



Prepared for the Wheatley River
Improvement Group by

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FIELD CREW SUPERVISORS REPORT

Summer 2014

Table of Contents

List of Figures	1
Introduction:.....	2
Tree Planting.....	3
Species Planted/Planting sites	4
Stream Restoration:.....	4
Brush Mats	5
Blockages and Debris:	6
Alders.....	6
Culverts, Dirt Roads and Anoxia	6
Rackham’s Pond:	7
Community Events and Partnerships:	8
Recommendations for 2015 Field Season.....	9
Appendix I	10
Map of 2014 Field Work.....	10
Trees planted by site 2014	11
Tree planting preferences.....	12

List of Figures

Figure 1. WRIG field crew 2014: Supervisor Brittany MacLean (left) and technician Jerrica Cormier (right).	2
Figure 2 Jerrica Cormier digging a hole to plant a tree at Rackham's Pond	3
Figure 3 & Figure 4. An example of stream restoration: before and after pictures taken of stream cleaning on Parker Cross Road. There was immediate improvement to stream flow, and movement of sediment from stream bottom.....	4
Figure 5. Brush mat made of spruce boughs and anchored with alder stakes and twine, Millboro Road. ...	5
Figure 6. Hung culvert with low flow, an obvious barrier to fish passage.	7
Figure 7. Jute matting installed to reduce erosion on the slope below Rackham's Pond, and encourage plant growth.	7
Figure 8. A monarch butterfly tagged for BBEMA tracking research. Swamp milkweed was planted in the watershed to help support struggling butterfly populations.	8
Figure 9. Brittany and Jerrica at the WRIG tent, sharing watershed knowledge.	8
Figure 10. WRIG and HCWG handing out trees at the Canada Day in Rustico booth.	9
Table 1. Trees planted by site, 2014	11
Table 2. Chart of planting location characteristics that selected trees do best in.....	12

Introduction:

For the 2014 summer season of the Wheatley River Improvement Group the field crew consisted of myself, Brittany MacLean, as the supervisor and one other field crew technician, Jerrica Cormier. I am entering my second year of the Wildlife Conservation Technology program at Holland College in September where I will graduate as a Wildlife Technician. I was hired and began my 10 week work term on June 23. Jerrica Cormier Graduated from Bluefield High School this year and is entering sciences at UPEI with a major in biology in the fall.



Figure 1. WRIG field crew 2014: Supervisor Brittany MacLean (left) and technician Jerrica Cormier (right).

As one of the many Watersheds in PEI, maintaining our local ecosystem and wildlife habitat is a very important part of what we worked to accomplish this year, by restoring diversity of plants and vegetation in riparian areas, reducing as much human impact due to agriculture and construction as possible. These human activities increase the risk of erosion into our watercourses, an existing and rising problem Island wide.

Some of the actions undertaken by WRIG this summer aimed to directly enhance wildlife and stream habitat. 800 PEI native trees and shrubs were planted in riparian and buffer zones to diversify vegetation, brush mats were constructed to reduce sediment in streams by collecting silt from the water column and also stabilize river banks. We cleared and restored fish passage through the streams by removing debris and fallen trees and we also performed Riparian Health assessments to collect data about the streams, determining the health and sustainability of the stream. This data will be compiled onto a map that shows us whether the stream needs work done, and we can also compare this data to previous years to see if there was in fact improvement to the overall health of the stream system. This information will aid future crews in determining what parts of stream need more work than others.

The season began with two training days on June 19th and 25th, organized by the Watershed Alliance, and held at BBEMA offices in Emerald. On the 19th was a tree planting course led by Gary Schneider (of Macphail Wood's) on proper planting and pruning techniques, and provided good information on different plants and the best habitat to establish them in for optimal survival. On the 25th, the watershed management course was organized and led by Shawn Hill; this course was good because it provided helpful information on important management techniques and concepts such as the construction of brush mats and placement of digger logs, as well as information on different species of fish indigenous to this area.

