

# 2025 Ontario Invasive Plant Council Conference

(As of December 17<sup>th</sup>, 2024)

## The Leading Edge of **INVASION**

### Agenda

**Date** Thursday, January 16<sup>th</sup>, 2025

**Time** 9:30am-4:30pm EST

**Location** *Virtually hosted on Zoom Events (Registration required at [https://events.zoom.us/ev/AhCshkPkHDMgGC9XnQL0TVPJ\\_bsCWhcU9rmkN9w3vIkYx3dQn\\_Kc~ApauqKfv\\_g5JL87fze1mYolfHgKZzobOj23Jmu2VYisydihta6bz-cu14A](https://events.zoom.us/ev/AhCshkPkHDMgGC9XnQL0TVPJ_bsCWhcU9rmkN9w3vIkYx3dQn_Kc~ApauqKfv_g5JL87fze1mYolfHgKZzobOj23Jmu2VYisydihta6bz-cu14A))*

**Theme:** The theme for this year's conference is: **The Leading Edge of Invasion**. This year's theme will address how we can stay ahead of the "invasion curve". It will showcase new and upcoming invasive species, cutting-edge research to detect and mitigate their impacts, and emphasize the importance of adaptive management strategies. This event will encourage people to explore innovative strategies, programs and partnerships to address the future spread of invasive species through a "leading-edge" perspective.

### Schedule

Time (EST)	Speaker	Notes
9:30am	<b>Brandon Williamson</b> , President Ontario Invasive Plant Council <b>Vicki Simkovic</b> Ontario Invasive Plant Council <b>Emily Mitchell</b> Ontario Invasive Plant Council	Welcome & Introduction Structure of the Day
9:45am	TBC	Indigenous Welcome
10:00am	<b>Brandon Williamson</b> , President Ontario Invasive Plant Council <b>Vicki Simkovic</b> Ontario Invasive Plant Council	Ontario Invasive Plant Council Program Updates
10:15am	Toronto's Prescribed Goat Grazing Pilot- A First for Urban Ecosystem Management	Cheryl Post, Natural Environment Specialist, City of Toronto (Gold Sponsor)

10:20am	Staying Ahead of the Curve on Invasive Species Detections and Control	Keynote Speaker: Dr. Joseph Bennett, Associate Professor, Institute of Environmental and Interdisciplinary Science and Department of Biology, Carleton University
11:20am	<b>LUNCH BREAK</b>	
<b>The Leading Edge of Invasion – Frameworks and Planning for Invasive Species Management</b>		
11:50am	Canada's 2030 Nature Strategy: Implementation and Reporting	Andréanne Léger, Director, National Biodiversity Policy, Canadian Wildlife Service - Environment and Climate Change Canada
12:10pm	Invasive Species Policy and Legislation in Ontario	Arniek Doornbos, Invasive Species Policy Advisor, and Lauren Efford, Conservation Programs Advisor, Ontario Ministry of Natural Resources
12:30pm	Hamilton Conservation Authority's Invasive Prioritization Planning	Ben Laing and Bryson McEwen, Hamilton Conservation Authority
12:50pm	<b>BREAK</b>	
<b>Concurrent Sessions - The Leading Edge of Invasion – Prevention</b>		
	<b>Concurrent Session 1 – Emerging Threats (Ontario Focused)</b>	<b>Concurrent Session 2 – Prevention, Outreach and Awareness (Within Ontario and Beyond)</b>
1:00pm	An Update on Hydrilla in Ontario, <i>Dr. Rebecca Rooney, Founder and Director of the Waterloo Wetland Lab, Department of Biology, University of Waterloo</i>	Using Citizen Science Observations to Develop Managed Area Watch Lists, <i>Dr. Bruce Young, Chief Scientist, NatureServe</i>
1:20pm	Oak Wilt: An Emerging Threat to Ontario's Forests– <i>Julie Holmes, Plant Health Survey Biologist, Canadian Food Inspection Agency</i>	The Invading Species Awareness Program's Hit Squad Program: How Collaboration and Partnerships have Contributed Towards Invasive Species Education, Awareness, and Monitoring Initiatives in Ontario. <i>Brook Schryer, Ontario Federation of Anglers and Hunters</i>
1:40pm	Spot it? Snap, Catch and Report it! Prepare to Meet the Spotted Lanternfly - <i>Hannah Fraser, Entomologist – Horticulture, Ontario Ministry of Agriculture, Food and Agribusiness</i>	Grow Me Instead – Promoting Invasive-free Gardening Across Ontario – <i>Vicki Simkovic, Program Coordinator, Ontario Invasive Plant Council</i>
2:00pm	<b>BREAK</b>	
<b>Concurrent Sessions - The Leading Edge of Invasion – Eradication</b>		
	<b>Concurrent Session 3 – Early Detection and Rapid Response (Within Ontario and Beyond)</b>	<b>Concurrent Session 4 – Detection, Tracking and New Invasions (Within Ontario and Beyond)</b>
2:10pm	Using AI and Drone Technology for Early Detection of Aquatic Invasive Species, <i>Matt Bolding, Invasive Species Program Coordinator, Ducks Unlimited Canada</i>	Constructing Standard Invasion Curves from Herbarium Data—Toward Increased Predictability of Plant Invasions <i>Dr. Pedro Madeira Antunes, Plant and Soil Ecology Lab, Professor and Canada Research Chair, Department of Biology, Algoma University</i>

