Brock University

*The 52nd:*

# Ontario Ecology, Ethology and Evolution Colloquium

*Co-existing within nature*

April 30th - May 2nd, 2026

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# Opening Remarks

Dear Attendees,

Welcome to the 2026 Ontario Ecology, Ethology, and Evolution Colloquium (OE3C) hosted by Brock University! OE3C has become a staple conference among Ontario scientists over the last 52 years. Recently, it has become known as a conference “for students, by students”. Without the backing of an academic society, OE3C is only made possible through the commitment and tenacity of self-assembling organizing committees, consisting of voluntary graduate and undergraduate students who start from scratch each year, as the conference bounces between Ontario institutes annually. Despite its transient nature, OE3C has occurred every year since its inception in 1974 at York University (then referred to as the Ontario Ecological Colloquium – OEC), with the exception of 1975. In continuing with this tradition, Brock University is proud to host the 52$^{nd}$ gathering of OE3C.

OE3C has served as the first conference experience for hundreds of students, including those who have continued in academia and are now professors themselves with students that attend this event. It is a conference valued by many as a friendly and supportive environment for emerging scholars to present their research, discuss ideas and issues at the forefront of their fields, and network with scientists outside their home institutions. This year is no exception. With 23 Oral and 17 Poster Presentations by students from across 10 Ontario Universities, the next generation of scholars are well represented and eagerly exploring a wide range of research topics. Such topics include Reproductive Ecology, Environmental Change, Community Composition, Physiological Ecology, and Pollinator Decline, to name a few. We look forward to diving into the diversity of research in ecology, ethology, and evolution taking place across the province!

This year, we are excited to welcome you as we build awareness on current issues and work towards **Co-existing in nature**. Western society has become consumed by technological advancements, disconnecting humans from the natural world. Even across biology, a discipline rooted in life itself, there exists a lack of connectivity to the very world we aim to understand. For today’s students, biology happens in the classroom as opposed to in nature. Stepping back and looking at the western world as a whole, communities prioritize highways, and industrial, commercial, and residential developments with little consideration for integrating or preserving natural landscapes. Community aesthetics idealize manicured monoculture lawns and crops, and gardens of ornamental, non-native species. Why do we shun what nature surrounds us instead of embracing it? How can we benefit from nature while also benefiting nature? When did we excise ourselves from the environment within which we exist? How can we live lives that integrate nature?

Join us as our Keynotes guide us through the world of spatial behaviour and wild animal cognition, the genomic basis of contemporary evolution, and weaving Indigenous and Western knowledge systems to advance environmental and ecological science. Our Discussion Panel will build on this theme as our experts provide insight into how we can re-integrate nature into our personal and professional communities.

This year's committee is excited to welcome you OE3C 2026 and uphold its reputation as an accessible, inclusive, educational, and exciting event!

Cheers to a great conference!

OE3C 2026 Organizing Committee

## Organizing Committee

**Alex Wilder**
Co-Chair

**Cassia Hamilton**
Undergraduate Student Representative
Banquet Lead

**Harry Kumbhani**
Keynote Speaker Lead
Program & Schedule Co-Lead

**Kiyoko Gotanda**
Faculty Advisor

**Katherine Yagi**
Faculty Advisor

**Lauren Nesbitt**
Advertisement & Communications Lead
Merch Coordinator
Logo Designer

**Lyllian Corbin**
Secretary

**Madelaine Legault**
Workshops, Outings, & Events Co-lead

**Matthew Summerville**
Social Media Lead

**Miriam Richards**
Faculty Advisor

**Nicholas Benton**
Workshops, Outings, & Events Co-Lead
Abstracts Lead
Program & Schedule Co-Lead

**Paige Au**
Merch Coordinator

**Rasa Khosrowshahli**
Website Lead
Workshop Co-Lead

**Reem Mahmoud**
Registrations Lead

**Sarah Hein**
Treasurer

**Wylan Clitherone**
Undergraduate Student Representative
Workshops, Outings, & Events Co-Lead

## Land Acknowledgement

Brock University acknowledges the land on which we gather is the traditional territory of the Haudenosaunee and Anishinaabe peoples, many of whom continue to live and work here today. This territory is covered by the Upper Canada Treaties and is within the land protected by the Dish with One Spoon Wampum Agreement.

Today this gathering place is home to many First Nations, Métis and Inuit peoples and acknowledging reminds us that our great standard of living is directly related to the resources and friendship of Indigenous people.

## Sponsors

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# Conference Code of Conduct

The OE3C organizing committee is committed to providing a safe and positive environment for all participants of OE3C 2026 and other events. We strongly prohibit any form of harassment or discrimination. We request that all participants be respectful of the Inclusion, Diversity, Equity, and Accessibility values, and support a positive exchange of ideas during the event. Graduate and undergraduate students are also expected to abide by Brock University's Student Code of Conduct during the conference. Anyone that violates these rules will be requested to leave the event.

## Expected Behaviour for All Participants

1. Treat everyone with respect, dignity, and consideration, valuing a diversity of views and opinions.
2. Be mindful of everyone's safety and considerate of others' physical space.
3. Be professional, courteous, and collaborative.
4. Refrain from using any harassing, demeaning, or discriminatory behaviour or speech.
5. Refrain from interrupting or distracting presenters and audience members during the workshop, keynote talk, and graduate student talks.
6. Respect presenters' requests to refrain from sharing contents of their talk on social media or other public platforms. Presenters that wish to opt-out of media dissemination are encouraged to indicate their wishes verbally or by including logo on their presentation or poster.
7. Respect and follow any instructions given by volunteers, OE3C organizing committee members, and Brock University staff to ensure everyone's safety.
8. Inform the volunteers, OE3C organizing committee members, and Brock University staff of any suspected inappropriate behaviours, dangerous situations, or persons in distress immediately.

## Unacceptable Behaviour

1. Harassment involving any unwelcome or offensive comments, gestures, physical displays, or physical contact with any participant that would reasonably be considered offensive, humiliating, or intimidating to the other person.
2. Discriminatory conduct or comments based on race, gender identity or expression, sex, sexual orientation, disability, ethnicity, political affiliation, marital status, etc.
3. Behaving in a disruptive or unprofessional manner that puts the health, mental well-being, or safety of yourself or others at risk. This also includes making loud

noises, talking over others, talking on your phone, etc., during presentation sessions, group activities, social events, and important announcements.

4. Failing to comply with the instructions of conference volunteers, OE3C organizing committee members, or Brock University staff.
5. Retaliation or threats directed against participants reporting any activity or situations reasonably considered to be in violation of this Code of Conduct.
6. Falsely reporting violations of this Code of Conduct in bad faith.

## Rules for Presenters

To ensure a positive and cohesive experience, presenters of OE3C are expected to:

1. Arrive prepared for your assigned presentation session at least 10 minutes in advance.
2. Refrain from exceeding your presentation time limit.
3. Refrain from switching between presentation rooms (or posters) during your assigned session.
4. Be respectful towards other presenters and audience members.
5. Respond to audience members' and judges' questions in a professional and courteous manner.

## Reporting Unacceptable Behaviour

If you suspect someone is violating this Code of Conduct, please promptly report your concerns to the nearest conference volunteer or OE3C organizing committee members. If you are not comfortable reporting a complaint/concern to a volunteer or organizing committee members onsite, please reach out to us at oe3cofficial@gmail.com, Harry Kumbhani at rh24iu@brocku.ca, or Alex Wilder at aw21sm@brocku.ca for an immediate response or immediate assistance onsite.

If you or someone else is in immediate danger, or if you would like to report an emergency, please contact Brock's Campus Security at 905-688-5550 x3200.

## Logo Inspiration

For the 52nd OE3C, the theme of the conference is “Co-existing within nature” and is also being held at Brock University. Since it has been 20 years since Brock has held the conference, we decided to include Brock’s mascot Boomer the badger as our representation for ethology. As Brock University is within the Niagara Region, we decided to incorporate key features from the Niagara Region including Niagara Falls and grape vineyards for ecology. Despite grape vineyards being a traditionally monoculture crop and very much a non “co-existing within nature” use of land they also represent an area in which researchers at Brock are actively trying to address through research into the use of crops and their impacts on crop yield and vineyard ecosystem dynamics. We have also decided to include the provincial flower and symbol of Ontario, the trillium as its constant representation across all things Ontario should remind us Ontarians what nature can provide us. To represent us co-existing with nature, the leaves of the trillium flower are rotor blades from windmills found throughout the Niagara Region that represent us evolving with nature.

## Location Information

**Main gathering:** Pond Inlet, 2nd floor of J-block in the Mackenzie Chown Complex

- All participants will visit this room for registration
- Opening/closing remarks from Peter Berg and Miriam Richards
- Keynote talks
- Oral presentations
- Lunch
- Various workshops

**Poster presentations:** Plaza Atrium, main floor of the Plaza Building

**Banquet:** Market Hall, lower floor of Thistle complex
Please note that seating options are also available among these locations for those with accessibility concerns. Suggested seating locations and shortest routes are identified by signage.

### Map of locations

Interactive map

Map pdf

Campus parking

## Conference Schedule at a Glance

# 52nd ONTARIO ECOLOGY, ETHOLOGY, and EVOLUTION COLLOQUIUM (OE3C)

## General Schedule

April 30th – May 2nd, 2026

**LEGEND:**

- POND INLET
- PLAZA
- THISTLE
- OTHER

### THURSDAY
April 30th

**Registration Opens**
@ 8:30
Hotel Check-In @ 15:00
Baggage-check available on campus

**Refreshments**
9:00 – 10:00

**Workshops & Activities**
10:00 – 17:00
*Photography 101 with Dr. Kiyoko Gotanda*
10:00-11:00
*Knowledge Mobilization 101*
11:15-12:15
*Lunch & snacks available* after 12:15
*Podcasting for Knowledge Mobilization*
13:00-14:00

*Coding Workshop*
14:00 -16:30

*Rewilding Hike*
15:30 – 17:00
*CCOVI Tour and Tasting*
15:00-16:30 (19+ event)

**Opening Remarks & Refreshments**
17:00 – 17:30

**Dr. Mélanie Guigueno Keynote**
17:30 – 18:30

**Evening Social**
19:00 Onward
Siris Tasting Lounge
39 James Street
Downtown St. Catharines

### FRIDAY
May 1st

**Poster Preview & Coffee**
8:30 – 9:00

**Seminar Presentations**
9:00– 10:30

**Coffee Break**
10:30 – 10:45

**Seminar Presentations**
10:45– 12:00

**Lunch Break**
12:00 – 13:00

**Dr. Nancy Chen Keynote**
13:00 – 14:00

**Discussion Panel**
14:00 – 15:00

**Poster Session & Coffee**
15:00 – 16:00

**Seminar Presentations**
16:00 – 17:30

**Bus to Niagara Falls**
First departure 7pm
*Brock University*
Final Return 10pm
*Clifton Hill*

**Registration will remain open for the duration of the conference.**

**Scavenger Hunt**
Items can be found for points throughout the conference, winners to be announced during closing remarks

### SATURDAY
May 2nd

**Mindfulness Hike**
8:30 – 9:30

**Coffee Break**
9:30 – 10:00

**Seminar Presentations**
10:00 – 11:00

**Coffee Break**
11:00 – 11:15

**Lightening Talks**
11:15– 12:00

**Lunch Break**
12:00 – 13:00

**Seminar Presentations**
13:00 – 14:30

**Dr. Jesse Popp Keynote**
14:30 – 15:30

**Closing Remarks & Awards**
15:30 - 18:30

**Banquet**
18:00 – 20:00
*DJ and dancing to follow*
Market Hall

**Photography contest** items will be displayed throughout the conference with awards announced during closing remarks

# Conference Workshops and Outings

## Photography 101

**Thursday, April 30th 10:00 – 11:00 AM**

Bring your camera! Come even if you don't have one!

