2025 Latornell Conservation Symposium Presentation & Poster Abstracts

Contents

DAY 1 AGENDA – MONDAY NOV. 3, 2025

Land - Session 1A: Growing Conservation Roots – Local Leadership in Land Stewardship

Branching Out: Trials and Successes in Implementing Fort Erie’s Tree Bylaw - Jessica Abrahamse and Zachary George

Municipalities play a vital front-line role in conserving natural heritage features, particularly through policies like tree protection by-laws. In the Town of Fort Erie, one of Niagara Region's fastest-growing communities, the adoption and enforcement of a tree removal by-law has presented both challenges and unexpected wins. This presentation explores the evolution of Fort Erie’s tree bylaw from policy to practice, highlighting the trials faced by a small-town planning department navigating competing pressures from development, community expectations, and limited resources.

Drawing from firsthand experience within the Town’s environmental planning team, this paper will share lessons learned in balancing the need for growth while working towards meeting the climate objectives of the Town, the Province and Canada's commitment to the Paris agreement to preserve Fort Erie's urban canopy and prevent mass clear cutting. Key insights include strategies for partnerships, community education, managing tree removals on private land, coordinating with developers, and reviewing replanting plans as a mitigation tool. The presentation will also explore how local tree bylaws can complement broader conservation goals under planning frameworks and climate action.

Your New Forest: Introduction to the New Landowner Guide – Val Deziel

Forests Canada has recently launched Your New Forest Landowner Guide to help property owners and managers at each stage of tree development by highlighting key areas, including the benefits of trees and reasons to plant, an overview of planting methods and maintenance recommendations, tips about invasive species and sustainable forest management, and so much more.

Over the past several years, we have collected questions and topics of interest from landowners and planting partners, including how best to transition from newly planted trees to healthy, resilient, forested landscapes. In a recent survey, we also specifically heard from the farming community that they wanted more information on each stage of managing their growing forests.

This presentation will provide highlights to the new guide and give attendees new tools to support landowner outreach and engagement.

Strategizing the Approach to Climate Engagement – Lauren Moretto, Kate Goodale

Building capacity among staff within Conservation Authorities for climate engagement will be critical to advance climate action across Ontario. In partnership with the Ontario Resource Centre for Climate Adaptation, Lake Simcoe Region Conservation Authority developed a Climate Change Engagement Guidebook to help advance the Conservation Authority's climate action. The guidebook is a practical tool for Conservation Authority staff and encourages deeper thinking about meaningful and effective engagement. It provides a comprehensive approach to climate engagement by defining engagement principles and guiding staff through five definitive steps. We hope that application of this resource and lessons learned can help advance climate engagement and progress climate action across Ontario.

Water - Session 1B: Smart Waters – Innovation and Protection in Water Management

Advancing Waterborne Pathogen Surveillance and Mitigation: Next Generation Tools for Protection of Surface Water Quality and Public Health – Amber Park

This presentation will discuss the water management research and technologies that led to the establishment of the CERC Waterborne Pathogen program at University of Guelph, and how the program is leveraging these advanced tools to transform how we monitor and mitigate waterborne pathogen risks to protect precious water resources. Projects that are in currently in progress under the broader program will be discussed including: current water quality sampling campaigns in the Grand River and Ausable watersheds; agricultural initiative that examine best management practices for on-farm stormwater collection through both passive and activated Green Infrastructure (GI) solutions; and the development of diagnostic platforms that assess both pathogen presence and infectivity for improved Quantitative microbial risk assessment (QMRA).

By developing open-source, field-deployable technologies that enable high-resolution spatiotemporal monitoring of water quality parameters this program aims to provide actionable information for real-time risk management. This integrated approach exemplifies One Health principles by addressing human health risks, agricultural sustainability, and environmental protection through coordinated surveillance, source tracking, and treatment strategies that span from farm to watershed scales.

An Overview of the Development and Implementation of the First Barrier – Behnam Doulatyari

The presentation will provide an overview of the program as envisioned by the Walkerton Inquiry, implemented through the Clean Water Act, 2006. We will celebrate achievements and highlight current challenges and what we are doing to address them.

Development of a Wetland Water Balance and the Impact on Groundwater Supply wells – Ryan Bolger

In cold-climate urban environments such as Guelph, Ontario, the widespread application of road salt for winter safety poses an increasing threat to groundwater quality. Despite the known persistence of chloride in hydrologic systems, critical uncertainties remain regarding its subsurface transport mechanisms—particularly in urban recharge zones where stormwater infrastructure and land use changes intersect. This study, as part of a broader four-phase investigation into the impacts of road salt on urban water systems, focuses on characterizing the hydrological behavior within the Burke Well sewer shed, a critical recharge area for Guelph's municipal groundwater supply. Using high-resolution LiDAR, climate records, pumping records, field instrumentation, and several physical based models, a hydrologic model was developed to quantify the water balance of this recharge zone. This study aims to simplify the calibration process improving repeatability by accurately estimating critical parameters including an area-weighted evapotranspiration quantity and stream discharge out of the catchment. The calibrated parameters will allow for recharge modeling and forecasting based on pumping records, where the understanding of recharge, ET, lateral flow, and pumping within the catchment zone will inform municipalities on the state of available water in the aquifer and the impact to the groundwater table as demand increases with growing populations.

People - Session 1C: Learning Together, Governing Together – Evolving Models for Watershed Education and Co-Governance

WORKSHOP: Odoogimaakandaan: Building Understanding, Connections and Relationships – Charlene Winger-Jones, Victoria Serda, Tasha Gunasinghe, Doran Ritchie

The Niagara Escarpment Biosphere Network is a not-for-profit corporation that was formed in 2022 as part of UNESCO's direction to have a non-political organization to carry the designation in collaboration with Indigenous Peoples. Celebrating the 35th year since receiving the designation in 1990, we want to host a multi-presenter workshop to reflect on the conservation and sustainable development journey and how we have recently been implementing Co-Governance, Ethical Space, and Etuaptmumk (Two-Eyed Seeing) on our board and activities. We hope to have a series of short presentations followed by audience participation, eventually leading to discussions around implementing Two-Eyed Seeing and Co-Governance in the audience's groups.

PRESENTATION: Evolving Models for Watershed and Great Lakes Education – Karlee Flear, Fiona Navickas

A decade of Great Lakes Student Conferences has laid the foundation for meaningful youth engagement. As education trends shift, new opportunities are emerging. This session shares insights from a recent provincial retrospective and workshop, highlighting how conservation authorities, ENGOs and the province are growing watershed and Great Lakes learning through school-based partnerships, student action projects, and regional collaboration.

Land - Session 2A: Mapping Change – Innovations in Land Monitoring and Biodiversity

Terrestrial Invertebrate Biodiversity Across Ecological Gradients: A Metabarcoding Approach – Anibal H. Castillo

Biodiversity, one of nature's most valuable resources, provides vital ecosystem functions and services, like food and water. Only a small percentage of species have been described. We cannot conserve what we do not know, and traditional methods of identifying terrestrial biodiversity are limited in their ability to keep up with current conservation demands imposed by the climate crisis. Current methods require collecting individuals to analyze communities' composition, and, while helpful, they have drawbacks, like being expensive and time-consuming. I have designed an innovative approach, drying and grinding leaf litter to a fine powder from which I extract DNA, an effective method for assessing leaf-litter invertebrate biodiversity. It addresses the above-mentioned challenges and allows testing locally relevant macroecological hypotheses. My sampling scheme facilitates a near-comprehensive latitudinal axis of terrestrial biodiversity survey and comparison, spanning from the northern tundra to the southern side of the equator, which has never been done before.