2:30pm	TBC	Genomic Biosurveillance of Forest Invasive Species <i>Dr. Richard Hamelin, Professor and Head, Department of Forest and Conservation Science, Faculty of Forestry, University of British Columbia</i>
2:50pm	Early Detection and Rapid Response to Aquatic Invasive Plants, Jon Gosselin, <i>Technical Development Biologist, SePRO</i>	TBC
3:10pm	<b>BREAK</b>	
<b>The Leading Edge of Invasion – Long-term Adaptive/Innovative Management Strategies</b>		
3:20pm	From Concept to Action: Michipicoten First Nation’s Clean Equipment Protocol	Jessica Zadori, Michipicoten First Nation
3:40pm	Reclaiming Claireville’s Wetlands: The Role of Invasive Management in Ecological Restoration	Diana Gora, Toronto and Region Conservation Authority
4:00pm	Thames Valley Corridor Invasive Species Management in London, ON	Linda McDougall, City of London, and Ashli Oe, Spectrum Resource Group, Celestina Docherty, Spectrum Resource Group, Jennifer Davy, Spectrum Resource Group
4:20pm	<b>Brandon Williamson</b> , President Ontario Invasive Plant Council <b>Emily Mitchell</b> Ontario Invasive Plant Council	Closing remarks
4:30pm	<b>Event Closes</b>	

## Speakers

### Keynote Speaker



**Dr. Joseph Bennett, Associate Professor, Institute of Environmental and Interdisciplinary Science and Department of Biology, Carleton University**

Joseph Bennett is an Associate Professor at the Institute of Environmental and Interdisciplinary Sciences and Department of Biology at Carleton University, and a co-director of the Geomatics and Landscape Ecology Laboratory. Research in his lab focuses on prioritizing conservation decisions, invasion ecology, optimal monitoring, biogeography and spatial statistics. He has a particular interest in applied research that helps protect threatened species, control invasive species, and create better environmental policies at the national level. He also designs optimization tools to help resource managers better achieve their conservation goals. His research is being used by numerous governments and non-governmental agencies in Canada and elsewhere, to help set their conservation priorities.

### Staying Ahead of the Curve on Invasive Species Detections and Control

Despite many advances in invasive species research, the prevention and control of invasive species spread remains difficult. Trajectories of invasive species spread are hard to predict, and it can be challenging to determine which species may become invasive. Without improvements in proactive management, the already-massive impact of invasive species on ecosystems and economies could increase, due to shifting global trade patterns and accelerating climate change. Much research points to the importance of early detection and prevention. However, given the difficulties in detecting species movements, we will need a holistic approach to achieving proactive management. This includes the best survey and management practices informed by science, which incorporate innovative techniques to optimize detection and management. It also includes greater appreciation of the diversity of human perspectives and the importance of different knowledge systems. For many reasons, working in partnership with Indigenous rightsholders and knowledge holders needs special attention. All of this will be much easier if bold action is taken in legislation and policy, including consolidated legislation and agency structures to allow more unified responses to emerging threats.



**Cheryl Post, Natural Environment Specialist, City of Toronto**

Cheryl Post is a Natural Environment Specialist with the City of Toronto, Urban Forestry. For over a decade she has specialized in natural environment infrastructure projects that protect and enhance Toronto’s urban ecology, such as wetlands, boardwalks, and sustainable trails. She recently spearheaded Toronto’s innovative Prescribed Grazing Project, the first to pilot this type of grazing for urban ecosystem management in Ontario.

### **Toronto's Prescribed Goat Grazing Pilot- A First for Urban Ecosystem Management**

In 2024, the City of Toronto (Urban Forestry) piloted an exciting new approach to urban ecosystem management. The Prescribed Grazing Pilot Project brought over 60 goats to graze 3000m<sup>2</sup> of meadow at Don Valley Brick Works Park, one of the City’s flagship natural environment parks. Prescribed grazing can address a variety of management concerns, including invasive species, woody vegetation encroachment, native plant regeneration, and soil improvement. It also provides ample opportunity for engagement and education. As the first municipality to pilot urban goat grazing in Ontario, the City of Toronto’s Prescribed Grazing Pilot Project represents an innovative approach to the protection and enhancement of urban ecosystems, and has been a significant success story.