The areas that were assessed for the 2014 season by the field crew for stream enhancement, tree planting and general maintenance (like beach sweeps) were on the main branch of the Wheatley River, the Chapel Creek area off the Buffalo road and Hornes Creek area off the Winsloe Road. Wheatley River had many of its tributaries assessed and trees were planted near the Millboro Road, New Glasgow Road, Parker Cross Road, Little Bungay Road and Route 2.

Tree Planting

Tree planting is one of the first tasks to be done in the watershed, because it is important to get the saplings in the ground within the month of July before the weather gets too hot, there is less rain and the soil gets too dry these are not ideal conditions for the trees to survive establish in. We planted a total of 800 trees and shrubs, with 18 different native species, we had a great diversity of plants at our disposal, and this helped a lot when diversifying planting site. We planted at a total of 8 sites and distributed the trees according to the need that specific area had:



Figure 2 Jerrica Cormier digging a hole to plant a tree at Rackham's Pond

whether it be bank stabilization, dry or marshy areas, extending the buffer zones or creating more cover for animal in a location that had no trees at all.

We planted at one site in the Hornes Creek area off the Winsloe Road. This land owner came to us and asked if we would plant trees in his tributary to diversify the buffer zone, extending it from the existing zone because he was afraid the farmers renting it were coming too close to the stream and he wanted to stabilize the receding bank. We planted 110 trees in this area.

There were two sites the crew planted in the Chapel Creek area both were off the Buffalo Road, one at Tracy Gallant's and the other on Lynn Gallant's property. The first landowner requested trees to be planted on some retired farm land close to the stream bordering her property where there was no trees growing, only various types of grasses and weeds, so we diversified the area and extended the forested area beside by planting 36 trees and shrubs. The second location was a small open marsh area in the middle of a relatively well wooded area, we planted here because the trees were pretty far away from the stream and the banks needed stabilization. Because we have such an excellent variety of trees available this year, 104 water tolerant trees like bog birch, blue leaf birch and hemlock were planted in this area.

The remainder of the sites we planted at were in the Wheatley River area off the New Glasgow Road, the Millboro Road and at Rackhams Pond. We planted on three properties on the New Glasgow Road, two neighbouring agricultural in the same tributary; Walter Andrews and Joanne Daily's properties. This was an ephemeral section of stream with a wide section of grassed buffer zone, but there were no trees established. The types of plants chosen for these sites were banks stabilizing plants because grass roots do not hold together banks very well and a wide variety of different species of plants for a total of 276 trees. The third site on the New Glasgow Road was at Micah Gallants, just downstream from the Wheatley River Bridge. Micah approached the watershed and asked if we could plant some trees along the section of the Wheatley River that flows in front of his house, there was little diversity there and some sections with no trees present, we were planting close to the bank so stabilizing trees were chosen, we planted 39 trees in this area along with our only Red Osier Dogwood. The remainder of the trees were planted in two sites off the Millboro Road; at the Lipnicki's and Allan Lings' properties. The site chosen on the Lipnicki's property was a large section of stream that was marshy in some areas and dry closer to the road, we planted a total of 80 trees here to enhance animal habitat and cover and increase the size of the buffer zone that was there. Allan Lings' property included a buffer zone that was mostly grassed with a few white spruce, so we planted 87 trees to help diversify the area.

Species Planted/Planting sites

See table in Appendix I

Stream Restoration:

The other major work undertaken during the summer was in the stream itself, where we



Figure 3 & Figure 4. An example of stream restoration: before and after pictures taken of stream cleaning on Parker Cross Road. There was immediate improvement to stream flow, and movement of sediment from stream bottom.

performed stream restoration techniques to improve fish passage and water flow. Our goal for this summer was to continue with the previous years' work and to try and get to as many of the streams that were missed and not previously assessed as possible. We found many sections that had not been looked at in a while had a lot of debris and blockages. Blockages for the most part were branches, leaves and silt that had been caught up on low lying branches during high water events

in the spring, contributing to entire fallen trees fallen during the winter or storms, spanning across the streams creating major blockages. Often, these blockages could only be removed by means of a chainsaw and heavy lifting. We removed these fallen trees in several locations in the watershed with the assistance of Jeff Arsenault (WRIG Chair) who offered his chainsaw and help to us. The places we removed trees were at Harvé Poiriers' property off the Winsloe Road (removed two there), on Stewart MacRaes' property off the Millboro Road (removed one there) and on Woltens (PID# 545616 off of Route 2).