Using UAVs and AI for Improved Management of Aquatic Invasive Species – Matthew Bolding

Protecting the health of aquatic ecosystems is a shared conservation priority, yet managing invasive species like European water chestnut can demand significant time, funding, and staff resources, especially in hard-to-access areas. To help address these challenges, Ducks Unlimited Canada partnered with Saiwa Inc. to develop an innovative, AI-powered surveillance tool that enhances early detection while reducing operational costs. By analyzing imagery captured by unmanned aerial vehicles (UAVs), the tool uses machine learning to identify the location of European water chestnut and provides GPS coordinates to support targeted management efforts. Now in active use, the tool has strengthened an ongoing invasive species control program and is being adapted to detect other threats, such as invasive water soldier. This approach highlights how cross-sector innovation can support more efficient, effective conservation outcomes.

A Croak or a Chorus? Exploring Efficacy of MMP as a Tool for Single-Season Habitat Inventories – Kristen Harrison, Benjamin Meinen

Frog and toad populations in woodlands and wetlands are typically assessed using the Marsh Monitoring Protocol (MMP), a widely adopted auditory survey method for Environmental Impact Studies (EIS). Surveys to inform an EIS, such as MMP, are typically conducted in a single field season.

However, the MMP was designed as a long-term, community science initiative to track population trends over time, not as a one-season comprehensive survey. Its current use as a short-term assessment tool raises concerns about its accuracy and impacts.

This presentation will examine the efficacy of using MMP as a short-term inventory and assessment tool. Using analyzed frog and toad call data from autonomous recording units (ARU) across multiple sites, we will highlight the key implications for inventory, assessment, and habitat protections.

Water - Session 2B: Lake-Wide Action, Local Innovation: Collaborative Pathways for a Healthier Lake Erie, Lake Simcoe, and Western Lake Ontario

The Lake Erie Action Plan: Six Years of Shared Accomplishments and the Road Ahead – Harry Keess

Collective and sustained action is required to reduce excess phosphorus and improve the health of Lake Erie. The Canada-Ontario Lake Erie Action Plan (LEAP) was released in 2018, setting out a plan to decrease the presence of harmful and nuisance algal blooms, and low oxygen zones (hypoxia). Since its initial release, significant action has been taken by many LEAP partners, including federal and provincial governments, Indigenous communities, Conservation Authorities, municipalities, the agricultural sector, and non-government organizations, with many positive results. In 2024, the LEAP Evaluation and Update Report was released, highlighting updated priorities. This presentation will describe LEAP accomplishments to date, the updated priorities going forward and how others can get involved. The presentation will also highlight on-the-ground nutrient reduction projects under the federal Great Lakes Freshwater Ecosystem Initiative, and a new online tool which shares details of LEAP progress and partner accomplishments.

Protecting our Waters: Preventing Toxic and Nuisance Algae in Lake Simcoe and Lake Ontario – Kelly-Anne Fagan

Through Canada's Freshwater Action Plan, the Canada Water Agency has established Freshwater Ecosystem Initiatives in 8 waterbodies of national significance. Activities support innovation, collaboration, and targeted actions including a focus to reduce nutrients to prevent toxic and nuisance algae in Lake Simcoe and Lake Ontario. This presentation will provide an overview of priorities and actions being taken to support nutrient reduction and protect aquatic ecosystem health in Lake Simcoe and Lake Ontario.

From Land to Lake: Enhancing Coastal Resilience Through Nature-Based and Hybrid Solutions in Western Lake Ontario – Sharon Lam, Jenny Hill, Namrata Shrestha

The Western Lake Ontario Land to Lake (WLO-L2L) Initiative is advancing stronger, more coordinated collaboration among governments and resource managers along Western Lake Ontario. With broad representation from conservation authorities, municipalities, and federal and provincial governments, the WLO-L2L Initiative is enhancing capacity for collective action to improve water quality and ecosystem health. The first part of this presentation will trace the evolution of the WLO-L2L Initiative from an early concept to a multi-stakeholder, collaborative initiative, highlighting its achievements and the benefits of regional coordination for the health and resilience of the WLO basin.

The second part will focus on a project of mutual benefit that demonstrates how collaboration can address shared challenges across the region. With support from the Ministry of the Environment, Conservation and Parks (MECP) and the Canada Water Agency (CWA), TRCA is leading the development of a compendium of coastal resilience issues and typology of nature-based and hybrid solutions for WLO that can serve as a best practice resource. This presentation will share progress to date and invite feedback and discussion.

People - Session 2C: Coastal Connections – Building Resilience Through People and Place

Fostering Nature-Based Coastal Management: Using Behavioral Insights to Understand Barriers and Drivers – Stephanie Otto

Nature-based shoreline management is a lower cost and environmentally sustainable option for reducing the impacts of Great Lakes coastal erosion and flooding, but how can we encourage property owners to adopt these practices on their shorelines and reduce their reliance on traditional shoreline hardening?

Through engagement with property owners and coastal community stakeholders, the Canada Water Agency identified perceptions and behaviours influencing shoreline management decisions in Wasaga Beach, a community on Georgian Bay where shoreline hardening is becoming an increasing threat to nearshore processes and the coastal ecosystem. This presentation will highlight the barriers and drivers influencing shoreline management decisions, and proposes solutions to encourage nature-based shoreline management through a human behavioural science lens. The results and recommendations from this study can serve as the basis for continued engagement with coastal communities and stakeholders to enhance ecological resilience and can be applied across other Great Lakes coastal communities.

Building Resilient Coastal Communities: Adapting to Coastal Hazards Through Collaboration – Mujtaba Ali, Phillipe Murphy-Rheaume, Bonnie Fox

In 2023, Natural Resources Canada (NRCan) launched the four-year Climate-Resilient Coastal Communities Program, an initiative that funds integrated regional-scale pilot projects on Canada’s three marine coasts: Atlantic, Pacific, and North, and in the Great Lakes-St. Lawrence region. The program is funding 21 projects to address the disproportionate impacts of coastal hazards and climate change on coastal communities across the country. NRCan's presentation will briefly highlight the pilot projects and their outcomes.

Conservation Ontario's (CO) Adapting to Coastal Hazards Across the Great Lakes Project received funding under the Program for three Conservation Authorities to undertake their respective pilot projects on Southern Lake Huron, Northern Lake Superior and Western Lake Ontario. Conservation Ontario's presentation will highlight the project's ongoing collaborations, lessons learned and future outcomes.

Great Lakes-St Lawrence Cities Initiative (GLSLCI), a binational organization and a key partner in Conservation Ontario's project, will highlight their efforts to engage non-member and member mayors to foster municipal champions. The presentation will highlight the mayor's commission on coastal resilience and GLSLCI's commitment to developing training material.

Land - Session 3A: Monitoring for Meaning – Long-Term Data and Ecological Insights

Counting Connections: Ecological Thresholds for Anurans in Human-Altered Landscapes – Dorian Pomezanski

As a group of species that are reliant on landscape permeability to access required habitats, anuran presence can provide valuable information about minimum habitat characteristics necessary to maintain habitat connectivity. Ontario has adopted some minimum habitat buffer recommendations, but reduced anuran abundance and species richness in disturbed areas suggest that these minimum habitat protections are insufficient to ensure long-term species persistence. Requirements related to habitat connectivity in particular lack detail regarding the configuration, distribution, and accessibility of land covers across the landscape. This research identifies ecological thresholds amongst several habitat connectivity and landscape composition metrics designed to model anuran habitat usage in Ontario. Critical thresholds in landscape composition and habitat connectivity were identified across six commonly occurring anuran species and multiple spatial scales. Significant thresholds were identified in both the landscape composition metrics and connectivity metrics, which can provide a more meaningful basis for habitat management in fragmented landscapes.

