Section 3

Education & Outreach

3.1 ALUS Middlesex
3.1.1 ALUS Middlesex

Location

Middlesex County

Partners

- ABCA
- KCCA
- LTVCA
- Middlesex Federation of Agriculture
- SCRCA
- Tartan Image Designs
- UTRCA

Funders

- ALUS Canada
- Delta Waterfowl
- Government of Ontario
- National Conservation Plan
- Ontario Nature
- Ontario Trillium Foundation
- The W. Garfield Weston Foundation

Transferability

- The ALUS program has been duplicated over 22 communities across Canada.
- To date ALUS has funded over 23,000 acres of environmental projects in Canada.

Contact Information

Hillary Heard (Program Coordinator),
ALUS Middlesex,
519-282-9228
alus.middlesex@gmail.com

For More Information

- ALUS Middlesex Website
- ALUS Middlesex Twitter: @ALUSMiddlesex

Project Goals

- Establish buffer areas between farmland and water ways.
- Reduce erosion and runoff while removing pollutants/nutrients from entering the watershed.
- Increase awareness and outreach through farmer-to-farmer approach.
- Education of farmers about the benefits of ecosystem services to farmland.
- Continual monitoring and management of established projects.

Project Description

Community-developed, farmer-delivered ALUS Middlesex provides support to local farmers to deliver and maintain ecosystems on their marginal, ecologically sensitive land. ALUS Middlesex collaborates with partners to establish projects that provide ecosystem services including flood retention, erosion and runoff reduction and removal of pollutants.

By managing their marginal lands differently, ALUS Middlesex participants can create habitat connections, filter water before it enters sensitive wetlands, and enhance wildlife habitat across these critical Canadian watersheds. ALUS Middlesex supports management and maintenance of projects enrolled in the ALUS program with an acreage based annual payment

Results Summary / Expected Outcomes

- Reduction in erosion, runoff, and pollutants/nutrients into the Great Lakes Watershed from agricultural land where buffer strips, wetlands etc. are established.
- Increased engagement in stewardship activities on farmland in Middlesex County

Next Steps

- Further outreach and communication to build a community of like-minded farmers.
- Continue to work with partners to target local environmental and agricultural priorities
- Monitoring and management of established projects

Lessons Learned

- Collaboration is a key component to stewardship in agricultural communities.

3.2 Canadian Freshwater Alliance
3.2.1 Lake Erie Alive

Project Goals

- Engage citizens on the issue, what's being done, and how they can participate and help reduce nutrients in their local watercourses.
- Ensure meaningful action and adequate funding to reduce nutrients by participating in government and stakeholder consultations & engagement processes on policy and program development and implementation.

Project Description

Our project has focused on:

- Educating and engaging citizens and stakeholders through a variety of mechanisms, including public meetings, tours, webinars, and outreach events, activities and communications.
- Participating in government and stakeholder consultations & engagement processes.

Results Summary / Expected Outcomes

- We've hosted public town halls and meetings, some which coincided with the governments' feedback period on the first draft of the COA Plan for Lake Erie.
- We worked closely with a variety of partners and stakeholders to submit feedback on all drafts of the COA Plan for Lake Erie.
- We worked with the de Gaspé Beaubien Foundation on AquaHacking 2017, United for Lake Erie. AquaHacking is where computer programmers, engineers, marketers, designers and other creative minds with an environmental conscious work as a team during several months to develop functional, marketable innovations to help solve the Great Lakes and Saint-Lawrence Basin water issues.
- Member of advisory committee
- Mentored youth delegation & organized feedback sessions for finalists
- Organized two-day tour of western basin for finalists. Highlights included farm stops to learn about BMP efforts, meeting with Chippewas of Thames youth and elders, and a tour of Pelee Island.
- Member of steering committee for the Thames River Phosphorus Reduction Collaborative, focused on developing and promoting effective land management and drainage solutions for agriculture, developed cooperatively with partners, for reducing phosphorus and improving water quality in the Thames River.
- Conducted public opinion research in the Lake Erie watershed to understand the views of the public with regard to the health of Lake Erie.
- Hosted several webinars, including most recent on wetlands with Dr. Nandita Basu of the University of Waterloo and Dr. Pascal Badiou of Ducks Unlimited Canada. Recordings are available online.

Location

Across Lake Erie Watershed

Partners

Various for different aspects of project, including Freshwater Future and Environmental Defense.

Funders

Various, including:

- Individual donors
- Tides Canada Foundation
- Salamander Foundation

And in partnerships with Freshwater Future and Freshwater Future Canada:

- Erb Family Foundation
- McLean Foundation
- McCutcheon Family Foundation

Contact Information

- Raj Gill (Great Lakes Organizer). Canadian Freshwater Alliance, raj@freshwateralliance.ca

Next Steps

We are working with regional partners to develop citizen toolkits for local engagement

Lessons Learned

Lots of important research and work is being conducted across the basin, efforts to share information, and work collaboratively are always appreciated, and will be necessary to successfully address nutrient loading and algae blooms.

For More Information

- http://www.lakeeriealive.org/
- http://www.freshwateralliance.ca/

Webinars

In the Fresh Ideas Webinar, Dr. Nandita Basu, Associate Professor of Water Sustainability and Ecohydrology at the University of Waterloo, and Dr. Pascal Badiou, Research Scientist at Ducks Unlimited Canada, presented their research on the particular importance of small wetlands in improving water quality in agricultural watersheds.

Chippewas of the Thames & AquaHacking tour (photo credit: Raj Gill)

Water quality sampling (photo credit: Raj Gill)

BMP tour (phot credit: Raj Gill)

3.3 City of London
3.3.1 Low impact development rollout

Project Goals

Reduce stormwater phosphorus loadings by promoting 'at source' water quality controls to maximize water quality treatment and promote infiltration.

Project Description

- LID stormwater controls maximize treatment and promote infiltration of the 'first flush' runoff event. LID implementation would reduce phosphorus loadings associated with stormwater runoff from entering downstream natural watercourses and Lake Erie.
- Incorporation of LID, adaptive environmental management principles into the Dingman Creek subwatershed area-wide ECA pilot project and implement a program to maximize the treatment and infiltration of stormwater using LID technologies in built-out areas in coordination with the City's linear infrastructure renewal program.

Results Summary / Expected Outcomes

- To date, the City has constructed LID stormwater controls in conjunction with four roadway construction/ reconstruction projects and two City facilities including a community centre and fire station.
- Future works are planned in conjunction with four infrastructure renewal programs for future construction, one of which includes a subsurface exfiltration pipe system.
- The Dingman Creek Subwatershed pilot project ECA is in the development stage, however, will include ECA approval for municipally constructed and owned LID features within the Dingman Creek Subwatershed.

Completed Low Impact Development project in the City of London (photo credit: City of London)

Location

- Located in the City of London; Upper Thames River Watershed.
- Specific focus will be throughout the City in coordination with linear infrastructure renewal program and within the Dingman Creek subwatershed

Partners

- Internal city staff including Infrastructure Renewal Program team.
- MOECC Dingman Creek ECA pilot project team

Funders

- Clean Water and Wastewater
- City of London

Transferability

- The LID projects that have been implemented to date have provided the City with a better understanding of the requirements, opportunities and challenges associated with implementing LID stormwater controls across the City.
- The designs of the LIDs could be incorporated in other municipalities within the watershed.