Photography is an integral tool for enhancing humanity's connection with their environment. Researchers, hobbyists, and casual nature enjoyers use photography as a method of communicating the natural world to broad audiences. As camera quality and accessibility increase with time, it is now easier than ever for anyone to produce high quality photographs. Join us in exploring the principles of photography from the basics of the right camera settings to advanced techniques. Important aspects of photography such as focus, lighting, aspect ratios, and more will be discussed. From the most expensive macro rigs to phone cameras, this workshop will provide valuable information for getting the perfect shot no matter your hardware. You will have a chance to practice your skills by photographing the stunning scenery and biota of the UNESCO Niagara Escarpment Biosphere surrounding Brock University.

https://www.pidgephotography.com/

## Knowledge Mobilization 101

**Thursday, April 30th 11:15 AM – 12:15 PM**

Knowledge mobilization is a key part of the research process, helping ensure that knowledge is shared in ways that are accessible, relevant, and useful beyond academia. This session offers a practical introduction to KM, including its background, critical considerations, and examples of strategies that help research reach and benefit the people it is meant to serve. It will also provide a foundation for the later podcasting session, which explores one KM approach in more depth.

## Podcasting for Knowledge Mobilization

**Thursday, April 30th 1:00 – 2:00 PM**

Curious about using podcasting to share your research? Join podcaster and podcast researcher Alison Innes to learn about podcasting for knowledge mobilization and the importance of storytelling. We'll discuss the various considerations that go into making a podcast including audience, content, platforms, and accessibility, as well as having clear goals for your project, approaching podcasting in an ethical way and managing potential risks.

Presenter Alison Innes is a PhD student in the Interdisciplinary Humanities PhD program at Brock University. Her research explores ideas of ethical and authentic podcasting, ideas of expertise and authority, and how podcasting's intimacy and open access nature democratize research and engage non-academic audiences. Alison holds an MA in Classics from Brock University and undergraduate degrees from both McMaster University and Glendon College, York University.

Alison currently creates and hosts her own research podcast Project PhDcast and is a co-producer on Eve, Intersected. She was the host and producer of Foreword and the Podcast Learning Network for Brock University, where she worked with faculty and

student researchers on knowledge mobilization projects. She is the co-creator of the independently-produced podcast MythTake.

## Coding Workshop

**Thursday, April 30th 2:00 – 4:30 PM**

No prior coding knowledge required!

Advances in computation have allowed researchers to simulate natural processes and even use nature as a template for solving complex issues. Genetic algorithms are inspired by Charles Darwin's theory of natural selection and are used to solve complex problems through mimicking biological processes. These algorithms can be used in numerous applications, from planning optimal financial decisions to machine learning, and can be applied to natural science issues as well.

This workshop will provide a beginner-friendly interactive demonstration of the goals and function of genetic algorithms through coding in Python. Follow along as you delve into problems commonly faced by researchers in ecology, ethology, and evolution that can be solved through genetic algorithms. Then, freely experiment with conditions and optimize your algorithm to compete against your colleagues for prizes and bragging rights!

## CCOVI Tour and Tasting Event

**Thursday, April 30th 3:00 – 4:30 PM**

The Cool Climate Oenology and Viticulture Institute (CCOVI) at Brock University is an internationally recognized hub of research on the Canadian grape and wine industry. Situated within greater Niagara wine country, CCOVI provides high quality training and guidance to researchers and industry members in Canadian grape and wine production. The CCOVI Tour and Tasting event will involve a guided tour of the CCOVI labs and cellar, which boasts over 40,000 bottles in its collection. The tour will also include a look at the Canadian Wine Library's collection of vintages and will end with a tasting experience of some of Niagara's most remarkable wines. Attendees will learn about wine production, sensory profiles, and the work being done in Niagara's vineyards.

Please note: This event is limited to attendees that are 19+ years of age.

## Rewilding Hike

**Thursday, April 30th 3:30 – 5:00 PM**

Want to get outside and explore the lovely ways St. Catharines coexists within nature? Join us for The Life of the Land: Returning to our Wild Beauty!

Our adventure consists of a 3.5km hike through the delightful Glenridge Quarry Naturalization Site. Throughout the hike, your guide will stop periodically to share information about the area, the rewilding process, and why returning some wild beauty to our urban world can give us all a little more hope. We hope to see you there!

## Evening Social at Siris

**Thursday, April 30th 7:00 PM**

Join us at a new local wine bar in Downtown St. Catharines for a fun evening of socializing, music, alcoholic and non-alcoholic drink options, and tasty tapas treats!

Location: Siris Tasting Room (39 James Street, St. Catharines) – public transit available from Brock University.

## Bus to Niagara Falls

**Friday, May 1st 7:00 – 10:00 PM**

Want to witness the thundering waters of Niagara Falls? A shuttle bus will be leaving the Brock campus starting at 7pm for OE3C attendees interested in exploring Clifton Hill and downtown Niagara Falls. There's a little bit of everything for anyone on the Hill—a midway, haunted houses, a giant ferris wheel—not to mention, an ancient World Wonder! The shuttle will run back and forth between Brock and Niagara Falls until 10pm.

## Mindfulness Hike

**Saturday, May 2nd 8:30 – 9:30 AM**

Feeling a little chaotic from the excitement of the conference? We have just the activity to help! Join us on our 3 km mindfulness hike through the Bruce Trail. As we calmly walk through our beautiful landscape, the prompts shared on the hike will help ground us in the moment and the space we are in. Come join us and take a deep breath, as we enjoy a quiet moment surrounded by nature.

*The following activities will be held throughout the conference, and do not require prior sign-up:*

## Scavenger Hunt

For the duration of the conference, a scavenger hunt will take place within the MacKenzie Chown Complex at Brock University. Through twists and turns and oddly shaped blocks, explore all the fun displays which are dotted around the building! Be sure to find all the QR codes, as there will be a point-based system that lets you compete with your friends! Details to be announced at the conference.

**Scavenger Hunt App Instructions**

Around campus you will find QR codes for the OE3C Scavenger Hunt! Using www.oe3capp.ca, you can find a list of item and location hints as well as a map. Scan the QR codes at each location and enter in your username to have your find recorded! Items found should populate on your personal lists. Bonus opportunities exist so keep your eyes peeled! Prizes are available for those who find the most items.
If you are experiencing issues with www.oe3capp.ca please email Alex aw21sm@brocku.ca

## Photography Contest

If you're attending OE3C 2026 and enjoy taking pictures as you coexist within nature, you're encouraged to participate in our Photography Contest!
Enter for a chance to display your skills and win a prize pack full of fun Niagara and nature-themed goodies. More details on prize packs coming soon.

Attendees can submit one photo in each of the following categories:

- Ecology
- Ethology
- Evolution
- Methodology (fieldwork)
- Landscape
- Close-Up

Anyone in the public is welcome to vote on their favourite picture in each category, so be sure to share the contest link with your friends!
Submissions are open until May 1st at noon, and voting will be open from April 30th to May 1st.
Winners will be announced on the last day of the OE3C. Photos submitted will be displayed throughout the Colloquium and the winning photos will be shared on our social media channels.
Go to the contest page for submissions, voting information, as well as other contest details and deadlines. Terms and conditions apply.

## Art Gallery

Throughout the conference, we will be hosting an art gallery. We are looking forward to representing Niagara's rich and diverse local art community while providing an opportunity for artists to show off their work to potential consumers.
Display your "Coexisting Within Nature" themed art at the OE3C conference where your pieces can be admired by attendees from across the province of Ontario.
There are many perks, including:

- Displaying art in high traffic meeting areas to maximize visibility.
- Providing signage to promote artist websites, social media, and shops.
- A dedicated section of the program giving information for each artist.

## Keynote Speakers

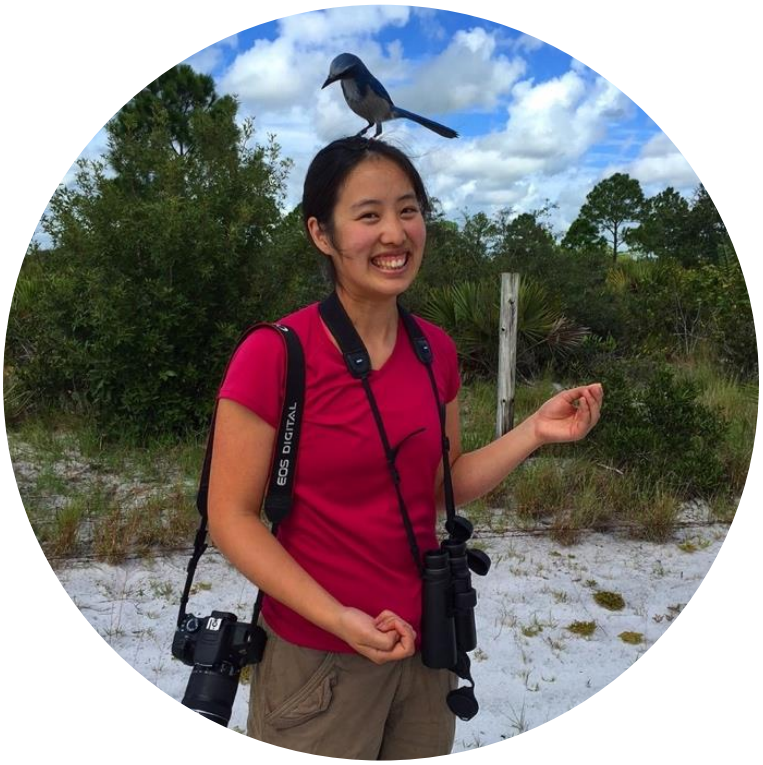
### Ethology: Dr. Mélanie Guigueno, McGill University

*Thursday, April 30th, 5:30 PM–6:30 PM, Pond Inlet*

Mélanie Guigueno is an Associated Professor in the Department of Biology at McGill University. Her lab combines field and lab work to understand how natural selection or environmental contaminants shape cognition and the brain of wild animals, with a focus on spatial behaviour. Systems include migration in European starlings, foraging ecology in urban ring-billed gulls, and host nest selection in brood-parasitic brown-headed cowbirds. Techniques used in her lab include immunofluorescence of brain tissue, unbiased stereology, cognitive tests, and spatial tracking of free-ranging animals. Dr. Guigueno has published extensively in behavioural ecology and ecotoxicology journals, such as Biology Letters, Animal Behaviour, and Environment International. Her research contributions have been recognized by several organizations and agencies, receiving, within the past 10 years, the L'Oréal-UNESCO for Women for Science Award, The Alice Wilson Award from the Royal Society of Canada, the Early Career Research Award from the Society of Canadian Ornithologists, and Elective Membership in the American Ornithological Society. Most recently, she was selected to participate in the Research Corporation for Science Advancement's Scialog Series on Neurobiology and Changing Ecosystems for three consecutive years (2025-2027). Dr. Guigueno's research or expertise has been featured extensively in media including BBC Earth Online, The Globe and Mail, Montréal's Biosphere, and Radio-Canada's Les Années lumière.

