



Toronto and Region Conservation Authority

Regional Watershed Alliance Agenda

May 31, 2023
6:30 P.M.

The meeting will be conducted via a video conference
Members of the public may view the livestream at the following link:
<https://video.isilive.ca/trca/live.html>

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 - 2.1 APPOINTMENT OF SCRUTINEERS
 - 2.2 CHAIR OF THE REGIONAL WATERSHED ALLIANCE
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3. ACKNOWLEDGEMENT OF INDIGENOUS TERRITORY
4. DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF
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Namrata Shrestha, Ph.D. Senior Manager, Watershed Planning and Reporting in regard to Item 8.1 - TRCA's Watershed Planning Process and the Watershed Plan

6.2 INTRODUCTION AND UPDATE ON PROFESSIONAL ACCESS INTO EMPLOYMENT PROGRAM (PAIE)

Michelle Benford, Supervisor, Community Outreach & Education in regard to Item 8.2 - Introduction and Update on Professional Access Into Employment Program (PAIE)

6.3 TERRESTRIAL INVENTORY AND MONITORING PROGRAM AT TRCA

Sue Hayes, Senior Manager, Terrestrial Inventories & Monitoring in regard to Item 9.1 - Terrestrial Inventory and Monitoring Program at TRCA

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NEXT MEETING OF THE REGIONAL WATERSHED ALLIANCE #3/23, TO BE HELD ON SEPTEMBER 20, 2023 AT 6:30 P.M. VIA VIDEOCONFERENCE

Item for the Action of the Regional Watershed Alliance

TO: Chair and Members of the Regional Watershed Alliance
Wednesday, May 31, 2023 Meeting

FROM: Sameer Dhalla, Director, Development and Engineering Services

RE: **TRCA's WATERSHED PLANNING PROCESS AND THE WATERSHED PLAN**
Humber River, Etobicoke Creek, and Carruthers Creek

KEY ISSUE

To provide an overview of Toronto and Region Conservation Authority's (TRCA) integrated watershed planning process and update on the status of the development of the Etobicoke Creek and Humber River watershed plans and the implementation of the Carruthers Creek Watershed Plan.

RECOMMENDATION:

WHEREAS TRCA is a watershed-based organization involved in integrated watershed planning and management to help achieve healthy and resilient watersheds, community well-being, and safety over the long term;

AND WHEREAS watershed planning provides a framework to assess the current and potential future conditions of the watershed and identifies measures to protect, restore and enhance watershed health;

AND WHEREAS provincial policies in some cases require and encourage municipalities to complete watershed plans, in partnership with conservation authorities;

AND WHEREAS TRCA and its partner municipalities are working on advancing the Humber River Watershed Plan (HRWP), completing the Etobicoke Creek Watershed Plan (ECWP), and implementing the Carruthers Creek Watershed Plan (CCWP) and other previously completed watershed and subwatershed plans;

AND WHEREAS TRCA will be undertaking the final stages of public, stakeholder, and First Nations and Indigenous community engagement this Fall to receive feedback and to support finalizing the draft ECWP;

IT IS RECOMMENDED THAT Regional Watershed Alliance (RWA) provide input on the planned engagement sessions be received and incorporated into the final engagement strategy for the ECWP;

AND FURTHER THAT RWA members be encouraged to communicate opportunities for engagement on the ECWP and on watershed plan implementation including restoration, education and other community projects

through their networks.

BACKGROUND

A watershed refers to an area that is drained by a river and its tributaries. Healthy watersheds provide various benefits (e.g. clean water, flood protection, recreation opportunities) that are critical to healthy ecosystems and safer human communities.

The purpose of a watershed plan is to help understand current and potential future watershed conditions, and identify measures to protect, enhance, and restore watershed health. These measures ensure that ecosystems are resilient and human communities are safe from natural hazards over the long term. Watershed planning integrates natural systems into land use and infrastructure decision-making, and climate adaptation planning. It helps identify strategic management actions for nature conservation and mitigation measures to minimize the undesirable impacts of land use and climate change.

Watershed plans are not land use plans. However, as supported by provincial policy, the data, scientific analysis, modelling, scenario evaluation, and management actions generated through a watershed planning process are used by municipalities to help inform future land use planning and infrastructure decisions. Watershed plans can also be an excellent resource to municipalities and other stakeholders. These plans inform sustainability and climate adaptation planning, green space securement and management, green infrastructure implementation, stormwater management planning and retrofits, and urban revitalization initiatives.

