

STEWARDSHIP REPORT 2017

Wetland Restoration Projects

Project funding for wetlands was provided by the MNR, ECCC, Wildlife Habitat Canada, Ducks Unlimited Canada, LTVCA and the project landowner.

Over the winter 2017, four of eighteen wetland projects were completed. This summer the remaining 14 will be finished. The Agricultural Coordinator completed two additional wetland projects.

1. The Groenewegen wetland complex was recently restored during the fall of 2016. Historically the 50 acre floodplain of the Coleman drain was used as pastureland for livestock. The producer has now retired the land and restored 15 acres of wetlands and 5 acres of native tall grasses and forbs. The wetlands drain into the Coleman drain, which flows into Rondeau Bay. The restoration project will provide a suite of environmental benefits. The recently constructed wetlands will increase the water holding capacity of the floodplain and will reduce peak flows during severe rain events. It will also provide habitat for species at risk. Additionally, the site will sequester carbon dioxide.



2. The Pegg wetland complex was restored during the fall of 2016. 5 acres of marginal agricultural land was retired for restoration. Previous to the restoration, the land was annually cropped. 3 wetland cells were excavated and designed to capture surface water runoff and subsurface tile flow. The wetland complex outlets into the Beechard drain, which flows directly into the central basin of Lake Erie. Native grasses and forbs have been seeded around the wetland cells to provide additional upland habitat for a variety of species at risk. Additionally, the deep root systems of the native grasses will assist in stabilizing the soil and retaining nutrients.



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3. The Myslik wetland restoration project began in 2014. Historically, the site was a pastureland for livestock. The landowner decided to retire the 100 acre field and restore the property to its natural state. 18,000 trees have been planted at the site and 15 acres of native tall grasses and forbs have been established to provide habitat for regionally based species at risk. Furthermore, 2 acres of wetlands have been restored and designed to capture farmland runoff from the adjacent field to reduce peak flows and to retain agriculturally sourced nutrients. The wetlands drain into the McGregor Creek sub-watershed, a tributary of the Thames River. The Myslik restoration project provides a diverse suite of environmental benefits to the region. In the future, the landowner also intends to donate the property to the LTVCA.

4. The Natvik Family of Orford Township have been great land stewards for generations. Recently this wetland was restored to add to their already dynamic Eco zone. The water flows north from the ridge south of Eberle Line into the main reservoir at the headwaters of Gooden Drain. From there it seeps into and through the 10 acre woodlot to the other side where there is a rock chute and tile to Gooden Drain.



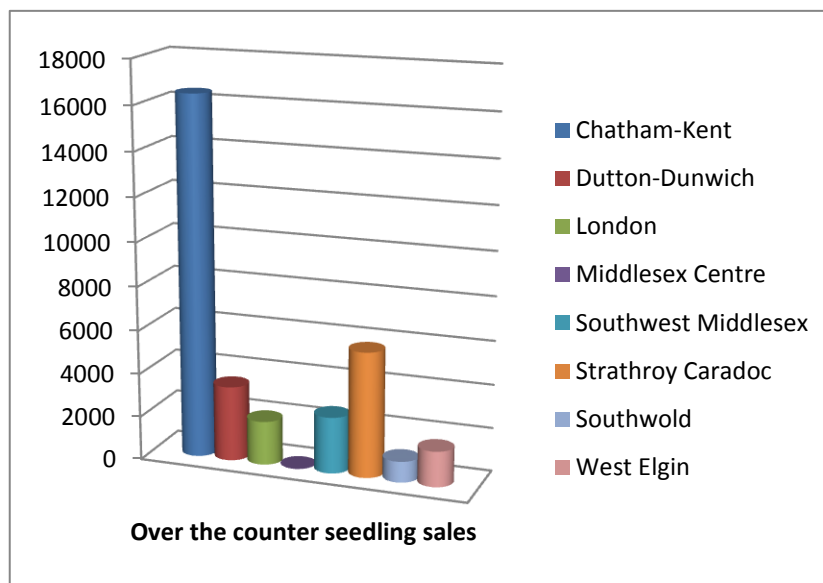
Furthermore, the LTVCA is monitoring 9 sites to determine the wetlands effectiveness at retaining and reducing agriculturally sourced phosphorus loads.