## Evolution: Dr. Nancy Chen, University of California Los Angeles (UCLA)

*Friday, May 1st, 1:00 PM–2:00 PM, Pond Inlet*




Dr. Nancy Chen (she/her) is an Assistant Professor in the Department of Ecology and Evolutionary Biology at the University of California, Los Angeles. Dr. Chen received her Ph.D. from Cornell University and was a postdoctoral fellow at the University of California, Davis. Research in her lab focuses on the genomic basis of contemporary evolution in natural populations. Her research integrates genomics and long-term demographic studies to characterize the evolutionary processes shaping patterns of variation across the genome through space and time and to link genetic variation to variation in individual phenotypes, fitness, and eventually population dynamics.

**Ecology: Dr. Jesse Popp, University of Guelph**

*Saturday, May 2nd, 2:30 PM–3:30 PM, Pond Inlet*

Dr. Jesse Popp is a Canada Research Chair in Indigenous Environmental Science at the University of Guelph. She is a member of Wiikwemkoong Unceded Territory with Anishinaabe and mixed European heritage and strives to promote inclusive science that embraces multiple ways of knowing while on her journey of learning and sharing. As the PI of the Wildlife, Indigenous Science, Ecology (WISE) Lab, she and her research team work to weave Indigenous and Western knowledge systems to contribute to the advancement of environmental and ecological science.

## “Science in Industry and Academia” Discussion Panel

Please join us in exploring the diverse backgrounds and career paths of our panel of scientific professionals from across a wide range of disciplines. Receive first-hand information about their unique experiences in industry, academia, government, and organizational work. Learn about potential avenues of research or find a new interest through a Q and A session with the panel.

**Dr. Katharine Yagi Ph. D.**

I am an ecologist and herpetologist working at the intersection of research, education, and conservation. I am a Research Review Officer at Mitacs, a Research Associate with 8Trees Inc., an Adjunct Professor at Brock University, and a member of the Amphibian and Reptile Specialist Subcommittee for COSEWIC, where I contribute to species at risk assessments and conservation efforts. My work spans research evaluation, field-based conservation, ecological restoration, outreach, and student mentorship. I am also an author of an educational children’s book called “What’s Under that Log?”.

**Dr. Malkie Spodek Ph. D.**

I am a Senior Scientist in Entomology with the Cool Climate Oenology and Viticulture Institute (CCOVI) and Adjunct Professor in the Department of Biological Sciences at Brock University. I have expertise in systematics, biosecurity, biological control and Integrated Pest Management (IPM) in agricultural systems. At CCOVI, I work with the grape and wine industry to develop applied research programs that support sustainable pest management practices in vineyards.

**Alison Smart**

I was born and raised in the Niagara Region and attended Brock University, where I earned a Bachelor of Science (Honours) in Biochemistry in 2007. Following graduation, I began working in Science Stores on a maternity leave contract. Although I stepped away from Brock on several occasions—including to obtain my Medical Laboratory Technician certificate—I consistently found my way back. Through these experiences, I have developed a strong appreciation for my role in Science Stores and take pride in supporting the research and teaching laboratories, where I know I am meant to be.

**Dr. Dave Bowman Ph. D.**

I am the Lab Manager of the Brock-Niagara Validation, Prototyping and Manufacturing Institute (VPMI) at Brock University and an Adjunct Professor in Chemistry. I earned a PhD in Analytical Chemistry from McMaster University, with expertise in mass spectrometry and advanced chromatographic techniques for characterizing complex chemical mixtures and contaminants. The VPMI is an applied research institute that supports academic and industry clients through analytical fee-for-service testing and research collaborations.

**Wylan Clitheroe**

Hello! My name is Wylan, and I am currently an undergraduate student studying biology here at Brock University. When I am not studying, I work for the Government of Ontario as an Interpretive Guide at Lake Superior Provincial Park. Ontario Parks is an amazing place to work with quite a lot of room to grow. As an interpreter, my job is to write educational programs and activities to help visitors learn about and feel connected to the nature around them. I am happy to answer any and all questions you may have about working at Ontario Parks or within Environmental Education!

**Dr. Kevin Turner Ph. D.**

My research program focuses on identifying how changing climate and landscapes impact the hydrology and biogeochemistry of northern water resources. I have worked with the Vuntut Gwitchin First Nation since 2007 to understand how changing climate is impacting their traditional territory. Landscape responses to climate change have included increased lake drainage, permafrost slumping, shrub growth, and fire. My lab employs the use of remote sensing including use of satellites and drones to detect landscape changes and integrates use of biogeochemical analyses of downstream environments to evaluate relations among climate, vegetation, permafrost, and water. My teaching is focused on geomatics including remote sensing and geographic information systems.

## Special Guests

**Karl Dockstader**

Karl Dockstader is an award-winning broadcaster and proud member of the Oneida Nation, Bear Clan. He is a Niagara resident, the Indigenous Cultural Consultant at Niagara College, co-recipient of the Canadian Journalism Foundation CBC Indigenous Journalism Fellowship, and one of the co-creators of One Dish One Mic.

**Mark Zelinski**

Mark Zelinski's diverse career over 49 years as a professional photographer has taken him across 80 countries, with clients ranging from The National Film Board of Canada to Panasonic. He is also a publisher, writer, painter, filmmaker, Fellow of Royal Canadian Geographic Society, member of The Explorer's Club and winner of the Canadian Governor General's Medal. Zelinski is best known for his "Books That Heal" initiative - donating 9,000 copies of his photography books to 100 worldwide charities. His internationally acclaimed photography books include forewords by HRH Prince Philip, The Honourable Lincoln Alexander, and Justin Trudeau. Mark's tenth book "Niagara Escarpment: LAND BETWEEN WATERS" brings exquisite focus to the environmental treasures of the Niagara Escarpment, and to the diverse Indigenous and settler communities that thrive along its rugged, curving path. The new book includes extensive coverage of The Niagara Region - its history, natural lands, communities and environmental organizations. Mark's Website: www.MarkZelinski.com.

# Oral Presentation Sessions Schedule

## Friday May 1st

*I Just Wet My Plants (9:00 AM–10:30 AM)*

| Time | Number | Presenter | Title | Page |
|---|---|---|---|---|
| **9:00 AM** | T1 | Kay MacNaughton | Getting to the root of the issue: Challenging settler ecological perspectives of invasive plants in Michi Saagiig Aki | 32 |
| **9:20 AM** | T2 | Matthew Summerville | Raisin the bar: Exploring ecosystem dynamics in organic vineyards | 32 |
| **9:40 AM** | T3 | Emily Heagney | Is inflorescence height a target of selection under pollinator decline? | 33 |
| **10:00 AM** | T4 | Sarah Hein | Seasonal drivers of jack pine (*Pinus banksiana*) growth in North Slave Region, Northwest Territories, Canada | 33 |

*Something Smells Fishy (10:45 AM–12:00 PM)*

| Time | Number | Presenter | Title | Page |
|---|---|---|---|---|
| **10:45 AM** | T5 | Sophia D'Aurora | Defining lake whitefish (*Coregonus clupeaformis*) home ranges in Lake Huron to inform fisheries management | 34 |
| **11:05 AM** | T6 | Savannah Ecclestone | Pursuit in the North Atlantic: Regional Differences in White Shark Hunting Behavior | 34 |
| **11:25 AM** | T7 | Jennika Mitchell | Examining size and sex distribution of Baffin Bay's Greenland Halibut population to validate population assessment methods | 35 |
| **11:45 AM** | T8 | Keshia Lawrence | Indigenous eel ethology | 35 |

*Communities Assemble! (5:00 PM–6:00 PM)*

| Time | Number | Presenter | Title | Page |
|---|---|---|---|---|
| **5:00 PM** | T9 | Sarah Dunn | City living invertebrates: Exploring abundance and diversity of invertebrates throughout Iqaluit, NU | 36 |
| **5:20 PM** | T10 | Dithara Perera | Why are the diatom assemblages changing in 'least disturbed' buffered Adirondack lakes, NY? | 36 |
| **5:40 PM** | T11 | Joe Armstrong | The influence of yearly temperatures on adult body size across diverse Niagara bee communities | 37 |

## Saturday May 2nd

*Dinosaurs and Dragons (10:00 AM–11:00 AM)*

| Time | Number | Presenter | Title | Page |
|---|---|---|---|---|
| **10:00 AM** | T12 | Alex Wilder | Evidence of olfaction and olfactory communication in Humboldt penguins | 38 |
| **10:20 AM** | T13 | Melanie Denommé | Investigating the motivations of repetitive barrier interactions in bearded dragons (*Pogona vitticeps*) | 38 |
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*Sex! Now that I have your attention, please enjoy these talks (1:00 PM–2:30 PM)*

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# Friday Abstracts

## Poster Session (4:00 PM–5:00 PM, preview: 8:30 AM–9:00 AM)

### P1: Reconstruction of fire history in the Northwest Territories, Canada

**Lauren Nesbitt**, Michael Pisaric, Katrina Moser, Kevin Ng, Dorian Gaboriau, Jason Lynch

Northern ecosystems are being impacted by climate change at an unprecedented rate compared to lower latitudes, including marked increases in the frequency and severity of disturbances such as wildfire. In the Northwest Territories (NWT), fire regimes are controlled by various factors including vegetation type and density, moisture availability and temperature. Historical fire records only date back to the 1950s, making it challenging to document long-term fire regimes and their responses to past climate change over centennial to millennial timescales. Here, we used 13 charcoal and 3 pollen paleorecords as well as several sedimentological proxies from lake sediment cores to understand the Holocene interactions between fire activity, vegetation and climate in the North Slave Region, NWT. Following deglaciation, fire activity was minimal due to reduced fuel loads and low temperatures. By 8200 cal. yrs. BP, fire activity increased as temperatures warmed and spruce expanded resulting in drier conditions and greater fuel availability. By 4200 cal. yrs. BP, fire activity declined again due to cooler and wetter conditions, even as pine expanded on the landscape. By the 20th century, fire activity increased in response to rapid climate change and is expected to continue during the 21st century. According to Holocene analogs, fire activity will likely continue to increase in the NWT in response to warmer conditions and increasing fuel loads.