Contact Information

- Adrienne Sones, P.Eng (Environmental Services Engineer),
  Stormwater Engineering Division
  City of London
  asones@london.ca
  519-661-2489 x 5591

Next Steps

- Continue to work with internal staff to identify opportunities for implementing LID stormwater controls.
- Develop systems and processes to track and maintain LID stormwater control features

Lessons Learned

LID stormwater controls are a relatively new undertaking for the City of London. Many internal divisions have gained a better understanding of design considerations, constructability and construction co-ordination as well as operation and maintenance requirements.

For More Information

- City of London website's Low Impact Development page

Completed Low Impact Development project in the City of London (photo credit: City of London)

3.4 Farm and Food Care
3.4.1 Timing Matters Peer-to-Peer Network

Project Goals

Work with agricultural commodity organizations on a Peer-to-Peer Communications and Education Program to heighten awareness surrounding the risks of manure application on frozen and snow covered ground.

Project Description

- The Timing Matters Peer-to-Peer Response Team is an industry-led, peer-to-peer network made of a coalition of agriculture and commodity organizations. The team is here to listen and help farmers identify practical alternatives to spreading manure on frozen or snow-covered ground, in order to use nutrients more effectively and minimize potential environmental impact on local creeks, rivers and lakes, many of which eventually drain into Lake Erie.
- The project is a pilot for the winter of 2017-18, focused on farms in the Lake Erie watershed. The program responds to complaints of winter spreading and visits (or calls) those farmers to follow up with some information about why the practice is no longer recommended and to ask some questions about why they have undertaken to spread in the winter. The goals are to educate but also to understand what the reasons are for winter spreading, good or bad practice, and soil compaction or lack of storage or culture.

Results Summary / Expected Outcomes

The Winter 2018 Pilot Program Report will be available April, 2018.

Next Steps

Respond to complaints submitted to OMAFRA during the winter of 2018.

Location

Lake Erie Watersheds. Complaint based farmers who spread manure in winter.

Partners

- CFFO
- Farm & Food Care
- OFA
- Ontario livestock commodity groups
- OMAFRA

Funders

- Livestock commodity groups
- OMAFRA

Transferability

Peer-to-Peer education of farm practices and environmental implications could be used for other situations.

Contact Information

- Mike Mitchell,
  Ontario Pork
  mike.mitchell@ontariopork.on.ca
- Matt Wilson,
  OMAFRA
  Matt.Wilson@ontario.ca
- Bruce Kelly,
  Farm and Food Care
  Bruce@farmfoodcare.org

3.5 Fertilizer Canada, Ontario Ministry of Agriculture, Food and Rural Affairs
3.5.1 4R Nutrient Stewardship

Location
Ontario, with an initial focus in the West basin region of Lake Erie.

Partners
- Christian Farmers Federation of Ontario
- Conservation Ontario
- Fertilizer Canada
- Grain Famers of Ontario
- International Plant Nutrition Institute
- OABA
- OMAFRA
- MOECC
- Ontario agri-retailers
- Ontario Certified Crop Advisor Board of Ontario
- OFA
- The Nature Conservancy

Funders
- Fertilizer Canada
- OABA
- OMAFRA

Transferability
The 4R Ontario Certification Program is specific for nutrient management practices in Ontario with respect to the Western basin region of Lake Erie and surrounding watersheds. However, with successful implementation, this program could be scaled to reflect specific best nutrient management practices in other Canadian regions.

Contact Information

- McKenzie Smith (Audit Coordinator),
  Fertilizer Canada,
  Ottawa, Ontario
  msmith@fertilizercanada.ca
  613-786-3044

Project Goals
This program aims to increase and track the adoption of 4R nutrient stewardship in the Ontario Lake Erie Basin through 4R Nutrient Stewardship Certification standards. The standards were developed as part of a voluntary initiative to improve the watershed conditions of the Western Lake Erie Basin, and were created to address the following goals:
- optimize crop uptake of nutrients and minimize nutrient losses;
- create long-term positive impacts on water bodies associated with agricultural production areas, including the reduction of eutrophication and incidence of harmful algal blooms, and helping to meet water quality standards;
- encourage sharing of the most up-to-date information about responsible nutrient stewardship with Nutrient Service Providers and growers; and other interested groups; and
- help the agricultural sector adapt to new research and technology in the area of nutrient stewardship.

Project Description
The fertilizer industry has established the 4R Nutrient Stewardship Framework in cooperation with government, researchers, customers, farm organizations, conservation Ontario and the public. Adjustments in the crop nutrient source and application rate, timing, and placement method will support agricultural productivity while also helping to improve the water quality of the Great Lakes, specifically Lake Erie and its contributing watersheds.

The 4R nutrient stewardship principles are the same the world over, but how they are implemented locally varies greatly depending upon field and site specific characteristics such as soil, cropping system, management techniques and local climate. Therefore, 4R Nutrient Stewardship BMPs must be customized to fit each farm's unique climatic, soil, cropping and operational conditions. This is achieved, as needed, with professional input from recognized and qualified specialists such as CCAs who work with farmers to assess their situations and develop management plans.

Continuous improvement can be achieved by employing science that optimizes the economic, social and environmental performance of best management practices utilized in implementing the voluntary 4R Nutrient Stewardship Program in Ontario. The 4R Ontario Steering Committee members will continuously work with the research community to help identify the most effective conservation and nutrient management practices to ensure the standards stay up to date and provide the most current research available.

Results Summary / Expected Outcomes

- In 2016, the 4R Ontario Agri-Retail Certification Pilot project was launched. Four locations enrolled in the pilot program, and Ontario agri-retailers will be implementing the 4R Certification program province-wide in 2018.
- In March 2015, AAFC announced $1.1 million in funding for Fertilizer Canada's 4R Nutrient Stewardship Improvement project. Fertilizer Canada and its members provided an additional $1.1 million. Under this project, nine leading Canadian researchers are conducting 10 projects to quantify economic, social and environmental benefits resulting from 4R Nutrient Stewardship.
- In September 2014, the North American Certified Crop Adviser board unanimously approved a plan to develop a specialty certification for Certified Crop Advisers which utilizes the 4Rs as the foundation for nutrient management and protecting soil and water. There are now almost 200 CCAs certified in North America on 4R Nutrient Management – 89 of which are based in Ontario.
- Partnering with major commodity groups, the 4R Ontario partners surveyed over 500 growers in Ontario to assess fertilizer practice adoption in 2016.
    - Eighty-eight per cent of growers in Ontario are aware of 4R Nutrient Stewardship. Growers in the Western and Central Lake Erie Basins are 4.6 per cent more aware of 4R Nutrient Stewardship, and 5.1 per cent more familiar with the 4Rs relative to growers in the rest of Ontario.
    - Growers identified agri-retailers as their predominant 4R resource, particularly in the Western and Central Lake Erie basin.
    - Forty-three per cent of Ontario growers soil test for nitrogen every three years or more frequently, and just over 63 per cent of Ontario growers soil test for phosphorus every three years or more frequently.
    - The most common timing of phosphorus fertilizer application is in the spring at planting.
    - The most common placement of phosphorus fertilizer is broadcast with incorporation which was higher in the Western and Central Lake Erie Basin (43.7 per cent crop acres) compared to the rest of Ontario (27.9 per cent crop acres). Phosphorus fertilizer placement as side banding at planting or by the seed were the next two most common placement practices.
    - Forty-three per cent of corn growers applied manure to over 30 per cent of corn acres; mostly in the fall or in the spring before planting. Only 10 per cent of soybean growers applied manure to just 13 per cent of soybean acres; mostly in the fall or in the spring before planting. The most common placement for manure (liquid and solid) is on surface and incorporated within one to two days.