Balancing Habitats: Reassessing Pool Habitat Value in Benthic Macroinvertebrate Monitoring – Jessica Fang

The Ontario Benthos Biomonitoring Network (OBBN) protocol prescribes sampling from both riffle and pool habitats at each station; however, pool data have often been deprioritized or excluded from analysis due to concerns that slower-flow environments may lead to inflated Hilsenhoff Family-Level Biotic Index (FBI) scores. This study analyzes 12 years (2013-2024) of macroinvertebrate data from Toronto and Region Conservation Authority (TRCA) to assess the value of pool habitats. While FBI scores are typically higher (poorer) in pools, our results also show that pools support comparable taxonomic richness, contain unique taxa not found in riffles, and exhibit distinct community structures. These findings demonstrate the pool habitats provide complementary insights into stream condition. Continued inclusion of pool sampling could enhance the ecological completeness and interpretive strength of long-term biomonitoring programs.

Stream Fish Monitoring in the Toronto Region: Taking Stock and Charting the Course Ahead – Angela Wallace

Long-term environmental monitoring is essential for guiding effective ecosystem management and conservation strategies. Since 2001, Toronto and Region Conservation Authority (TRCA) has been conducting fish community assessments through its Regional Watershed Monitoring Program (RWMP). Approximately 150 sites across 9 watersheds are sampled by single pass backpack electrofishing following the Ontario Stream Assessment Protocol. Fish community samples are collected once every three years with many sites having at least eight samples over the 24 years. This extensive dataset provides valuable insights into the health and diversity of aquatic ecosystems in the Toronto Region. Join us as we examine trends and patterns that have emerged over nearly a quarter-century of monitoring. We'll also discuss the future direction of the RWMP's fisheries monitoring efforts, with a particular focus on biodiversity and the implementation of adaptive management practices to enhance aquatic ecosystem resilience.

Water – Session 3B: 30 Years of Aquatic Restoration – Reflections and Future Directions

30 Years of Habitat Restoration at Tommy Thompson Park – Ralph Toninger

A 30-year retrospective of the ecological restoration at Tommy Thompson Park and the key conservationists who made it all possible. Since 1995 a dedicated team has created and enhanced over 70 hectares of terrestrial and aquatic habitats including coastal wetlands, sheltered embayment, meadows, and successional shrublands. The designs drew upon the techniques from the Toronto Waterfront Aquatic Habitat Restoration Strategy and have contributed to the progress of delisting the Toronto and Region Area of Concern. The thriving biodiversity at Tommy Thompson Park is the legacy of Gord MacPherson, Ralph Toninger, Rick Portiss, Karen McDonald, and John DiRocco.

30 Years of Stream Restoration – Doug Forder

Like Latornell, Ontario Streams is celebrating 30 years of Conservation Impact. This presentation will discuss some of the highlights and achievements in stream and wetland rehabilitation of Ontario Streams as well as changes in methodologies over time. Highlights will include, barrier mitigation projects, wetland creation and rehabilitation projects and small scale stream rehabilitation methods with many before and after comparisons.

People - Session 3C: Cultivating Conservation – Farmers as Stewards of Biodiversity

PANEL: Unsung Conservationists: The Role of Beef Farmers in Conserving Grasslands, Pasturelands and Biodiversity – Sandra Vos, Carolyn Callaghan, Andrew Campomizzi

In Canada, most of the remaining native grasslands and pasture are under the care of beef farmers. These lands play a critical role in preserving biodiversity and carbon storage. When all crop and pastureland is considered, the land used to raise beef cattle contributes the majority of critical habitat that wildlife need for reproduction and to raise their young (74%) and to find food (55%). Land grazed by beef cattle is also estimated to hold 1.9 billion tonnes of soil organic carbon, and beneficial management practices can further enhance carbon storage. In this presentation, a screening of the short documentary “Homes on the Range” will be followed by a panel discussion. The documentary showcases the role Canada’s beef farmers play in preserving wildlife habitat and biodiversity. The panel will include a representative from the Canadian Wildlife Federation, a researcher from Bird Ecology and Conservation Ontario, and an Ontario beef farmer.

https://www.youtube.com/watch?v=ODePwl0M88c

WORKSHOP: Bridging Agroecology and Conservation – Toward Mutual Organizational Support – Thorsten Arnold, Ali English

The Ecological Farmers Association of Ontario (EFAO) supports a unique Farmer-Led Research Program that empowers farmers to design, implement and analyze experiments on their own farms. Rooted in the belief that farmers are knowledge holders and ecosystem stewards, the program fosters innovation through low-cost, scientifically sound methods. Projects explore soil health, cover crops, reduced tillage, livestock integration and crop biodiversity, generating data that is locally relevant and ecologically meaningful. These inquiries are deeply grounded in each farm's ecosystem context, ensuring that research questions emerge from real-world challenges and opportunities. Farmer-researchers receive mentorship, training, and shared evaluation tools to ensure rigor and comparability. By putting inquiry into farmers' hands, EFAO bridges the gap between academic research and on-the-ground conservation practice. This model builds adaptive capacity, supports resilient landscapes and strengthens cross-sector collaboration, demonstrating that agroecology is not just a philosophy, but a living, evolving research framework grounded in place.

DAY 2 AGENDA – TUESDAY NOV. 4, 2025

Land - Session 4A: Restoration in Action – Tools and Strategies for Resilient Landscapes

From Problems to Progress: Empowering Conservation Action with the Stressors Framework – Joe Gabriel, Sherwin Watson-Leung

Building on decades of restoration success, Credit Valley Conservation (CVC) is revising its restoration planning approach to enhance future actions. The latest enhancement is creating the Stressors Framework: a toolkit that characterizes environmental problems and showcases how conservation actions are solving them. It begins by characterizing watershed stressors (also known as threats) and linking them to the environmental impacts they cause. Through CVC's Principles and Guidelines for Ecological Restoration (PGER), impacts are then tied to conservation actions. In addition to guiding restoration planning, the framework is a communication tool for showcasing problems and solutions to partners. It also guides restoration monitoring to showcase the tangible, measurable impact of projects. Here, we share examples of how CVC uses the framework with PGER to showcase the lasting influence of our work. We'll also explore how your organization can apply these tools and how they're being integrated into CVC's updated Watershed Plan.

Strategic Risk Assessment of Wildlife Connectivity: A Multispecies Approach – Jonathan Ruppert

Urban expansion increases built surfaces, reducing and fragmenting wildlife habitat. Despite this, wildlife can persist if habitat fragments, such as urban green areas, are functionally connected. Using graph theory models, we assessed how proposed developments may alter landscape connectivity and identified potential mitigation strategies. Without mitigation, key movement corridors linking peripheral and inner-city forested areas are fragmented, with new corridors shifting to isolated green areas within developed zones. Natural heritage systems that include small, widely distributed renaturalized areas offer the best connectivity outcomes and can help offset habitat loss. However, elevated road mortality near corridors intersecting roads highlights the need to address roads as barriers in connectivity planning. Our findings support incorporating widely distributed, smaller natural areas connected to larger patches via natural corridors or mitigation structures. Such strategies provide a practical solution to balance urban growth, economic constraints, and biodiversity conservation goals, including targets like the 30—30 initiative.

From Planning to Action: Prioritizing Restoration for Biodiversity and Climate resilience – Andrew Chin

At Toronto and Region Conservation Authority (TRCA), the preparation of two recent watershed plans (Etobicoke Creek and Humber River) has resulted in developing a process to identify priority restoration sites. TRCA has applied science-driven and refined data to select these sites through a prioritization approach to enhance habitat quality, watershed connectivity, riparian natural cover, biodiversity, and climate change resilience. These plans, developed in collaboration with partner municipalities, key stakeholders within the watershed, and participating First Nations, consider specific terrestrial, aquatic, and climate criteria to promote habitat restoration within areas identified as having opportunities for additional natural cover through TRCA's enhanced Natural Heritage Systems mapping. Case studies from restoration projects implemented at priority sites in the Etobicoke Creek watershed will be highlighted to demonstrate the effectiveness of this approach. By strategically identifying and implementing restoration projects, TRCA's watershed plans enable a resilient, biodiverse, and ecologically connected landscape across the Toronto region.

