



Prepared for the Wheatley
River Improvement Group by

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FIELD CREW SUPERVISOR'S REPORT

Summer 2015

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Introduction

The 2015 Wheatley River Improvement Group (WRIG) field crew consisted of myself, Brittany MacLean, as supervisor and one other field crew technician, Jerrica Cormier. I graduated from Holland College this past year as a Wildlife Technician and am now continuing with the two-and-two program and entering UNB in the fall to complete my BSc in Environment and Natural Resources with a major in Wildlife Conservation. I was hired for a 10 week work term on June 22. Jerrica Cormier will be entering her second year at UPEI this fall and is working



Figure 1 Field Crew Supervisor, Brittany MacLean (Left) and Field Crew Technician, Jerrica Cormier (Right)

towards her BSc in Biology. She was hired for an 8 week work term on July 6. Maintaining the many different ecosystems and wildlife habitats throughout the watershed is a very important part of what we tried to accomplish the season. We worked towards restoring diversity of plants and vegetation in riparian areas, reducing as much human impact and erosion as possible in the streams, and monitoring the estuary which is one of the most biodiverse areas in any watershed.

Some of the things WRIG accomplished this summer include planting 852 native trees and shrubs in riparian zones and landowners' retired properties and constructing brush mats to build up the stream banks by collecting sediment out of the stream while also providing habitat for the young of the year brook trout. We cleared and restored fish passage through the streams by removing fallen trees and blockages caused by limbs and debris caught on them. A Water Quality Management Plan was constructed and meetings were held with local fishermen to try and collect data on the estuary and why it turns anoxic every summer.

Tree Planting

Tree planting is one of the first things that is done in the summer season because it is important to get the saplings in the ground within the month of July before the weather gets too hot and dry; it is less likely for them to survive if planted in the later months. For this 2015 summer season the WRIG field crew planted 558 native trees and shrubs divided between 17 different species. With so many different species of plants at our disposal to work with it was a great help to diversify and area. We planted at a total of 11 different sites and distributed the trees according to the need that specific area had whether it be bank stabilization, creating hedges, extending riparian zones, or retiring old farmland. In addition to the 558 trees planted by the field crew, WRIG members and volunteers planted 96 trees in the Wheatley River

Watershed and 198 trees were given away to residents of the Wheatley River and Hunter River Watersheds with the Canada Day tree planted pledge.

We planted trees in several smaller sections this field season and did a few larger plantings as well. We planted at two areas near Hornes Creek, the first was off the Winsloe Road. This land owner had tree plantings done in the past by other groups but they never survived; there was a very grassy and marshy riparian zone that they wanted to diversify with more woody vegetation. We were able to plant 211 trees and shrubs in this area. The second land owner in the Hornes Creek area was just off the Portage Road. This area had some well-established trees in its riparian zone with short maintained grass just beyond it just on the tail end of the estuary. The riparian zone was quite thin so we planted 16 trees on the outer side of the trees to try and extend the riparian area and to add diversity to the spruce trees. There was one planting site of the Crooked Creek branch of the Wheatley River off the New Glasgow Rd. This area was one that WRIG planted last year but there was still room for more trees. After doing a site assessment of this area at the beginning of the season the success rate after the heavy snowfall this winter was about half. We planted 125 more trees in this area replacing the ones that died over the winter and expanding the area that we'd previously planted. We did a small planting of only 13 trees on the Rackham's pond cliff this year because unfortunately this past winter was very hard on the soil and a large portion of the cliff eroded away. We planted the trees on the very top of the cliff in hopes that when the trees' root systems grow and develop that some of the cliff will be stabilized and saved. The last two planting sites are in the Wheatley River estuary area, one off the Church Road and the other off the Stead Road. The area on the Church Road we planted in two different areas on this property, the first was on a slight hill that lead to a small tributary of the Wheatley River. We planted the trees there to help stabilize the hill from erosion. The second place on this property was in a retired field that surrounded a shale pit, the land owner had trees planted in this area before by another group but they never took. There was a total of 112 trees planted on that property.