Next Steps

The 4R Ontario Certification program is on schedule to be launched this calendar year. The purposed standards are currently in a public consultation period, which will be completed February 28, 2018. The program will be published in Fall 2018 and agri-retailers will be provided with a pre-audit coaching opportunity this Spring. Following development and publication, audits will take place this coming Fall.

Lessons Learned

In order to reduce phosphorus levels in Lake Erie, Fertilizer Canada promotes the adoption and implementation of 4R Nutrient Stewardship – using the right fertilizer source, at the right rate, at the right time and in the right place. Canada's fertilizer industry believes that the voluntary adoption of these principles is the best approach towards reducing the negative environmental impacts of unwanted nutrient loading.

Ontario's 15 4R demonstration farm projects have shown the effectiveness of science-based best management practices to growers. The demonstration farms and ongoing research is used by the 4R Ontario Steering Committee and 4R Ontario Technical working group to inform the Ontario 4R Certification Standards.

For More Information

Fertilizer Canada Nutrient Stewardship webpage.

Youtube

4R Nutrient Stewardship: Sustainable Farming in Ontario

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs

3.6.1 Agriculture Sector Working Group under the Domestic Action Plan for Lake Erie

Location

Lake Erie Basin

Partners

- AAFC
- Beef, Chicken, Dairy, Egg, and Grain Farmers of Ontario
- Conservation Authorities (ERCA, GRCA, LTVCA, SCRCA, UTRCA)
- Christian Farmers Federation of Ontario
- Ecological Farmers Association of Ontario
- Farm and Food Care Ontario
- Growing Ontario Together
- Innovative Farmers of Ontario Association
- OFA
- OMAFRA
- MOECC
- OABA
- Ontario Certified Crop Advisor Association
- Ontario Fruit and Vegetable Growers
- Ontario Greenhouse Vegetable Growers
- Ontario Pork
- Ontario Processing Vegetable Growers
- Ontario Sheep Farmers
- OSCIA
- Thames River Phosphorus Reduction Collaborative

Contact Information

- Cale Selby
  OMAFRA
  cale.selby@ontario.ca
  519-826-3559
- Dorienne Cushman
  OMAFRA
  dorienne.cushman@ontario.ca
  519-826-4096

Project Goals

This industry-government forum provides an opportunity to exchange information and provide advice on potential actions by the agriculture community and government to reduce phosphorus loading from the agriculture sector to Lake Erie through development, implementation and assessment of phosphorus reducing actions.

Project Description

The Agriculture Sector Working Group was assembled to provide ongoing input to the development, engagement and implementation of agriculture actions for the Domestic Action Plan [for Lake Erie]. These industry-government meetings provide a forum to exchange information, provide advice on potential actions by the agriculture community and government to reduce phosphorus entering Lake Erie. Membership includes government, agriculture and agri-business organizations, and conservation authorities. Industry organization and collaboratives, most of which are member organizations from the working group, have added actions to the Plan that they are leading to support phosphorus reductions in the Lake Erie basin. The Domestic Action Plan will be released in February 2018.

Results Summary / Expected Outcomes

The Agriculture Sector Working Group has, and continues to provide a forum for ongoing engagement for the implementation of agriculture actions for the Domestic Action Plan which is being released in February 2018.

Next steps

The Agriculture Sector Working Group will continue to provide a forum for industry-government engagement to advance the implementation of agriculture actions of the Domestic Action Plan.

Lessons Learned

Collaborative industry-government engagement provides opportunity for knowledge sharing between members, which facilitates implementation of actions.

Transferability

The Agriculture Sector Working Group provides a working model for future industry-government partnerships.

For More Information

Farm and Food Care's Agriculture Sector Working Group webpage

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs

3.6.2 Assessment and best management practices for floriculture outdoor production in Ontario

Project Goals

Address water quality concerns associated with floriculture by promoting and enhancing agricultural BMPs.

Project Description

1. Evaluate potential impacts of leachate and opportunities for reducing environmental impact on water quality;
2. Demonstrate BMPs for applying fertilizer through traditional methods compared to new, low-macronutrient water-soluble fertilizers and the use of controlled-release fertilizers;
3. Enhance BMPs to reduce nutrient levels in their on-farm drains (runoff from outdoor growing areas).

Results Summary / Expected Outcomes

4. Determine the significance of Floriculture Crop production contributions to nutrient loadings;
5. Develop BMPs for Floriculture Crop Production that reduce nutrient loadings to nearby watercourse, and communicate to producers

Location

Ontario

Partners

- Flowers Canada
- Soil Resource Group (Guelph)
- Agri-business
- Farmer cooperators

Funders

OMAFRA (COA)

Contact Information

Flowers Canada

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.3 Guides for evaluating soil health on a site specific basis and soil remediation, Pt. 1

Location
Ontario

Partners
University of Guelph, Ridgetown

Funders
OMAFRA (BMPVD)

Contact Information
- Adam Hayes, OMAFRA
- Dr. Ivan O'Halloran, University of Guelph, Ridgetown

Project Goals
This Project will provide information about how to apply soil health testing to precision agriculture management zones.

Project Description
- First component is to provide information about how to apply soil health testing to precision agriculture management zones.
- Second component is provide information to farmers about how to restore degraded farm soils, which could be poor yielding management zones, to productive soils in an economically feasible way.

Results Summary / Expected Outcomes
This project is in preliminary stages.

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.4 Guides for evaluating soil health on a site specific basis and soil remediation, Pt. 2

Location
Ontario

Partners
OSCIA

Funders
OMAFRA (BMPVD)

Contact Information
- Adam Hayes, OMAFRA
- Andrew Graham, OSCIA

Project Goals
The objective of this project is to develop protocols that farmers and their advisors can use to better understand how to test for soil health in precision management zones and how to remediate degraded soils.

Project Description
This project will:
1. Determine the optimum way to sample a precision agriculture field for soil health;
2. Remediate an eroded area of a field by restoring the A horizon;
3. Remediate an area of a field with low organic matter using organic amendments.

Results Summary / Expected Outcomes
This project is in preliminary stages.