### **The Leading Edge of Invasion – Frameworks for Invasive Species Management**



**Andréanne Léger, Director, National Biodiversity, Canadian Wildlife Service - Environment and Climate Change Canada**

Andréanne Léger is the Director of National biodiversity policy in the Canadian Wildlife Service of Environment and Climate Change Canada. Prior to joining ECCC, Andréanne spent several years in different roles at Agriculture and Agri-Food Canada, working on environment and science-policy issues. Andréanne has studied agricultural sciences and agricultural economics at McGill University, Wageningen University and Humboldt University.

### **Canada's 2030 Nature Strategy: Implementation and Reporting**

Canada's 2030 Nature Strategy was released in June 2024. It was developed in collaboration with governments, Indigenous groups, and stakeholders, and reflects input received from thousands of Canadians and organizations over the Global Biodiversity Framework adopted at COP15 in December 2022, and builds on existing initiatives in all regions and sectors across the country, emphasizing a whole-of-government, whole-of-society approach centered on partnership and collaboration. The presentation will provide an overview of the Strategy with a focus on current implementation, notably with respect to Target 6 addressing invasive alien species, and forthcoming reporting on progress and achievements.





**Arniek Doornbos, Invasive Species Policy Advisor, Ontario Ministry of Natural Resources and Forestry**

Arniek Doornbos is an Invasive Species Policy Advisor in the Biodiversity and Invasive Species Section of the Ontario Ministry of Natural Resources. She started working for the ministry in June of 2022, after moving to Canada from the Netherlands. With her climate policy and environmental sciences background, she provides, among others, policy advice on invasive species and pathway management, best management practices and process improvement.



**Lauren Efford, Conservation Programs Advisor, Ontario Ministry of Natural Resources**

Lauren Efford is a Conservation Programs Advisor with the Biodiversity and Invasive Species Section at the Ontario Ministry of Natural Resources. Since 2020, Lauren has been committed to advancing climate change, biodiversity, and invasive species policy. Her work involves developing and implementing strategies to protect Ontario's natural resources and promote sustainable practices.

**Invasive Species Policy and Legislation in Ontario**

Abstract coming soon!



**Ben Laing and Bryson McEwen, Invasive Species Technician, Hamilton Conservation Authority**

Ben and Bryson are the Hamilton Conservation Authority's invasive species technicians, focused primarily on terrestrial plants and emerging forest pests. Their typical scope of work includes pesticide applications and manual removal work, distribution mapping, pest and pathogen surveys, public outreach and stewardship on private and public lands, and prioritization planning on conservation owned lands.

Ben holds a Bachelors Degree in Environment, Resources and Sustainability from the University of Waterloo, and a Master's in Environmental Assessment from Concordia University. His previous work experience includes outdoor education, environmental compliance, and non-profit work.

Bryson holds a Diploma from the Environmental Technician program at Niagara College with a focus in sampling and monitoring. He's a new addition to the field of Environmental Conservation, having joined the Hamilton Conservation Authority in 2021.



In their role, Ben and Bryson have been developing a framework that can efficiently map and communicate invasive species distributions to non-Ecology based Conservation Area staff, with the goal of helping them undertake removal and management work independently. This system has yielded both success and challenges in its second year of implementation, both of which they are excited to share.

### Hamilton Conservation Authority's Invasive Prioritization Planning

Invasive species management is complex, time intensive, and expensive. For land managers such as the Hamilton Conservation Authority (HCA), these difficulties are exacerbated by the large amount of land holdings under their stewardship. Therefore, to assist with combatting invasive species, HCA has begun creating a series of prioritization plans for HCA Conservation Areas. These plans help compartmentalize the complex problems invasive species pose and create actionable paths for management. These prioritization plans seek to accomplish three primary goals. First, implementing measures to prevent the introduction of new invasive species in natural areas. Second, creating and refining a decision framework to assist in the prioritization of invasive species populations for control. Third, improving inter-departmental collaboration efforts by communicating Integrated Pest Management principles and specific action items, resulting in increased capacity for management activities. The process of creating a prioritization framework has highlighted the numerous difficulties that are present when dealing with invasive species. Two years in, there are still many challenges to overcome and opportunities to improve this program. This presentation will outline the potential benefits of developing a formal prioritization plan for other organizations similar to HCA, and will also discuss the lessons learned during the creation of the HCA's first two prioritization plans.

## The Leading Edge of Invasion – Concurrent Sessions - Prevention

### Concurrent Session 1 - Emerging Threats in Ontario



**Rebecca Rooney, Founder and Director of the Waterloo Wetland Lab, Department of Biology, University of Waterloo**

Dr. Rebecca Rooney is the founder and director of the Waterloo Wetland Lab, a wetland ecology research group at the University of Waterloo. She teaches students in ecology and conservation biology and her graduate students conduct research into ecological integrity and wetland responses to human disturbance. She has studied topics from wetland reclamation and restoration, invasive plant management, species at risk recovery, and the fate and effects of contaminants like pesticides, microplastics, and hydrocarbons.