Currently, TRCA and its partner municipalities are working on three watershed plans at various stages of the process as part of TRCA's next generation of watershed planning. They include:

- (i) Carruthers Creek Watershed Plan (CCWP)
- (ii) Etobicoke Creek Watershed Plan (ECWP)
- (iii) Humber River Watershed Plan (HRWP).

TRCA has an over 30 year history of advancing watershed and subwatershed plans with municipalities, industry and community stakeholders beginning in the 1990's across TRCA's jurisdiction. These plans have helped to inform and provide certainty for land use and infrastructure planning and investments while mitigating negative environmental impacts. Watershed and subwatershed plans have helped identify issues to better inform development and infrastructure decisions and to achieve restoration opportunities. In most cases the plans have played a major factor in helping to maintain water quantity and quality conditions to help avoid and or mitigate negative environmental impacts that typically accompany urbanization. In some notable instances in the Rouge and Duffins Creek, populations of coldwater species have been able to persist in large part due to adherence to watershed and subwatershed plan recommendations. Work on earlier watershed and subwatershed plans has informed the development of the next generation of watershed plans currently underway that are described in more detail below.

RATIONALE

Carruthers Creek Watershed Plan

The Carruthers Creek Watershed Plan (CCWP) was endorsed by Durham Regional Council in June 2021 and approved by the TRCA Board in September 2021. Since then, it has been in the implementation stage. TRCA's Watershed Planning and Reporting (WPR) staff have been working closely with our partner municipalities to facilitate implementation.

To support this, an Implementation Steering Committee consisting of staff from TRCA, the Region of Durham, City of Pickering, Town of Ajax, and Mississaugas of Scugog Island First Nation has been formed. This committee advocates for effective implementation of the CCWP, helps build partnerships and seeks funding, provides input on annual prioritization of actions and budgeting, and tracks progress for regular reporting. (Additional details is available on [TRCA's CCWP website](#))

In 2022, TRCA, with guidance from the Implementation Steering Committee, facilitated two projects that help advance the management recommendation 1.1.7 and 2.1.3, which are described briefly below.

- i) For management recommendation 1.1.7 TRCA in partnership with the Town of Ajax, and the Region of Durham has initiated a Sustainable Neighbourhood Action Plan (SNAP) in one of the priority planting neighbourhoods that was identified in the CCWP. This project will focus on promoting sustainable home retrofits and hosting several awareness and planting events to plant more than 250 trees/shrubs and 400 stems of wildflowers.
- ii) For management recommendation 2.1.3 TRCA in partnered with the Region of Durham, Town of Ajax, and Ducks Unlimited Canada to restore about 8 hectares of riparian vegetation and wetlands in the Kerrison Wetland site. In addition, TRCA is assisting the partners to explore additional funding opportunities and to actively apply for various grants (e.g. Natural Infrastructure Fund) to expand this project to additional areas.

TRCA will continue to work with the Implementation Steering Committee to help identify priorities for each subsequent years and assist in advancing implementation and tracking and reporting on the progress.

To facilitate reporting on implementation progress, TRCA intends to increase the functionality of the existing [Watershed and Ecosystems Reporting Hub](#) by developing a watershed planning platform that would incorporate the CCWP (and each watershed plan going forward as they are developed), and a watershed plan implementation tracking platform to track and report on implementation progress / watershed trends over time to ensure public accountability on the part of TRCA and its partner municipalities.

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Etobicoke Creek Watershed Plan

The development of the ECWP commenced in 2020 with the formation of a Steering Committee with staff from TRCA, the City of Toronto, Region of Peel, City of Mississauga, City of Brampton, Town of Caledon, Mississaugas of the Credit First Nation, and the Greater Toronto Airport Authority. Additional Indigenous communities and First Nations, stakeholders, and members of the public have been involved and engaged throughout the watershed planning process using various means. Approaches to engagement included virtual webinars, in-person open houses and events, emails, project subscriber list, and the ECWP project website.

Currently, the ECWP is in its final stage of development with drafting of the ECWP document. This involves using a collaborative approach to implementation planning and drafting a management framework that identifies actions to protect, enhance, and restore watershed health. This information is combined with the key findings from the previous two stages that characterized current watershed conditions and provided insights on potential impacts of future land use and climate change.

The draft ECWP document is prepared with extensive input and review by the ECWP Technical Committee and the Steering Committee. The next step is to release the ECWP for public review. A 2023 engagement session is planned to facilitate this, which includes two Open Houses, two virtual webinars, and presence at TRCA events to share the draft ECWP document and receive feedback. This will be followed by the revisions, and final approvals from municipal councils and TRCA's Board of Directors. Once final approvals are obtained, the implementation stage of the ECWP will begin.

