

# ENVIROCON 2026

## CLIMATE HOPE:

### Responding to the Present and the Future

*This year's theme is Climate Hope. Although we are aware of the difficulties climate change is already causing, we want to encourage positive discussions regarding what to do with the climate challenges we face. Together, we can generate climate action and motivate others to do the same.*

*It takes a village to imagine a positive climate future **for all**.*

## Schedule

**9:00 AM – 9:30 AM**

Indigenous ceremony and teaching

**9:40 AM – 11:30 AM**

Student research presentations

**12 PM – 1:00 PM**

Local vendor booths, craft hubs, and poster presentations

**1:00 PM – 2:00 PM**

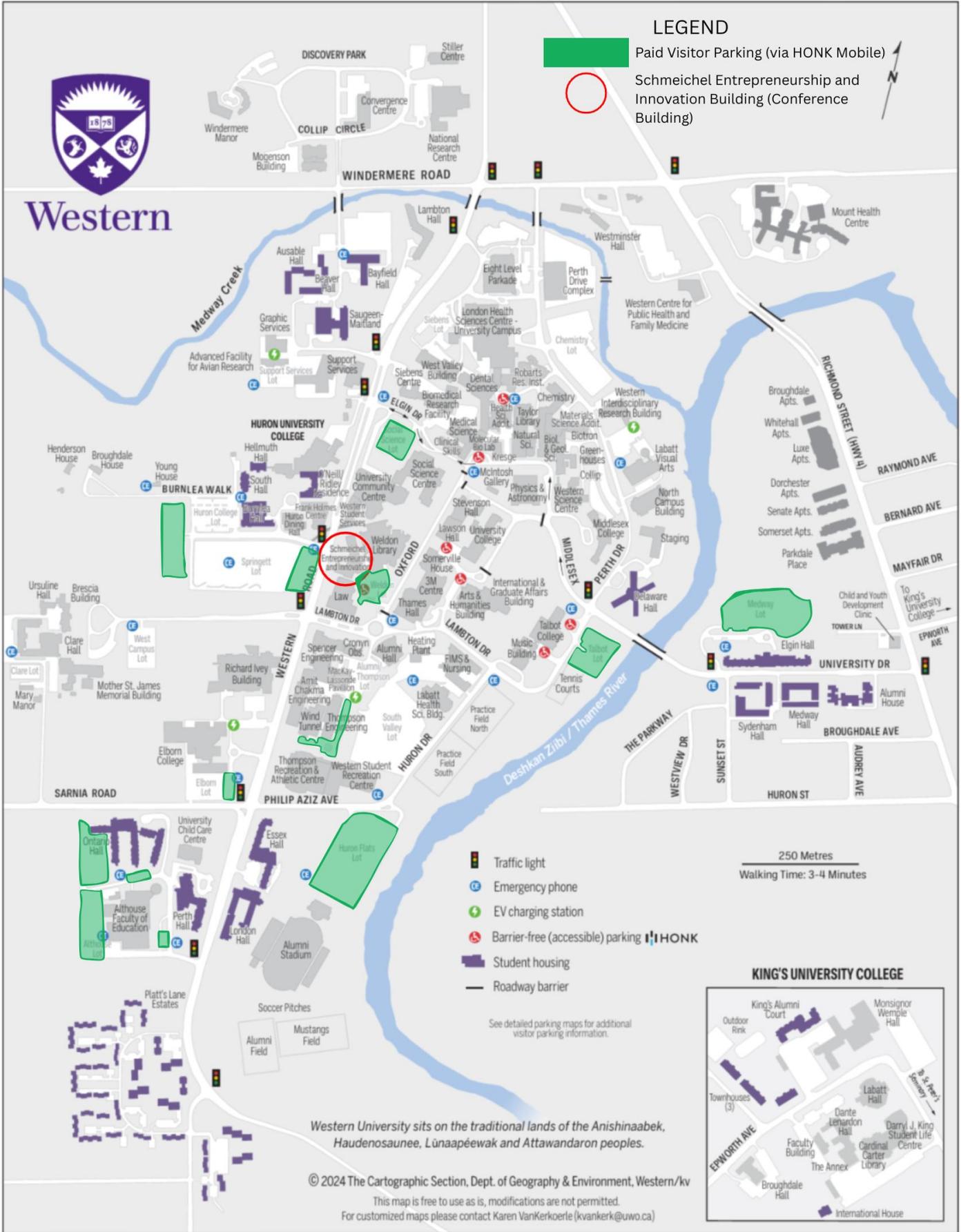
Interdisciplinary Panel Discussion

**2:15 PM – 3:00 PM**

Round Table Discussion

## SCHMEICHEL ENTREPRENEURSHIP AND INNOVATION BUILDING

Western University  
1151 Richmond St, London, ON  
enviroconuwo@gmail.com  
March 20, 2026  
8:30 AM – 3:15 PM