### P2: Reproductive responses of the Redback Spider (*Latrodectus hasselti*) to the urban heat island effect

**Linh Nguyen**, Maydianne C.B. Andrade, Isaiah Box

Urbanization subjects' organisms to unprecedented levels of environmental stressors, including the elevated temperatures associated with the Urban Heat Island (UHI) effect. Thermal stress has been linked to reduced survivorship and reproductive success, but certain species, including the invasive Australian redback spiders (*Latrodectus hasselti*) appear to thrive under such conditions. We compared reproductive output of the F1 offspring of female spiders collected from urban (Syndey, NSW) and rural sites (Bredbo, NSW) as a function of mating temperature. Sexually mature spiders that had been reared under common garden conditions were moved into temperature-controlled rooms at 24°C (‘rural’), or 30°C (‘urban’) for 2 weeks of acclimatization before being paired for mating. After mating, females were kept at treatment temperatures and monitored for egg sac production. Although habitat of origin did not predict reproductive output, the urban temperature treatment resulted in significantly faster egg sac production, but also increased non-viable egg counts. Hatchling count and egg viability were influenced by traits of both parents, including female age and mass, and male age. This study provides no evidence for population-level adaptation to high temperatures, suggesting any difference in reproduction across the treatments was due to plasticity. While the higher temperatures associated with urban sites led to more rapid reproduction, this came at the cost of fewer offspring, although this disadvantage may be mitigated by favourable parental traits. Overall, these findings show that UHI may affect patterns of reproduction, but implications for population persistence in urban habitats and possible urban-rural evolutionary divergence require additional study.

## P3: Effects of hydroxyl-radical treatments (Clean Works technology) on survival and reproduction of Asian lady beetle (*Harmonia axyridis*), a contamination pest in Niagara's vineyards

**Harmandeep Singh**

The multi-coloured Asian lady beetle (MALB), *Harmonia axyridis*, is a contamination pest in vineyards across northeastern North America. Its presence in grape clusters during harvest can compromise wine quality by causing “ladybug taint.” Although insecticides are currently used to reduce beetle populations at harvest, sustainable alternatives are needed. Clean Works Inc. developed a technology that generates hydroxyl radicals (•OH) using a combination of hydrogen peroxide ($H_2O_2$), ozone ($O_3$) and UV-C light. This technology is being evaluated for its potential effects on beetle fitness. In laboratory trials, we tested the effects of hydroxyl radicals at four different concentrations and dosages on adult beetle survival. Two treatments reduced survivorship to 80%; however, a similar level was observed in the control group, and overall differences among treatments were statistically insignificant. Survivorship of males and females was also analyzed within each treatment and across treatments, and no significant differences were detected. A second experiment examined reproductive parameters: fecundity, fertility and development, comparing beetles treated with the highest permitted dosages of 5% $H_2O_2$, 7.5 ppm $O_3$, and 0.9 mJ/cm2 UV-C, to untreated beetles. We found that •OH treatment did not negatively affect any biological parameters in the beetles that we tested. Further laboratory and vineyard experiments will evaluate if •OH treatment will negatively affect beetle behaviour.

## P4: Insect gut tissues as indicators of microbiome-dependent development in American cockroaches

Farah Mohamed, **Samia Saif**, Torey Hilbert, Zakee Sabree

The presence of a gut microbiome is a near-universal state in animals. Such symbiotic relationships have developed throughout millions of years, shaping the development of both host and microbial species. The American cockroach (*Periplaneta americana*) is an omnivorous species, whose diet supports diverse populations of commensal microbes in their gastrointestinal system. Both their diet and these microbial populations are amenable to those found in humans. In this project, we use cockroaches as a model system to investigate how microbial presence affects digestive tissue development. We did so by comparing germ free cockroaches, who lack microbial colonization, and conventional cockroaches, who retain their natural microbial community. We predicted that the absence of microbes alters normal host gut-tissue development. To test this, the intestinal tract of each individual was dissected and photographed. Dissected guts were then measured using the Fiji ImageJ processing package. Gut length was measured by tracing from the anterior foregut to the posterior hindgut, and measurements were averaged across four blinded observers to ensure reliability and reduce bias. Preliminary analyses suggest that germ-free cockroaches exhibit measurable differences in gut morphology compared to conventional individuals, supporting the hypothesis that microbial presence contributes to normal host tissue development. These findings highlight the importance of microbial symbionts in shaping host morphology and suggest that gut tissue metrics can serve as accessible indicators of microbiome status. This work contributes to a broader understanding of host–microbe interactions and provides a foundation for future research into the developmental and physiological consequences of microbiome disruption.

## P5: Biological characterization and experimental development of *Clavicipitaceae* Fungi associated with hemipterans

**Gabriela Santos de Paula**, Thairine Mendes Pereira, Pablo Fernandes Braga, Harry C. Evans, Simon Luke Elliot

The family Clavicipitaceae (Hypocreales) comprises fungi with broad functional diversity, including endophytic and entomopathogenic species (EIPF). Genera such as *Hypocrella*, *Aschersonia*, *Moelleriella*, and *Conoideocrella* are notable for their high host specificity, primarily infecting nymphs of sap-sucking hemipterans (Coccidae and Aleyrodidae) in tropical and subtropical environments. Although these genera share similar ecological traits: they exhibit taxonomic distinctions supported by morphological and molecular evidence. Given their potential for biological control, this study aimed to characterize isolates from Minas Gerais, Brazil, using morphological, molecular, and in-vitro culture approaches to support taxonomic identification and future application. The species were registered in SisGen (A8C4F9F), and macro- (stromata) and micromorphological characters (conidiomata, phialides, paraphyses, and conidia) were analyzed, along with mycelial growth under different culture media (PC, PDA, PDAt, and SDAY ¼), temperatures (18, 22, 26, and 30 °C), and photoperiods (12:12 h / 0:24 h). Data were analyzed using LMM and GLMM statistical models and phylogenetic inference by maximum likelihood (IQ-TREE), based on SSU, LSU, TEF, and RPB1 markers. Four species were identified: *H. disciformis* (bs: 100%), *M. ochracea* (bs: 100%), *M. madidiensis* (bs: 99%), and *C. luteorostrata* (bs: 100%). The media SDAY ¼, PDA, and PDAt promoted growth, which was inhibited at 30 °C in all isolates, with optimal growth between 22–26 °C, while photoperiod showed no significant effect. The results indicate productive potential and the need for further studies toward future applications in biological control.

## P6: A speciation clock for *Caenorhabditis*: Quantifying reproductive isolation in *C. briggsae* hybrids

**Adrija Paul**, Margaret Wilde, Maia Dall'Acqua, Daniel Fusca, Asher D. Cutter

Speciation is complete when exchange of genetic information is no longer possible between populations, often preceded by the emergence of partial reproductive isolation (RI), an amalgamation of behavioural, physiological, and genetic barriers to successful interbreeding. Understanding the factors that drive reproductive isolation is thus central to explaining how new species arise and persist. In this study, we conducted controlled crosses between *Caenorhabditis briggsae* and seven other *Caenorhabditis* species to examine patterns of fertility and embryonic viability. We used egg counts and hatching success to quantify pre- and post-zygotic RI and generate a speciation clock for *C. briggsae*. Speciation clocks describe the relation between RI and divergence time between species pairs, as have been characterized for *Drosophila* flies, birds, plants, and some other organisms. Our results show a positive correlation between components of RI and divergence times for *C. briggsae* with other species of *Caenorhabditis*. We also found complete embryonic inviability between *C. briggsae* and the most distantly-related species tested in the Elegans group clade (*C. kamaaina*). *C. briggsae* is one of three *Caenorhabditis* species that has independently evolved selfing as a mode of reproduction (the other two are *C. tropicalis* and *C. elegans*). By generating a speciation clock for *C. briggsae*, this work opens the door to testing how reproductive mode might influence the rate of accumulation of RI in the speciation process.

## P7: Evolutionary shifts in self pollination under pollinator decline

**Noah Rhoden**

Declining pollinator populations pose a major risk to the reproduction of flowering plants, many of which rely heavily on insect-mediated outcrossing. To persist under reduced pollinator services, plants may adapt by evolving traits that promote autonomous self-fertilization. One such trait is stigma curling, in which the stigma bends to contact anthers or self-pollen later in floral development, facilitating delayed self-fertilization once opportunities for outcrossing have diminished. While stigma curling may safeguard reproduction, it could also reduce seed quality and quantity through inbreeding depression or trade-offs in resource allocation. To test whether reduced pollinator abundance promotes the evolution of floral traits facilitating self-fertilization, we conducted a three-generation experimental evolution study in the greenhouse using *Mimulus guttatus*, a mixed-mating wildflower pollinated primarily by declining *Bombus spp*. Populations were grown under high- and low-pollinator treatments using *Bombus impatiens*, with subsequent generations produced from seeds of each treatment group. In the final generation, we measured floral morphology, with a particular focus on stigma curling, alongside reproductive output. We predict that populations experiencing reduced pollinator abundance will show increased prevalence and degree of stigma curling, reflecting selection for autonomous self-fertilization. However, this shift may come at the cost of reduced seed set due to inbreeding depression and resource trade-offs. These results will clarify whether pollinator decline selects for selfing mechanisms in *M. guttatus* and provide insights into how mating system evolution under pollinator decline may feedback to influence population persistence.

## P8: The effects of understory shade cover on *Erythronium americanum* phenology and fruiting success

**Amanda Liu**, Vanessa Lu, Louisa Bartkovich, Megan Bontrager

Phenology is a key biological indicator of climate change, as it reflects organismal response to seasonal timing, such as, through migration or flowering. Spring ephemerals are particularly prone to shifts in seasonal timing due to their reliance on ephemeral windows. While most work has focused on canopy-driven light limitation, the role of understory vegetation as a source of shading remains comparatively underexplored. This study investigates whether understory shade competitors induce phenotypic plasticity in *Erythronium americanum*. Specifically, we tested the hypothesis that understory shading induces shade-avoidance syndrome (SAS), a plastic response documented in both crop and wild species. Fieldwork was conducted at the Koffler Scientific Reserve in King, Ontario using ambient-light control plots from a larger canopy manipulation experiment. Leaf area of *E. americanum* individuals was estimated using ellipse-based calculations from field measurements of leaf length and width, and individuals were classified based on the presence or absence of understory shading. This study is situated within a broader experimental framework examining how shifts in spring light regimes, driven by changes in snowmelt and canopy phenology, affect trait expression and fitness. By linking smaller-scale biotic interactions such as understory competition with larger-scale abiotic changes, this work contributes to understanding how multiple drivers of light limitation interact to shape phenology, growth, and ultimately fitness in spring ephemerals. This project will be extended in the upcoming field season to directly quantify fitness consequences of altered light regimes through changes in corm biomass and survival, providing a longer-term link between plastic responses and individual performance.