Water – Session 4B: Climate-Ready Watersheds – Planning Tools for a Changing Future

From Policy to Practice: Leveraging Subwatershed Planning for Climate-Resilient Conservation – Shelley Hazen, Bailey Cole

Ontario is at a critical inflection point, where climate policy must translate into measurable, on-the-ground action. Recent changes to the Provincial Planning Statement (PPS), including stronger language requiring municipalities to plan for climate change, represent a major shift in expectations and an opportunity to embed climate adaptation into core planning processes.

The Cardon Sequestration Potential of Early Successional Ecosystems – Sarah Kirilenko, Kaitlyn Read

While there has been a recent push to better understand the carbon sequestration potential of high-quality natural heritage areas such as wetland and forest ecosystems to support climate change mitigation efforts, the amount of carbon sequestered by early successional ecosystems has garnered much less attention. In Southern Ontario, these ecosystems can occupy a significant proportion of the landscape and thus have the potential to sequester large amounts of carbon. Within the Lake Simcoe Watershed these young ecosystems make up to 20% of the natural heritage features.

This presentation will highlight the methods and results from a study completed by Lake Simcoe Conservation Authority in 2023 – 2024 to estimate the carbon sequestration rates of cultural meadows, cultural thickets and cultural woodlands in the Lake Simcoe Watershed, and add to the baseline estimates of carbon sequestration in the watershed, supporting municipal partners in their net zero carbon emissions goals.

Reviewing the Continued Relevancy of Water Budgets – Mystava Touw

As development and water demand grow, many source protection regions are questioning the continued relevance of water budgets completed 15 years ago. This presentation explores how the Lake Simcoe Region Conservation Authority (LSRCA) addressed this concern using publicly available data and low-cost methods. It outlines a process to update demand estimates, calculate current and future groundwater stress, and assess changes in supply and risk for Tier 3 water budget studies. The approach provides practical metrics to evaluate whether an existing water budget remains valid or needs updating. By using this process to triage water budget studies, regions and municipalities can prioritize updates based on relevancy, ensuring effective and timely resource management.

People – Session 4C: Ethical Space and Equity in Conservation

Activating Big Picture Ppportunities in Ethical Space – Dustin Brown, Samantha Whiteye

Carolinian Canada Coalition will share early insights from a program designed to grow and monitor ecological corridors and cultural connectivity in the Carolinian Zone of southern Ontario. The program is developed in collaboration with diverse partners -- including First Nations and private landowners -- and anchored by the Big Picture Opportunities Map. This evolving tool centres on Indigenous leadership, modern ecological connectivity models, citizen science, and a comprehensive suite of mapping layers and data sources to support collaborative decision-making in ethical space. The map is designed to advance Indigenous-defined priorities and guide development of holistic conservation action plans. The work builds on and updates a landscape-scale vision and stewardship plan called the Big Picture which advances a regional approach to conservation and stewardship while working across spatial scales.

Space-Based Belonging for Rural 2SLGBTQ+ People – Daniel Abigail Marilyn Layden

From the study *Experiences of Discrimination and Community Integration Experiences by 2SLGBTQ+ in Perth and Huron Counties*. This study was a partnership of University of Guelph researchers and United Way Perth-Huron. We examined how services in rural communities could assist in the decreased discrimination, and increased belonging, for 2SLGBTQ+ people through practical recommendations. We found that rural place-based belonging was a major theme. Canadian rural spaces hold great importance for the longevity of Canadian agriculture and conservation of natural space. 2SLGBTQ+ people who wish to live in these spaces, for a variety of reasons such as interest in agriculture or desire to live in a quieter, greener, environment, face challenges to remaining in these spaces. For Canada to conserve our natural spaces, we must use place-based belonging to encourage the resilience and revitalization of rural areas for all people, 2SLGBTQ+ people included.

Restorative and Enriching Visual Features of Hamilton Neighbourhoods and Greenspace – Kelley Amanda Prendergast

There is a body of evidence that examines parental perceptions of neighbourhoods and greenspace features that influence early childhood development. There is a gap in research that examines parental perceptions using a merged model of the Circumplex Model of Affect with Bronfenbrenner's bioecological theory. This paper focuses on visual features of parental perceptions of restorative and enriching features in neighbourhoods and greenspaces in Hamilton, Ontario. A sample of 30 parents across Hamilton neighbourhoods were interviewed. Semi-structured parental interviews were conducted using a Google Street View photo montage. Codebook thematic analysis was utilized with convergent and divergent themes using the merged model. The findings included several themes. Future qualitative and quantitative research could focus on how circumstances of combinations of features in a neighbourhood or greenspace influence parental perceptions of neighbourhood features and how this may influence policies to improve neighbourhoods and greenspaces.

Land - Session 5A: Building Healthy Landscapes: Reforestation, Biodiversity, and Invasive Species Solutions

Urban Reforestation in Markham: A 30-Year Journey to Increasing Woodland Cover – Patrick Wong

In 1993, the City of Markham undertook its first Natural Features Study and endorsed a comprehensive strategy to protect and enhance the natural environment. An extremely ambitious long term goal to more than triple upland woodland cover from 3.2% to 11% was recommended. Over thirty years later, the City is almost half way to realizing this goal (upland forest cover has increased to 6.6% and total woodland cover has increased to 8.0%). This presentation will look back at the journey undertaken by the City with the support of many partners and community members, and describe how the City has gradually increased support for restoration and reforestation programs as the City built internal expertise and knowledge. We will explore some of the original recommendations from the 1993 Study, what has worked and not worked, and new opportunities that lie ahead to achieve this goal.

Hamilton’s Natural Areas Inventory: Nature counts – Kasia Zgurzynski

There has been a Natural Areas Inventory (NAI) in Hamilton approximately once every 10 years for the last 30 years. In 2024, the Hamilton Conservation Authority, City of Hamilton and Hamilton Naturalists’ Club initiated a new NAI. This involves surveying natural areas, big and small, and identifying the habitats and wildlife present. Hamilton is a special place for biodiversity, being at the northern end of the range of many species, and the southern end for many others. This biodiversity is facing unprecedented threats, including invasive species, habitat loss, and climate change. The goals of this NAI include identifying natural areas for protection and defining threats and restoration opportunities throughout Hamilton. Engaging the public in biodiversity surveys and reaching out to Indigenous communities to share information and invite engagement is also a key project priority. Previous NAIs have contributed to significant protections of natural areas. It is time for an update!

Fighting Phragmites in Ontario: A Successful First Year the Ontario Phragmites Action Program– Kyle Borrowman

Invasive Phragmites is recognized as one of Ontario’s most aggressive and ecologically damaging invasive plant species. In response, the Ontario Phragmites Action (OPA) program was launched with a landmark $11 million, three-year investment from the Ministry of Natural Resources and Forestry to implement a collaborative, coordinated approach to landscape-scale management. Now in its first year, the OPA program has demonstrated significant progress through strategic partnerships, community engagement, and targeted resource development. This presentation will highlight key successes achieved across the province, including engagement with over 100 municipalities and more than 80 Indigenous communities who are managing invasive Phragmites on the ground. It will showcase innovative tools, granting initiatives, and best practices being mobilized to control Phragmites and restore Ontario's natural spaces. The session will also serve as a call to action, inviting new partners to join this growing initiative and offering a hopeful vision for an Ontario less burdened by invasive Phragmites.

Water – Session 5B: Fields of Change – Agricultural Innovation for Water and Soil Health

WORKSHOP: Farm Drainage and Opportunities for Conservation – Mel Luymes, Chris Van Esbroeck, Sid Vander Veen, Jeff Dickson

It can be challenging for staff of rural Conservation Authorities to work with farm drainage, municipal drains and contractors. This workshop aims to foster productive conversation between stewardship / regulatory staff and drainage industry representatives that would improve the working relationship between these groups.