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Reforestation Projects

Project funding for reforestation was provided by Forests Ontario, Ontario Power Generation, LTVCA, and the project landowner.

The Stewardship department completed 36 reforestation projects in May of 2017. The total number of project seedlings was 97,660 planted by LTVCA staff. Over the counter seedling sales was 32,995. Grand total for the year equating to 130,655 seedlings planted across the watershed. Below is a breakdown by municipality.



The Conservation Authority had 9 machine planting projects in Chatham-Kent over 1 hectare each. This is the minimum requirement to receive Forests Ontario Funding. In total for the 2017 season the Stewardship department planted around 140 acres of new forest cover watershed wide.

Additionally, the Agricultural Coordinator completed 4 projects totalling 21 acres of Native grassland restoration.



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Habitat Structures Installed ~ Spring of 2017 began with habitat structure installations on 10 wetlands completed in the past winter. The ducks use these habitat cylinders to nest and get away from predators in fragmented habitats. The structures were installed by the Environmental Project Coordinator, Land Stewardship Technician, and our GIS Technician.



Eastern District Land Stewardship Technician Dan Brinkman



The LTVCA held a Stewardship Appreciation Night at the Country View Golf Course in Dover Centre on February 28th 2017. The event consisted of Lower Thames staff Liam Laforest, Greg Van Every and Lindsay Bennett speaking about environmental restoration projects in Chatham-Kent, as well as guest speaker Mathis Natvik speaking about environmental stewardship in Southwestern Ontario. The event brought in over 25 landowners from Chatham-Kent to show their interest in environmental restoration projects.



For more information please contact Greg Van Every ~ Environment

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The Stewardship staff attended the Go Wild Grow Wild Expo to promote landowner stewardship ranging from putting up bird and bat habitat boxes up to large scale wetland and tree planting projects. This event was a great turnout with over 400+ landowners visiting the Authorities booth.

Other Events

Stewardship staff attended events such as Southwest Agriculture Conference at Ridgetown College, Farm Organization group meetings such as National Farmers Union, Christian Farmers of Ontario, and the Grain Farmers of Ontario. Staff promoted Stewardship projects that are available as well as networked with the farmers about the latest in the industry. Stewardship staff also attended the annual Maple Syrup Festival in Shrewsbury at the Conservation Authorities property Sinclair's Bush. This was a public event that allowed the public to learn the history of maple syrup, about the process of making maple syrup, and also a tour of Sinclair's Bush given by Stewardship staff Liam Laforest.



Annually the LTVCA holds tours in our watershed highlighting current projects and issues. The tour in the video link here:

https://youtu.be/5qq6Rq_lzF4 was in partnership with the Thames River Phosphorus Reduction collaborative. The intention was to inform industry agencies and funders and to showcase what is being done by LTVCA regarding

phosphorus in the Great Lakes.

The Conservation Authority distributed over 120 thousand tree seedlings watershed wide, and over 65 thousand in Chatham-Kent. The fruit farm has large refrigeration rooms allowing staff to keep the seedlings in a dormant stage before planting throughout the month of May. Each bag of seedlings can range from one hundred to one thousand tree seedlings, depending on the species.



Greg Van Every, Environmental Project Coordinator shown with bags of tree seedlings at Manitree Fruit Farms

Public Partnerships and Projects

The **Lower Thames Valley Conservation Authority** held its annual free tree program at CM Wilson Conservation Area on Earth Day April 22nd 2017. Staff gave Chatham- Kent Residents one bare root free tree per household, and species varied from Kentucky coffee tree, Ironwood, Sugar Maple, and Chinquapin Oak. Six hundred trees were given out in total ranging from 4ft to 7ft tall. A grand total of 1500 large stock trees were planted across the watershed with several partners. Citizens showed great interest this year and a lot of positive feedback was received.