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.5 Ontario cover crops: Outreach and engagement strategy

Project Goals

Outreach and education efforts outlined in the Cover Crop Strategy will help promote cover crops as an important practice to build soil health and improve water quality, create awareness of the practice, and provide information that helps farmers understand how to use cover crops within their production system.

Project Description

Cover crops are considered a fundamental aspect of any sustainable cropping system due to their ability to protect and enhance soils. However, their benefits extend beyond soil health. Increasing the adoption of cover crops plays an important role in stabilizing soil during the non-growing season, and helps to reduce the risk of erosion and nutrient loss.

The benefits of cover crops seem clear, but questions and challenges remain as farmers at different scales of operation try to maximize those benefits, given the limitations of time and equipment. Balancing soil building and fertility management with the demands of planting and harvesting can be challenging. Farmers may feel they lack enough land to develop adequate cover crop rotations, and anecdotal evidence about cover crops reducing weed, insect and disease pressure may not be backed by research in their region.

The main objectives are:

1. Gather, assess and synthesize current knowledge and information related to cover crop programs and producer behavior, to inform the development of the Cover Crops Outreach and Education Strategy;
2. To convene and facilitate discussions with the Cover Crops Steering Committee to identify strategic outreach, education and communication approaches, and develop a comprehensive Cover Crops Outreach and Education Strategy;
3. To enable the Cover Crops Steering Committee to develop comprehensive outcomes and performance measures for the Strategy and build consensus from all Steering Committee members on the final strategy.

This Ontario Cover Crops Strategy was developed by the Ontario Cover Crops Steering Committee to generate momentum across the province for the adoption of cover crops, especially during the non-growing season

Results Summary / Expected Outcomes

1. A long-term collectively agreed to and actionable Cover Crops Outreach and Education Strategy will be created and implemented by nine influential organizations to deliver a collective plan that will influence and encourage agricultural producers to adopt cover crop practices;
2. This initiative will generate momentum, primarily within the Lake Erie western and central basins, for the adoption of cover crops, to reduce the risk of nutrient loss in the non-growing season.

Location

Across Ontario including the Lake Erie Basin.

Partners

- OMAFRA
- Grain Farmers of Ontario
- Innovative Farmers Association of Ontario
- OABA
- OFA
- Ontario Fruit and Vegetable Growers' Association
- OSCIA
- UTRCA
- University of Guelph, Ridgetown Campus
- Certified Crop Advisor Association
- Farm and Food Care

Funders

OMAFRA (COA)

Contact Information

- University of Guelph, Ridgetown Campus, Business Development Centre

For More Information

Ontario Cover Crops Strategy (April 2017)

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.6 Promoting and implementing agricultural stewardship in Essex & Lower Thames watersheds

Location

Essex and Lower Thames Watersheds

Partners

- ERCA
- LTVCA
- OSCIA
- Landowners

Funders

OMAFRA (COA)

Contact Information

ERCA

Project Goals

To promote BMPs within the Essex and Lower Thames watersheds, and increase understanding of the forms and movement of phosphorus across varying soil types and geographic landscapes.

Project Description

1. Building capacity in Lake Erie Conservation Authorities for delivery of agricultural related stewardship
2. Education/outreach, demonstration farms, developing a community of practice amongst CAs, coordinated advice between CCAs and CAs, promote sustainable land rental agreements and coordinated workshops (promote soil health, cover crops and 4R Stewardship)

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.7 Promoting and implementing agricultural stewardship in Lake Huron watersheds

Location

Lake Huron Watersheds

Partners

- ABCA
- MVCA
- SCRCA
- SVCA

Funders

OMAFRA (COA)

Contact Information

ABCA

Project Goals

To promote BMPs within the Lake Huron watersheds, and increase understanding of the forms and movement of phosphorus across varying soil types and geographic landscapes.

Project Description

1. Building capacity to better position Conservation Authorities for delivery of agricultural activities related to nutrient management in Lake Huron;
2. Education/outreach, demonstration farms, developing a community of practice amongst CAs, coordinated advice between CCAs and CAs, promote sustainable land rental agreements and coordinated workshops (promote soil health, cover crops and 4R Stewardship)

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.8 Promoting and implementing agricultural stewardship in St. Clair Region (Lake Erie) watersheds

Project Goals

To promote BMPs within the St Clair Region watersheds, and increase understanding of the forms and movement of phosphorus across varying soil types and geographic landscapes.

Project Description

1. Building capacity in Lake Erie Conservation Authorities for delivery of agricultural related stewardship;
2. Education/outreach, demonstration farms, developing a community of practice amongst CAs, coordinated advice between CCAs and CAs, promote sustainable land rental agreements and coordinated workshops (promote soil health, cover crops and 4R Stewardship)

Location

St. Clair Region Watersheds

Partners

- Landowners
- OSCIA
- SCRCA

Funders

OMAFRA (COA)

Contact Information

SCRCA

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs
3.6.9 Promoting and implementing agricultural stewardship in Upper Thames River watersheds

Project Goals

To promote BMPs within the Upper Thames watersheds, and increase understanding of the forms and movement of phosphorus across varying soil types and geographic landscapes.

Project Description

1. Building capacity in Lake Erie Conservation Authorities for delivery of agricultural related stewardship ;
2. Education/outreach, demonstration farms, developing a community of practice amongst CAs, coordinated advice between CCAs and CAs, promote sustainable land rental agreements and coordinated workshops (promote soil health, cover crops and 4R Stewardship);
3. Develop a manual for Bio-Filter Design

Location

Upper Thames River Watershed

Partners

- Landowners
- OSCIA
- UTRCA

Funders

OMAFRA (COA)

Contact Information

UTRCA

3.6 Ontario Ministry of Agriculture, Food and Rural Affairs

3.6.10 Soil Leaders Pilot Program

Location

Rural Ontario

Partners

- Farm & Food Care
- Innovative Farmers Association of Ontario
- Rural Ontario Institute

Funders

OMAFRA (COA)

Contact Information

Rural Ontario Institute

Project Goals

Train and support leading in farmers who are taking action to improve soil health in order to inspire other farmers to take similar actions towards improved soil health in the broader agricultural community.

Project Description

Using a behavioural science approach the project will formalize peer-to-peer training to increase the influence of early adopters as change-agents in their communities.

Results Summary / Expected Outcomes

1. Develop a Leadership training curriculum that will provide innovators (early adopters) with tools to effectively communicate their experiences to other farmers;
2. Increase adoption of BMPs for soil health

3.7 Lower Thames Valley Conservation Authority
3.7.1 Land Stewardship Program

Project Goals

- To provide rural landowners financial incentives to complete land stewardship projects on rural properties throughout the Lower Thames watershed.
- To combat habitat fragmentation by linking corridors and expanding core areas.
- To increase habitat, improve water quality and quantity

Project Description

Within the LTVCA watershed landowners can receive funding for environmental projects such as reforestation, wetland restoration, tallgrass prairie projects. Funding is provided by many industry partners including MNRF, ECCC, Forests Ontario, Ontario Power Generation, Enbridge, OMAFRA etc. Data is collected on project type, area, location, and landowner data. This data is currently stored on the LTVCA servers.