# Program

8:30 AM – 8:45 AM	<p><b>Registration</b>  <i>Ronald D. Schmeichel Building for Entrepreneurship and Innovation (Henceforth: SEI), Grand Hall, Room 1110</i></p>		
8:45 AM – 9:00 AM	<p><b>Opening Remarks</b>  <i>SEI, Grand Hall, Room 1110</i></p>		
9:00 AM – 9:30 AM	<p><b>Indigenous ceremony and teaching</b>  <i>SEI, Grand Hall, Room 1110</i>  <i>Dr. Mary Lou Smoke, Elder-in-Residence, Wampum Learning Lodge</i></p>		
9:40 AM – 11:30 AM	<p><b>Student Research Presentations</b>  <i>SEI, Grand Hall, Room 1110 &amp; SEI 4110</i></p>		
11:30 AM – 12:00 PM	<p><b>Lunch &amp; Interactive Workshops</b>  <i>SEI, Grand Hall, Room 1110</i>  <i>Workshop details:</i>  <i>Kristen Zinger – Neighborhood sketching (SEI, Grand Hall, Room 1110)</i>  <i>Lexi Kosmides – Seed Ball Making (SEI, Grand Hall, Room 1110)</i>  <i>Luis Patricio – Reimagining Sustainable Cities (SEI, Room 4110)</i></p>		
12:00 PM – 12:50 PM	<p><b>Local Vendor &amp; Student Initiatives Booths;          Poster presentations</b>  <i>SEI, Grand Hall, Room 1110</i></p>		
1:00 PM – 2:00 PM	<p><b>Interdisciplinary Panel Discussion</b>  <i>SEI, Grand Hall, Room 1110</i></p> <table> <tr> <td> <p><b>Dr. Robert Buchkowski,</b>  <i>Department of Biology</i></p> <p><b>Dr. Sabina Rakhimbekova,</b>  <i>Department of Civil and Environmental Engineering</i></p> <p><b>Dr. Evan Bowness,</b> <i>Department of Geography and Environment</i></p> </td> <td> <p><b>Dr. Nouri Najjar,</b> <i>Ivey Business School</i></p> <p><b>Dr. Egide Kalisa,</b> <i>Department of Epidemiology and Biostatistics</i></p> </td> </tr> </table>	<p><b>Dr. Robert Buchkowski,</b>  <i>Department of Biology</i></p> <p><b>Dr. Sabina Rakhimbekova,</b>  <i>Department of Civil and Environmental Engineering</i></p> <p><b>Dr. Evan Bowness,</b> <i>Department of Geography and Environment</i></p>	<p><b>Dr. Nouri Najjar,</b> <i>Ivey Business School</i></p> <p><b>Dr. Egide Kalisa,</b> <i>Department of Epidemiology and Biostatistics</i></p>
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2:15 PM – 3:00 PM	<p><b>Round-table discussions</b>  <i>SEI, Grand Hall, Room 1110</i></p>		
3:00 PM – 3:15 PM	<p><b>Awards and Closing Remarks</b>  <i>SEI, Grand Hall, Room 1110</i></p>		

# Indigenous ceremony and teaching

**Dr. Mary Lou Smoke**

Elder-in-Residence at the Wampum Learning Lodge

*Mary Lou was raised in Batchewana First Nation and moved to Toronto at the age of 15, where her path led her to meet her lifelong partner, Dan Smoke-baa. At just 18, she was crowned Miss Native Toronto, marking the beginning of a lifelong commitment to Indigenous representation and cultural pride.*

*Together, Mary Lou and Dan-baa moved to London 48 years ago when he enrolled in the Indian Teachers Education Program (ITEP) at Western. Their journey with Western began then and deepened in the 1990s, when they worked alongside Vivian Peters as some of the first Knowledge Keepers on campus. They became strong Aunties and Uncles to Indigenous students arriving from northern communities, offering support and guidance through times of transition and challenge.*