A summary of planned timelines is presented below. (Additional details on ECWP is available on [TRCA's ECWP website](#))

| Stage | Timeline |
|--|-----------------|
| Preparation and scoping | 2020 |
| Watershed characterization | 2020 – 2021 |
| Future management scenarios | 2021 – 2022 |
| Implementation planning and watershed plan development | 2022 - 2023 |

Humber River Watershed Plan

The development of the HRWP commenced in 2022 with the formation of a Steering Committee with representatives from TRCA, City of Toronto, Region of Peel, Region of York, Dufferin County, Simcoe County, City of Brampton, Town of Caledon, City of Vaughan, Township of King, City of Richmond Hill, Town of Aurora, Town of Mono, and Township of Adjala-Tosorontio, and the Mississaugas of the Credit First Nation. Additional Indigenous communities and First Nations, stakeholders, and members of the public have been involved and engaged through various means. Engagement approaches have included virtual webinars, in-person events, emails, project subscriber list, and the HRWP project website.

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Currently, the HRWP is in the middle stage of development with completion of the characterization stage that provides insights on watershed health. The future scenario analysis stage has also been initiated and highlights potential impacts of future changes in land use and climate.

Once this stage is completed in 2024, broader engagement with the public, stakeholders, and other First Nations and indigenous communities will be completed to share insights and receive input. This will ensure that a collaborative approach to implementation planning and drafting of the management framework is undertaken. Lastly, in 2025 the draft HRWP document will be developed, which will be released for public review, followed by revisions and final approvals.

A summary of planned timelines is presented below. (Additional information on HRWP is available on [TRCA's HRWP website](#))

| Stage | Timeline |
|--|-------------|
| Preparation and scoping | 2022 |
| Watershed characterization | 2022 – 2023 |
| Future management scenarios | 2023 – 2024 |
| Implementation planning and watershed plan development | 2024 - 2025 |

Relationship to TRCA's 2022-2034 Strategic Plan

This report supports the following Pillar(s) and Outcome(s) set forth in TRCA's 2023-2034 Strategic Plan:

Pillar 1 Environmental Protection and Hazard Management:

- 1.3 Maintain healthy and resilient watershed ecosystems in the face of a changing climate

Pillar 2 Knowledge Economy:

- 2.3 Advocacy and adaptability in the face of policy pressures

Pillar 2 Knowledge Economy:

- 2.4 Integrate environmental considerations and science into decision making

FINANCIAL DETAILS

The development of the watershed plans, engagement, and the reporting tools was supported by capital funding from the Region of Peel, York Region, Region of Durham and the City of Toronto (capital levy accounts 120-02). TRCA technical staff involvement was also supported through a variety of other accounts. Additionally, TRCA staff secured external funding in the form of grants from Mitacs Inc. to complete parts of

the watershed planning and reporting needs.

DETAILS OF WORK TO BE DONE

Carruthers Creek Watershed Plan

TRCA will continue to support implementation of the CCWP and develop tracking tools to report on implementation progress. Implementation actions will be identified annually by the Implementation Steering Committee, subject to available budget and capacity.

Etobicoke Creek Watershed Plan

The final engagement session with the public, stakeholders, and First Nations and Indigenous communities is planned for August and September 2023. The draft ECWP will be available for a 60-day public comment period starting on August 1, 2023.

Prior to the public commenting period, TRCA will provide engagement notifications and an information brief on the draft ECWP to TRCA Board Members and the Regional Watershed Alliance via TRCA's Clerks Office and to municipal councilors in the watershed via TRCA's Government and Community Relations Team. Engagement notifications will also be sent to First Nations and Indigenous communities, stakeholders, and the project webpage subscribers list.

TRCA staff will also undertake project webpage updates, a broader social media campaign, and will participate in various TRCA events to raise awareness of the draft ECWP (i.e., Bike the Creek on June 10, 2023, MPP open houses, etc.). Lastly, TRCA, in collaboration with Steering Committee partners, will host online webinars and in-person open houses during the comment period to provide information on the draft Etobicoke Creek Watershed Plan and receive feedback from the audience.

After the broader engagement on the draft ECWP is complete, TRCA will complete revisions based on comments received and will prepare the final ECWP. The final ECWP will then go through the appropriate approval/endorsement processes within each municipality and finally through TRCA's Board of Directors.

TRCA is currently working with its partner municipalities to confirm the approval/endorsement process for the final ECWP. It is important that partners municipalities within the watershed take the final ECWP document to their respective decision-making bodies and/or Councils for endorsement (or equivalent). This will emphasize that the ECWP is a collaborative plan developed by all partners and ensure that all partner organizations continue to be committed to the watershed plan and its implementation.