Free Tree Day at C.M. Wilson

Union Gas Helping Hands In Action ~ Union Gas employees and retirees visited C. M. Wilson Conservation Area in Chatham-Kent to work with the Lower Thames Valley Conservation Authority to help restore the park and improve trails as part of the company's Helping Hands in Action program. By contributing their "sweat equity" volunteers help improve, renovate and add

tangible value to non-profit and charitable organizations in their communities. This year a video was produced to help the community understand what it is that helping hands is and does:

<https://www.youtube.com/watch?v=TpF3O6J1gnc>

Chatham-Kent Parks and Open Spaces provided



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funds to relocate the hoop house to C.M. Wilson and buy some start up stock trees.

Scouts Canada & Riparian Rangers ~ LTVCA Stewardship Staff held an event at the Clear Creek Reforestation Project site with Scouts Canada and the Riparian Rangers on May 27th. 800 trees and 200 shrubs were planted by approximately 100 volunteers.

Media Events ~ several articles were written about various stewardship activities over the course of spring and summer ensuring our message is fresh with our audience. Our 3 tours were well covered as well.



Riparian Ranger planting



Scout Planting

Nature Conservancy Canada
Parks Ontario
Enbridge
Larry Cornelius

Aamjiwnaang

The Antler River Guardians ~ This partnership entails the restoration of a Clear Creek quarry; a small parcel north of the main old growth forest known as Clear Creek. In efforts to reduce erosion and diversify the site the LTVCA created a series of pools to slow runoff and create a more dynamic habitat. The Nature Conservancy owns the land. Parks Ontario has been given management rights to the property. Enbridge is funding some of the cost requirements to naturally restore the quarry as well as the farm land south of Talbot Trail. Larry Cornelius is an environmental advocate who grows native plant species and is a member of the Sydenham Field Naturalists. The Aamjiwnaang first nation's greenhouse (Maajiigin Gumig) has appropriate native species for a planting at the quarry site. The Antler River Guardians youth will assist with the planting of plugs in the open top soil exposed from excavation.



Clear Creek Quarry before excavation

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CK Retention and Attraction

CK Public Health ~ Sponsor what is known as "Your Roots Are Always in CK". This partnership aims to retain youth or influence them to come back to CK after post-secondary. The CK Public Health also has an interest in skin cancer prevention through shading school yards and communities with trees.



Shewburg Cemetery community tree planting event

The Chippewa of the Thames ~ were a big partner for the Conservation Authority in 2017. Stewardship staff helped them plant over 450 large stock trees as well as over 2500 seedlings in the watershed. This was one of the larger group orders for in 2017.



Stewardship Award Winners

Dan Peltier and Peter Cameron were the landowner recipients of our stewardship award in 2017. Both Dan and Peter wanted to involve their children and teach them about nature through the project. Dan's project consisted of a 1 acre wetland restoration with 3 acres of reforestation surrounding the pond. Peter restored 4 acres of wetland. They received the award at our 2017 AGM.



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Other News

The Lower Thames Valley is also hiring a **Species at Risk Aquatic Biologist** to develop an aquatic Species at Risk (SAR) program for the Lower Thames watershed and implement a SAR Sec.11 agreement with DFO. This position will develop, coordinate and implement all field sampling, laboratory analysis, data management and summary reporting for the LTVCA's aquatic monitoring program (including benthic invertebrate, fish and mussel habitat monitoring).



Lampsilis Mussel attracting bass with its life like lure

The purpose of this position is to fill data gaps and to grasp a better understanding of our water quality through stream biology which we have not previously had the resources to accommodate.

Alongside this we are encouraging the use of a new app called "Clam Counter". This app is an educational tool which allows the community to learn more about aquatic mussel life cycles, anatomy, identifying features, and to help with data collection on mussel populations.