### An Update on Hydrilla in Ontario

In June, the Waterloo Wetland Lab was sampling submersed aquatic plants in Hillman Marsh, on the Pelee Peninsula, when they discovered an unwelcome species. *Hydrilla verticillata*, commonly just hydrilla, has been described as North America's most invasive plant because of the rapidity with which it can spread. Working with a broad base of collaboration led by the Essex Region Conservation Authority and the Ministry of Natural Resources and Forestry under the Invasive Species Act, we undertook monitoring to determine how extensive the infestation is and to inform efforts to treat it with the herbicide ProcellaCOR containing the active ingredient floraspiraxifen-benzyl. We intend to continue monitoring to track the efficacy of treatment and to help develop best management practices for hydrilla suppression. We will provide an update on what we know, how to identify hydrilla, and our research plans for the future.



**Julie Holmes, Plant Health Survey Biologist, Canadian Food Inspection Agency**

Julie joined the Canadian Food Inspection Agency (CFIA) after completing a BSc. in Ecology at the University of Guelph, where she became passionate about invasive species biology. Since joining the agency as an inspector in 2006, Julie has held a variety of positions within CFIA's Operations, Science, and Policy and Programs branches to support the delivery of the Plant Health program. As the Plant Health Survey Biologist for Ontario, Julie works on a number of high visibility pest files and enjoys the many opportunities for collaboration with partners and stakeholders who share in the goal of protecting Canada's ecosystems from invasive species. Oak Wilt is a destructive pest regulated under the authority of the Plant Protection Act. The Canadian Food Inspection Agency conducts surveys, develops outreach and education products to promote plant health issues, and establishes partnerships to support the regulatory control and collective response to critical plants pests.



## Oak Wilt: An Emerging Threat to Ontario's forests

Oak wilt is a destructive plant disease caused by the fungus *Bretziella fagacearum* and is considered a quarantine pest under Canada's *Plant Protection Act*. It was recorded for the first time in Canada in June 2023 and represents an emerging threat to Ontario's forests. This talk will highlight the impacts of oak wilt on the landscape and aims to highlight the value of partnerships and public outreach in both detecting and responding to invasive species incursions.



**Hannah Fraser, Provincial Horticulture Entomologist, Ontario Ministry of Agriculture, Food and Agribusiness**

Hannah Fraser is the provincial horticulture entomologist with the Ontario Ministry of Agriculture, Food and Agribusiness. She works with producers, agricultural associations, governments, and a network of provincial, national, and international researchers and extension specialists, to deliver pest management solutions for Ontario growers. Her current focus is preparedness and response planning for invasive and emerging insect pests of agricultural crops, including the spotted lanternfly.

## Spot it? Snap, Catch and Report it! Prepare to Meet the Spotted Lanternfly

Spotted lanternfly (*Lycorma delicatula*, SLF) is an invasive planthopper that threatens Ontario's agricultural and forestry sectors, and it is considered a nuisance pest in residential landscapes. First detected in Pennsylvania in 2014, SLF has spread to at least 17 states, including those bordering Ontario. Due to the proximity of the pest and the numerous pathways for entry, the risk of introduction to and subsequent establishment in Ontario is considered high. The insect has a large host range that includes crops and landscape plants, grapevines are at risk of plant injury or death due to swarm feeding by adults as they move from senescing hosts into vineyards in the late summer and fall. Canopy dieback and plant health decline have been recorded in saplings of some landscape trees, especially those stressed by environmental conditions. The Canadian Food Inspection Agency has reported numerous sightings and interceptions of SLF in Canada including several in Niagara and southwestern Ontario. Early detection is critical for effective response. Learn to recognize SLF, how to reduce the risk of spread, and find out what to do if you think you've spotted this unwelcome invader.

## Concurrent Session 2 – Prevention, Outreach and Awareness (Ontario and Beyond)



**Dr. Bruce Young, Chief Scientist, Nature Serve**

Bruce Young is NatureServe’s Chief Scientist. He has 30 years of experience promoting plant and animal conservation through the development of conservation status assessments, guidance for natural resources managers, and biodiversity indicator platforms. His leadership has led to first-ever assessments of hundreds of insect pollinators and the publication of several reports on the status and assessment of pollinators in North America. As a major collaborator to the Global Amphibian, Mammal, and Reptile Assessments, Dr. Young has helped mobilize conservation efforts for these groups. His leadership in the development of the NatureServe Climate Change Vulnerability Index has fostered new insights on how climate change is affecting species.