Upon approval/endorsement from each of the municipal Committees/Councils, the final ECWP will proceed to the TRCA Board of Directors for approval. Following the TRCA Board of Directors approval, if received, the ECWP will be considered final and ready for implementation by all watershed partners.

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Humber River Watershed Plan

The next steps for the HRWP include preparation of the Characterization Report and sharing the key findings in 2023. This includes posting the report on the TRCA's HRWP project website and sending notifications advising of the webpage updates and available reports to the public, stakeholders, First Nations and Indigenous communities, municipal councilors, TRCA Board members and the Regional Watershed Alliance. In addition, the project team will participate in various TRCA events including Celebrate the Humber event on August 27, 2023 and other local events as opportunities arise. The intent will be to focus on raising awareness about the HRWP and the key findings from the Watershed Characterization Stage.

Also, TRCA staff will complete the Future Management Scenarios Stage in 2023-2024 to understand how the watershed conditions may change under different future land use and climate scenarios. Once this stage is completed in 2024, a broader engagement with public, stakeholders, other First Nations and Indigenous communities will be completed to share insights and receive input. This will ensure that a collaborative approach to implementation planning and drafting of the management framework is undertaken. Lastly, in 2025 the draft HRWP document will be developed, which will be released for public review, followed by revisions and final approvals.

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Date: April 25, 2023

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Item for the Action of the Regional Watershed Alliance

TO: Chair and Members of the Regional Watershed Alliance
Wednesday, May 31, 2023 Meeting

FROM: Darryl Gray, Director, Education and Training

**RE: INTRODUCTION AND UPDATE ON PROFESSIONAL ACCESS INTO
EMPLOYMENT PROGRAM (PAIE)**
Introduction and update on PAIE

KEY ISSUE

To share information about the Professional Access into Employment (PAIE) Program, and how the Regional Watershed Alliance (RWA) members can get involved, support and promote the program.

RECOMMENDATION:

WHEREAS the PAIE Program is recruiting newcomer environmental professional program participants for the 2023/24 cohorts;

WHEREAS members of the Regional Watershed Alliance are part of organizations and networks that may offer mentorship opportunities to PAIE program participants;

IT IS RECOMMENDED THAT a presentation by PAIE staff about the program, and recruitment and intake timelines for remaining 2023/24 cohorts be received;

AND THAT RWA members be asked to circulate information about the PAIE Program to their networks and to relevant staff in their respective organizations;

AND FURTHER THAT RWA members consider whether their organizations can offer mentorship opportunities as part of the PAIE Program.

BACKGROUND

PAIE is an innovative Ontario Bridge Training Program led by Toronto and Region Conservation Authority (TRCA) and funded in part by the Government of Canada and the Government of Ontario. The program has been running since 2006 and operates out of TRCA's Education and Training division.

The PAIE Program is designed to help internationally educated environmental professionals (the participants) launch their careers in Engineering, Geoscience, Environmental Science and Planning in Ontario. The main goals of the PAIE program are employment, licensure or certification and organizational change.

PAIE Coordinators meet with the participants to equip them with an understanding of the local labour market and to support them as they seek to secure employment, gain local experience in their fields, and pursue professional licensing and certification. Central to our work is the goal of encouraging organizational change through the promotion of diversity

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and equity within our own organization and within our partner organizations; and to promote the hiring of internationally educated professionals in the local labour market.

PAIE program components include:

- Ongoing individual job search and employment counselling
- Job search workshops targeted to specific professions
- Canadian Corporate Culture and Communication workshops
- Technical and software workshops targeted to specific professions
- Field excursions
- Mentoring support
- Job matching and employer outreach
- Employment retention support
- Professional licensing and certification support

Funding for the current PAIE Program began in October 2021 and will end in September 2024. The intake target for this funding cycle is 120 program participants over 3 cohorts.

Cohort 1: Mar – Dec 2022, 40 participants

Cohort 2: Feb – Nov 2023, 40 participants

Cohort 3: Jan – Sep 2024, 40 participants

RATIONALE

The PAIE program was initially developed in response to strong interest from many newcomers who contacted TRCA about volunteer opportunities to gain exposure to local environmental work. As a large and well-known employer in the environmental field with connections to industry and government, an extensive professional network and a robust technical staff base eager to share their expertise, TRCA has been well-positioned to assist newcomer environmental professionals.

