checked weekly for the presence of these insects. Any spruce budworm trapped are collected, bagged, and frozen. At the end of the season, the data collected, and the frozen insects are sent back to the scientists for identification and data analysis.



Figure 16. *Spruce budworm trap set up at an undisclosed location in the Hope/Stanley Watershed Complex.*

Community Outreach

Tree Drive

This year, TREC held its second annual Tree Drive on Friday, July 2nd (1PM-6PM) and Saturday, July 3rd (9AM-3PM) at our office, 575 Taylor Road, North Granville. This year we gave away eastern white cedar, balsam fir, eastern hemlock, white pine, white spruce, yellow birch, sugar maple, red oak, and several

shrubs and vegetation including clematis and milkweed, along with planting and care instructions. At the Tree Drive we signed up 24 members, took many donations, and greatly raised the our profile in the community.

Raffle

TREC launched its first ever TREC Summer Raffle (License No. 04645). Thanks to our many local donors, TREC raffled off more than \$800 in prizes. Tickets were sold online from June 25th at 8AM to July 1st at 11:59PM and in person July 2nd from 1PM-6PM and July 3rd from 9AM-2PM. Our first place prize included: (i) two green fees from Anderson's Creek Golf Course, (ii) passes to Shinning Waters, Sand spit, and Mariners Cove from Maritime Fun Group, (iii) \$50 Gift Card from Outside Expeditions, (iv) framed drawing by Becka Viau, (v) River Pattern Mug from Trout River Pottery, (vi) key of C Windchime from Island Winds, (vii) peanut butter cups, two chocolate lobsters, and a mint chocolate bar from Jane & Sue Chocolates. A second-place prize from the Preserve Company was given – a custom gift box that includes a Lupin Mug, three preserves: Wild blueberry and raspberry with champagne, raspberry with champagne, and strawberry, two Salsas: Cherry and peach, Chocolate covered fudge and Chocolate covered chips. In total 218 tickets were sold to 44 individuals, raising \$875 in ticket sales for the TREC project fund. Our grand prize winner Vicki Elsinga and our runner up Brent Scrimshaw picked up their prizes and allowed us to announce them as our winners.

Swim for the South Shore

South Shore Watershed Association held their first “Swim for the South Shore” on August 7th – a 1km open water swim leaving from the boat launch and ending at the beach. SSWA charged a \$20 per person registration fee, and ask that all participants raise \$50 for their organization. In a show of support of our fellow watersheds, TREC set up a booth with information about our ongoing work in the Hope/Stanley watershed. TREC met many new individuals in the area (roughly 40 individuals). We want to thank Juliana (SSWA coordinator) who held an amazing and busy event on that beautiful Saturday in August.



Figure 17. Summer field technicians, Charlotte and Owen, at TREC's booth at the Swim for South Shore event.

River Days Kayak Tour

For the River Days Festival, held annually in Stanley Bridge, TREC joined the festivities. Offering free guided kayak tours (9AM-12PM), Trout River Environmental Committee led groups of up to 10 individuals along the estuary in the Stanley Bridge estuary. Each tour 45 minutes in duration left from the beach at the Stanley Bridge wharf. Team members discussed tree species, wildlife, and the work they do in the area. In total, 10 individuals joined our crew on this day enjoying the clear skies and calm waters.

In addition, two of our crew members set up an informational booth at the Farmer's Market (10:00 am - 2:00pm) located in the Stanley Bridge Heritage Centre. The market featured local goods and tables for the Young Millionaires Program. Our director, Andrew Lush, and watershed technician, Charlotte, spoke with many community members about the work we do. One young girl really stuck out to our crew for her enthusiasm and passion for wildlife and watershed work.

Trails and Parks

Trout River Park

Maintaining our parks is an important part of TREC's ongoing work and the Trout River Park was in need of significant maintenance this year. Our team spent multiple weeks this field season on this project, beginning with the removal of several fallen trees by Matt McIver, who quickly blocked these popular trails for our crew. While our team often operates the chainsaw, these trees were a little trickier as they were hung up on still living trees. This made it important for us to outsource the work to ensure the safety of our visitors and our crew.

Having this safety hazard removed, our team started on piling brush, pruning back shrubs, installing informational signs, and weeding our public use areas. We removed rotten wood that once made up our fences and benches. These will be replaced in the years to come! Thanks to the support of Transportation, we were also able to re-do our trails themselves. We re-installed new filter fabric and laid 10 tons of gravel down to improve the quality of our trails. You may notice not all the trails were finished. We plan to continue this work next year, finishing off the gravel and even making a new trail.



Figure 18. Photos of the field work completed in the summer 2021 field season at the Trout River Park.