Impact of Cover Cropping on Agricultural Runoff and Nutrient Losses – Kokulan Vivekananthan

Keeping farm soils covered offers agronomic and environmental advantages, such as improving soil health and reducing soil erosion. A living cover crop can also help lower edge-of-field nutrient losses by increasing crop uptake and reducing runoff. However, real-world data remains limited, particularly in colder regions like Southern Ontario. This presentation shares early findings from two sites in Southern Ontario where surface and subsurface runoff and nutrient losses are monitored under different cover crop management strategies through the On-Farm Applied Research and Monitoring (ONFARM) program. Our results indicate that the effectiveness of cover crops in reducing surface runoff varies depending on crop type, weather conditions, and season. Initial findings also imply that cover crops may contribute to decreasing nutrient losses.

People – Session 5C: Strengthening Conservation Through Innovation, Inclusion, and Collaboration

Building Beyond Land: From Reclamation to Restoration – Songrui Li

This presentation explores the environmental challenges of coastal land reclamation, a global phenomenon driven by urban and economic expansion. Focusing on integrated shoreline management, land use planning, and ecosystem monitoring, it highlights insights from case studies in Hong Kong and Toronto. These examples illustrate the negative impacts on hydrology, biodiversity, natural heritage, and wetland ecosystems, alongside potential solutions like eco-engineering, urban renewal, and floating developments, especially eco-design aspect. By aligning land use regulation with sustainable practices and emphasizing wetland conservation as part of natural heritage protection, the presentation underscores the importance of balancing development and conservation to encourage continued action in addressing today's environmental challenges.

Hydrology and Ecology Collide: A Highlight on Ecohydrology – Nyssa Hardie

What it is, how it fits into natural heritage and development planning. Why it matters. The goal to ensure a resilient, sustainable, and thriving ecology.

The presentation is aimed at increasing awareness and understanding of Ecohydrology in consulting work and in environmental planning.

Assessing Municipal Perspectives on Winter Maintenance and the Changing Climate in the Lake Simcoe Basin – Wyatt Weatherson

Climate change presents significant uncertainty in environmental management, particularly within the winter road maintenance industry in Ontario, Canada. This mixed methods research characterizes the challenges facing municipalities in the Lake Simcoe watershed and verifies their perspectives around changing winter temperatures and precipitation with analysis of long-term climate data. Thematic analysis of interview transcripts was done inductively to understand challenges facing the public winter maintenance industry, with subsequent Mann-Kendall trend analysis of climate data from 11 stations in the Lake Simcoe watershed as a means of testing perceptions of winter maintenance staff. Our findings reveal a lack of data accessibility, and outdated data collection and management practices. Mann-Kendall trend tests suggest that climate change is occurring within the Lake Simcoe watershed, though only two stations had data records of sufficient length to draw meaningful conclusions from.

Conservation Outreach and Collaboration: Connecting with the Next Generation through the Lenses of Justice, Equity, Diversity, Inclusion and Indigeneity – Dominique Rumball

In the Great Lakes basin, outreach is a key tool implemented in the fight to conserve and restore our freshwater ecosystems and the species that they support. However, creating long-term useful and meaningful outreach materials and connecting with the intended audience can be major challenges that prevent the success of outreach initiatives. This presentation will delve into the process behind creating the children's book "Finding A Forever Home: The Adventures of Giigoonh the Spotted Gar," a project that through collaboration, embraces and celebrates justice, equity, diversity, inclusion, and Indigeneity. The process of creating an inclusive book, building long-term relationships to collaborate effectively, and developing educational materials to reach the intended audience will be explored in this presentation. Through these experiences, major challenges and best practices for effective science communication will be shared.

Engaging Great Lakes Residents through Community-Based Science to Collect Data and Drive Decision-Making – Stacey Cherwaty-Pergentile

Protecting the Great Lakes isn't solely the responsibility of governments or scientists. Communities play a vital role in restoring and protecting the Great Lakes.

Through the Great Lakes Freshwater Ecosystem Initiative, the Canada Water Agency (CWA) is supporting eleven projects along the shores of the Great Lakes to actively collect important water quality and ecosystem health data. These efforts are expanding the monitoring coverage across the lakes, helping to address priority scientific challenges. The data are enhancing the value of community-driven research in support of both decision- and policy-making.

Data gathered through these projects are being used in research, scientific publications, environmental reporting, ecosystem indicators and are supporting restoration efforts in the Great Lakes. Beyond this, community science serves an important educational role, building environmental awareness and knowledge. Community scientists are essential contributors; they collect data, share insights, and take meaningful action to protect the Great Lakes.

EFAO's Farmer-Led On-Farm Research: How EFAO Studies Living Systems in their Ecosystem Context – Ali English

The Ecological Farmers Association of Ontario (EFAO) supports a unique Farmer-Led Research Program that empowers farmers to design, implement and analyze experiments on their own farms. Rooted in the belief that farmers are knowledge holders and ecosystem stewards, the program fosters innovation through low-cost, scientifically sound methods. Projects explore soil health, cover crops, reduced tillage, livestock integration and crop biodiversity, generating data that is locally relevant and ecologically meaningful. These inquiries are deeply grounded in each farm's ecosystem context, ensuring that research questions emerge from real-world challenges and opportunities. Farmer-researchers receive mentorship, training, and shared evaluation tools to ensure rigor and comparability. By putting inquiry into farmer’s hands, EFAO bridges the gap between academic research and on-the-ground conservation practice. This model builds adaptive capacity, supports resilient landscapes and strengthens cross-sector collaboration, demonstrating that agroecology is not just a philosophy, but a living, evolving research framework grounded in place.

Land - Session 6A: Restoring What Was Lost – Tools and Stories of Ecological Renewal

Are We Keeping Pace? Integrating Species at Risk Habitat into Brownfield and Excess Soil Management – Roxana Khoshravesh

Species at Risk (SAR) habitat is defined as an “area of natural significance” under Ontario Regulation 153/04 and an “environmentally sensitive area” in MECP’s Rules for Soil Management and Excess Soil Quality Standards. As a result, environmental site assessments must evaluate SAR habitat to determine appropriate Site Condition Standards (SCS) or Excess Soil Quality Standards (ESQS). With MECP frequently updating species lists and guidelines, the Brownfield and Excess Soil sectors face growing challenges in keeping pace. This presentation examines regulatory ambiguities, risks of omitting ecological expertise, and inconsistent implementation across projects. It also shares Terrapex’s approach to staying current through interdisciplinary collaboration. By encouraging greater integration of ecological knowledge into environmental assessment, this session supports the broader goal of ensuring compliance, reducing risk, and advancing conservation. Attendees will be encouraged to take continued action to address today’s environmental challenges through adaptive, informed, and collaborative practices.

The Tallgrass Awakening in the Rice Lake Plains: How Indigenous Cultural Practice Inspired Conservation Partners to Bring Dormant Ecosystems Back to Life – Mark Stabb, Gillian di Petta

A vast grassland-savannah landscape once dominated the sandy hills of the Oak Ridges Moraine in Northumberland County. This tallgrass ecosystem was largely lost to modern human activity by the end of the 20th century. But remnants remained degraded, dormant, not quite destroyed. This is a story of the trials, tribulations and triumphs of decades of restoration work to reawaken and revive these biodiverse gems. Guided and inspired by stewardship practices at the Alderville First Nation Black Oak Savanna, the Nature Conservancy of Canada and partners of the Rice Lake Plains Joint Initiative have restored and expanded many tallgrass remnants, some to their former glory. After 20+ years of collaboration, the conservation impacts include protection of globally significant habitats, stewardship of species at risk, multiple ecosystem benefits and the growth of a community of partners and landowners who remain committed to restoring this rare and beautiful part of Ontario's natural heritage.