Since its inception, PAIE has benefited from an incredible amount of support from TRCA staff. Individuals from across the organization have provided mentoring, occupation specific training, volunteer, internship, and employment opportunities; and connections to employers and other industry contacts to help participants grow their local professional networks.

Number of TRCA staff engaged as PAIE mentors since 2014: **67**

Number of TRCA staff engaged as instructors since 2014: **32**

Number of work experience opportunities provided at TRCA since 2014: **53**

This has contributed greatly to the Program's success in helping participants launch their careers in Ontario. Employment success rates have remained consistently strong with 80% or more participants in each cohort obtaining employment in their fields and reporting an average 300% salary increase post program.

Internal staff collaboration with PAIE has been a win-win situation for all involved. Below are testimonials from some of our current TRCA mentors, instructors, internship supervisors, hiring managers and program advisors.

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“Since 2010, I have provided a profession specific workshop on the topic of Environmental

Assessment legislation and regulation to each PAIE cohort and I will continue to offer it to 2020-2025 PAIE participants. I offer up to 12 volunteer placements for PAIE participants each year, whereby my staff mentor and inform newcomers of Canadian standards and Practices as well as provide participants with the technical requirements and communication skills necessary to succeed in the Canadian workplace.

I have assisted participants in gaining meaningful employment in the industry, and sourced Planning candidates for employment in my department. In turn, PAIE participants have enriched TRCA's diversity. In particular, PAIE candidates have made a substantial impression on staff in my department, where we also learn about international environmental planning from this very talented pool of internationally trained individuals.”

~ Beth Williston, Associate Director, Infrastructure Planning and Permits

“My team at Property, Asset, and Risk Management Department has been a long-term supporter and contributor to the PAIE Program led by TRCA. Our support included participation in PAIE events, training sessions and information/mentoring meetings. We organized and led field trips for PAIE program participants and developed internships for Environmental Technicians and Construction Specialists. More than 15 participants have been interviewed and 6 have been hired into various internships and employment with the PARM team.”

~ Aaron D’Souza, Senior Manager, Contract Services & Asset Maintenance, Property Assets and Risk Management

“As the Senior Manager, Hydrogeology and Drinking Water Source Protection at the Toronto and Region Conservation Authority (TRCA), I have been a long-time supporter and contributor to the PAIE Program led by TRCA. Since PAIE's inception in 2006, I have facilitated individual and group information sessions to provide technical instruction, interview support, mentoring and consultation; and have provided Hydrogeology Internships for PAIE clients with my team.

Having mentored many PAIE participants in the past, I can confirm the quality of the candidates and helpfulness of PAIE staff in ensuring a positive experience. The coaching, screening, and matching services offered by program staff are highly targeted and helpful in minimizing the workload involved in recruiting and mentoring talent.”

~ Don Ford, Senior Manager, Hydrogeology and Drinking Water Source Protection, Engineering Services

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“As a graduate of the 2010 PAIE Program, I have been delighted to support the success of Internationally Trained Individuals in the local environment sector through my contributions as a PAIE Program Mentor, Hiring Manager, and Instructor for current and previous installments of the PAIE Program.

As a Mentor, I meet with individual or groups of participants to share my knowledge of local water resources engineering principles and practices, advising on matters pertaining to technical knowledge gaps and training needs, and connecting participants to contacts within TRCA and my external professional network to help identify opportunities in the field.

I have hired and directly supervised PAIE Program Participants and was very satisfied with their work. This has further solidified my impression of PAIE Program Participants as highly capable, knowledgeable, and dedicated professionals.”

~ Dilnesaw Chekol (PhD), Senior Engineer, Water Resources Engineering, Engineering Services

“Since 2015, I have mentored over 20 PAIE program participants in various settings and participated in two employer panel events organized by the PAIE team. Most of my mentees have successfully transitioned to full-time salaried employment. I also helped the PAIE team develop one volunteering and one short-term employment position in my team, which helped newcomer professionals learn Canadian corporate culture and understand requirements of GIS job in a conservation authority. Under my supervision, the GIS team has delivered numerous technical workshops and demonstrations on GIS topics to PAIE clients.”

~ Dan Clayton, Manager, Geospatial Services, Information Technology & Records Management

Due to COVID restrictions since March of 2020 community, employment and settlement services shifted to virtual service delivery. This change to virtual service delivery made it initially more difficult for TRCA to connect with eligible participants and meet our intake targets. To mitigate this, the PAIE team have been conducting outreach using a variety of online methods including social media channels, website and digital newsletter ads, email campaigns, weekly virtual information sessions and participation in virtual job fairs. Despite our virtual outreach efforts, telephone correspondence and more recently - in person site visits to referring agencies and attendance at relevant in person events now that the sector has reopened for in person service delivery, it has remained difficult for us to reach our intake goals.