## P9: Hybridization with an invasive species asymmetrically impacts the fitness of the native plant *Geum canadense*

**Johanna E. N. Kiik**, Marc T. J. Johnson

Non-native invasive species pose a large threat to the abundance and diversity of native species. While invasive species biology has been well studied, the role that hybridization plays in affecting the ecology of native species remains poorly understood. We sought to understand how invasive species affect the fitness and demography of native species through hybridization. Our work focused on the interaction between the native wildflower *Geum canadense* and the exotic wildflower *Geum urbanum,* which hybridizes to produce species *G. x catlingii*. We surveyed over 500 plants to assess the potential for hybridization by: 1) determining the phenological overlap between *G. urbanum* and *G. canadense*, 2) investigating the spatial and habitat differentiation of the two species and their hybrid, and 3) quantifying the fitness of *G. x catlingii* compared to the parental species. In combining these data, we aimed to infer the effects of *G. urbanum* on the long-term persistence of *G. canadense*. We observed that *G. urbanum* began flowering two weeks prior to *G. canadense*, whereas *G. canadense* exclusively flowered at the same time as *G. urbanum* and *G. x catlingii*. In fitness, *G. canadense* harbored less seeds per aggregate fruit than *G. urbanum*. Our preliminary results suggest that the native species, *G. canadense*, is more impacted by hybridization than the invasive species *G. urbanum*. This work, which we will expand by tracking pollen movement and performing controlled crosses, contributes to understanding how invasive species can influence the population's ecology and persistence of native species through hybridization.

## P10: Twelve generations of selection on goldenrod gall size measured in an undergraduate field lab

**Ella Martin**

Evolution by natural selection is easy to predict in theory but estimates of whether selection accurately predicts evolutionary change from natural populations are rare. Long-term studies of natural selection on wild populations can capture variability in the strength and direction of selection over time, enabling better predictions. Here, we leverage over a decade of data collected in an annual undergraduate evolutionary biology field lab to track relationships between climate, trophic interactions, and natural selection over time. From 2013-2025, students collected 6254 goldenrod galls, measured their diameters, and identified signs of attack by birds and wasps, which impose divergent selection on gall size for smaller and larger galls, respectively. We found that bird attack rates were significantly correlated with variation in the strength of selection, but wasp attack rates were not. Selection on gall size varied among years and was most strongly and consistently dependent on the mean annual temperature, but it did not confer the expected evolutionary response. Instead, we found that gall size increased following years of strong negative directional selection by birds. This study highlights how environmental and ecological change can accurately describe variation in selection, but variation in selection does not always translate to evolutionary dynamics in natural populations. Additionally, by combining scientific data collection with undergraduate education, we are able to collect large sample sizes regularly and offer the opportunity for experience-based learning for a large class of students. Surveyed students reported that the field lab improved their understanding of and engagement with the course material.

## P11: Attention bias towards predator cues as an indicator of negative affective states in Garter Snakes (*Thamnophis sirtalis sirtalis*)

**Sophie Gauthier**

Internal and external factors both play a role in shaping how animals interact with their surroundings, ultimately impacting their fitness, survival, and well-being. Both classes of factors are argued to directly influence an animal's affective state. An affective state refers to an animal's "emotions" based on their lived experiences and can be either positive or negative. Negative affective states that arise from physically unpleasant experiences such as fear, fatigue, or discomfort can also influence important cognitive processes such as attention, memory, and judgment; this phenomenon is referred to as an attention bias. An attention bias is when an animal demonstrates a differential allocation of focus towards one stimulus compared to another. An attention bias can be deemed as negative when negative affective states trigger increased attention towards negative information or potential threats. We examined whether dehydration-induced negative affective states alter attention allocation in Eastern Garter Snakes (*Thamnophis sirtalis sirtalis*), using the Affect-Driven Attention Bias (ADAB) framework. Because reptile behaviour remains comparatively understudied, this work aims to address a key gap in welfare and cognitive-bias literature. Snakes were either injected with isotonic or hypertonic saline solution to mimic normal hydration and dehydration respectively. Snakes were then placed in a tank with a positive (home cage) and a negative (predator) scent cue. We found that snakes did not show any difference in attention assessed via tongue flicks between the two scent cues or between hydration states. Our data shows that dehydration does not create a negative attention bias in *T. s. sirtalis*.

## P12: Environmental enrichment influences physiological colour change in captive-reared Chinook Salmon (*Oncorhynchus tshawytscha*)

**Kaley Vance**, Trevor Pitcher

Salmonid species across Canada have been declining for decades. In response to the decline, captive breeding is often used for population supplementation. However, captive breeding often results in animals who exhibit mismatched traits (compared to their wild counterparts), leading to poor outcomes when reintroduced to the natural environment. Chinook salmon (*Oncorhynchus tshawytscha*) are capable of physiological colour change (i.e. crypsis) to reflect their environment, a mismatch between colour in both captive breed and wild salmon has been observed due to unnatural tank colours. In this study, we investigate colour change in a captive-reared Chinook salmon by using grey, red, black, white, blue and green tanks and introducing enrichment (gravel substrate) after a week in coloured tanks to examine if colouration is affected. The results of this study will be applicable to captive breeding conservation programs for salmon across Canada.

## P13: Lake water clarity: Importance to change in cladoceran assemblages in the Adirondack Park (NY, USA) and the Experimental Lakes Area (northwest Ontario)

**Morgan Mumma**

Cladocera are planktonic freshwater crustaceans whose assemblage composition reflects environmental conditions, motivating their role as indicators in paleolimnological studies. In reference lakes that did not chronically acidify during the 1900s, cladoceran assemblage trends were thought to be driven only by climate change; however, reference systems in the Adirondack Park (NY, USA) and the Experimental Lakes Area (ELA) (northwestern Ontario, Canada) exhibited contrasting changes since pre-industrial time despite similar warming. Specifically, large-bodied Daphnia increased in relative abundance in the ELA despite decreasing in the Adirondacks. We hypothesized this contrasting size selection resulted from opposing changes to visual planktivory deriving from changes in water transparency due to changes in dissolved organic carbon (DOC). As greater acid deposition occurred in the Adirondacks, larger decreases in DOC were likely felt, with the modern concentration potentially still below background levels despite DOC being elevated since pre-industrial time in the ELA. In a top-bottom format complimentary to previous analyses of Cladocera, we used absorption spectra to infer change in DOC, with DOC ultimately having increased in both regions. Change in DOC was then compared to change in cladoceran assemblage characteristics. A lack of significant relationships between DOC and assemblage shifts was found, suggesting DOC is likely not the driver behind the differences in cladoceran assemblage shift. Other potential explanatory environmental variables, including climate variables and lake water calcium, should therefore be analyzed. Furthermore, future studies should assess change in DOC against change in Cladocera in whole cores to better elevate potential relationships over time.

## P14: Passive acoustic monitoring as a benthic biomonitoring approach for assessing stream ecosystem health

**Avery Ng**

Benthic macroinvertebrate biomonitoring is a traditional approach to assessing ecosystem health. However, the process is labour intensive and invasive. One solution to this problem is Passive Acoustic Monitoring (PAM), a method that uses sound recordings to quantify biodiversity. This study aims to investigate the basic acoustic qualities of Ontario streams across different levels of impact and across seasons to investigate the effectiveness of this alternative method for Ontario watersheds. Using a SoundTrap ST400, sound recordings were taken between May 2025 and November 2025. Sound samples were retrieved from River Canard (Windsor, ON), Ruscom River (Essex, ON), Belle River (Lakeshore, ON) and the Sydenham watershed (Alvinston, ON) to compare sound data across levels of impact. Thirty minute recordings of both riffles and pools were analyzed using computer software to investigate their sound qualities, including the sound pressure level, amplitude variation, frequency variation and Acoustic Complexity Index (a measure of complex biotic sound). PAM showed a significant difference between the acoustic activity of riffles and pools, and showed a greater complexity in less impacted habitats. However, there is only a modest positive correlation between the ACI of a habitat and the abundance of soniferous families in less impacted habitats. Although PAM did not reveal itself to be a superior method to assessing the macroinvertebrate community to traditional sampling, this study tells us that there is still more work to be done to understand the connection between invertebrates and the underwater soundscape.

## P15: Operative temperatures of eastern garter snakes (*Thamnophis sirtalis sirtalis*) reveal a Goldilocks effect for habitat use

**Harry A. W. Kumbhani**, Curtis R. Abney, Danilo Giacometti, Glenn J. Tattersall

For ectothermic animals, temperature can be one of the most limiting resources since they regulate their body temperature via their external environment. Therefore, ectotherms often have a range of environmental temperatures at which they seek out known as their thermal preference. Garter Snakes (*Thamnophis*) are the most widespread reptiles in North America, although evidence suggests that thermal preference has not diverged much among populations or species. To shed light on how thermal decisions influence local habitat use by the eastern garter snake (*Thamnophis sirtalis sirtalis* (Linnaeus, 1758)), we measured the thermal profiles of three habitats differing in canopy cover: open peat, mixed shrub, and closed forest. We installed biophysical models to record operative temperatures at a fine scale and assess habitat thermal quality. We also used coverboards to survey habitat usage. While the open canopy offered the highest thermal quality, we recorded the greatest number of snakes in the mixed shrub, which had a lower thermal quality. Since environmental temperatures regularly exceeded the upper thermal limit of *T. s. sirtalis* in the open canopy, snakes might favour the use of habitats that minimize the odds of overheating. Therefore, open habitats potentially restrict snakes' activity window and may not be thermally attractive. Our data show that *T. s. sirtalis* use habitats that vary in thermal quality, but warmer habitats are not necessarily better. Rather, snakes preferentially seek areas that offer a mix of open and closed canopies to suit their thermoregulatory needs.

## P16: Understanding factors that influence bobcat (*Lynx rufus*) spatial patterns in the Hudson Highlands of New York

**Paige Au**

Determining factors that influence spatial occurrences in wildlife is a critical component in understanding species habitat requirements. The bobcat (*Lynx rufus*) is a felid species that occurs at notably low densities in certain areas in the Mid-Atlantic region of the United States. Although previous studies have examined bobcat spatial occurrences in the Mid-Atlantic, continuous land cover changes in this region require more recent research to ensure populations are managed effectively. Additionally, the high adaptability of bobcats to various environmental conditions means research on specific populations is needed to inform local management strategists. This study examines whether spatial occurrences of bobcats found in the Hudson Highlands of New York state are influenced by various environmental factors. Factors that will be examined include land cover class, canopy height, canopy cover, stand age, stand composition, stand density, level of woody material, elevation, slope, aspect, terrain ruggedness, and distances to nearest water body, urban area, and road.

## P17: Identifying unrecognized sexual size dimorphism in Passerine birds

**Bethany Duford**

Sex is an important factor in biological studies, but for many bird species, sex can't be reliably determined in the field. When plumage doesn't vary between sexes, size dimorphism can sometimes be used to determine sex. Migration monitoring stations catch thousands of birds each year and collect morphological data, including wing chords (wing length). Wing chord is used to determine sex for some species, but dimorphic size thresholds have been published for few species. My study asked whether previously unrecognized sexual size dimorphism exists in bird species lacking established sexing criteria. I predicted that for some species, the distribution of wing chord measurements could be modelled as two underlying distributions. Using data from the Long Point Bird Observatory, I evaluated whether each species was best fit by one or two underlying distributions and applied a mixture model to identify potential male and female groups. From these models, I generated proposed 95% confidence thresholds for sex determination. To validate this approach, I analyzed species with known dimorphism and tested whether the model extracted published thresholds. This method successfully detected sexual size dimorphism in known species and identified new candidate species. Naive to sex, the model replicated existing thresholds within 1-2 mm. I identified four additional categories, including species with potential unrecognized dimorphism, species with current thresholds that may need refining, species suggesting size dimorphism but requiring additional data, and species with limited size dimorphism. Future work should validate these thresholds with DNA analysis, improving sex identification and providing more informative datasets.