### Using Citizen Science Observations to Develop Managed Area Watch Lists

Invasive species are a major threat to natural ecosystems. To combat the destructive potential of arriving invasive species, many natural resource managers have adopted an ‘early detection and rapid response’ (EDRR) strategy. A key component of EDRR is a ‘watch list’ of invasive species that have yet to be detected in a managed area and are prioritized for surveillance, reporting, and other responses. However, managed areas with limited resources may not have the capacity to develop useful watch lists. To address this need, we developed an automated process to use data from iNaturalist, a popular citizen science platform, and a U.S. national list of nonnative plant species to compile a provisional watch list of the 100 most frequently reported nonnative species within a 160-km buffer around a managed area. We demonstrated the application of the process using 36 U.S. National Park Service units with relatively small operating budgets. Using Fort Vancouver National Historic Site, Washington, as an example, we show how provisional watch lists can be refined by removing species that are unlikely to occur in the unit due to the absence of suitable habitat and prioritizing species from the state priority invasive plant list. The automated process has the advantage of being easily repeatable at regular intervals to alert managers of newly arrived species. Managers can readily modify this method for use anywhere if they have access to observation data from a citizen science platform and a list of nonnative species in the area of interest.

**Brook Schryer, Program Advisor, Ontario Federation of Anglers and Hunters**



Brook Schryer is the Program Advisor with the Invading Species Awareness Program (ISAP) out of the Ontario Federation of Anglers and Hunters (OFAH). In his eight years with the program, his work has focused on aquatic invasive species, including outreach and education, surveillance and monitoring, as well as tracking initiatives.

## The Invading Species Awareness Program's Hit Squad Program: How Collaboration and Partnerships have Contributed Towards Invasive Species Education, Awareness, and Monitoring Initiatives in Ontario.

The Ontario Federation of Anglers and Hunters' (OFAH) Invading Species Awareness Program (ISAP) has been delivering educational programming on invasive species through a partnership with the Ministry of Natural Resources (MNR) since 1992. Over the last 33 years, the program has focused on education and outreach, addressing key pathways of spread for invasive species, and facilitating monitoring and surveillance. For more than 15 years, the ISAP has partnered with organizations across the province to hire over 20 Hit Squad summer staff annually. These staff are housed out of our partner organizations and spread education and outreach to bait retailers, marinas, garden centres, local special interest groups, amongst many others. They hand out educational resources, install signage, such as Clean, Drain, Dry signs, and always look for other opportunities to engage their local communities. Invasive species impact all of Ontario, from eastern, central, and southwestern Ontario all the way to northern Ontario. The Hit Squad Program recognizes the importance of local, on-the-ground outreach and action to continue to prevent the spread of invasive species in rural and urban communities across the province.



**Vicki Simkovic, Program Coordinator, Ontario Invasive Plant Council**

Vicki joins the OIPC with a strong background in ecology, invasive species, and restoration. Prior to OIPC she gained fieldwork experience in invasive species management through her role as a Field Assistant with the Upper Thames River Conservation Authority and a Conservation Technician with the Nature Conservancy of Canada. She also obtained her Master of Science in Ecology and Evolution at the University of Western, where she studied the behaviour and genetics of an invasive termite species. She is passionate about increasing public awareness of invasive species and their harmful impacts. She has also been a lifelong naturalist and enjoys being surrounded by nature

## Grow Me Instead: Promoting Invasive-free Gardening Across Ontario

Each year many new plants species are introduced for use in the horticulture trade due to low maintenance requirements and often, beautiful, showy flowers. Many of these species can become very problematic because they can escape gardens and enter natural areas where they outcompete native plants, lower biodiversity and can become extremely costly to remove. The Ontario Invasive Plant Council's Grow Me Instead Guide, created by the Horticulture Outreach Collaborative, was created to assist gardeners in making informed decisions about the plants that they are buying for their gardens, helping to educate and avoid the use of invasive plants. This presentation will outline several problematic garden plants and suggest native alternatives that are proven to non-invasive or native, easily found and widespread availability and have similar requirements, shape and garden uses as the invasive species.

## The Leading Edge of Invasion – Concurrent Sessions – Eradication

### Concurrent Session 3 - Early Detection and Rapid Response (Ontario and Beyond)



**Matt Bolding, Invasive Species Program Coordinator Ducks Unlimited Canada**

Matt Bolding is the Invasive Species Program Coordinator for Ducks Unlimited Canada (DUC) in Ontario. In this role, Matt leads the management of European water chestnut populations on Wolfe Island, spearheads DUC's AI-driven drone surveillance program for aquatic invasive species, and collaborates on biocontrol research for invasive *Phragmites australis*. Additionally, he serves as the Eastern Regional Coordinator for the Ontario *Phragmites* Action Program. Trained as a wetland ecologist, Matthew previously worked at the University of Waterloo, where he contributed to research and monitoring efforts for *Phragmites* management in Long Point, Ontario. His work reflects a strong commitment to innovative and collaborative approaches in the fight against invasive species in Ontario's wetlands.