The PAIE Program would benefit from increased awareness of this valuable training and mentorship opportunity across all of TRCA's organizations and from circulation through RWA member networks and organizations. Similarly, given the considerable environmental sector expertise represented within the RWA membership, staff would welcome interest from RWA members, their organizations, or networks in offering mentoring to PAIE participants. Mentoring can include single in-person or virtual informational interviews with

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an individual or small group of participants, as well as ongoing in person or virtual mentoring of an individual or small group of participants for a specified term or job shadowing.

RWA Committee members or members of their networks are encouraged to reach out to their respective Human Resource professionals such as their Chief Human Resource Officer or relevant hiring managers to apprise them of the PAIE program and opportunity.

If there is interest that exists on behalf of the organization, the following TRCA staff indicated below should be contacted so as to ensure prompt follow up on any potential interest:

Michelle Benford, Supervisor, Community Outreach & Education
Michelle.benford@trca.ca
(416) 509-1052

Peter Dudka, Coordinator, Community Outreach & Education
Peter.dudka@trca.ca
(647) 204-9068

It is hoped that the above approach will help to increase uptake in support of the PAIE program objectives.

Relationship to TRCA's 2022-2034 Strategic Plan

This report supports the following Pillar and Outcomes set forth in TRCA's 2023-2034 Strategic Plan:

Pillar 3 Community Prosperity:

3.3 Informed citizens are conservation champions

Pillar 3 Community Prosperity:

3.4 Inspired communities take environmental action

FINANCIAL DETAILS

The PAIE Program is an Employment Ontario Program funded in part by the Government of Canada and the Government of Ontario through the Ministry of Labour, Immigration, Training and Skills Development.

DETAILS OF WORK TO BE DONE

As a result of low intake during the first cohort of this funding cycle, PAIE will need to recruit another 79 eligible participants into the program between April 2023 and January 2024.

Report prepared by: Michelle Benford

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Date: March 16, 2023

Item for the Information of the Regional Watershed Alliance

TO: Chair and Members of the Regional Watershed Alliance
Wednesday, May 31, 2023 Meeting

FROM: Sameer Dhalla, Director, Development and Engineering Services

RE: **TERRESTRIAL INVENTORIES AND MONITORING UPDATE**

KEY ISSUE

Update regarding Terrestrial Inventories and Monitoring data collection and planned next steps.

RECOMMENDATION:

WHEREAS Toronto and Region Conservation Authority (TRCA), in partnership and collaboration with TRCA’s partner municipalities, continues to conduct field inventories and long-term environmental monitoring tracking the health of its watersheds through the Regional Watershed Monitoring Program;

AND WHEREAS the inventory and monitoring science-based data supports many internal and external initiatives, including mandatory programs and services;

IT IS RECOMMENDED THAT the staff report and presentation on the Terrestrial Inventories and Monitoring be received.

BACKGROUND

Terrestrial inventory and monitoring provide a comprehensive approach to tracking terrestrial biodiversity throughout TRCA’s watersheds as part of the Regional Watershed Monitoring Program. The data collected as part of this program are important for informing natural heritage and watershed planning, conservation land management, restoration planning, and other critical and mandatory work of TRCA and its partners.

There are two main survey types of Terrestrial Inventories and Monitoring data collected, including biological inventories, and long-term monitoring. Data sets generated complement one another and the data can be used to answer different types of questions about the terrestrial ecosystem within the Toronto region.

Biological Inventories

The biological inventory data provides a “snapshot” in time, where vegetation community, flora (plants), fauna (bird, frog, and in some cases bat) data are collected across a site with a detailed description at the site level of the current conditions. This data type is well suited to address questions related to appropriate land management use, determining trail alignments, or setting restoration priorities. An example is the identification of areas that would be highly sensitive to recreational pressures, such as wetlands. For reliability, data would need to be updated every 10-15 years.

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Terrestrial biological inventory data are collected by trained biologists in the field during the months of May through to September. Standardized protocols are followed to document vegetation communities, flora species of conservation concern, breeding birds, frogs, and bats. Data sets go back to the 1980s when inventories were undertaken in support of TRCA's Environmentally Significant Areas Program.

Today, data sets continue to be updated annually in support of new or updated initiatives such as the Natural Heritage Strategy, which was completed in 2022. The data collected describe and support current conditions site level reporting and, in some cases, document changes in terrestrial biodiversity.