Database Trial ~ the first season with the new database system was a success. The database has streamlined our tree seedling inventory tracking, eased invoicing and cost share calculations for staff, and improved time spent on reporting. We are still fine tuning the system; however the process for stewardship project facilitation has improved drastically.

Jeannette's Creek Agricultural Phosphorus Reduction & Monitoring Program

Support for this project was provided by Ontario Soil and Crop Improvement Association (OSCIA) through the GLASI Priority Sub-watershed Project. Funding is provided by the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) and Agriculture and Agri-Food Canada (AAFC) through Growing Forward 2.

The goal of this program is to provide funding to agricultural producers within the Jeannette's Creek Sub-watershed to implement Best Management Practices (BMPs) that will reduce phosphorus loading in Lake Erie. Where feasible, projects will be rigorously monitored to determine BMP effectiveness at reducing phosphorus loading, and to quantify the cost to reduce phosphorus per kilogram through a targeted stewardship approach.

1.0 Monitoring and Data Collection Activities

1.1 Water Quality Monitoring Network

Significant precipitation during the Spring of 2017 has led to a number of sampled rain events in the Jeannette's Creek PSP study area. The LTVCA sampled 4 rain and flow events in the Jeannette's Creek study area over the period of April 20th – May 31st, in which the region received a cumulative total rainfall of 150mm. 85 water samples were taken and sent to Caduceon Environmental Laboratories for nutrient concentration analysis from the 3 pump scheme monitoring stations.

The Jeannette's Creek PSP area received a cumulative total precipitation of 44mm during the month of June. With crops now in their growth stage and with the soil being relatively dry the LTVCA has observed few runoff events in the region this June. However, the pump stations have run a few times during June and the LTVCA has collected 4 samples, which have been sent to the lab for analysis. Sampling will continue throughout the watershed over the duration of summer, however we do not anticipate that the region will experience many significant flow events.

The Dauphin Pump Station will be undergoing maintenance during the months of July and August. Chatham-Kent Drainage will be removing the pumps to perform maintenance and will also be replacing the outlet pipes that are buried under the dike. The LTVCA will be required to remove our monitoring equipment from the pump station while the maintenance and repair is occurring at the pump station. Chatham-Kent Drainage will have a temporary PTO driven pump set up at the site to drain the scheme when necessary during the maintenance period. The LTVCA will collect grab samples during this time period and record run hours of the pump.

Ideally, this will still provide the modellers with the required data to calculate nutrient loads.

During the month of July, the LTVCA will begin to install the new FTS Upstream Monitoring Station in the Deary pump scheme system. The station will be setup to sample water during flow events within the drain channel, upstream of the Deary pump station. This will provide the modellers with the ability to analyze how internal loads or legacy nutrients may be contributing to the total nutrient load discharged from the pump scheme. This is important, as we need to be able to identify the internal nutrient contribution in order to accurately assess the effectiveness of the implemented suite of BMPs. The station will continuously collect data on the following metrics: turbidity, flow, water level and rainfall. Additionally, it will have the capacity to collect water samples during flow or rain events.

1.2 BMP Edge of Field Monitoring Sites

During the period of April 20th – June 30th, 116 water samples were taken from the Edge-of-Field Best Management Practice (BMP) verification plots and were sent to the University Guelph Ridgetown Campus for analysis. In the future the nutrient concentration values from these samples will be used to calculate nutrient loads for each subsurface drainage plots within the Jeannette's Creek study area.

The LTVCA completed the installation of the two recently acquired HACH FL900 flow totes during the month of May at the edge of field sites. Both units are now operational and collecting flow data.