## I Just Wet My Plants (9:00 AM–10:30 AM)

### T1: Getting to the root of the issue: Challenging settler ecological perspectives of invasive plants in Michi Saagiig Aki

**Kayla MacNaughton**

Promoting local biodiversity is vital to confronting the climate crisis. While invasive species are widely identified as a major global threat to biodiversity, there is less attention in the research to how this designation informs place-based conservation practices and perspectives. Plants are foundational to ecosystem function and cultural identity, making invasive plants a critical site for examining how Western science and Indigenous Knowledges can work together to challenge extractive colonial land management regimes. This research examines environmental perspectives on Invasive Plants in Michi Saagiig Anishinaabeg Territory (Michi Saagiig Aki). Michi Saagiig Aki refers to the lands and waters of the Michi Saagiig Anishinaabeg located within the Great Lakes Basin; a region known for having high concentrations of invasive plant species, which can contribute to the displacement of ecologically and culturally significant plants, like manoomin. As a non-Indigenous researcher born and raised in this territory, I employ methods rooted in relationality, engaging in conversations and ceremonies with plants and people. Centering Michi Saagiig Nishnaabeg Perspectives on the phenomenon of invasive plants, findings reveal that, effective biodiversity conservation requires reciprocal and relational land ethics, including equitable partnerships between knowledge systems and the recognizing invasive plants as participants in the process of settler colonialism.

### T2: Raisin the bar: Exploring ecosystem dynamics in organic vineyards

**Matthew Summerville**, Andrea Hebert, Angel Lainscek, Alex Popescu, Liette Vasseur

Vineyards are an agricultural fixture in the Niagara Region, accounting for 90% of grape production for Ontario. Management strategies within Niagara vineyards vary, conventional vineyards use high levels of landscape intervention (soil tillage and synthetic chemicals), and organic vineyards use lower levels of landscape intervention (no to low tillage and organic chemicals). Due to low levels of intervention, organic vineyards often suffer from high levels of pest incidence. Leafhoppers are common pests in Canadian vineyards, and damage grapevines through feeding on sap. Biodiversification, the process of increasing plant biodiversity in vineyards, is shown in literature to reduce pest load by recruiting natural enemies. Cover crops between rows of grapevines are often targeted when working with biodiversity in vineyard spaces. Most traditional cover crop species utilized in biodiversification research are non-native or annual species. Current research aims to bridge the gap in this understanding by utilizing native perennial species as cover crops. Native perennial cover crops are predicted to improve pest control interactions when compared to traditional cover crop plantings. In 2024, native perennial cover crops were established within three vineyards in the Niagara region. Varied monitoring parameters were employed to assess their influence on leafhopper and other invertebrate monitoring. Yellow, red, and green sticky traps were placed at three heights in middle and edge panels of sampled grapevine rows. The experiment was repeated in 2025; invertebrate Identification is ongoing. Plant community composition will be monitored in the 2026 growing season and ecosystem services such as pest control will be assessed.

## T3: Is inflorescence height a target of selection under pollinator decline?

**Emily Heagney**, Christina Caruso

Pollinator decline can strengthen selection for plant traits that increase pollinator attraction. One trait that may be a target of selection under pollinator decline is inflorescence height, but it is not known whether inflorescence height or a correlated trait is the target of direct selection. To determine if inflorescence height, by increasing pollinator attraction, is a target of selection under pollinator decline we experimentally simulated pollinator decline and manipulated the height of bumble bee pollinated *Lobelia siphilitica*. For all plants we measured pollinator visitation rates, inflorescence height and seed production. We found that plants elevated 20 cm above the ground were first visited by pollinators significantly more often than plants that were not elevated. This indicates that taller inflorescences increase pollinator attraction. If elevated plants under experimentally simulated pollinator decline also produce more seeds, then we can conclude that inflorescence height is a target of direct selection and taller inflorescences may be an adaptation to pollinator decline.

## T4: Seasonal drivers of jack pine (Pinus banksiana) growth in North Slave Region, Northwest Territories, Canada

**Sarah Hein**, Sarah Ben Omrane, Caroline Leland, Michael F.J Pisaric

The boreal forest of Northwest Territories (NWT) is a vital ecosystem currently undergoing rapid transformation due to climate warming. To understand how northern forests respond to climate variability and recent anthropogenic climate change, we developed jack pine (*Pinus banksiana*) tree-ring chronologies (whole wood, earlywood, and latewood) from three bedrock-dominant sites (Pontoon Lake, Fox Lake, and Kam Lake) in the North Slave Region, NWT, extending to mid-1600s CE. These chronologies were integrated with two archived chronologies from International Tree Ring Data Bank (ITRDB) from Kam (CANA-288) and Fox Lake (CANA-287) to maximize sample depth and improve the reliability of climate-growth relationships. Site-specific chronologies exhibited robust coherence with high inter-series correlation and expressed population signal (EPS) indicating a strong common climate signal. Climate sensitivity was assessed by correlating each chronology against regional instrumental records from Yellowknife Airport (1943-2024). Preliminary results indicate a strong June precipitation signal across all chronologies, with the highest correlations observed in earlywood and total ring-width, and a strong June-July precipitation signal observed with latewood. In contrast, temperature signals were less coherent, with a weaker significant correlation observed in August at Pontoon and Fox Lake. Collectively, these results indicate that jack pine growth is predominantly driven by early-summer precipitation (June and July), whereas late-summer temperature (August) exerts a comparatively weaker influence on jack pine growth. Future analysis using Quantitative Wood Anatomy (QWA) will be applied to examine intra- and inter-annual climate-growth responses to seasonal climate dynamics, thus advancing our understanding of natural climate variability in North Slave Region, NWT, Canada.

## Something Smells Fishy (10:45 AM–12:00 PM)

### T5: Defining lake whitefish (*Coregonus clupeaformis*) home ranges in Lake Huron to inform fisheries management

**Sophia D' Aurora**, Camilla Ryther, Justin Trumpickas, Ryan Lauzon, Warren Zeinstra, Chris Davis, Cavan Harpur, Erin S Dunlop

The native lake whitefish (*Coregonus clupeaformis*) is experiencing population collapses in Lake Huron from declining recruitment. The lake whitefish fisheries are managed in Lake Huron using a quota system that assumes populations don't move beyond zone boundaries. Yet, little is known about lake whitefish home ranges and the extent to which populations move between management zones, basins, or across international boundaries. To better understand the movement ecology of lake whitefish (known as dikameg in Anishinaabemowin) in Lake Huron, a collaborative Two-Eyed Seeing research study, named Together with Giigoonyag, was initiated between the Saugeen Ojibway Nation, Ontario Ministry of Natural Resources, and Parks Canada. An acoustic telemetry array was established across Lake Huron to remotely track 380 acoustically tagged lake whitefish. Here, we describe up to four years of the seasonal home ranges of six lake whitefish populations in Lake Huron. The Main Basin lake whitefish showed extensive movement compared to the Georgian Bay and North Channel lake whitefish. Seasonal movement patterns were consistent among years for all populations. However, home range size was variable between seasons for only three populations that also demonstrated greater spatial overlap during the fall spawning period compared to other seasons. Neighbouring populations shared management zones, overlapping in some capacity, but each populations' movement patterns remained distinct from one another. These results demonstrate unique distribution patterns among lake whitefish populations in Lake Huron. Our improved understanding of this species' movement ecology can better inform their fisheries management and conservation efforts.

### T6: Pursuit in the North Atlantic: Regional Differences in White Shark Hunting Behavior

**Savannah Ecclestone**, Eric Ste. Marie, Thomas Stamp, Nigel Hussey

Given recent global marine predator population declines, understanding predator-prey relationships is critical to support ecosystem management. In the context of a recovering population, here we use archival biologging technology to better understand the foraging behaviours of white sharks (*Carcharodon carcharias*). Nine individuals were tagged across distinct residency areas: high latitude region off Nova Scotia, Canada (n = 4), and a low latitude region along Georgia and North Carolina, USA (n = 5). Over short-term deployments (12 – 40 hours), acceleration and depth data were used to detail predation attempts and contrast behaviours between regions. Of 35 inferred burst predation events, Canadian and US sharks averaged four bursts per day, ranging from 3 – 32 seconds. Burst mechanics were similar in both regions, such as overall dynamic body acceleration (CAN: 6.8 ± 1.9 m/s2, USA: 6.3 ± 4.5 m/s2), tailbeat amplitude (CAN: 0.8 ± 0.5, USA: 1.0 ± 0.8), and tailbeat frequency (CAN: 1.2 ± 0.5 Hz, USA: 2.7 ± 2.4 Hz). Differences existed in environmental conditions of bursts, where the average depth of occurrence for Canadian and US sharks were 3.5 ± 3.9m and 14.1 ± 12.2 m, respectively. Understanding when and where these endangered apex predators hunt is critical for effective management and conservation. Future studies incorporating larger sample sizes could confirm these findings and strengthen regional comparisons.

## T7: Examining size and sex distribution of Baffin Bay's Greenland Halibut population to validate population assessment methods

**Jennika J. Mitchell**, Thomas Stamp, Nigel E. Hussey

Fisheries management requires stock assessment models to estimate the population size of exploited fish within specific areas. Various assessment models differ in their complexity and, critically, the assumptions applied to the population of interest. Greenland halibut (*Reinhardtius hippoglossoides*) is a commercially important deepwater flatfish, with annual landings worth an estimated $90 million (CAD). As of June 2024, a Surplus Production Model in Continuous Time (SPiCT) was accepted as the stock assessment model for Greenland halibut in Baffin Bay (Subarea 0+1). A key assumption of SPiCT is that age and size distribution remain consistent through time. However, sexual dimorphism within the species (females attaining larger body sizes than males), broad-scale environmental gradients across the region, and complex movement behaviour could affect distribution patterns and violate these assumptions. To test this, we analyzed fishery-independent longline survey data on 5857 halibut collected across Baffin Bay from 2012-2025. A generalized linear model was used to compare length distributions by depth and latitude, whereas spatial patterns in sex ratios were analyzed using a binomial logistic regression model. The results showed a persistent female bias with females accounting for a minimum of 62% of catches across all years, with no notable changes in sex ratio across latitudes. In contrast, fork length increased with descending latitude from an average of 61.5 to 72.8cm. Though smaller fish resided in the most northern latitudes, increasing length with depth was significantly more prominent than those in the southmost range. These findings confirm spatial variability in fish length, while supporting temporal stability in sex composition and size, providing independent validation to support sustainable fisheries development across the Arctic.