Reforestation and Meadow Management Tool – Josh Brooks, Scott Sampson

Restoration practitioners have grappled with how to determine the balance between creating meadow or forest habitat and ensuring that we are restoring the right habitat in the right place. This presentation will showcase a GIS mapping-based tool that Credit Valley Conservation developed to assist with restoration decision-making on Conservation Authority properties. This tool helps restoration practitioners decide if an open habitat should be restored towards either a meadow or forest, based on a series of landscape ecology criteria. This presentation will showcase the GIS tool, along with how these recommendations fit into decision-making on CVC properties.

Water – Session 6B: Planning for Resilience – Integrating Watersheds, Wetlands, and Infrastructure

Over 30 Years of Advancing Watershed Health: TRCA’s Collaborative Watershed Planning Approach – Melanie Randolph

Toronto and Region Conservation Authority (TRCA) has over 30 years of history advancing watershed plans through collaborations with our partner municipalities, key stakeholders, and participating First Nations, as well as through engagement with the public. This presentation will review the evolution of the watershed planning process used by TRCA. It will also reflect on the impacts that these watershed plans have had over the years with a focus on the implementation of some of the recently prepared watershed plans such as Carruthers Creek and Etobicoke Creek, highlighting our newly developed implementation tracking and reporting process. We will also celebrate the start of our next watershed plan for the Rouge River.

Technical Guide: Linking (Sub)watershed Planning to Master Planning, Asset Management Planning and CLI ECA - Ron Scheckenberger, Ray Tufgar

This new Technical Guide "Linking (Sub)Watershed Planning to Master Planning, Asset Management Planning and the CLI ECA", informs municipal infrastructure planning, design and associated operations and maintenance, by considering the watershed-scale (and associated environmental and water-based information) for roads, wastewater systems, potable water supply and distribution, stormwater management systems, and parks. In contemporary planning of community infrastructure, defining risks (legal, social, technical, economic) and setting the appropriate level of service (LOS) for municipal infrastructure, must carefully consider the interrelationships between natural systems and built systems, and how they function to protect the environment, while keeping communities safe from natural hazards and maintaining municipal service levels. The Technical Guide will help practitioners at the municipal and conservation authority levels improve (Sub)watershed Studies so that they can better support Municipal Master Planning for community infrastructure, as well as Asset Management and compliance with the CLI ECA. Through this process, the respective parties are anticipated to reduce their liabilities and costs, while delivering better, more environmentally sustainable solutions to the public.

Assessment & Protection of Wetlands as Natural Infrastructure – Michael Dakin, Kim Stephens, Scott Robertson

The land use planning and regulatory system in Ontario has historically focused on wetland conservation from an ecological perspective. Federal, provincial and municipal policies/legislation afford relatively strong protections for biological features and functions of wetlands. Wetlands also provide hydrologic functions, but the full extent of these services may not be considered or fully valued in the existing policy/legislative regime.

CAs are uniquely positioned to address this gap. Despite rollbacks through Bill-23, CA’s core mandate remains protection of people and property from natural hazards. To do this effectively, protection of natural heritage features and avoidance of natural hazards cannot be separated. Assessment and conservation of wetlands as natural infrastructure represents an opportunity to refocus CA’s planning and regulatory approach to achieve safe and resilient communities.

This presentation will provide practical advice to help reconnect natural heritage and natural hazards with a focus on smaller communities and rural areas.

People – Session 6C: Innovation in Practice – Modernizing Conservation Authority Operations

A Culture of How: Operational Improvements to Deliver Safe, Sustainable Development – Jonathan Scott

Over the past year, the Nottawasaga Valley Conservation Authority (NVCA) has undertaken major operational improvements to strengthen planning and permitting services. Focused on building a "culture of how", NVCA has modernized its approach to help applicants achieve safe, sustainable development outcomes while protecting the watershed. Key initiatives include launching an internal triage system to streamline applications, introducing a new e-permitting platform for faster and more transparent service, and developing a peer review framework to drive consistency and efficiency. Staff have also received enhanced service training to better support applicants and resolve issues early. These reforms have helped eliminate a permitting backlog and improve client satisfaction. NVCA's experience shows how a conservation authority can adapt, deliver strong customer service and support smart growth, all while upholding environmental protection.

Sharing is Caring: Protecting Natural Heritage in the Thames River Watershed – Sarah Rabideau

Partnership is essential when it comes to managing large watershed systems. Two conservation authorities united to assess and collate natural heritage data in a shared waters system to identify areas that may protect, restore and enhance ecological connection. Natural heritage systems encompass a suite of linked features that promote and sustain ecological function, and conservation authorities play a unique role in their ability to support their protection through standard mapping procedures and geospatial analyses. Recent aerial photography was reviewed to delineate communities, collate and thematically assess for patch connectivity and ecological significance. Distinguishing areas that are vital to ecological connectivity better serves local communities and ecosystems by identifying where we may best support remedial actions like phosphorus reduction, water quality improvement and adaptation measures to climate variability. Join us and learn how this collaborative project rooted in natural history is shaping conservation science and service delivery in the Thames River Watershed.

Introducing TRCA's Online Application Portal for Planning and Permit Applications – Mark McKnight, Nicole Moxley

TRCA has launched its web-based cloud Online Application platform, an efficiency-tool that is improving both customer experience and internal efficiency, through modernized approach to application intake, review, and enforcement functions. The new system has significantly improved collaboration on files, work planning, and visibility to team activities. It is also providing more accurate and measurable data related to TRCA service deliverables such as, employee productivity, product quality and customer satisfaction, and supporting TRCA's commitments to meeting Building Industry and Land Development Association (BILD) Client Service and Streamlining Initiatives.

In this session you will learn about:

- TRCAs new approach to application intake, review, commenting and enforcement, including collaboration, GIS automation, data analytics, and records management
- How to prepare for a system transformation
- Managing the implementation team
- Resourcing your transformation projects
- Keeping momentum during the project and after launch
- Future plans for Integration with enterprise planning solutions of others, including municipalities.

Land - Session 7A: Designing with Nature – Creating and Evaluating Habitat Solutions

Designing New Wetlands: When You Cannot Conserve, Create Anew – Todd Smith

Because of land development, wetlands are removed from the landscape. To compensate for this loss of ecosystem, wetlands can be created on land that never was a wetland yet where conditions exist to produce and sustain this type of ecosystem. This design collaboration yields beneficial and measurable impacts. This talk will illustrate the process of designing new wetlands and how they succeed over time.

Beacon's Ecologists and Landscape Architects have several years of experience working with conservation authorities and clients on such projects. We work with engineers to access water flows into the new wetland and design micro-grading that results in vernal pooling and water retention; and with hydrogeologists to understand elevations needed to access groundwater levels. Extant seed banks, hydric soils, herbaceous and woody plants are specified within and along the perimeter of the new wetland along with habitat structures including dead logs, and or small brush piles.

Planning for Water and Supporting Ecosystems: A Panel Discussion on Ecohydrology – Nyssa Hardie, Trevor Frasier, Stephen Van Drunen, Jason Elliott

This panel will host industry experts in Ecohydrology for a conversation that touches on how we maintain and replicate natural systems in an increasingly urban environment. Maintaining the water balance for created and natural features drives our ecohydrology work during development planning. This often includes the need to replicate headwater networks through stormwater systems and attempts to sustain existing wetlands by diverting water across a post-development landscape. Monitoring is an important component for assessing the achievement of our goal to maintain water balance. But have we defined our ultimate goal properly? What does success actually look like? And are we achieving our goals?