Devil's Punchbowl Park

We also continued our work on the Devil's Punchbowl. Last year a lot of work was put into re-opening our trails after Dorian took down a significant amount of our trees and cutting a new trail. This year, we were continuing our restoration work on the Riverbend Trail (huge thank you to Island Trails who came out last year to open up this trail for us). Some of you may have noticed it can be very wet down there at certain times of the year. To help with this, we installed "corduroy logs". Using the fallen trees from Dorian, we moved the logs into the trail system creating a natural "boardwalk". As the winter comes and the spring melt follows, these logs will sink into the mud; flattening out and becoming more stable.



Figure 19. Photos of two summer staff, Teo and David, with the new trail map installed at the Punchbowl Park.

Some other tasks in this area included planting native Acadian tree species in the areas that saw significant tree loss. We are hoping to over time to support the natural successional process by

introducing older growth trees to this area. In addition, the native plant garden was naturally mulched and planted with more native shrub species. Natural mulch is used to help the garden retain water and to create a space for many native pollinators to live (many bees and other species build their nests in the ground).

Other Projects

Bat/Bird Boxes

Bird boxes are typically built each year by the TREC crew to be given away to our landowners. These bird boxes are made for tree swallows to nest in (based on the size of the hole). However, this year, our team also started building bat boxes. These bat boxes will be given out to community members to better support and create bat habitat. This year our crew (specifically David and Owen) built 8 bat boxes and 4 bird boxes. All this work was possible due to the support of many individuals: Home Hardware North Rustico for donating the supplies to build our bat boxes, David for researching our bat box design, and Tessa McBurney and Jordi Segers of the Canadian Wildlife Health Cooperative for supporting our process and providing insight.



Figure 20. Example of the bat boxes built by summer staff, Owen and David. Each box was painted black with non-toxic paint and will be given out this fall.

Beach Clean Up

The crew joined HCWG and WRIG summer crews to do a beach clean-up of barachois beach on August 12th. This was timed for mid-August as to not disturb nesting birds that are known to use this beach.

Eagle Banding

Bald eagle populations were decimated by 1954 due to habitat loss, hunting, and DDT impacts. However, the population has since bounced back due to the cultural and legal changes in recent history. There are now an estimated 500 to 600 eagles on PEI. As part of monitoring programs, some of these birds are banded every year. Gerald MacDougall, a retired biologist from PEI Department of Fish and Wildlife, organized the banding of a nest in our watershed on the behalf of our team. Joined by staff of the CWHC/AVC, Mi'kmaq leaders, staff/members of Abegweit Conservation Society, members of Island Nature Trust, and community members, TREC was able to observe these trained individuals remove, transport, band, and return these birds to their nest. It was an incredible experience, one I am sure our staff will not soon forget.

Figure 21. Photos from the eagle banding along Trout River in 2021. Teo is holding one of the eaglets (left) while two staff, Kelsey and Laura, watch the technician from the Canadian Wildlife Health Cooperative band another eaglet (right).



Goose Banding

TREC helped the Canadian Wildlife Service and Ducks Unlimited to band Canada Geese in the national park at Cavendish, on the Lake of Shining Waters. 150 were banded and 90 were recaptured. This was a wonderful learning opportunity for our crew to collaborate with individuals from many other organizations and governmental departments. Our crew learned so much through this day about geese and had a great time.

On PEI there are several distinct populations, but two of interest: the North Atlantic population (NAP) and the temperate breeding population (TBP or resident geese). NAP geese are the geese that traditionally migrated through PEI in the spring and fall and nest in Labrador. This NAP population is considered healthy but is carefully managed because of its historical and cultural significance to both Canada and the US. The temperate breeding population on the other hand, is one that originated from golf courses in Ontario and were introduced to Chipman, NB in the 1990's. This population seldom leaves Atlantic Canada, breeds here, are considered by many to be a nuisance, and numbers are currently exploding. One could say they are to a degree "invasive".

Attempts to band both NAP geese and temperate breeding geese have been made in PEI in recent years, and this data has been used (and will continue to be used) to make management decisions. For instance, some of the information gathered has helped determine that NAP geese do not migrate through Atlantic Canada until October allowing for a September hunting season to be opened specifically to target the TBP birds.

Hunting season lengths, and bag limits across the Maritimes are determined based on this data.



Figure 22. Summer field technician, Charlotte, holding one of the geese banded with the Canadian Wildlife Service and Ducks Unlimited Canada.