## T8: Indigenous eel ethology

**Keshia Lawrence**, Maria Ellen Lawrence, Briar 'Katharine' Gugler

Across the shifting boundaries of salt and freshwater, the American eel (*Anguilla rostrata*) carries more than ecological significance; it carries memory, migration, and kinship. Once abundant throughout northeastern waterways, eel populations now reflect the cumulative impacts of colonization, habitat fragmentation, water degradation, and climate disruption. Their decline is not only ecological, but extremely cultural, as is their resurgence and conservation. This research advances an urgent call for Indigenous-led, community-engaged and relational ethology, further supporting that the study of animal behaviour is grounded in responsibility, reciprocity, and self-reflection. Drawing from three years of intertribal community fieldwork, this research centers Indigenous methodologies in observing, understanding, and caring for eel relatives across transboundary waters. A recent intertribal eel count was held in New York State (April 3–6, 2026) and received United Nations Ocean Decade–endorsement, marking a pivotal moment for Indigenous citizen science. By tracing eel migration from oceanic spawning grounds to inland rivers, this work parallels the histories of Eastern Indigenous communities; displacement, resilience, and return. Through this lens, ethology becomes more than observational, but accountable and ethical. What does it mean to study a species whose survival is entangled with our own decisions, infrastructures, and histories? Integrating climate science, Indigenous knowledge systems, and community-based conservation, this presentation shares emerging findings from the Hudson River watershed and beyond. This presentation will highlight how biocultural indicators, cultural practices, and intergenerational memory are critical to restoring both ecological integrity and human responsibility in conservation and environmental science. At

its core, this work insists that conservation cannot be separated from relationships. To restore the eel is to rekindle pathways of people, water, knowledge, and care.

## Communities Assemble! (5:00 PM–6:00 PM)

### T9: City living invertebrates: Exploring abundance and diversity of invertebrates throughout Iqaluit, NU

**Sarah E. Dunn**, Patricia Rokitnicki, Rachel Dow, Angelina Kemp, Emily McKinnon, Christina A.D. Semeniuk, Elena Tranze-Drabinia, François Vézina, Oliver P. Love

Urbanization is increasing worldwide, leading to environmental changes which in turn alter species' abundance and diversity. However, most studies examining the impact of urbanization are conducted at temperate latitudes resulting in knowledge gaps for Arctic species. My project aims to understand the impacts of urbanization on invertebrate abundance and diversity in a Canadian Arctic city. Our objective is to determine whether there are differences in invertebrate abundance and diversity between areas of low and high urbanization in Nunavut's capital, Iqaluit. Invertebrate samples were collected using modified malaise traps in June-July in 2024 and 2025 across four high urban and four low urban sites (based on a GIS-based urbanicity index). Samples were sorted by invertebrate order and then the dry mass was obtained to quantify overall abundance. Species diversity was measured as the total number of invertebrate orders detected in a sample. Despite variability across sites, we found no difference in abundance or diversity between high and low urban locations (GLMM: t= 3.539 df=1 p=0.5094 and GLMM: t= -0.119 df=1 p=0.90). However, there were significant differences in abundance between years, with a lower abundance in 2025 than 2024 (GLMM: t= -4.424 df=1 p<0.01). Our work aims to quantify the impacts of urbanization on invertebrate abundance and diversity in this Arctic site to provide important insights into how Arctic invertebrates respond to rapid changes in habitat features overall. Ultimately, this work can aid in the development of predictive models assessing how expected impacts of land use change will impact invertebrate abundance.

### T10: Why are the diatom assemblages changing in 'least disturbed' buffered Adirondack lakes, NY?

**Dithara Perera**

The 'least disturbed' Adirondack lakes in NY have undergone major shifts in diatom species composition indicating a 'base line shift' today compared to pre-acidification period. Eagles Nest Lake in the Adirondacks, particularly, has maintained high pH levels and acid neutralizing capacity (ANC) since pre-industrial times, even though it experienced acid deposition until 1990. After the implementation of Clean Air Act Amendments, Sulphur dioxide (SO2) emissions were reduced, which coincided with declines in acid deposition. A phenomenon known as 'rebrowning' was observed in many lakes in Adirondacks including Eagles Nest Lake which can be explained by increased dissolved organic carbon (DOC) concentrations following reductions of sulphate loads and/or increased temperature and precipitation. We are addressing the questions: how have diatom assemblages in Eagle's Nest Lake changed over the past 200 years and are these changes associated with changes in DOC and/or increases in temperature. Using paleolimnological approaches on a dated sediment core from Eagle's Nest Lake, we observed a switch from a stable assemblage dominated by centric oligotrophic diatoms to an assemblage with pelagic pennate diatoms indicative of more nutrient-rich conditions. We are investigating several possible explanatory variables responsible for changes in assemblage structure including spectrally inferred concentrations of DOC, metals associated with industrial emissions and

measured trends in precipitation and temperature over the last 120 years. Understanding changes in some of the least disturbed but non-acidified lakes will allow us to better understand trajectories of recovery in Adirondack lakes of similar morphometric characteristics that historically acidified and are now recovering.

## T11: The influence of yearly temperatures on adult body size across diverse Niagara bee communities

**Joe Armstrong**

The Temperature Size Rule (TSR) predicts that warmer developmental temperatures result in smaller adult body sizes. Bees are ideal for testing this in ectotherms due to their diverse social structures and nesting substrates. This study examines three Niagara species with varying life histories: the small-sized eusocial *Halictus ligatus*, the medium-sized solitary *Osmia conjuncta*, and the medium to small-sized solitary *Ceratina calcarata*. Each species exhibits documented size plasticity linked to temperature, nutrition, or microclimate. Using weather data (2003-2023) and specimens from long-term monitoring in Southern Ontario, we analyze the relationship between ambient developmental temperatures and adult body size. We hypothesize that bees maturing in hotter years will be significantly smaller than those from cooler years. By comparing species with different nesting habits and sociality, we aim to determine if these ecological factors provide a buffer against the impacts of rising average temperatures.

# Saturday Abstracts

## Dinosaurs and Dragons (10:00 AM–11:00 AM)

### T12: Evidence of olfaction and olfactory communication in Humboldt penguins

**Alex Wilder**, Valerie Edwards, Kaitlyn Mortimer, Zoe EM Lavoie, Douglas P Whiteside, Jennifer Valvo, Kiyoko M Gotanda

Animals use a variety of signals to communicate, including visual, auditory, and chemical signals. However, many penguin species have reduced olfactory bulbs and fewer olfactory receptors, suggesting limited use of olfactory signaling, and the importance of olfaction is highly debated in penguins. Humboldt penguins (*Spheniscus humboldti*), colonial seabirds of conservation concern, are commonly kept under human care in breeding programs. Interestingly, Humboldt penguins can use preen oil—a waxy secretion primarily used for feather maintenance and waterproofing—as a scent signal to discriminate between kin and non-kin. We hypothesized that Humboldt penguins rely more on olfactory cues than previously thought and use preen oil scents to identify mates. Penguins at the Calgary Zoo were exposed to scent cues from their mates versus non-kin, non-mate colony members, and their behaviours were observed. Initial results indicate that penguins identify non-mate scents and show adverse responses to non-kin, non-mate stimuli. These findings enhance our understanding of scent signaling in penguins and offer conservation managers novel strategies for penguin management and remediation.

### T13: Investigating the motivations of repetitive barrier interactions in bearded dragons (Pogona vitticeps)

**Melanie Denommé**, Glenn J. Tattersall

In captivity, reptiles have often been observed repetitively interacting with the barriers of their enclosure (hereafter called IWB). Because IWB is directed at the barriers of the enclosure, many assume this behaviour indicates a motivation to escape; however, this assumption has never been tested. Therefore, we observed captive bearded dragons (*Pogona vitticeps*) in their home enclosures over one and a half years and examined patterns in their performance of IWB. If IWB indicates a motivation to escape, then lizards should perform this behaviour more on escape routes than any other area of their enclosure. Furthermore, the performance of IWB should be associated with other factors that may increase a motivation to escape; specifically, we predicted that a lizard's motivation to escape the enclosure would increase around the time of defecation, during breeding seasons, or in anticipation of feeding. Although IWB was biased towards known and transparent escape routes, it was not consistently associated with the factors we predicted. Our investigation is one of the first to analyze the motivations of repetitive behaviour in reptiles and highlights new and potentially elucidating areas for future research that may improve our understanding of repetitive behaviours in all vertebrates.

### T14: Approximating observer skill by modelling learning using data-derived observer experiences in eBird

**Amber French**, Karl Cottenie, Elizabeth Porter

Citizen science (CS) platforms like eBird provide large-scale biodiversity data but variation in observer skill can influence the accuracy and interpretation of ecological patterns. In this study we developed a data-derived framework to approximate observer skill by modelling learning over time using eBird checklist data from Ontario (2002-2019). We quantified six observer-level variables reflecting an observer's measure of interest and detectability, and reduced these into composite skill axes using a principal component analysis. Results revealed two primary dimensions of observer variation: spatial exploration, strongly associated with higher species richness, and temporal exploration, reflecting consistent engagement. Our results also suggested the potential for a positive feedback loop, where motivated observers explored broader areas, detected more species, and improved their skill over time through engagement and learning. These findings demonstrate that observer skill is dynamic, and structured by motivation to participate. By incorporating proxies for skill and learning, this framework provides a scalable approach to account for observer variation in CS datasets and improving ecological inference, strengthening confidence in CS-based conclusions.

## Lightning Round (11:15 AM–12:00 PM)

### LT1: How have changes in sulfate deposition and climate impacted zooplankton communities in a least-disturbed lake from the Adirondacks (NY, USA) from pre-industrial times to the present?

**Julia Atteck**

Throughout the 20th century, atmospheric sulfate deposition impacted lakes across North America, including in regions like the Adirondacks (NY, USA), causing widespread acidification and resulting in legislative regulations on sulfate emissions. Non-acidified systems have often been used as references to assess impacts on acidified systems, but may themselves have also experienced impacts from sulfate deposition. This study aims to characterise the influence of changes in atmospheric sulfate deposition and climate on the Cladoceran zooplankton community from Eagles Nest Lake, a least-disturbed and non-acidified lake from the Adirondacks. A sediment core representing the past ~200 years was analysed using paleolimnological techniques to reconstruct changes in the Cladoceran assemblage, spectrally inferred dissolved organic carbon (DOC), and sulfate deposition, in conjunction with historical temperature and precipitation records. A major assemblage shift was identified between pre-industrial and modern zones, driven by a rise in the small pelagic *Bosmina spp.* and a decline in littoral taxa. Increased sulfate deposition beginning in the early 1900s resulted in a major decline in DOC and increases in large pelagic *Daphnia pulex.* Since the mid-1900s the reverse relationship was observed, and rising *Bosmina spp.* drove large increases in Cladoceran abundances. Towards the top of the core, increases in DOC concentrations beyond historical levels signals the growing role of climate change, as DOC and temperature are highly positively correlated. These results suggest that systems once considered to be pristine may also be experiencing impacts of anthropogenic stressors, and are actually changing towards novel states rather than recovering to pre-industrial conditions.