Water – Session 7B: Engineering Resilience – Innovations in Stormwater and Forecasting

HydroSphereAI: Machine Learning-Driven Hydrological Forecasting in a Changing Climate – Andre Erler

Hydrological forecasting remains a critical challenge for water resource management. This presentation outlines a promising Machine Learning (ML)-driven approach to operational forecasting that advances beyond traditional rainfall-runoff models. Evaluation of historical simulations against observed streamflow demonstrates excellent skill, even in ungauged basins, where traditional RR models struggle. We also show how ML forecasts can be interpreted in physical terms and extended to other critical variables such as snowpack. We begin by outlining the core technology underlying Aquanty's ML forecasting model, including key predictors, the training process and the uniquely augmented/customized training dataset. In the operational forecasting segment, we discuss real-time acquisition and processing of weather forecast data, as well as integration (assimilation) of real-time observational data into the ML models. We close with a review of early performance of the model for flood risk mitigation in a range of Ontario watersheds during the spring 2025 freshet and summer season.

Crafting Constructive Comments: Enhancing Sediment and Erosion Control through Collaborative Feedback - Michelle Letourneau

Sediment and erosion control (ESC) is a critical part of responsible land development and water protection in Ontario. Since the 1970s, ESC practices have advanced significantly from basic on-site barriers to performance-based systems shaped by engineering, watershed planning, and regulatory oversight. Municipal and Conservation Authority staff play a key role in this system through development review and permitting. This session explores how reviewers can enhance environmental outcomes and reduce project delays by providing ESC comments that are clear, consistent, and solution-focused. Drawing on real-world examples, the presentation highlights how effective feedback can foster mutual understanding and improve compliance. Attendees will gain practical strategies for writing ESC comments that reflect current best practices, meet municipal and provincial expectations, and support cross-sector collaboration. The session ultimately encourages continued action to improve ESC practices and protect Ontario's natural resources through informed, cooperative approaches.

Field Performance Evaluation of a New Stormwater Pre-Treatment System in Cold Climates - Melanie Blackburn, Aidan Haskell

Stormwater runoff can transport contaminants to downstream water bodies, impairing water quality and disrupting aquatic ecosystems. Among a range of innovative stormwater control measures, a new pre-treatment catch basin inlet device "the EnviroBasin" has been developed. While laboratory tests have demonstrated its ability to remove sediment and debris from stormwater, its field performance remains unverified. In partnership with Enviropod, the developers of the EnviroBasin, this project undertakes a comprehensive field evaluation of the device, installed adjacent to an arterial road in London, Ontario. High-frequency sampling is conducted during storm events, with both influent and effluent samples analyzed for particle size distribution and total suspended solids. Preliminary results indicate that the EnviroBasin effectively removes sediment particles 75 µm from stormwater under varying storm intensities and pollutant loads. Ongoing monitoring will assess the device's performance across seasons and expand the analysis to include metals and nutrients.

People – Session 7C: Community-Driven Conservation – Local Action, Lasting Impact

PRESENTATION: Local Leadership in Action: Advancing Practical Green Solutions in Bradford West Gwillimbury – Jonathan Scott

Over three years, the Green Initiatives Advisory Committee (GIAC) has established itself as a credible and practical voice for environmental progress in Bradford West Gwillimbury. Focused on delivering real, measurable results, GIAC has advanced key initiatives such as expanding local tree planting programs, promoting climate change mitigation strategies, supporting green development standards, and advocating for action on sustainability. The committee has also partnered with local schools, businesses, and residents to drive grassroots engagement. Through a solutions-focused approach, GIAC has helped integrate environmental leadership into municipal decision-making, while balancing economic and community growth. Our experience offers a model for how small-town advisory committees can have real impact combining evidence-based advocacy, community collaboration, and a commitment to pragmatic action.

PANEL: Grassroots Action for Sustainable Neighbourhoods – Melissa Williams, Patricia Lewis, Patricia Lowe

Abstract: Communities are at the heart of building a sustainable future, and lasting change begins at the local level. The Sustainable Neighbourhood Action Program (SNAP), launched by Toronto and Region Conservation Authority (TRCA) in 2009, has since grown into a model adopted by other Conservation Authorities, including Credit Valley Conservation (CVC) and Central Lake Ontario Conservation Authority (CLOCA). Together, these programs show how grassroots engagement can bring residents, community groups, and local organizations together to co-create climate solutions that respond to neighbourhood priorities while ensuring diverse voices are included and represented.

In this panel, representatives from TRCA, CVC, and CLOCA will share lessons learned from their respective experiences. With TRCA’s long history of SNAP implementation, CVC’s expanding portfolio of neighbourhood initiatives, and CLOCA’s emerging SNAP, participants will gain insights into the evolution of this approach—from early pilots to more established programs, and from scaling up successes to building new foundations. Panelists will highlight how grassroots engagement, local leadership, and strong partnerships can transform neighbourhoods at any stage of the journey and inspire broader systemic change.

POSTER PRESENTATIONS

Growing with Context: Understanding Reforestation Through Diversity and Regeneration – Emerson Critton-Papp, University of Toronto

Tree planting on private lands has been successfully practiced in southern Ontario for decades. However, the plant species that colonize these plantations, and the influence of surrounding forests and natural regeneration on reforestation success, remain poorly understood. Current monitoring standards often lack the depth needed to evaluate restoration success in terms of plant diversity and the extent to which adjacent forest conditions shape plantations. This research critically examines the role of surrounding forests and natural regeneration in shaping the ecological outcomes of reforestation on private lands. To assess these effects, more than 40 fixed-area plots, following the Vegetation Sampling Protocol (VSP), were established in plantations over 10 years old. The results rank sites based on diversity indices and the presence of native and invasive species, offering a restoration lens to guide and improve reforestation practices.

Climate Change and Vector-borne Diseases: Predicting Transmission Potential in the Arctic – Lilian Chan, University of Guelph

Vector-borne diseases (VBDs) pathogens transmitted by vectors such as mosquitoes pose significant threats to humans and wildlife as climate change increases vector abundance and expands their ranges. These changes may introduce tropical and temperate diseases into the Arctic, threatening wildlife and the health of Indigenous communities. However, our ability to respond is limited by gaps in knowledge about how warming affects VBD transmission.

My research investigates the transmission dynamics of Setaria yehi, an emerging parasitic nematode transmitted by Arctic mosquitoes that infects caribou and muskox species critical to Inuit subsistence and Arctic ecosystems. Using mosquito trait data, I developed a predictive model to estimate nematode transmission potential under warming conditions. I then project future risks under various climate scenarios, identifying areas most vulnerable to nematode outbreaks. This research supports conservation efforts by helping policymakers target high-risk areas for surveillance and intervention, improving preparedness for emerging disease threats under climate change.

Thinking Across Borders: Present and Future Environmental Systems Governance in Ontario – Manuel Spiller, Western University

Continuous ecological systems such as riparian zones adjacent to river and lake shorelines in heavily fragmented, colonialized landscapes have been significantly impacted by human activity. Further, individual development of one section of a waterfront can cause ripple effects that affect other properties along shorelines. Current day governance is not organized to comprehensively solve problems these systems face. I analyze and clarify various perceptions of transboudary governance, uncovering classifications that highlight existing issues. Based on Ontario's unique model including watershed-based conservation authorities, the geographic and institutional governance boundaries will be shown, and benefits as well as shortcomings highlighted. This poster clearly visualizes this complexity of continuous ecological systems governance as a call for the assessment of the viability and probability of commoning, ground-level governance of a transboundary system or resource through relationships between the individual property owners.