This summer we managed to work through 5 major sections of stream in the Wheatley River, Half of the Millboro Road Tributary, all of the section from the Little Bungay Road to the Route 2, from the New Glasgow Road upstream to where the Wheatley River forks, from the Parker Cross Road to halfway to the same fork in the stream and from the Winsloe Road to the fork of that tributary. While in the stream, the areas focus on and the conditions we worked to improve were aimed at clearing fish passage, so the fish had access to the entire stream system in order to lay their eggs in good habitat, enabling the spawn to grow. Where appropriate, natural resting spots for fish were created in the stream by installing digger logs and the placement of large rocks. These features in the stream create pools and riffles for the fish to rest in while traveling up and down the stream systems. We also did not take everything out of the streams, leaving low hanging branches that are well out of the water, and fallen trees that are not impeding stream flow or fish passage, these are excellent cover for the fish, protecting them from predators and providing shade in the hot summer months.

Brush Mats



Figure 5. Brush mat made of spruce boughs and anchored with alder stakes and twine, Millboro Road.

Brush mats are a very important tool watershed groups have at their disposal. These in stream structures work to remove sediment from the water column, relocating it to the inside bends of streams and building up and stabilizing stream banks to prevent further erosion. While assessing the streams, when we found a good location to build a brush mat, we would mark it in the GPS so we could come back to that spot at a later time and construct it, enabling us to find the absolute best spots in that specific system the brush mats would be the most useful. In total, 8 brush mats were constructed throughout

the watershed this season. Brush mat locations can be seen on the map attached in Appendix I. Time was taken to assess brush mats that were installed by previous field crews, and there was good

evidence that they were still working well with vegetation growing on them and there was no work that needed to be done to them.

Blockages and Debris:

Over the winter and spring months, debris and blockages build up in our river system due to fallen tree limbs, broken from the wind and the weight of the snow and carried downstream by spring flooding. These blockages keep fish from making their way upstream; preventing spawning in the proper stream headwater nursery habitat. This summer we removed over 50 blockages in different areas of the watershed. We began our stream work at the Wheatley River tributary crossing on the Millboro Road, and completed the section that runs upstream along that road. We also completed the stream section from the Little Bungay Road all the way to the Route 2 highway, which had been untouched for several years. Sections of the New Glasgow Road and the Parker Cross Road were completed but the whole stream sections remain to be finished. We also cleared the tributary off the Winsloe Road, this was a small section of stream with few blockages. Another big accomplishment for this year is we removed 6 very large fallen trees that had a big impact on fish passage by the use of a chainsaw and the help of Jeff Arsenault.

Alders

Alders, a fast growing, shrubby tree that is established along many Wheatley River tributaries, is often the first to establish on retired fields, growing especially well in wet areas and along streams. While they provide good cover for wildlife and help stabilize stream banks, left unchecked they can shade out other trees from growing, and their extensive root systems and low hanging branches can cause stream congestion and blockages. These are a large part of what we remove from the streams each year. In many parts of the watershed they are the only vegetation present along the stream. To increase plant diversity and prevent blockages, we would remove the alders that started to grow in the water and were a risk of catching debris floating in the stream and in the spring floods. Where needed, branches were left over the water for shade and cover for the fish. This year we did not come across very many big swaths of alder patches needing thinning, and only cut and pruned as needed.