Results Summary / Expected Outcomes

- Increased natural heritage and better use for marginal agricultural lands to provide ecological goods and services.
- Reduce algal blooms and overall nutrient contributions from agriculture.
- Retain a better standard of source water in our Great Lakes and communities.

Next Steps

Continue involving landowners and partnership relations. Develop more education materials suited to modern communication (social media etc.) to further entice landowners to do projects on their land. Recruit new land via private lands and land donations.

Lessons Learned

Landowners appreciate projects more when they have a personal investment to the project. For example, if they invest the time to properly prepare the site or offer their own financial assistance. This greatly improves the success of these projects and fosters good community relations.

30 acre forest & prairie restoration (photo credit: LTVCA)

Location

10 member municipalities from Delaware to Lighthouse Cove

Partners

- ECCC
- FO
- Landowners
- LTVCA
- MNRF
- OMAFRA
- OPG
- WHC

Funders

- ECCC
- FO
- LTVCA
- MNRF
- OMAFRA
- OPG
- WHC

Transferability

Any non-profit group could fund raise and do a similar program. Typically conservation authorities are best positioned for this task. Enough willing landowner participants need to be recruited.

Contact Information

- Austin Pratt, Austin.Pratt@ltvca.ca
- Greg Van Every, Greg.VanEvery@ltvca.ca
- Randall Van Wagner, Randall.VanWagner@ltvca.ca
- Colin Little, Colin.Little@ltvca.ca

3.7 Lower Thames Valley Conservation Authority
3.7.2 Targeting Phosphorus Reductions in the Lower Thames Valley Watershed

Location
LTVCA Watershed (Jeannettes Creek, Rivard Pump Scheme, McGregor Creek, Rondeau Bay, Baptiste Creek, New Biggen Creek, Talbot Creek and Sharon Creek).

Partners
ECCC

Funders
ECCC

Transferability
Education and outreach material may be applicable to other agriculture areas within the Great Lakes Basin. Other conservation authorities who face similar challenges can replicate the research in their watershed. The Data collected will be used as baseline data for ongoing research and projects.

Contact Information

- Amanda Blain, Amanda.Blain@ltvca.ca
- Greg Van Every , Greg.VanEvery@ltvca.ca
- Randall Van Wagner, Randall.VanWagner@ltvca.ca
- Colin Little, Colin.Little@ltvca.ca

Project Goals
- Increase awareness on the issues of nuisance algal blooms in the Lake Erie Basin with a specific focus on the Thames River watershed.
- To transfer knowledge to agricultural producers to provide them with a better understanding of what causes nuisance algal blooms and how/when nutrient loading is occurring.
- To increase agricultural BMP adoption within the Thames River watershed with the intention of reducing spring nutrient loads to Lake St Clair and Lake Erie.

Project Description
The purpose of the project is to increase agricultural best management practice (BMP) implementation within the Lower Thames watershed to reduce spring nutrient loads entering Lake St. Clair and Lake Erie. The LTVCA will create educational and outreach material to increase awareness on the issue of nutrient loading and nuisance algal blooms within the Lake Erie basin, as well as promote the adoption of BMPs with agricultural producers. Furthermore, the LTVCA will collect baseline agricultural land activity data (Post-Harvest Crop Residue %, Post-Harvest Tillage Practices) for eight subwatersheds within the Thames River basin. This data will provide significant value to future research and monitoring initiatives within the Thames River basin and will allow the LTVCA to identify areas of concerns that should be targeted for future extension programs to increase agricultural BMP implementation numbers

Results Summary / Expected Outcomes
- A better understand of agriculture BMPs and the programs we offer for farmers and landowners.
- An increase in agriculture BMPs such as buffer strips, windbreaks and wetlands to help reduce nutrient loading into waterways,
- With the increase in agriculture BMPs we hope to see a reduction in algal blooms and overall nutrient contributions from agriculture.

Next Steps
- Develop educational materials such as information booklets to hand out at events and create four informative videos. Three videos will focus on BMPs and stewardship programs that are available to landowners. The final video will be focused on environmental challenges in the Thames River Basin and what actions stakeholders and the LTVCA are taking to improve the environmental health of the watershed.
- Complete a report that summarizes the collected agricultural land activity data for the eight targeted subwatersheds within the LTVCA watershed.

3.8 Rotary Club of Chatham Sunrise
3.8.1 Clean Water for Living

Project Goals

Through this project the Rotary Club of Chatham Sunrise is attempting to educate Rotarians and the general public regarding the issues that negatively affect our water as well as the steps that we can all take to reduce our negative impact on local watercourses and lakes. Since one of the most pressing negative issues is the loading of our water bodies with excess phosphorous and nitrogen, steps to reduce nutrient loading is a prominent part of best practices illustrated.

Project Description

There are in fact so many negative issues regarding clean water and our environment generally that people frequently tune out of the discussion. It is for this reason that the Chatham Sunrise Rotary club decided to take the positive approach of identifying and highlighting "Clean Water Champions." "Clean Water Champions" are people and organizations illustrating positive water management practices. Starting in the summer of 2015 the Rotary Club of Chatham Sunrise hired award winning cinematographer Brent Foster of Foster Visuals to create video vignettes showing successful initiatives in Chatham-Kent to respect and improve the quality of water that ends up in our rivers. These videos along with other information and links to helpful sites are hosted on the "Clean Water for Living" website.

In addition to social media presence, members of the Chatham Sunrise club have been making in person presentations to Rotary Clubs and other groups across Ontario and Michigan.

Results Summary / Expected Outcomes

John Lawrence, rotary member and Chair of the Clean Water for Living project (photo credit: Brent Foster)

As an ongoing project we hope to see more individuals and organizations adopt our suggested activities to respect and protect our water courses and lakes.

Location

Primarily in the Chatham Kent/Thames River area, with a range from Ann Arbor on the west to Toronto on the east.

Funders

Sunrise Rotary fundraising activities

Contact Information

cleanwaterforliving@gmail.com

Next Steps

Identify more Clean Water Champions and produce more videos to spread the message.

For More Information

www.cleanwaterforliving.com

Hilco Tamminga and Greg Devries show how they conserve water in their purpose designed and built facility featuring leading edge water management practices (photo credit: Brent Foster).

Farmer and Rotarian Blake Vince practices no-till planting and advocates for multi-species cover crops to protect soil and water (photo credit: Blake Foster)

Videos

- Start the Conversation
- Protecting Water in Agriculture
- 4R Nutrient Stewardship
- Conserving Water in the Greenhouse Industry
- Conserving Water in an Institution
- Conserving Water in the Home
- Protecting Water in Urban Areas

Ursuline Sisters Anne Denomy and Eleanor Gleeson explain how the Ursuline community demonstrates their concern for our planet and its water by building a residence to exacting LEED Gold environmental standards (photo credit: Brent Foster)

3.9 Upper Thames River Conservation Authority
3.9.1 Antler River Guardians from the 4 Directions

Project Goals

Provide First Nations youth with work experience and an awareness and appreciation of opportunities in the environmental field; improve connections between communities along the river, both First Nation and non-First Nation; and advocate for environmental issues.