Figure 2 Blue Leaf Birch planted along Hornes Creek East Branch

Tree Planting Species List

Tree Species	Amount
White Pine	132
Balsam Fir	42
Larch	42
Red Spruce	42
Hemlock	42
Red Oak	180
Yellow Birch	90
White Birch	66
Bay Berry	24
Red Leaf Willow	24
Aronia	24
Common Elder	24
Blue Leaf Birch	24
White Ash	24
Red Maple	24
Cedar	24
White Spruce	24
Total	852

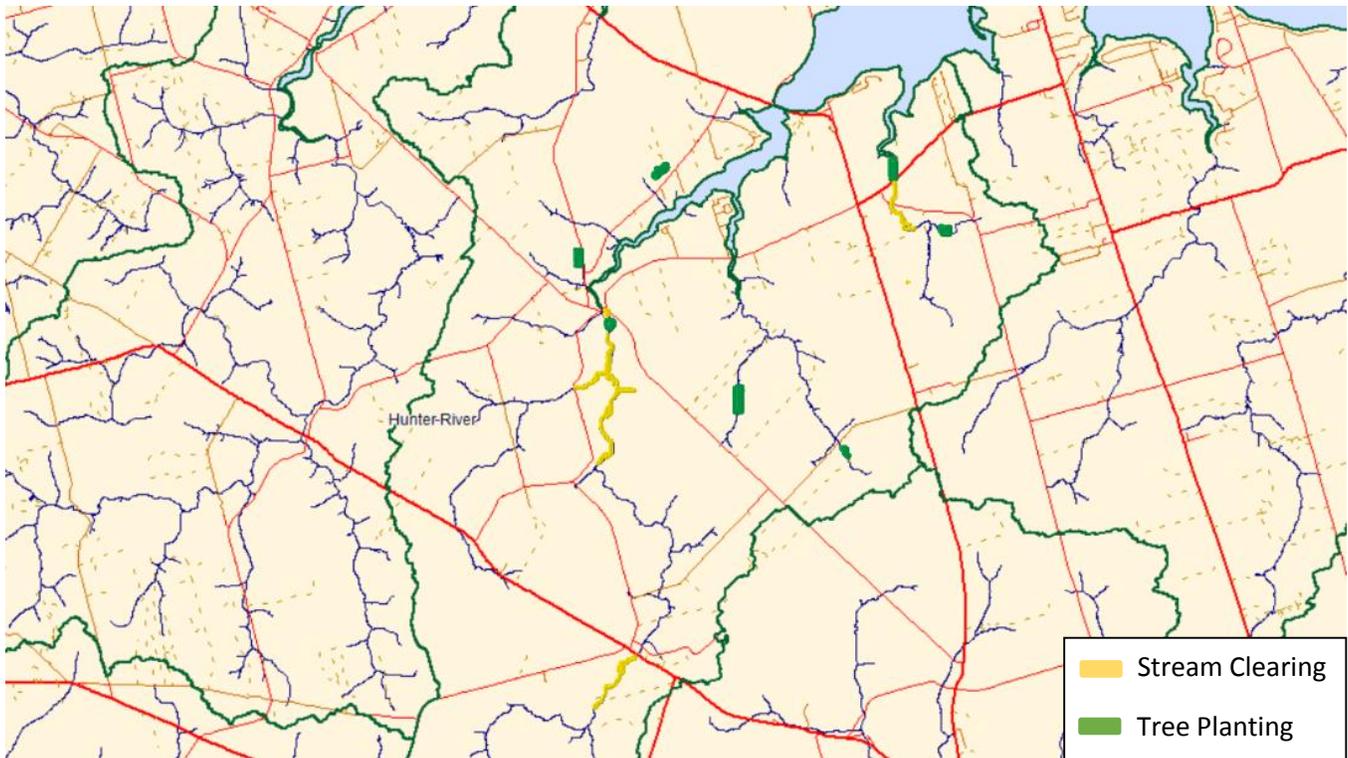


Figure 3 Map of 2015 Field Work locations

Stream Restoration

During the second half of the summer the majority of our time is spent doing stream restoration. This work helps to improve fish passage along the stream as well as fish and wildlife habitat and improves water flow of the stream itself. This summer we started off doing site assessments in the stream to assess the damage done by the winter, which we used to determine what streams need the most care. Some of the things we would look for during these assessments were debris and blockages caused by branches and leaves getting piled up, trees that had fallen in the stream and were impeding passage, and bank erosion and runoff from farmers' fields. We looked for good places to install brush mats. This year we cleaned 3 large sections of stream. The first was a portion of Hornes Creek off of the Winsloe Road, the second was from the Wheatley River Bridge to Rackham's pond and down the secondary branch to the Millboro Road. The third was south of Route 2. During stream restoration we try and take out as much as we can without destroying salmonid habitat. Salmonids need debris and objects in the water as cover from predators, and also shade from overhanging branches so they stay cool in the hot summer months. They need cold water temperatures or they die. In the stream we take out mostly alders that have become overgrown in the water and are starting to choke off the river as well as fallen trees. This year we removed a total of six fallen trees with the assistance of Jeff, WRIG director, who offered to help us with his chainsaw. Five out of the six trees were located on parcel # 548156 they were completely submerged in the water and were impeding passage of sea run fish into the tributaries. The other tree was on parcel # 240689; that tree had fallen and debris was getting caught in it. Brush mats are a very important tool watersheds have at their disposal, they remove sediment from the streams and build the banks up to prevent erosion. After cleaning the stream of alders we then would come back and build brush mats in spots that they would be the most useful. In total we constructed 8 brush mats, 6 of them on the second stream clearing section and the other 2 on the first clearing section.



Figure 4 Stream before clearing debris and overgrown alders.



Figure 5 Stream after removing impediments to fish passage.



Figure 6 Field Crew Technician, Jerrica Cormier, working on a brush mat.