Training

Our staff got a ton of new training this year. We value teaching our students and providing an educational opportunity for our field staff. This year our new staff received training from MacPhail Woods on pruning and tree identification, first aid training, watershed training from the Watershed Alliance and chainsaw training from the Province of PEI. In addition, our chainsaw certified staff received in stream chainsaw training from Matt McIver. This proved to be extremely valuable to our staff during stream clearing this year! Our returning staff received slightly different training including field training on electrofishing for our certified staff from the Watershed Alliance and invasive species training from the Invasive Species Council in Georgetown (removing Oriental Bittersweet).

Social Media and Outreach

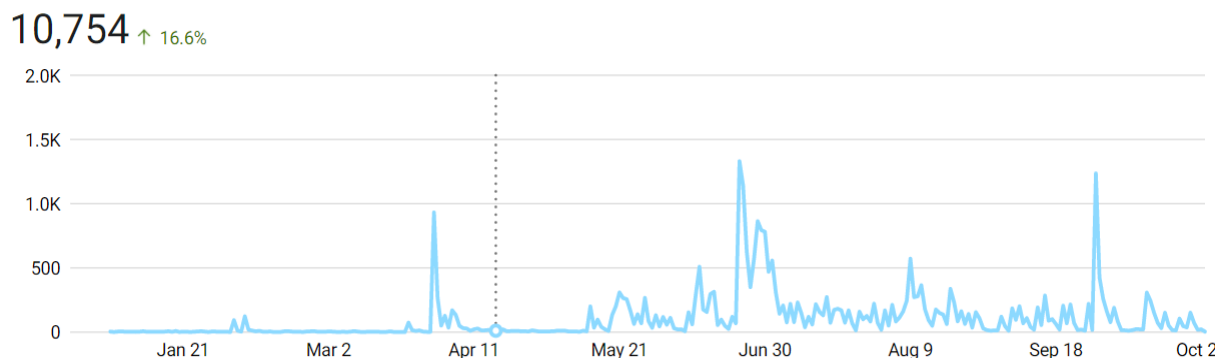
This year, due to the vigilance and efforts of our field supervisor Laura, our outreach through media platforms has increased dramatically. All our field staff – Teo, David, Charlotte, and Owen – took turns writing articles for the County Line Courier. This task became quite a competition and our team after much effort made the front page with an article about our eagle banding efforts!

In addition, our reach through Facebook has increased 16.6% in the last year (reaching over 10,754 individuals). Our audience is made of mostly women between the ages of 25 to 55 years. This year our top performing posts were (i) our release of the Punchbowl sign

(2,600 individual reached and 75 likes), (ii) our raffle announcement (2,300 individuals reached and 23 likes), (iii) our announcement of Trout River trail maintenance (2,100 individuals reached and 50 likes), and (iv) information about our eagle banding efforts (466 individuals reached and 45 likes).

We also launched an Instagram account this year. Over one month of being active we have gained 50 followers and have reached 120 individuals. We hope this will continue to develop as the account garners more traction.

Figure 24. Facebook reach over the last 12 months seeing an increase of 16.6% since 2020.



Facebook Page Likes ⓘ

575

Age & Gender ⓘ

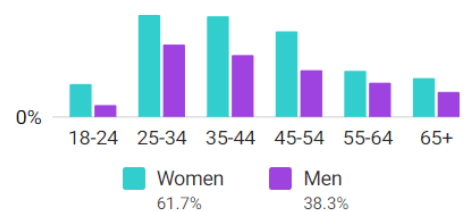


Figure 23. Facebook audience engagement including likes, audience age, and audience gender.

Acknowledgements

Thank you to the support of all our community members, TREC members, and everyone else involved in our projects. We could not possibly name every individual who has supported our projects this year through permissions to enter their land, showing up to our events, donations to our projects, planting trees, or volunteering their time. We appreciate everyone's help. In particular, we want to thank the following organizations for their time, knowledge and support.

The Department of Transportation
The Department of Forests, Fish and Wildlife
South Shore Watershed Group
Hunter Clyde Watershed Group
Wheatley River Improvement Group
The Watershed Alliance
Kensington North Watershed Group
Bedeque Bay Watershed Group
Invasive Species Council
MacPhail Woods
Kate MacQuarrie
The TREC Board
Gary Schieder
Matt McIver
J. Frank Gaudet Tree Nursery
UPEI Climate Change Lab

North Granville Community Center
Canadian Wildlife Health Cooperative
River Days Festival Committee
Stanley Bridge Marina
Gerald McDougall
Island Trails
North Rustico Home Hardware
Ducks Unlimited
Canadian Wildlife Service
Anderson's Creek Golf Course
Outside Expeditions
Becka Viau
Trout River Pottery
Island Winds
Jane & Sue Chocolates
The Preserve Company