Project Description

The Antler River Guardians From The 4 Directions (ARGFT4D) is a First Nations youth engagement program, based in the watershed of Ontario's Deshkan Ziibi, or Thames River. The Anishinaabe call this river Deshkan Ziibi, which translates as Antler River. The "4 Directions" represent the four participating First Nations, as well as the four directions of the medicine wheel.

The information that the participants gather, including indigenous ways of knowing that explore indigenous spiritual, historical, and cultural connections to Deshkan Ziibi, will also help inform the Thames River Shared Waters Approach to Water Quantity & Quality being developed by the TRCWR.

Results Summary / Expected Outcomes

- 2017 highlights
  - Participated in wetland restoration project, using native plants from Aamjiwnaang First Nation greenhouse
  - Learned about aquatic Species at Risk
  - Mapped erosion sites along the river
  - Visited Six Nations, where they practiced traditional skills
  - Visited Walpole Island First Nation, where they surveyed mussels in Lake St. Clair
  - Visited Aamjiwnaang First Nation, where they toured the greenhouse
  - Created a PhotoVoice display of photographs, taken and captioned by the youth, to share their summer experience (PhotoVoice funding provided by Canadian Heritage Rivers System)
  - Learned traditional hunting and trapping skills
- 2015-2016 highlights
  - Presentations to:
    - Chiefs and Councils of the participating First Nations, as well as to the Chiefs of Ontario
    - International scientists, government leaders and public at the 2016 Great Lakes Public Forum in Toronto
    - Thames Valley District School Board's Secondary School Environmental Symposium
    - Youth groups, environmental groups and local businesses
  - Cross cultural exchange with the Ontario Ministry of Natural Resources and Forestry's Rangers program, with traditional teachings, canoe tripping and a cultural day

Location

Lower Thames Watershed

Partners

The First Nations Engagement Committee of the Thames River Clearwater Revival (TRCWR) initiative, made up of the Aamjiwnaang First Nation, Caldwell First Nation, Chippewas of the Thames First Nation, Walpole Island First Nation, and other partners.

Funders

MOECC has provided ongoing funding support for the ARGFT4D. Other funding has come from ECCC, Canadian Heritage Rivers Society, Union Gas, Summer Student Experience, Employment and Training, YOU.

In-kind support is provided by Chippewas of the Thames First Nation, Caldwell First Nation, Aamjiwnaang First Nation, Walpole Island First Nation, MNRF and the UTRCA.

Transferability

Each First Nation is unique in terms of capacity and interests. This program is transferable given long term funding, flexible programming that can be adjusted to meet the goals of First Nations, a dedicated leader, and tangible outcomes.

Contact Information

- Tara Tchir (Project Manager), tchirt@thamesriver.on.ca 519-451-2800 x 261
- Jo Boyer (ARGFT4D liaison) jo.boyer@cottfn.com 519-289-2662 x 214

Next Steps

The focus of the 2018 – 2019 program is to bring the ARGFT4D to each of the First Nations with traditional territory in the watershed to interact and work in partnership with other youth of the communities on projects of interest to each community.

For More Information

https://www.thamesrevival.ca/home/first-nations/

- Recognized with:
  - Award of Merit from Parks Canada's Canadian Heritage Rivers System (2016)
  - Carolinian Canada Youth Stewardship Award in the category of Passionate Youth (2016)
  - www.thamesrevival.ca

Lessons Learned

- The importance of having a dedicated person employed full time and year round to build and maintain relationships, apply for funding and organize the youth program.
- The importance of long-term funding, so that a meaningful program can be established and securely funded
- The importance of First Nations developing and running the program. It also has to be flexible to accommodate for the strengths and challenges of the individuals participating in the program
- The difficulty in engaging all first Nations who are located at great distances across the watershed. Often first Nations could not participate because it was not possible to transport the youth to one meeting location
- The necessity for equipment such as a reliable vehicle, canoes and camping gear that is dedicated to the project.

3.9 Upper Thames River Conservation Authority
3.8.2 Great Lakes Mini Water Festival

Project Goals

The goal of the Mini Water Festival is to give students a better understanding of the importance of the Great Lakes by exploring current uses, issues and impacts, especially as they relate to the Thames River and Lake Erie watershed.

Project Description

The Great Lakes Mini Water Festival demonstrates human uses, issues and impacts around the Great Lakes; educates about the Thames River watershed within the Lake Erie watershed; and promotes water as a natural resource that needs to be protected and conserved. It is offered as a multi-session, interactive educational program which includes:

- Session #1 – Water Smart (Grade 7): UTRCA staff provide an educational program to one Grade 7 class through the Mini Water Festival stations.
- Session #2 – Water Wise/Water Works (Grade 7): The Grade 7 class is divided into two groups:
  - Water Wise: Group 1 (10 students) learns how to present the Mini Water Festival stations
  - Water Works: Group 2 (remaining students) builds a campaign to promote the Mini Water Festival's key messages
- Session #3 – Water Festival/Water Works (Grades 7 & 4): The Water Wise Grade 7 students (Group 1) lead the Water Festival stations for one class of grade 4 students. Group 2 continues with Water Works.

Results Summary / Expected Outcomes

The messages of this program were presented at eleven schools in the north end of the Upper Thames River watershed and involved 571 students and their staff.

Lessons Learned

The program's success was due to the interactive, age appropriate activities and the efforts made to make the messages relevant to students in their communities and daily lives.

Photos and Youtube

- UTRCA's Mini Water Festival flickr album
- UTRCA's Great Lakes Mini Water Festival Youtube video

Children playing with the UTRCA's virtual reality sandbox (photo credit: UTRCA)

Locations

- Stratford
- St. Marys
- Shakespeare
- Sebringville
- St. Pauls

Partners

- Participating Schools
- Huron Perth Catholic District School Board
- Avon Maitland District School Board

Funders

- MOECC
- Huron-Perth Catholic District School Board.

Transferability

- This program could be used in various locations and situations, with access to/ability to create activity materials.

Contact Information

- Maranda MacKean (Community Education Specialist, Wildwood) UTRCA
  MacKeanM@thamesriver.on.ca
  519-284-2829, ext. 422

Community Education Specialist Maranda MacKean educating at the Great lakes Mini Water Festival in Perth (photo credit: UTRCA)

3.9 Upper Thames River Conservation Authority
3.9.3 GREEN Education Program

Location
Ingersoll, Woodstock, and Stratford.

Partners
- Cities of Stratford & Woodstock
- County of Oxford
- EarthForce
- GM Canada
- Huron-Perth Catholic District, London District Catholic, and Thames Valley District School Boards
- Oxford County Trails Council
- Stratford Motor Products
- Town of Ingersoll
- UTRCA

Funders
- GM Canada
- Thames Valley District School Board
- UTRCA

Transferability
This program began in Canada four years ago, involving only GM manufacturing communities. Program success in Oxford County led to the approval by GM Canada for UTRCA to pilot the program through the GM Dealership Network, now ongoing in Stratford with Stratford Motor Products as the local partner. This may lead to the program being available in other communities.