Promoting Conservation in Temperate Forests via Monitoring of Forest Productivity and the Relationship Between Forest Biomass and Species Diversity Across a Landscape Over Time – Amelia Lesniak, University of Toronto

As climate change effects continue to increase and threaten ecosystems across the globe, the need for natural climate solutions is more crucial now than ever. Conserving forest ecosystems is an effective method of mitigating climate change impacts for current and future generations. Forest inventory, monitoring, and predictive modeling are essential for forest conservation in the modern age. This study proposes the monitoring of forest aboveground biomass in the Lake Simcoe watershed in Ontario, Canada over the 2017-2024 period to calculate forest carbon storage changes. Forests act as vital carbon sinks when they absorb and store atmospheric carbon, lessening the amount of greenhouse gas in the atmosphere which primarily drives climate change patterns. Collected data used in this study comes from 187 forest plots inclusive of tree heights, width and species diversity over time. The data will show changes in forest biomass and species richness and evenness and compared amongst forest stands of different age groups. Forest productivity is determined through overall biomass totals and diversity for these temperate forest plots, used to inform forest managers of where their conservation priorities should begin. These variables used in determining forest productivity will be used in statistical predictive modeling methods to determine which variables are strongest in predicting biomass changes over time. The outcome of this study will improve conservation efforts as funding and time are precious resources that should be allocated to their fullest potential. Conserving productive, healthy, diverse forests is vital in securing a sustainable and healthy future on our planet.

Evaluating the feasibility of an integrated SAR and physics-guided machine learning approach for snow depth mapping in the Credit River – Charitha Pathipati, University of Windsor

This project aims to develop a data-driven framework to estimate daily snow depth using Synthetic Aperture Radar (SAR) imagery, specifically from RADARSAT Constellation Mission (RCM) data. By integrating backscatter features with daily meteorological variables such as temperature, precipitation, and humidity. The approach leverages machine learning techniques to relate SAR-derived indicators to ground-level snow conditions, addressing limitations of traditional snow monitoring in data-sparse or cloud-covered regions. The framework focuses on extracting features from dual-polarization SAR data and combining them with weather inputs to predict snow depth at high spatial and temporal resolution. The output will provide timely and accurate snow maps, which are critical for hydrological modeling, flood forecasting, and water resource management. Ultimately, the project supports better environmental decision-making in cold and snow-prone regions by enhancing remote sensing-based snow monitoring capabilities.

Restoring the Land: Indigenous Youth managing Invasive Species at the Wiijindamaan Land Futurity – Maddie Johnson, Conestoga College

Wiijindamaan is an Anishinaabemowin word which means to meet, gather, or come together with intent. Wiijindamaan: An Indigenous Land-based Futurity is a 200-acre restoration project that endeavours to enhance local biodiversity and traditional foods through habitat restoration, the reintroduction of native species and traditional Indigenous harvesting practices. The project is uniquely Indigenous youth focused with Indigenous youth carrying out the work in consultation with knowledge holders and Elders. One of the challenges of the project has been managing invasive species on the land. We use GIS mapping of ground surveys as a tool to improve the stewardship of medicines and foods such as fiddleheads, cattails, black raspberries, grapes, nettles, and fruit and nut shrubs and trees in the face of growing threats from invasives including giant hogweed, common buckthorn, phragmites, garlic mustard, and Manitoba Maple.

An Endangered Salamander Population Shifts Movement Directionality Over 45 Years of Increasing Urbanization – Zira MacFarlane, University of Toronto, Mississauga

Jefferson Salamanders (Ambystoma jeffersonianum) and their conspecific Unisexuals (A. laterale-(2)jeffersonianum) are threatened by increasing development. We revisited a population in the Peel Region that was previously assessed in the 1970s, where the landscape has shifted from predominantly agricultural to residential, using the same mark-recapture survey design of drift fencing with pitfall traps. Adults shifted movements 30°-60° eastward relative to 1970s movements. This is coupled with an 8.71% increase in impervious cover and a forest cover increase of 5.34%.

The mode direction of travel for metamorphs differed from adults and was consistent across decades, suggesting that emigration direction determinants vary across life stages. We present evidence of salamanders altering migration in response to changing landscapes. To our knowledge, this is the first long-term comparison of Ambystomatid salamander movement directionality, highlighting the importance of long-term movement studies and suggesting that forest restoration and impervious surface reductions benefit Jefferson Salamander complex populations.

Effects of Climate Change on Flooding in the Carp River Watershed – Violet French, Mississippi Valley Conservation Authority

Accurate knowledge of climate change is key to effective flood risk mitigation. With warming temperatures, the intensity of storms is increasing and as a result the magnitude of flood events is increasing. The unique Carp River watershed has urban headwaters located in Kanata which makes it especially susceptible to an increase in flooding due to higher intensity storms. This study estimates the impact of climate change on the magnitude of future flood events in the watershed using downscaled GCM models to develop IDF curves for several future time horizons and climate scenarios. The data was then used to run a calibrated numerical hydrologic model of the watershed to obtain future flood magnitudes and the results were analyzed and compared against baseline conditions. This knowledge can help guide watershed planning and flood management strategies to better protect the public from the devastating consequences of flooding.

Spatio-temporal variability of herpetofauna road mortality in Long Point Walsingham Forest Priority Place – Joshua Rose, University of Waterloo

Herpetofauna (reptiles and amphibians) road mortality is both a local and global concern, particularly in southern Ontario as the road network continues to increase. The growing human population and urban expansion in the province is contributing to accelerated land-use change. Recent increases in road density is causing heightened concerns regarding herpetofauna road mortality given the reliance on roadways by various taxonomic groups for migration, thermoregulation, and reproduction. The Long Point Walsingham Forest Priority Place, located in Norfolk County, Ontario, is a hotspot for wildlife road mortality due to the region’s high biodiversity, land use conversion, and urban sprawl. The objective of this study is to determine the impact of adjacent land cover type on herpetofauna road abundance, and evaluate how landscape features (e.g., built structures, streams) influence the frequency of road mortality observations. Herpetofauna species require immediate conservation due to the role of external removal (i.e., vehicle-related deaths) in driving population sizes towards extinction.

Burning for Biodiversity: Tracking Native Plant Recovery in High Park – Hannah Ezwawi, University of Toronto / City of Toronto

Remnant oak savannah and tallgrass prairie ecosystems are among the most unique and threatened vegetation communities in southern Ontario. Due to urban development, habitat loss, and the absence of natural fire regimes, many remnant oak savannahs have transitioned into closed-canopy forests and have been impacted by invasive plants. Historically, Indigenous peoples used prescribed burning to manage these communities, limit woody encroachment, and maintain populations of prairie plants.
With less than 1% of Ontario's tallgrass prairie and oak savannah remaining, there is an urgent need not only to protect but also to actively manage these ecosystems and their associated biodiversity. The City of Toronto has been a leader in this effort, implementing prescribed burns in High Park, which is an Area of Natural and Scientific Interest (ANSI), to restore and sustain these habitats.
To evaluate the effectiveness of prescribed burning, 12 fixed-area plots were established in burn sites within High Park using the Vegetation Sampling Protocol (VSP). The data collected enabled the establishment of baseline conditions and allowed for the assessment of native plant diversity in burned versus unburned plots.

Using a mixture of biochar and inactivated yeast as a soil amendment in Toronto's urban forest to enhance street tree health – Jane Hu, University of Toronto

Cities need to understand how to properly maintain their urban forests in order to reap the social, aesthetic, cultural, economic, and ecological benefits provided by the urban greenery. One way to enhance tree health is through the use of soil amendments. Soil health plays a vital role in urban tree vitality as much as 90% of urban tree health issues can be soil-related. Biochar has been cited as a promising soil amendment in forest restoration. Since biochar tends to immobilize nitrogen, brewer's yeast or Saccharomyces cerevisiae can be combined to enhance nitrogen availability. An urban biochar-inactivated yeast greenhouse experiment has been conducted to determine whether treatment groups with biochar and inactivated yeast (IY) soil amendment combinations will display improved tree health indicators compared to those in biochar only, IY only, and/or control conditions. The objective is to determine whether this combination could be used across the City of Toronto's street trees.