Long-term Monitoring

The monitoring data describes the trends in species (plants, birds, and frogs) over the long-term across the Toronto region. The response of the terrestrial ecosystem to various landscape changes can be quantitatively documented and differences in rural and urban land use can be compared.

The terrestrial long-term monitoring program was developed in 2007 and implementation began in 2008/2009 to answer questions at the regional scale. The number of monitoring plots were subsequently determined based on the monitoring questions, the selected monitoring indicators, the anticipated reporting frequency, and the level of statistical confidence required (e.g., not missing a signal in the data that represents species decline).

Data collection follows standardized protocols to ensure the data collected are scientifically defensible. Monitoring plots are in forest, wetland, and meadow ecosystems to document vegetation (including tree health, pests and diseases, and invasive species), breeding birds, and frogs/toads to document the trends over time and space (urban versus rural land use gradient).

Benefits of the Data

The amount of data compiled over the past two decades through the two data collection methods, inventories and monitoring, have allowed TRCA to gather one of the most comprehensive and effective terrestrial datasets of its kind across Ontario. In the inventory databases alone, there are approximately 75,000 fauna records, 115,000 flora records, and 50,000 vegetation community polygons delineated. These data sets are used extensively not only for internal TRCA projects and programs, but also by external partners and consultants to inform development and infrastructure planning.

RATIONALE

It is well understood that healthy natural ecosystems support biodiversity and a variety of ecosystem functions that are imperative to human health. From the air we breathe and the water we drink to protection from natural hazards and the provision of important spaces for recreational and spiritual opportunities, the importance of the role biodiversity plays cannot be overstated. Despite biodiversity providing life sustaining ecological services, the Ontario Biodiversity Council has stated that our efforts to protect these systems is not keeping pace with the rate of loss. A more focused and determined effort is needed to curb this trend to conserve biodiversity in Ontario.

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The terrestrial data collection support mandated initiatives as outlined in the Conservation Authorities Act along with other internal and external partner programs and projects.

Two key applications of this data support the development of technical current condition reports that form the basis of watershed plans and land management plans for TRCA's parks.

Under the Conservation Authorities Act and Regulations, the TRCA is mandated to develop a Watershed-based Resource Management Strategy and Conservation Area Strategy. These strategies provide the framework to support our partner municipalities, through Memoranda of Understanding, to undertake watershed plans to protect, conserve, and manage natural heritage within TRCA's watersheds and to inform management of natural heritage on TRCA-owned lands, respectively. The detailed terrestrial field data will support the development and future updates to these strategies.

Internal TRCA projects and programs have regularly relied on the terrestrial data to inform initiatives, such as the recent update to the Natural Heritage Strategy, setting restoration priorities, the development of an invasive species strategy, and the identification of Significant Wildlife Habitat. External partners have requested the data to help inform their own Natural Heritage Strategies, to inform Species at Risk planning, and help to inform land use planning.

Terrestrial Inventory and Monitoring staff provide support services to other internal teams to collect field data related to their projects. In some instances, species at risk monitoring is required as part of the project planning to ensure no harm to habitat or the species (e.g., identification of possible bat tree roosts before trees are removed). In other instances, data are collected to demonstrate the outcome of a project, such as pre- and post-restoration habitat monitoring (e.g., monitoring at The Meadoway and barn swallow nesting cups).

Key data findings:

A 10-year report on the long-term monitoring data was released in 2021 that documented the trends in terrestrial biodiversity from 2011 to 2020. While some indicators showed a downward trend, others were stable. The broad impacts of urbanization are easily observed as there is a clear difference in the type of species that can be found in the urban versus the more rural land use areas.

The amount of meadow habitat across TRCA's watersheds has declined along with the associated meadow dependent bird species. This is a trend that has not unique to the TRCA region as meadow habitat has often been converted to other land uses (e.g., agriculture or residential development) across southern Ontario. Many of the meadow dependent bird species have now been listed as Species at Risk in Ontario.

Species that are habitat specialists as they require larger natural areas that are not repeatedly or intensely disturbed for instance, are generally not found in the urbanized areas of the watersheds (e.g., ground-nesting forest birds). Whereas species that have adapted to human settlements and even in some cases thrive in them, are most found in the urbanized areas (e.g., such as raccoons).

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Within all structural layers of the forest, native species continue to be the most abundant in both the rural and urban land use zones, with the ground layer showing the highest incidence of invasive species making up a quarter of all species (25.1%). However, the trend over time indicates that invasive species continue to spread, species such as garlic mustard (*Alliaria petiolata*) and European buckthorn (*Rhamnus cathartica*) are of particular concern. European buckthorn has also continued to increase in the wetland communities.