Contact Information
- Brad Hertner (GREEN Program Partner, Oxford)
  hertnerb@thamesriver.on.ca
  519-451-2800 ext 274
- Vanni Azzano (GREEN Program Partner, Perth)
  azzanov@thamesriver.on.ca
  519-284-2931 ext 422

Project Goals
Inspire environmental youth leadership by providing experiential learning opportunities for young people and the tools to use their findings to create lasting solutions for pressing environmental issues.

Project Description
- The GREEN program is sponsored by GM Canada and is offered in every Canadian city (nine total) with a GM manufacturing or parts facility.
- Incorporating all aspects of Environmental Inquiry (stewardship, inquiry-based learning, experiential learning and integrated learning) this program is designed connect students with their local watershed and inspire environmental youth leadership.
- It is a full school year program targeting grade 7/8 students and includes field trips, classroom visits, independent study, and an action project.
- The fall is for investigation of the local environment (stream assessment, facilities tours, and activity stations). The winter challenges the participating classes to brainstorm and chose a local environmental issue to focus on, then research that issue. The spring guides classes through development and implementation of an action project that positively impacts their chosen issue.
- The program incorporates hands-on, locally relevant inquiry & civic action into the classroom while helping to develop the lifelong habits of active citizenship and environmental stewardship.
- This is the 4th year of program in Canada and in the UTRCA watershed

Results Summary / Expected Outcomes
The program has been delivered to over 460 students at 6 schools in 3 subwatersheds of the UTRCA, and has involved 12 Community Partners.

Students participating in a GM GREEN Program field trip (photo credit: UTRCA)

Lessons Learned

- Teaching Partners – we need the participating teachers to be partners on program delivery, expanding on program components between scheduled visits or field trips. We are working to provide more extensive professional development for our participating teachers.
- Spring Rush – our first couple of years had activities too concentrated in the spring and fall, and it made implementing the action project rushed. We have spread the program components more evenly throughout the school year.
- Leaving time for Reflection – we heard back from the school boards that the demonstration and celebration of the learning done throughout the year is an important part of the program. We are working to provide more time for that before the end of each school year.

Photos and Youtube

- GM Green Program flickr page
- GM GREEN Program in Stratford flickr album
- UTRCA Watershed Education flickr page
- GM GREEN Project 2017 Youtube video
- GM GREEN Project 2014 Youtube video

Students on the bus during a GM GREEN Program field trip (photo credit: UTRCA)

Next Steps

- Expand the professional development of participating teachers to allow for more program activities between scheduled partner visits.
- Develop new partnerships with local colleges/universities, local business, and community groups to broaden the experience for participating students.
- Look for opportunities to expand the program to other parts of the watershed through the GM dealership network

For More Information

- EarthForce – GREEN website
- GM Community Action page

3.9 Upper Thames River Conservation Authority
3.9.4 Showcasing Agricultural Best Management Practices

Location
Upper Thames River Watershed

Partners
- UTRCA
- Landowner cooperators

Funders
OSCIA from the GLASI Education and Outreach Component funded by OMAFRA and AAFC through Growing Forward 2

Transferability
- Highlighted BMPs are recommended practices to address a variety of environmental concerns
- Implementation of one or multiple BMPs can address on-farm issues commonly experienced by producers
- Many government agencies, agricultural organizations and conservation authorities provide technical information, assistance and cost sharing opportunities to encourage the adoption of BMPs

Contact Information
- Tatianna Lozier (Agricultural Soil & Water Quality Technician) 519-451-2800 ext. 233, loziert@thamesriver.on.ca

Next Steps
- Continue to share and promote video series at landowners workshops and events
- Enhance the information available on the webpage with the addition of new BMPs

Project Goals
- Develop a series of case studies to illustrate the successful implementation of agricultural BMPs funded under the farmland health incentive program
- Identify and promote champions who can provide expertise to other producers
- Assist with the promotion and uptake of BMPs.

Project Description
- 5 BMPs highlighted
  - Cover Crops
  - Buffer Strips
  - Field Windbreaks
  - Erosion Control Structures
  - Fragile Land Retirement
- Factsheets provided technical information on best management practices
- Case study videos created to draw on the experiences of landowners who have implemented the BMPs
- Landowners provided testimonials, project details, motivation for implementation, benefits, challenges and lessons learned for each practice

Results Summary / Expected Outcomes
- Case studies published electronically on the UTRCA website
- Videos promoted at several UTRCA events and presentations
- Videos endorsed through social media, local newspapers and news channels
- Several landowners contacted for interviews by local news sources.

For More Information
- Farmland Incentive Program
- Videos and Factsheets
- OMAFRA Best Management Practices Publications

Youtube Videos
- Erosion Control
- Buffer Strip
- Fragile Land Retirement
- Cover Crops
- Windbreaks

3.9 Upper Thames River Conservation Authority
3.9.5 Stream of Dreams Program

Project Goals

Educate students about the Thames River watershed and the impact of stormwater on water quality and to inspire everyone in the school community to protect and conserve our local water resources.

Project Description

- Stream of Dreams is a curriculum-based, copyrighted program deliver to entire schools by UTRCA Community Education and Community Partnership staff. The program is designed to inspire environmental and watershed awareness in the school and encourage community involvement.
- During the program, each class in the school participates in a science based “Stream Talk” and “Fish Art” workshop which are customized to grade level and tied to the curriculum.
- The Stream Talk focuses on stream health and stormwater impacts specific to the Thames River and Lake Erie watershed.
- In the Fish Art workshop, each student creates a "dreamfish" by painting a wooden fish representing their vision for a healthy aquatic ecosystem. All of the dream fish represent species native to the Thames River
- The dreamfish are installed on a chain link fence at the school which becomes a "Stream of Dreams" mural representing the school's vision for a healthy watershed.

Results Summary / Expected Outcomes

The program has been delivered to over 6,200 students at 12 schools in six subwatersheds of the watershed and has involved over 25 Community Partners.

Stoneybrook students admire their Stream of Dreams fish (photo credit: UTRCA)

Location

London, Middlesex Centre, Thames Centre, and Ingersoll

Partners

Stream of Dreams Mural Society; MOECC; Schools, School Boards, and School Councils; Oxford Park Community; Glen Cairn Community Partners; Glen Cairn Community Resource Centre; London Community Foundation; Kinsmen Optimist; Ilderton & District Lions Club; City of London; Dorchester Watershed Action Committee; Forest City Fire Protection; Friends of Stoney Creek; Youth For Christ; United Way; Lind Lumber; Woodingford Lodge Retirement Home

Funders

- Sherwin Williams
- Thames Valley District School Board
- UTRCA
- MOECC
- London Community Foundation
- Oxbow Home and School

Transferability

Stream of Dreams is a copyrighted program. With proper training from the Stream of Dreams Mural Society, other organizations could offer the program in their area.