Culverts and Dirt Roads

The Wheatley River Watershed has many secondary and dirt roads in the area; these areas can very problematic after heavy rainfall. PEI soil is very fine and runoff and erosion happens more easily around stream crossings. There are measures put in place to try and prevent runoff from entering the stream such as diversion ditches and check dams that are put in by the province to help prevent this, unfortunately over time these precautions don't always work anymore because they get full of silt. At the beginning of the season we performed a culvert assessment, where we went out to all the secondary roads crossings and assessed them based on certain characteristics such as if they were hanging, what type of culvert it was, whether it be metal or wood, if there was any runoff happening, and the type of flow.

Water Quality and Anoxia

This year one of our main focuses was water quality, and collecting more data on anoxia and what is causing it. There was a water quality management plan made up and in order to try and collect as much data as possible, every two weeks all the major bridges in the watershed were sampled with a grab sampler and the YSI was used to record information about the water.



Figure 7 Field Crew Supervisor, Brittany MacLean, removing a blockages from a culvert.

Also, once a month we canoed up the Wheatley River with the YSI to collect data from in the estuary. Unfortunately this year the estuary did go anoxic in the month of August. We also had a meeting with local mussel fisherman to get their input on anoxia and put in motion some kind of partnership and plan for next year to try and prevent these events from happening.

Rackham's Pond

Rackham's Pond was the location for our end of the year Celebrate Our River Day and Duck Race held on the 29th of August. This is a day where the community can come out and enjoy the pond and see the work we did throughout the year. This year the event was a great success there was a good turnout. We sold tickets for the duck race and there was also a barbeque and kids games at the pond. There was not a lot of work that needed to be done at the pond this year, we did weekly maintenance consisting of grass cutting, tree trimming, and whipper snipping to keep it looking nice. After the snow melt all the rocks from the bottom of the cliff washed away so this year was just a planning year on what we are going to do and what can be done to restore the cliff by the pond. We planted some trees at the pond on the top of the cliff to try and help the erosion problem that this winter has caused and placed a duck box to try and attract nesting ducks to the area. We also placed 5 other wood duck nesting boxes throughout the Wheatley River and surrounding watersheds this year to enhance wildlife habitat.



Figure 8 Waiting for the ducks at the finish line.



Figure 9 Wood Duck Nesting Box.