Other indicators are showing a stable trend. Frog species richness (# of different species) and species of conservation concern for instance were stable in both the rural and urban land use zones although there are clear differences in the type of species found. Species of conservation concern are no longer found in the urban land use zones as they require connected, higher quality forest and wetland habitat for their different life stages, which are generally not found in urban areas.

In 2007 Emerald Ash Borer (EAB), an invasive insect that kills ash trees, was first identified in our watersheds. In 2013, an intense ice storm that lasted for 3 days damaged many trees across the region. The timing of these events lines up with our monitoring data that shows a decline in the forest canopy across the region with a subsequent increase of invasive plant species.

Invasive plants are opportunistic and with the increased sunlight hitting the forest floor, they were able to proliferate. However, some bird species that specialize in gleaning insects from the bark of trees (e.g., woodpeckers and nuthatches) were able to capitalize on this increase (not only EAB itself but the host of other insects found in dead or dying trees) and their populations greatly increased.

Relationship to TRCA's 2022-2034 Strategic Plan

This report supports the following Pillar(s) and Outcome(s) set forth in TRCA's 2023-2034 Strategic Plan:

Pillar 1 Environmental Protection and Hazard Management:

1.2 Leadership in greenspace conservation

Pillar 1 Environmental Protection and Hazard Management:

1.3 Maintain health and resilient watershed ecosystems in the face of a changing climate

Pillar 2 Knowledge Economy:

2.1 Research and development that drives innovation and climate-based solutions

FINANCIAL DETAILS

Funding for the Terrestrial Inventories and Monitoring is made available from the following partners: City of Toronto, Region of Peel, Region of York, and Region of Durham through capital accounts 104-22 (Terrestrial Natural Heritage Field Inventories Program) and 124-10 (Terrestrial Regional Monitoring Program).

DETAILS OF WORK TO BE DONE

Terrestrial Inventories and Monitoring data will continue to be collected annually throughout TRCA's watersheds. The following data will be collected in 2023:

- Approximately 1300 ha of natural cover will be surveyed to document and map vegetation communities, and flora and fauna species of conservation concern. Data collection will be focused on the Highland Creek and Rouge River watersheds to support upcoming watershed plans and at several TRCA owned properties to support land management initiatives.
- Regional monitoring data to be collected in forest, wetland, and meadows for vegetation, birds, and frogs (164 total monitoring stations).
- Various project monitoring to support internal programs and projects, such as bat monitoring at 80 bat rocket boxes and using bat acoustics to determine presence of Species at Risk for planned tree removal projects and pre- and post-restoration monitoring at several locations, including The Meadoway.

Inventory and Monitoring Program Review:

Following the completion of 20 years of data collection through the RWMP, the Watershed Planning and Ecosystem Science business unit will be undertaking a review of the program to critically analyze the data and determine if adjustments are needed to better meet watershed planning needs. Since municipalities are required to undertake watershed planning to inform land use and infrastructure planning, this is an important project to undertake.

The Terrestrial Inventories and Monitoring data will assist the Watershed Planning and Ecosystem Science business unit with the review of the monitoring and inventory programs to evaluate on-the-ground changes to the natural environment and ecosystems in the face of land use and climate change.

To inform part of this review, the Terrestrial Inventories and Monitoring team initiated a pilot project in 2022 whereby passive monitoring recording devices (Wildlife Acoustics Song Meter) were placed at 4 wetland monitoring stations to record the calling period of the different frog and toad species found in the watersheds. As the calling periods of frogs/toads are driven by temperatures and precipitation, it is anticipated that early breeding frogs may begin calling earlier in the season corresponding to the changing climate.

This pilot project will continue in 2023 with data collection and analysis, and an assessment as to whether this type of data collection could be rolled out at additional monitoring stations in subsequent years as part of a set of monitoring indicators for climate change.

Data Management:

Terrestrial data are stored internally on TRCA servers in multiple databases following procedures for quality assurance and quality control measures. Datasets are shared annually to support external initiatives and programs, such as those led by Birds Canada, Natural Heritage Information Centre, and Ministry of the Environment,

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Conservation and Parks. Data sets can be obtained through direct request to the TRCA or in some cases through TRCA's Open Data Portal.

Terrestrial biological inventory and monitoring reports can be directly downloaded from the TRCA website. The [Watershed and Ecosystems Reporting Hub](#) allows users to view current conditions, trends, and targets, for each of the environmental indicators at various scales using the best available data and science.

TRCA is currently undertaking a review of all databases to ensure the appropriate structures are in place to manage the data over the long term as part of a data management strategy.

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