## LT2: The success of the preservation of the Alexander Skutch Biological Corridor in Costa Rica: An assessment of land cover and habitat patches from 2018 – 2025

**Anthony Loschiavo**

The Alexander Skutch Biological Corridor (ASBC) is a nationally defined region set aside for habitat preservation acting as a linkage for surrounding protected areas. Critical habitats are at risk of degrading in their functionality due to the recent increase in agricultural expansion and urbanization in the ASBC. The creation of baseline land cover data in an understudied region is crucial to navigate adaptive management actions for the success of habitat patch preservation. In this study, land cover alterations and habitat quality/connectivity changes from 2018 – 2025 will be assessed in the ASBC to gain an understanding of recent landscape matrix dynamics. A comprehensive thresholding model based on vegetative and built-up remote sensing indices have been applied to Sentinel-2 imagery to perform a supervised classification and harvest meaningful statistics on critical habitat zones. It was determined that dense vegetative cover increased in extent by 3% and built-up/bare land increased by 26% throughout the corridor. Habitat patches were also discovered to have increased in magnitude but decrease in quality and connectivity from 2018 to 2025. Targeted recommendations involving strategic development and afforestation/reforestation of degraded lands have been discussed as viable pathways of conservation success. The results deliver crucial information on the success of the preservation of the ASBC in a region without detailed baseline land cover data where replicable methodologies are valued for future management.

## LT3: Assessing the Haliburton Forest health using functional traits

**Alexia Kallmes**

Climate change is rapidly altering forest structure with unpredictable consequences. Human activity accelerates forest fragmentation, leaving forest stands vulnerable to environmental perturbations. Forest connectivity enables stands to disperse and exchange material, making tree dispersal and proximity integral to a forest's resilience. We map a section of the Haliburton Forest to assess forest stand health and assess whether tree age or species type influence the strength of material exchange among forest stands. We show that deciduous species compose the majority of each stand, and coniferous species the minority. Combined effects of human activity and higher temperatures may favour the survival of deciduous species and the decline of coniferous species. Understanding these relationships may inform forest management and lead to the maintenance of forest recovery and resilience.

## LT4: Evolution of plant response to AM fungi in *Medicago lupulina*

**Namanpreet Lamba**

For plant response to arbuscular mycorrhizal (AM) fungi to evolve and adapt to different environmental contexts, there must be selection on this trait within a plant population. Whether and how a population responds to selection depends on the amount of heritable variation and pleiotropy. While many studies have examined variation in plant responses to AM fungi at both interspecific and intraspecific levels, the response's heritability remains unquantified. This study will estimate the heritability of plant response to AM fungi under varying nutrient levels to simulate the variability of soil quality in nature and assess potential pleiotropy with root traits, specifically root diameter and specific root length (SRL). I hypothesize that plant response to AM fungi in *Medicago lupulina* L. (Fabaceae) is heritable and genetically correlated with root traits, and both are weaker under high nutrient conditions. Using *M. lupulina* genotypes from a single population,

I will quantify broad-sense heritable variation in plant response to AM fungi by growing plants in mesocosm where access to AM fungal networks will be experimentally manipulated. To evaluate pleiotropy, genotypic means of plant response to AM fungi will be regressed against genotypic means of root traits measured in a separate experiment. I expect plant response to AM fungi to exhibit heritable variation, with lower heritability under high nutrients due to a lower expression of additive genetic variation. I further predict a positive correlation between plant response and root diameter, and a negative correlation with SRL, with weaker correlations for both under high nutrient conditions.

### LT5: Is plant response to AM fungi affected by Arbuscular Mycorrhizal Network complexity?

**Elora Nabon**

Arbuscular mycorrhizal (AM) symbioses, in which plants exchange C for nutrients from AM fungi, are ubiquitous. AM fungi colonize the roots of host plants and can connect multiple host plants roots together, creating a fungal network capable of transferring nutrients between host plants. Higher complexity networks have more connected plants and higher species richness amongst connected plants, affecting nutrient flow dynamics in plant communities. To understand how plant response to AM networks changes with complexity, plant responses to AM fungi will be assessed using a mesocosm experiment manipulating the quantity and species richness of connections within an AM fungal network. *Trifolium pratense* will be used as a focal plant and grown either with or without network access, surrounded by six satellite plants, with treatments varying in connection density (0, 2, 4, or 6 connected individuals) and species composition (conspecific vs. heterospecific *Plantago lanceolata*). Plant response will be quantified by comparing biomass of focal plants with and without network access across treatments. If increasing number of connections increases total fungal carbon demand and strengthens the carbon sink within the network, then we expect plant response to the network to decrease as node number increases. Furthermore, if conspecific connections increase niche overlap and competition in both nutrient acquisition and carbon supply, plant response is expected to decline as the proportion of conspecific connections increases. If our research is supported, it would suggest plant benefits to AM fungi are significantly reduced in low complexity networks, especially those with high proportions of conspecific connections.

## Sex! Now that I have your attention, please enjoy these talks (1:00 PM–2:30 PM)

### T15: Is stereotypic behaviour a turn-off? Investigating reasons for housing effects on male mouse (*Mus musculus*) attractiveness

**Tatiana Golwalla, Isaiah Morrow**, Georgia Mason

Females typically exhibit stronger mate choice, favouring males with traits signaling high fitness. Such preferences persist in captivity, yet suboptimal housing can adversely affect these traits. Previous work shows that female DBA mice prefer males from well-resourced (WR) housing over those from conventional housing (CH), unexplained by differences in body weight or testosterone-related traits. Housing may instead influence other cues, such as ultrasonic vocalizations (USVs) or behavioural indicators of health. Stereotypic behaviours (repetitive, frustration-related actions) are of particular interest, as they predict reduced mating success in minks. We tested whether female preferences for WR males generalize across mouse strains and aimed to determine whether male USVs or stereotypic behaviours predict attractiveness. 16 female FVB mice were presented with two pairs of differentially housed DBA brothers (one WR and one CH) sequentially

in a T-maze. Female proximity to males was analyzed using linear mixed models. When spatial position was ignored, females showed a weak trend toward preferring WR males ($p = 0.096$). Incorporating maze arm position improved model fit and revealed a significant interaction between housing and spatial location, with WR males preferred only when positioned in the left arm ($p = 0.028$). Stereotypic behaviour did not predict preference ($p = 0.541$), suggesting females may rely on alternative cues. Ongoing work will refine the experimental design to clarify how females discriminate between males from different housing and to assess whether USVs contribute to differential attraction. Understanding how welfare shapes mate choice may ultimately inform captive breeding programs.

## T16: Investigating juvenile hormone effects on aggression and seasonal flight timing in male eastern carpenter bees

**Lyllian Corbin**, James Mesich, Miriam Richards

Males of the eastern carpenter bee aggressively defend territories at nesting sites to maximize their mating access to females. We investigated male aggression with circle tube assays, hypothesizing that juvenile hormones influence territorial behaviour. Thus, males treated with a juvenile hormone analog, methoprene, should be more aggressive than water-treated (control) males. Males flying early in the spring, waiting for females to emerge, should have higher juvenile hormone titres than late males flying after most females have begun flying. In 2024 and 2025, we captured males flying at nesting aggregations near campus, then observed male aggression in circle tube arenas before and after treatment. Methoprene-treated males showed lower latencies to aggression than water-treated males, indicating that methoprene increased males' tendency to act aggressive towards conspecifics. In 2025, we captured newly emerged males from their nests and males flying throughout the spring, then quantified juvenile hormone titres from their hemolymph. Males' hormone titres were high before females emerged then declined after females began flying. Thus, variation in juvenile hormone titres might explain differences in male territoriality.

## T17: The impacts of sugar meal source on the survival and reproduction of mosquitoes

**Nicholas Benton**, Fiona Hunter

Like many insects, mosquitoes (Family Culicidae) feed on sugar for energy and nutrition. Mosquitoes will feed on a variety of sugar sources found in nature such as floral nectar, Hemipteran honeydew, and fallen fruit. These sugar sources can have a variety of different types and concentrations of sugars, which could impact aspects of adult mosquito fitness. Thus, it is hypothesized that different sugar meal sources can impact the survival and reproduction of adult female mosquitoes. Samples of different sugar meal sources (floral nectar, Hemipteran honeydew, and fruit) were collected and analyzed using high-performance liquid chromatography (HPLC) to identify the types and concentrations of sugars comprising these sugar meals. Then, standardized artificial replicates of the sugar concentrations found in these sugar meals were created to perform repeated and controlled trials. Sugar meals were fed to two species: *Culex pipiens* biotype *molestus* and *Culex quinquefasciatus*. The survival curves of adult female *Cx. pip. molestus* and *Cx. quinquefasciatus* fed with different sugar meals were compared to determine if any sugar meals had a significant impact on the survival of a given species. Reproduction was determined by measuring the hatching success and the number of eggs for egg rafts laid by mosquitoes that were fed sugar meals. Both mosquito species showed significant differences in survival when fed a honeydew sugar meal and a fruit sugar meal. Furthermore, early data

suggests that sugar meals have a limited impact on the reproductive success of *Cx. pip. molestus*. Preliminary results show differences in the impact of sugar meals on mosquito survival with some sugar meals being more beneficial to mosquito survival compared to others.

### T18: Sexual di(et)morphism: Using experimental evolution to test whether resource partitioning promotes divergence of the sexes.

**Owen Jamieson**, Tristan Long

Sexual dimorphism is a widespread evolutionary phenomenon in which males and females differ in their overall morphology, physiology and/or behaviour. While sexual selection is understood to be the primary driving force for the evolution of most examples of sexual dimorphism, it is not the only mechanism through which the sexes can diverge. In many species, males and females have different nutritional needs, which can then lead to changes in how they interact with their nutritional landscape. This difference in resource acquisition behaviour can result in decreased intersexual competition for resources, and an increase in fitness for both sexes. While theoretical models suggest resource partitioning can readily evolve, empirical tests are rare. Using an experimental evolution approach, populations of fruit flies, *Drosophila melanogaster*, were given the opportunity to be selective about their food choices, through spatial segregation of carbohydrate-rich and protein-rich resources. Males and females were assayed for sex-specific fitness increases, as well as for any changes in food preference and resource acquisition. Flies that had the opportunity to diversify were seen to produce more eggs/offspring and these offspring had a higher egg-adult survivorship rate. Males did not broadly show a significant increase in fitness. These results are an important step in understanding how easy/difficult sexual dimorphism through resource partitioning can evolve.

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As with previous years we will be giving awards for best talk, poster, and lightening talk. Unlike previous years, we've decided to take a new approach. Using www.oe3capp.ca you will be assessing the talks of your peers! You will find your username and password for the app in your name tag upon registration.

Each talk has a unique code which can be found in the program and will be announced at the beginning of each talk. After entering your talk code and filling out the rubric, you will be invited to provide any constructive feedback for the speaker which will be collated and provided upon request.

Once your scores and feedback have been recorded, simply hit submit and the form will reset for the next talk!