Wheatley River Improvement Group

Water Quality Monitoring Plan

2015

Introduction

This water quality monitoring plan is for the estuary within the communities of Wheatley River, Oyster Bed, and Cymbria, Prince Edward Island. This branch of Rustico Bay goes anoxic during the months of July and August. This anoxic event has been happening in this estuary for the last 5 years putting a great deal of stress on wildlife habitat and aquaculture in the area.

The Wheatley River Improvement Group (WRIG), the watershed group for that area, will be responsible for the monitoring and data collection for this water quality monitoring plan.

Objectives

This water quality monitoring plan will be used to create baseline data from multiple points of interest and concern for the Wheatley River and surrounding area, to determine trends in these anoxic events so an action plan can be created to prevent it from happening. The main questions to be answered are as follows:

- When are these anoxic events starting exactly?
- When is it at its peak?
- How does this effect wildlife habitat in and around the estuary?
- What organisms thrive in this created habitat?
- How does this event effect the chemical makeup of the water?
- Is there a source point for this event?

In order for these objectives of this program to be met, this project should be maintained every year for the months of June, July, and August to create the baseline data necessary.

Sample locations

There will be 5 sampling locations throughout the estuary.

Site	Brief Description of Site Location	GPS Coordinates
Wheatley River Bridge	Head of the main branch in the estuary	N46.373 W63.289
Crooked Creek Bridge	Head of the second branch of the estuary	N46.380 W63.262
Oyster Bed Bridge	Base of the entire estuary before it empties into Rustico Bay	N46.401 W63.252
Rackham's Pond	First fresh water point at the head of the main branch of the estuary	N46.369 W63.287
Portage Road	Head of the third branch of the estuary	N46.394 W63.229

These 5 locations will be monitored the same day every week for the months of June, July and August, to have the amount of data necessary to identify trends.

These points may influence the data being collected because they are all located off of bridges which are manmade structures requiring maintenance every couple of years, and, if built inadequately, will reduce the flow of water through the estuary and could be the cause of the source point for the anoxic events.

Monitoring parameters

We will also be collecting data from PEI estuary watch program booklets provided by PEI Aquiculture. These booklets are available for landowners to fill out day to day and will be collected by WRIG.

Here is a chart that depict the areas that will be analyzing using the YSI probe:

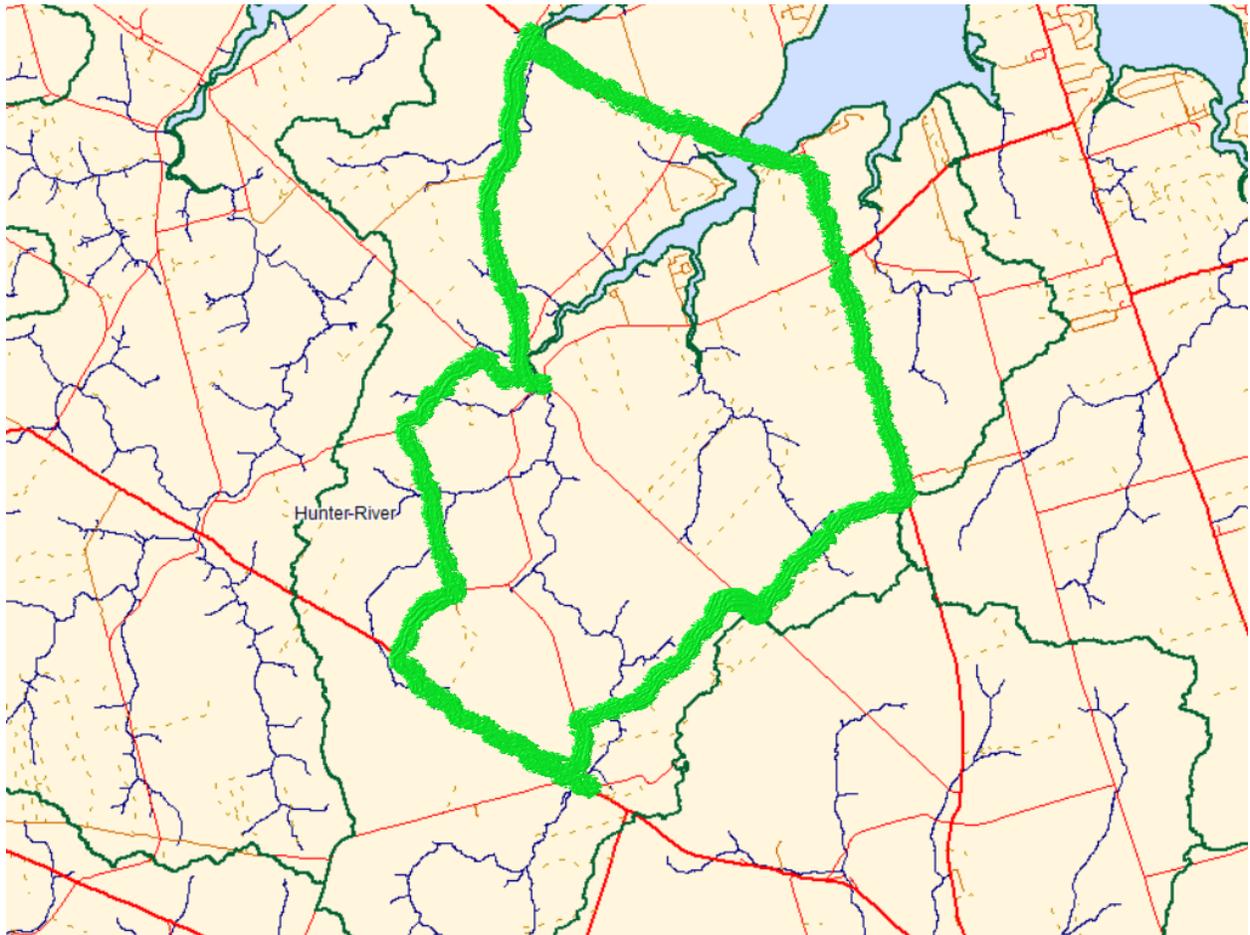
- Dissolved Oxygen
- Conductivity
- pH
- Salinity
- Total Dissolved Solids
- Turbidity/Transparency
- Temperature

The Frequency and duration for this project are depicted below

Site	Frequency	Time of Year (Season)	Time of day
Wheatley River Bridge	Once every week for the months of June, July and August	Summer	Afternoon (2:00-4:00pm)
Crooked Creek Bridge	Once every week for the months of June, July and August	Summer	Afternoon(2:00-4:00pm)
Oyster Bed Bridge	Once every week for the months of June, July and August	Summer	Afternoon (2:00-4:00pm)
Rackham's Pond	Once every week for the months of June, July and August	Summer	Afternoon (2:00-4:00pm)
Portage Road	Once every week for the months of June, July and August	Summer	Afternoon (2:00-4:00pm)

This procedure should be done in the summer because that is when anoxic events are at the highest risk of occurring. During these months the sun is at its hottest between 11-2, the sampling should be done after this time period because the sun is a major factor in creating the right conditions for anoxic events.

Rain Route



Fish kills can occur after heavy rain events. Precipitation can wash pesticides and other contaminants into the rivers causing fish kills; such occurrences have taken place in other PEI rivers over the last several years following significant amounts of rain. It is important to monitor waterways after heavy rains for evidence of dead fish. This route covers a majority of the major road crossings and culverts and provides an overview of the rivers and streams in the watershed.

Ideal Tree Planting Conditions

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	132				✓	✓	✓
Balsam fir	42		✓	✓	✓		
Larch	42 ✓						✓
Red spruce	42				✓		
Hemlock	42		✓		✓		
Red oak	180			✓	✓		
Yellow birch	90		✓		✓		
White birch	66			✓		✓	
Blue leaf birch	24			✓	✓	✓	
Bayberry	24			✓		✓	✓
Red leaf willow	24 ✓					✓	✓
Aronia	24					✓	✓
Common Elder	24 ✓		✓	✓		✓	✓
White Ash	24 ✓		✓	✓		✓	✓
Red Maple	24 ✓			✓		✓	
Cedar	24 ✓					✓	✓
White Spruce	24			✓	✓		✓
Total	852						