### Using AI and Drone Technology for Early Detection of Aquatic Invasive Species

Early detection of aquatic invasive species is crucial for preventing the establishment of persistent populations in wetland ecosystems. Traditional surveillance methods, including visual surveys by boat and public reporting, are often resource-intensive and time-consuming. Ducks Unlimited Canada, working with Saiwa Inc. developed an AI-powered tool capable of automatically identifying invasive European water chestnut in drone-captured imagery. Initially designed to support active management efforts, this tool holds promise for broader applications in monitoring and detecting emerging populations of invasive species. Current work focuses on expanding the tool to include detection capabilities for invasive water soldier, further enhancing its utility in aquatic invasive species management and conservation efforts.



**Jon Gosselin, Technical Development Biologist, SePRO**

Jon is a Technical Development Biologist for SePRO in the North region. In this role, he's responsible for working with water resource management firms, lake stakeholders and government resource and regulatory agencies to best technically steward SePRO's aquatic solutions. He's involved with product development, field trials and project support. Prior to his current role, Jon served as a Marine Science Technician in the U.S. Coast Guard Reserve. He holds an MS in Agronomy from the University of Florida with a focus on aquatic weed science, and a BS in Environmental and Resource Economics from the University of New Hampshire.



## Early Detection and Rapid Response to Aquatic Invasive Plants

Aquatic invasive plants pose a substantial threat to freshwater ecosystems, impacting biodiversity, water quality, and recreational activities. Early detection and rapid response (EDRR) are essential strategies for minimizing ecological and economic impacts of invasive plants and can significantly increase the likelihood of eradication. This presentation will explore the importance of EDRR, focusing on the latest monitoring techniques, citizen science initiatives, best practices for rapid intervention, funding opportunities, and a brief case study to highlight successful EDRR.

## Concurrent Session 4 – Detection, Tracking and New Invasions (Within Ontario and Beyond)



**Dr. Pedro Antunes, Plant and Soil Ecology Lab Professor and Canada Research Chair, Department of Biology, Algoma University**

Pedro Madeira Antunes is a Portuguese-Canadian biologist. He studies the intricate world beneath our feet, where soil, plants, and microbes interact, shaping communities and ecosystems. More specifically, he studies the life-supporting role of soil, exploring community-level interactions between plants and soil organisms, with an emphasis on mycorrhizal fungi, which act as conduits of nutrients to plants and carbon into the soil food web. Antunes began his studies in Biology at the University of Évora in Portugal (B.Sc., 1999), before honing his focus on Soil Science in Canada, where he completed his Ph.D. at the University of Guelph (2005). Antunes remained at Guelph as a postdoctoral researcher (2005-07) before taking on a Research Assistant Professorship in the Rillig Lab at the Free University of Berlin, Germany (2008-09) where he continued to expand his work on plant-soil ecological interactions. His trajectory took him back to Canada, where he accepted the position of Research Chair in Invasive Species Biology at Algoma University (2010). In this role, he established the Plant and Soil Ecology Lab, dedicated to understanding the ecological impacts of invasive species and other environmental stressors. The lab has become a center for pioneering studies on how global change factors, such as climate change, pollution, and biological invasions, reshape the ecology and evolution of plant-microbe interactions, ultimately influencing plant community composition across various ecosystems. This knowledge is relevant considering that soils are the foundation of life, supporting biodiversity, ecosystem function, food security, and resilience in the face of unprecedented environmental change.

## Constructing Standard Invasion Curves from Herbarium Data—Toward Increased Predictability of Plant Invasions

Prevention, early detection, rapid response, and prioritization are essential components of effective and cost-efficient invasive plant management. However, successfully implementing these strategies requires the ability to accurately predict the temporal and spatial dynamics of nonnative species. Why some nonnative plants become invasive and the source of variation in lag time between arrival and the onset of invasive expansion are poorly understood. At the same time, after species become invasive, predicting their susceptibility to pathogens capable of causing population declines is also poorly understood but relevant knowledge for management purposes. One tool to fill these knowledge gaps is the “invasion curve,” which tracks nonnative species abundance (i.e., area invaded) over time after arrival in a new



area. Since invasive species curves rely primarily on records from herbarium collections, these collections can potentially be used as a springboard to develop a standardized approach to building invasion curves. This would allow researchers to compare the trajectories of nonnative species, improving risk assessment and our ability to recognize potential invasive species and factors contributing to both invasibility and invasiveness through time. While there have been admirable efforts to produce invasion curves, several barriers exist to their reliable production and standardization. In this talk, I will explore the challenges related to the efficient production of these curves for plants using herbarium data as well as and plant traits and pathogen accumulation data and suggest ways in which progress could occur. The hope is that this knowledge will better aid natural resource managers to prioritize needs, make effective management decisions, and develop targeted prevention and monitoring programs by taking advantage of predicted invasive species curves.