Culverts, Dirt Roads and Anoxia

The Wheatley River Watershed has many secondary and dirt roads within its boundaries, which are problematic. After heavy rains, because PEI soil particles are so fine, erosion and runoff carry sediment easily and frequently into streams at road crossings. There are measures put in place along road side ditches to try and prevent runoff from entering the streams, such as diversion ditches and check dams. These are some of the things that are put in by the provincial Department of Transportation to help prevent the influx of sediment, unfortunately over time these precautions



Figure 6. Hung culvert with low flow, an obvious barrier to fish passage.

stop working because they fill up with silt and overflow. Whenever these roads cross a stream is another place where runoff can enter the stream, and unfortunately in this watershed the dirt road stream crossings are not ideal. These crossings are major sources of fish passage problems in the Wheatley River Watershed. Many culverts are situated above the stream bed, often above the normal water level on the downstream side, a situation referred to as a hung culvert. As far as major barriers to fish passage in the Wheatley River Watershed, these hung culverts represent the majority of existing problem spots for fish, because they cannot

make it up past the culvert to get upstream.

This year there was little anoxia, and no major anoxic events in the Wheatley River system, a very good thing for local wildlife and residents. Anoxia happens in estuaries where there is an excess of nutrients, combined with hot, sunny weather. This causes aquatic vegetation and different types of algae to thrive and grow very rapidly, and then it dies off and decomposes, depleting the water of the majority of its dissolved oxygen levels. When the oxygen levels gets too low the dead vegetation start to rot, making the water turn a milky, stagnant, smelly mess, choking out all the wildlife that lives in these types of habitat. Fewer sunny days and slightly lower temperatures may have helped prevent anoxia from happening this year.

Rackham's Pond:

Rackham's Pond was the place for many different community events and field projects in 2014. This year we tackled the issue of the eroding cliff on the slope of the fish way leaving the pond. Over the past few years, the slope has been affected by heavy rains and snow melt every spring and the top soil is spilling into the river. In an attempt to prevent this from continuing, jute netting (a landscape netting donated by the PEI Dept of TIR) that will biodegrade in 3-5 years with no impact to the environment was used. We



Figure 7. Jute matting installed to reduce erosion on the slope below Rackham's Pond, and encourage plant growth.

placed the jute netting in strips vertically along the slope face, anchoring them with stakes and planted different species of stabilizing shrubs in and around the jute to also help roots and other vegetation grow and prevent future runoff. This was done in two phases, early and late summer, to make sure that the anchoring would work and that heavy rains wouldn't knock the jute down. By the end of the summer, they were still holding and the plants that had been planted were still doing well.

Another big project was the rescue and replacement of our wheelchair accessible dock the just this past winter was washed away due to the heavy snow and spring runoff this year. At the beginning of the season the dock was missing but after we got a call from Allie who located it halfway up the Crooked Creek. Surprisingly there was minimal damage to the dock for the distance it traveled and we were able by the help of a local farmer and his tractor remove it and haul it back to the pond where we restored it and placed it back in its place this time anchoring it down with two large polls. Aside from these two projects, regular ground maintenance was performed, mowing and pruning, picking up and removing garbage left by visitors. We also started swampy milkweed plants in office, then transplanted the young plants to appropriate sites along the pond shore and island, as well as broadcast seeds in a cleared section of reeds. Provided to us by BBEMA, swampy milkweed plants are the only plant the monarch butterflies lay their eggs on in, and these plantings were done to create butterfly way stations, in order to help the struggling populations.



Figure 8. A monarch butterfly tagged for BBEMA tracking research. Swamp milkweed was planted in the watershed to help support struggling butterfly populations.

Community Events and Partnerships:



Figure 9. Brittany and Jerrica at the WRIG tent, sharing watershed knowledge.

This year there were many community events WRIG was happy to be a part of and were also hosted within our watershed. The season started early with an Environmental Fun Day (June 6th) for students from Central Queens Elementary and Golf shore grades 4-6 classes. Different stations were set up and groups visited each station to learn about a different topic in the environment, including PEI trees, PH levels in the stream, and local wildlife found in the watershed.