The LTVCA held two conference calls with Merrin McRae (University of Waterloo) in May and July to begin the process of assembling and performing data quality control checks on the time-series datasets collected from the edge of field plots. Datasets have been assembled and transferred to Merrin for the following metrics:

- Flow Data
- Water Quality Data (SRP)
- Rainfall Data
- Soil Moisture and Temperature Probe Data

The LTVCA will continue to work with Merrin to collect and assemble this data. Merrin will be using these datasets to perform the BMP verification analysis to determine the effectiveness of NT-Cover Crop system at retaining agriculturally sourced phosphorus on a Brookston Clay soil. Once assembled, the datasets will be sent to the GLASI modelling team.

1.3 Land Use Data Collection

On June 21st the LTVCA performed roadside data collection surveys throughout the GLASI Jeannette's Creek PSP area for the following variables:

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- Post Planting – Residue Cover % - 2017
- Post Planting – Tillage Practices - 2017
- Crop Inventory – 2017

Once assembled, this information will be transferred to the modellers.

1.4 Land Activities Surveys

The LTVCA has begun the process of working with participating farmers and CCAs to complete the land activities survey. We have completed surveys for 10 of the 24 field parcels that have implemented a BMP through the GLASI Jeannette's Creek PSP. Now that the growing season has begun, we anticipate that our progress on completing these surveys will regress. The remainder of the surveys will be completed with farmers when timing is convenient. We would expect to complete the remaining surveys in November and December of 2017. However, we will conduct them before this time if possible.

2.0 Program Promotional Activities

2.1 Thames River Phosphorus Reduction Collaborative Bus Tour

On June 27th, LTVCA staff organized and held the Thames River Phosphorus Reduction Collaborative (TRPRC) Bus Tour event. The TRPRC is a multi-stakeholder group that has formed to address the phosphorus loading issue in the Thames River basin. For more information on the TRPRC click on the following link <https://www.thamesriverprc.com/about-us>.

The LTVCA toured the TRPRC steering committee to various restoration sites in the Rondeau Bay subwatershed to illustrate natural heritage solutions that can be implemented on farm to reduce agriculturally sourced phosphorus loads. Furthermore, the LTVCA toured the event attendees through the GLASI Jeannette's Creek PSP study area to provide the group with an example of how farmers and Conservation Authorities can work together to implement agricultural BMPs and perform research to verify their effectiveness.



Figure 1: Greg Van Every speaking at the Pegg Wetland Complex (Left) in Rondeau Bay. Colin Little speaking at the Dauphin Pump Station about the GLASI Jeannette's Creek PSP (Right).

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The event involved a stop at the Dauphin Pump and Monitoring Station to illustrate how the LTVCA is monitoring these unique drainage systems (See Figure #1). Roughly 35 people attended the event. The event also received significant media attention, with numerous articles published in local newspapers and a cable TV story released by CTV London.

2.2 OSCIA Executive Outreach 2017

On July 6th, the LTVCA hosted the OSCIA Executive Outreach Tour in partnership with St. Clair Regional Crop Association. The tour provided attendees with the opportunity to see how GLASI funded projects are being implemented throughout Lower Thames Valley watershed. Approximately 20 people attended the tour. It involved a stop at Smyth Farms to see how they used GLASI funding to make equipment modifications that have allowed them to apply cover crops and to adopt a strip-tillage fertility program.

Furthermore, the LTVCA toured the group throughout the GLASI Jeannette's Creek PSP study area. This included stops at the Edge of Field BMP verification research site, Steve Gleeson's field, and the Deary Pump Station. Colin Elgie (Thompsons CCA) and Steve Gleeson discussed how they utilized funding from the cost-share program to implement a 5 year crop and field nutrient management plan, which allowed Steve to perform intensive zone soil sampling and create variable rate prescriptions for fertilizer applications. The LTVCA Agricultural Program Coordinator and Water Quality Specialist presented at the Deary Pump Station and provided examples of how the LTVCA is collecting flow and water quality data to calculate nutrient loads for the regions pump schemes.



Figure 2: Colin Elgie (CCA) and Steve Gleeson addressing the OSCIA Executive Outreach Tour regarding Steve Gleeson's 5 year Crop and Nutrient Management Plan at the Deary Pump House.

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