*Mary Lou and Dan-baa co-taught courses at Western from 2006 to 2017, including Representations of First Nations in the Media through the Faculty of Information and Media Studies and Indigenous Spirituality, with a focus on Anishinaabe and Haudenosaunee traditions, at Brescia University College.*

*Self-taught journalists and media trailblazers, Mary Lou and Dan-baa began their radio journey shortly after the Oka Crisis in 1990. They launched the Smoke Signals radio show, which ran for 33 years, and expanded into television in 1999, delivering Indigenous-focused news and commentary for two decades. Their passions have taken them across Turtle Island, learning from Elders and sharing many teachings.*

*Mary Lou is also a celebrated singer, having received the Lifetime Achievement Award from the Forest City Music Awards in 2019 and being named a Woman of Distinction by the YMCA in 2013 for her contributions to music, education, and the arts.*

*She holds two honorary doctorates: a Doctorate in Natural Laws from Noble University (2014) and a Doctor of Laws from Western University (2022).*

*Mary Lou brings with her a deep commitment to kindness, listening, and healing. She looks forward to working with Indigenous students, sharing teachings about medicines, and offering a compassionate ear. Whether through conversation, smudging, or song, she welcomes anyone on campus who wishes to connect.*

# Student Research Presentations

Q&A will take place at the end of each session.

Audience members may direct questions to any presenter within the session.

	People, Place & Wellbeing (Room 1110)	Biodiversity in Motion (Room 4110)
9:40 AM	<b>Ashley Rodrigues</b> – <i>Examining Undergraduate Student Beliefs, Behaviours, and Resilience in Responding to Environmental Concerns</i>	<b>Madison Robinson</b> – <i>The Genetic Diversity and Distinctiveness of Newly Discovered Bog Copper (<i>Tharsalea epixanthe</i>) Populations in Georgian Bay</i>
	<b>Jessica L. Campbell</b> – <i>Children's Right to Outdoor Experiences</i>	<b>Parker Vanbelleghem</b> – <i>Light at Night and the Migratory Stopover Behaviour of Thrushes</i>
	<b>Orus Mateo Castaño-Suárez</b> – <i>Terroir of Text and Graphs</i>	<b>Emily Laver-Shareski</b> – <i>The Genetic Monitoring of Mottled Duskywing (<i>Erynnis martialis</i>) During Reintroduction to Norfolk County</i>
	<b>Nevada Burwell</b> – <i>Exploring Power, Identity, and Nature in Paediatric Mental Wellness Care: A Qualitative Study on Nature-Based Prescriptions and Provider–Patient Relationships</i>	<b>Carson Mitchell</b> – <i>No pedigree, no problem: genomic inbreeding tracks genetic rescue with high resolution</i>
	<b>Bridgett Hollmann</b> – <i>Eco-Anxiety in Youth: A Scoping Review of Programs and Their Treatment</i>	
10:35 AM	<b>Break (15 minutes)</b>	
	Earth Processes & Deep Time (Room 1100)	Environmental Monitoring & Innovation (Room 4110)
10:50 AM	<b>Araminta Neog Bharali</b> – <i>Fluvio-Tidal Sedimentary Responses to Climate Change for Coastal Sustainability</i>	<b>Robert Silber</b> – <i>Implications of a Comprehensive Plastic Debris Sampling Program Across 60 Beaches of the Laurentian Great Lakes</i>
	<b>Martina Duarte</b> – <i>Deep-Sea Trace Fossils as Indicators of Rapid</i>	<b>Jorge Lizarazo</b> – <i>Predictive and Generative Deep Learning for</i>

	<i>Climate Change: Lessons from the Paleocene–Eocene Thermal Maximum</i>	<i>Biodiversity: Behaviour, Monitoring, and Migration</i>
	<b>Jawad Khan</b> – <i>Exploring Early Earth: Characterization of Banded Iron Formation (BIF) and Associated Organic Matter from the Gunflint Formation</i>	<b>Tess Gates-Flaherty</b> – <i>Climate-Driven Changes on Modern Temperate Tidal Flats, Chignecto Bay, New Brunswick</i>
	<b>Tsz Ho (Alex) Chiu</b> – <i>How Can We Turn Gold Tailings into Gold Mines?</i>	