Figure 10. WRIG and HCWG handing out trees at the Canada Day in Rustico booth.

WRIG also partnered up with the Hunter Clyde Watershed Group to be a part of the Canada Day celebrations in North Rustico, where we gave away native trees to families, asking them to make a pledge and plant them responsibly.

Rackham's Community Pond played host to an Old Fashioned Picnic, put on jointly by WRIG, the Wheatley River 4H club and the local Women's Institutes as their midsummer event. There

was food served at the Wheatley River Hall and WRIG staff gave tours of the pond and helped visitors identify any wildlife we managed to see. We also promoted WRIG and sold tickets to our annual year end celebrate our river duck race at the annual Rendezvous Rustico celebrations. To finish off the summer at Rackham's Pond, we held our Celebrate our River Event and rubber duck race. A BBQ of local food was served, and there were nature games and activities down at the pond for visitors and kids. Throughout the summer tickets were sold, each ticket represented a rubber duck that released and raced from the pond down to the Wheatley River Bridge. This year's event was a success, and went off without a hitch.

Recommendations for 2015 Field Season

Some of the recommended areas that I think could use some work is the rest of the stream off the Parker Cross Road and to take out all of the fallen trees off the Millboro Road. There were a lot of blockages we came across this year I think that all of the streams that were unable to be looked at this year should be looked at and cleared for fish passage. As for tree planting it is unfortunate that some of the places we would have loved to have planted trees we could not reach the land owners these places off the Millboro Road and on the Little Bungay Road should try to be contacted again and I think trees would thrive there.

Appendix I

Map of 2014 Field Work



Trees planted by site 2014

Table 1 Trees planted by site, 2014

Tree species	Trees available	Micah & Lindsey Gallant	Harve Poirier	Walter Andrew & Joanne Daily	Lynn Gallant	Allan Ling	Tracy Gallant	Chalres and Laura Lipnicky	Rackham's Pond
White pine	54			20		15	7	7	5
Balsam fir	48		21	10		7	5	5	
Larch	48	4		20		10		10	4
Red spruce	54			25	20	9			
Hemlock	72	1		25	25		5	10	6
Red oak	72	6	21	25					5
Sugar maple	72	6	21	25		15	4	12	4
Yellow birch	72	2	21	35		10	4		
White birch	54			35			6	10	3
Bog birch	54			10	25			16	3
Blue leaf birch	42			15	25			2	
Bayberry	30	2	10			6			8
Winterberry	24	6			9	9			
Red leaf willow	24	3	11	5				5	
Wild rose	24	5		9					10
High bush cranberry	24	3		11					10
Red berried elder	24		5	5		6	5	3	
Red Osier dogwood	1	1							
Total	793	39	110	275	104	87	36	80	58

Tree planting preferences

Table 2. Chart of planting location characteristics that selected trees do best in.

Tree species	Trees available	Wet Areas Full Sunlight (Swamps, Floodplains)	Wet Areas Part Shade (Stream banks, high swamp, upper plains)	Dry Area Full Sun (Old field, upper banks)	Dry Area Part Shade (woodland for diversity)	Wildlife Diversity and beautification	Windbreaks and hedgerows
White pine	54				✓	✓	✓
Balsam fir	48		✓	✓	✓		
Larch	48	✓					✓
Red spruce	54				✓		
Hemlock	72		✓		✓		
Red oak	72			✓	✓		
Sugar maple	72				✓	✓	
Yellow birch	72		✓		✓		
White birch	54			✓		✓	
Bog birch	54	✓	✓				
Blue leaf birch	42			✓	✓	✓	
Bayberry	30			✓		✓	✓
Winterberry	24	✓	✓				
Red leaf willow	24	✓				✓	✓
Wild rose	24					✓	✓
High bush cranberry	24			✓	✓	✓	
Red berried elder	24	✓	✓	✓		✓	✓
Red Osier dogwood	1		✓				
Total	793						