**Dr. Richard Hamelin, Ph. D., Professor and Head, Department of Forest and Conservation Sciences, Faculty of Forestry, The University of British Columbia**

Dr. Richard Hamelin obtained a B. Sc. from McGill University (1982), a Master's of Pest Management from Simon Fraser University (1986) and a Ph. D. from the University of Kentucky (1990). He works on pressing forest health issues such as invasive pathogens and pests and climate change. He has developed tools for pathogen detection and novel genomic approaches for pathogen surveillance. He has trained 60 graduate students, post-doctoral fellows and research staff, published 200 peer-reviewed scientific articles and delivered more than 300 presentations around the world. He was president of the Canadian Phytopathological Society and the Quebec Society for Plant Protection. He is a Fellow of the American Phytopathological Society, and received the International Union of Forest Research Organization Scientific Achievement Award, the Queen Elizabeth II Diamond Jubilee award, the Canadian Institute of Forestry Scientific Achievement Award and Merit Awards from Natural Resources Canada, the Canadian Forest service, the Canadian Food Inspection Agency, and the Quebec Society for Plant Protection.

### **Genomic Biosurveillance of Forest Invasive Species**

The world's forests face unprecedented threats from invasive insects and pathogens that can cause large irreversible damage to the ecosystems. This threatens the capacity to provide long-term fibre supply and ecosystem services that range from carbon storage, nutrient cycling, water and air purification, soil preservation and maintenance of wildlife habitat. The key to reduce this threat is via vigilant biosurveillance to increase preparedness and facilitate early interventions. This requires collecting and sharing data that can be used to rapidly and accurately identify samples from various life stages of insects and pathogens and assign them to taxa and sources so that pathways of introduction can be discovered. Assessing the risk that is posed by alien species also requires a better understanding of the sources and pathways of introduction and of the traits underlying invasiveness. Genomics provides a toolbox that can address some of these challenges. The BioSAFE (BioSurveillance of Forest Alien Enemies) project developed tools and resources to improve identification of pests and pathogens, assign outbreak or survey samples to putative sources to identify pathways of spread. These next generation biosurveillance tools will improve our capacity to prevent and manage invasive species.

## The Leading Edge of Invasion – Long-term Adaptive/Innovative Management Strategies



**Jessica Zadori, Michipicoten First Nation**

Jessica Zadori is an environmental professional experienced in provincial and federally governed terrestrial and aquatic environmental studies and field programs across Canada. Jessica currently works as the Biodiversity Coordinator with Michipicoten First Nation, focused on blending Western science and Traditional Ecological Knowledge to inform industry and research projects taking place within Michipicoten First Nation's Traditional Territory.

### From Concept to Action: Michipicoten First Nation's Clean Equipment Protocol

Michipicoten First Nation's mission throughout 2024 was to prevent the introduction of invasive plant species within MFN Reserve Lands, by eliminating the establishment of these invasive plants through the implementation of an area-specific Clean Equipment Protocol (CEP) developed by MFN's Lands and Environmental Stewardship Department (LES). The MFN community recognizes that the introduction and spread of invasive vegetation has been impacting not only the health of Mother Earth, but also the traditional use of land by community members and Indigenous land users. Preventing the establishment of invasive species within MFN's Reserve Lands represents a vital step in protecting our native plant resources, which must be available for use in the future by the next seven generations. This proposed presentation will focus on how the MFN LES Department, in collaboration with MFN's Public Works and Operations & Maintenance Departments, moved the concept of invasive species prevention and management to action, including details pertaining to where MFN started with understanding invasive species and current Best Management Practices through the process of constructing our own standards for equipment washing. This presentation would include discussion on next steps and what we learned through our first season of equipment washing.



**Diana Gora, Toronto and Region Conservation Authority**

Diana Gora is an Assistant Environmental Technician within the Ecosystem Management group at the Toronto and Region Conservation Authority (TRCA). She has been in her role with the Invasive Management and Meadow Restoration team at the TRCA since 2023. Her experience is largely in invasive management and post-management restoration, having worked on numerous projects with various conservation authorities and non-profit organizations. She earned her Bachelor of Science from the University of Guelph and post-graduate certificate in Ecosystem Restoration from Niagara College.