Contact Information

- Linda Smith (Stream of Dreams Program Coordinator)
  smithl@thamesriver.on.ca
  519-451-2800 ext 224
- Karlee Flear (Community Education Supervisor)
  fleark@thamesriver.on.ca
  519-451-2800 ext 254

Next Steps

- Develop pre- and post- lesson plans so teachers can embed the big ideas from Stream of Dreams into their own classrooms
- Continue to expand and deliver the program in the northern part of the watershed

For More Information

- UTRCA Environmental Education webpage.
- Stream of Dreams Mural Society website.

Lessons Learned

- Staff Involvement - In order to get the teachers to reinforce the Stream of Dreams messages in their classrooms after the program and in the years to come; it is very important that every staff member be an active participant in the program. We now give a presentation about the program to the staff at a staff meeting and insist that teachers come to the Stream Talk presentation; instead of sending the class on their prep.
- Stream Talk- We have added more interactive and video components to the Stream talk program at every grade to improve student engagement and understanding.
- Fish Assortment - Some of the fish are more susceptible to vandalism than others (i.e. more easily broken off the fence) because of their shape (i.e. Longnose gar) so we've had to modify the assortment of fish provided to some schools
- Varnishing – Coating the fish with several good coats of varnish is key to the longevity of the fish. We now varnish the fish at the school twice before installing them on the fence and then varnish them a third time.

Photos and YouTube Videos

- Stream of Dreams Glen Cairn YouTube video
- Stream of Dreams Woodstock YouTube video
- Stream of Dreams Glen Cairn Flickr album
- Stream of Dreams at Stoneybrook Flickr album
- Stream of Dreams Oxbow Flickr album

Students, teachers, administration, parent volunteers, and UTRCA staff were at Oxbow Public School to install the new Stream of Dreams along the front fence (photo credit: UTRCA)

Installing the Stream of Dreams fence at Glen Cairn Public School in London, Ontario (photo credit: UTRCA)

3.9 Upper Thames River Conservation Authority
3.9.6 2017 Upper Thames River Watershed Report Cards

Project Goals

Upper Thames River watershed report cards summarize an extensive amount of environmental information, with the goal of guiding local environmental action and providing a benchmark for progress. Watershed Report Cards report on a range of environmental conditions, including water quality indicators (one is phosphorus concentrations in streams), for each of the 28 watersheds that make up the Upper Thames River watershed. Each report card outlines recommended actions for improving water quality, including actions to address nutrient reduction in the Thames watershed. These report cards are designed to summarize environmental information in a concise format used to inform watershed partners including residents, municipalities, other agencies, groups and organizations.

Project Description

The UTRCA recently completed the 2017 Upper Thames River Watershed Report Cards. These environmental reports are competed every 5 years, starting in 2001 when a watershed-scale approach to monitoring, reporting, and outreach was initiated for 28 watersheds that make up the Upper Thames River watershed. The reports summarize environmental information for each watershed, including grades for water quality and forest conditions, watershed features, actions for improvement, and highlights of progress/actions accomplished in the watershed in the previous 5 years. The range of information reported for each watershed includes: land use, population, watercourse characteristics, spills, soil erosion/delivery, drainage, dams and barriers, sewage treatment, forest cover, wetland cover, riparian cover, fish species, species at risk, significant natural sites, water quality results (phosphorus, bacteria, benthic invertebrates), groundwater resources (drinking water sources, source protection areas), relevant reports (e.g. Natural heritage studies, Subwatershed Studies). An on-going goal of the report cards is to measure and report on change over time for these many variables, including ambient phosphorus levels in each watershed.

Results Summary / Expected Outcomes

- Water quality results range from C to D grades and indicate most (26) watersheds have remained steady since 2012 with minimal change since 2001. Two watersheds showed improvement. Of the 28 watersheds, 12 score a C grade and 16 score a D grade. While all streams fall within a similar C to D grade range for water quality, best scores were in Plover Mills, Komoka Creek, and Middle Thames. The lowest water quality scores are in Cedar Creek, Forks, and Reynolds Creek. Watershed Report Card guidelines (Conservation Ontario 2011) were designed to measure/grade water and forest conditions across Ontario and higher grades tend to be in areas of the province where there is less development or intensive land use.

Location

Upper Thames River Watershed – report on each of the 28 subwatersheds.

Partners

- UTRCA
- Conservation Ontario

Funders

UTRCA

Transferability

Conservation Authorities across Ontario now produce standardized Watershed Report Cards, released every five years, starting in 2013, and most recently in 2018.

Conservation Authorities, with Conservation Ontario, developed a Guide to Developing Conservation Authority Watershed Report Cards (2011), to provide a standardized methodology for Watershed Report Cards.

Contact Information

- Karen Maaskant (Water Quality Specialist)
  maaskantk@thamesriver.on.ca
  519-451-2800 x 246
- Cathy Quinlan (Terrestrial Biologist)
  quinlanc@thamesriver.on.ca
  519-451-2800 x 234

Next Steps

The UTRCA has developed Environmental Targets for the Upper Thames River watershed (UTRCA Environmental Targets Strategic Plan, 2016) to address the fact that while there have been extensive collective efforts in the watershed, progress in terms of environmental improvement over 30 years has been slow. Improving water quality grades in each watershed is one measurable target of the plan.

Lessons Learned

The watershed scale used in monitoring, reporting, and outreach has provided a local focus and motivation for collaboration among diverse stakeholders in watersheds. Community partnership groups have formed over the years as a result, such as Friends of Medway Creek, Friends of Stoney Creek, Dorchester Watershed Action Committee, Glen Cairn Community Partners. These groups have provided a focused multi-partner approach to enhanced environmental action and funding to implement work in the subwatershed.

For More Information

- 2017 Upper Thames River Watershed Report Cards
- Conservation Authority Watershed Report Cards

- There are many factors that contribute to water quality. For example, many of the watersheds with better water quality have a higher percentage of vegetated riparian buffer (e.g., Plover Mills 58%, Komoka 59%, Middle Thames 58%). Slope of stream channel may also provide benefit to local steam health conditions through increased flow. Six of the steepest sloped streams are in the top ten for water quality. However, steeper streams may be delivering higher nutrient loads to downstream lakes during key runoff conditions.
- Forest conditions grades range from a C to an F, with an overall D across the Upper Thames River watershed. This low grade is not surprising considering the Upper Thames River basin is located in a highly developed part of southern Ontario where only 11% forest cover remains. While no grades have changes since the 2012 Watershed Report Cards, there has been a slight decline in forest conditions.
- New data shows almost 800 ha of forest were cleared/removed from 2000 to 2010, while approximately 324 ha were planted to trees under UTRCA programs in the same time frame. The amount of tree planting is significant but not keeping up with the loss.
- Change has occurred in many watershed features reported. For example, the population increased by 4% (24,000 new residents) since 2012 report cards and by 14% (76,500) since 2001 report card. Environmental spills were down significantly from 2012 report cards: 2012 (666 spills) and 2017 (390 spills) with highest numbers in more urban areas.
- Since the 2012 report cards progress has been made through on-going programs (e.g. Clean Water Program) and new programs developed in the Upper Thames watershed to address water resource concerns, including nutrients. For example, a Low Impact Development program was initiated in 2013 by UTRCA to improve water quality in urban areas with a focus on education and training, expertise, and LID project implementation.