## Reclaiming Claireville’s Wetlands: The Role of Invasive Management in Ecological Restoration

Claireville Conservation Area (CCA) is a significant ecological site within the Greater Toronto Area (GTA), covering 848-hectares, with a mix of forested land, wetlands, and the Claireville Reservoir. It’s managed by Toronto and Region Conservation Authority (TRCA) and is known for its rich biodiversity and natural beauty. As part of the efforts to restore and maintain the ecological integrity of this area, an invasive species management project targeting Common buckthorn (*Rhamnus cathartica*) was implemented between 2022 and 2024 at CCA as part of the Goreway wetland restoration project. The project included the removal of buckthorn, phragmites and Japanese knotweed and the restoration of 1.7 ha, which involved creating wetlands on 1.6 ha, enhancing existing wetlands and planting 6,000 native tree and shrub across 0.7 ha. First year management began with using a skid steer mulcher to cut down and mulch a large portion of the project footprint (thick monoculture of buckthorn) while preserving larger, valuable native trees. Second year management, after initial clearing, chemical treatment targeted any remaining or regrowing buckthorn. Glyphosate foliar treatment proved ineffective, so a follow-up treatment with Garlon XRT was implemented, yielding much better results. Third year, post wetland construction, saw natural regeneration of wetland species, along with the introduction of native wetland seeding and plantings. Buckthorn treatment was focused on glyphosate foliar application on sprouting seedlings and treatment with Garlon RTU basal application was expanded into edges of the wetland to reduce the seed source. In the existing wetland, phragmites and Japanese knotweed were treated with a foliar application to reduce spread. TRCA remains committed to ensure the preservation of this area’s natural heritage system, including strategic invasive species management, to maintain and enhance biodiversity and ecosystem function.



**Linda McDougall, Landscape Architect, City of London Ashli Oe, Spectrum Resource Group**

Linda is an experienced Landscape Architect in the Parks Design & Construction section with the City of London. Linda leads a wide range of innovative park projects that implement Council’s Strategic Plan, London Plan policies and Master Plans including the London Invasive Plant Management Strategy.



**Celestina Docherty, Spectrum Resource Group**

Celestina graduated with honours in 2022 with a bachelor’s degree in environmental science from Laurentian University. She now works as a supervisor in the Invasive plant management division of Spectrum Resource Group. Celestina has been with Spectrum for the past 3 years, initially working as a field technician on the Thames Valley Corridor Project. Celestina continues to work for Spectrum as a supervisor, overseeing this project. In the future, Celestina will continue working diligently to control invasive plant species populations throughout the region.



**Jennifer Davy, Spectrum Resource Group**

Jennifer Davy has been with Spectrum Resource Group a Division of Wright Canada Holdings since the spring of 2019. She currently holds the position of Project Manager, managing the interior of British Columbia for all Invasive Vegetation Management (IVM) Projects and will be taking over the management of the province of Ontario in the 2025 season. She is passionate about IVM, safety and environmental protection on the jobsite and training new technicians. Jennifer is an alumna of both Okanagan (previously university) College holding an Associate of Science Degree, and the University of British Columbia holding a Bachelor of Science with a Major in Biology and Honours Degree. She is currently working towards her Registered Professional Biologist designation.

### **Thames Valley Corridor Invasive Species Management in London, ON.**

The Thames Valley Corridor (TVC) is London's most important natural, cultural, recreational, and aesthetic resource. The City of London is leading a multi-year, landscape-level, invasive species management project to protect and enhance London's Canadian Heritage River. The TVC project is consistent with the priorities in Council's Strategic Plan, the London Invasive Plant Management Strategy (LIPMS), the One River Environmental Assessment, River Management Plan, and the Paddling Plan. As a recognized leader in invasive species management the City of London was the first to leverage the Ontario Invasive Plant Council's (OIPC's) framework to draft and implement a municipal invasive plant management strategy. The LIPMS was approved by Council in 2017 and identifies priority species and prioritizes management in significant natural heritage features including the TVC. The TVC project is addressing priority invasive species that are: Impacting biodiversity and the ecological integrity of the TVC, encroaching on the Thames Valley Parkway (TVP) active mobility system, impacting safety & sightlines on the TVP and impacting recreational use and blocking views of the Thames River.

Spectrum Resource Group (SRG) was retained under contract by the City of London's Parks Design & Construction section through a competitive Request for Tender process for invasive species management in 2022 for a multi-year project to address priority species in the TVC. The primary objective is to manage Buckthorn, Japanese Knotweed, Dog Strangling Vine, Giant Hogweed, and invasive Honeysuckles in over 630 hectares of parkland on all three branches of the Thames River. Phragmites is also managed, primarily by the Invasive Phragmites Control Centre in the TVC and across the city, following a strategic, watershed-based approach. The TVC project began on the Main Branch of the TVC in 2022, the South Branch in 2023 - 2024 and North Branch in 2024 - 2026. Monitoring and touch-ups of previous years' work is done each year to increase efficacy and efficiency consistent with Best Management Practices published by OIPC. This is an exciting, landscape-level project that is protecting the ecological integrity of the Thames Valley Corridor and improving quality of life for Londoners.



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