# Interdisciplinary Panel Discussion

## **Dr. Robert Buchkowski** Department of Biology

*Robert is a terrestrial ecologist interested in how living organisms affect the cycling of carbon and nitrogen. His work blends field and laboratory data collection with mathematical modelling. He completed his undergraduate degree in Biology at Lakehead University and his master's and doctoral degrees at Yale University. Before joining Western University, Robert worked as a Research Scientist at the Atlantic Forestry Centre in Fredericton, New Brunswick. Outside of work, Rob spends time with his family and their two dogs named after fruit-bearing trees.*

## **Dr. Nouri Najjar** Ivey Business school

*Nouri is an applied microeconomist working in the areas of environmental economics, trade, and political economy. Most of his research relates the actions of firms to the environment, often in the context of environmental and climate policy. His recent work shows how changes at the firm in response to environmental policy contribute to a cleaner economy, and how environmental policy affects a firm's decision to participate in foreign markets.*

## **Dr. Sabina Rakhimbekova** Department of Civil and Environmental Engineering

*Sabina is a civil engineer working on groundwater surface interactions and transport of contaminants in coastal settings. Prior to Western, Sabina worked on NSF-funded project "Net-Zero Water Dorm" project, focusing on designing a sustainable on-campus building with low-energy, low-emission water treatment and as a Quality Intern on the Miami Tunnel project gaining practical experience in large-scale infrastructure. For her research, Sabina employs a multi-faceted approach, integrating field investigations, laboratory experiments and numerical and geospatial modeling to better understand, characterize and monitor complex interacting hydrological and geochemical processes. Her current research interests include climate change and anthropogenic impacts on water quality, groundwater and contaminant transport, and water sustainability. Passionate about teaching, Sabina focuses on innovative pedagogy, curriculum design, and active learning in STEM education. Her educational research explores effective teaching strategies, student engagement, and integrating real-world problems*

## **Dr. Egide Kalisa** Department of Epidemiology and Biostatistics

*Egide is a health and environmental scientist working on individual's exposure to air pollutants in indoor and outdoor environments, understand how much pollution people breathe, and how to reduce those exposures. Before working at Western, Egide was a Research Scientist in the Atmospheric Science and Technology Directorate, Air Quality Division, Environment Canada and Climate Change and a Postdoctoral Research Fellow at the University of Toronto. He has conducted research in Environment and Health in different countries, including Canada, Japan, New Zealand, Rwanda and the United Kingdom.*

## **Dr. Evan Bowness** Department of Geography and Environment

*Evan is an environmental sociologist and urban political ecologist working on sustainable food systems. He is the Canada Research Chair in Sustainability and Equity and, alongside Co-Director Mateus Tremembé, he is also the Director of the Towards Equitable Sustainability Transitions (TEST) Lab, where they collaborate with communities on the frontlines of the climate crisis through projects focused on traditional food systems, climate adaptation planning, and visual storytelling.*

# Hopeful Futures Roundtable Discussion

How do we imagine more hopeful, sustainable, and desirable futures amidst the ongoing climate crisis? What is the value of imagining hopeful futures when they seem so far out of reach? How can we utilize hopeful visions as a tool for addressing climate change?

## Local Vendor Booths

<b>Friends of the Garden</b>	<p><i>FOGs is a group of volunteers who care for two of Western's beautiful gardens: St. Mary's Rock Garden and the Pollinator Garden. FOGs volunteers work through the year on a variety of projects like garden maintenance and Plant Sales. FOGs make an annual contribution to bursaries for undergraduate and graduate students and embody a strong drive for environmental work and a great sense of community.</i></p>
<b>SOGS Sustainability</b>	<p><i>The Sustainability Committee strives to make SOGS an environmentally sustainable organization. Centralized by the SOGS Climate Emergency Declaration, the committee works closely with the SOGS Climate Commissioner, graduate students, the campus community, and city stakeholders to better communicate and educate SOGS members about issues pertaining to the global climate crisis and environmental sustainability.</i></p>
<b>Surface Science Western</b>	<p><i>SSW is a research and consulting laboratory at Western specializing in the analysis and characterization of surfaces and materials. Since its inception in 1981, SSW has successfully served thousands of clients from across a diverse range of industry sectors, from small manufacturing facilities to industrial giants.</i></p>
<b>London Bicycle Café</b>	<p><i>The London Bicycle Café is about 21st century mobility. They help families get moving on two wheels, giving them the freedom to traverse London beyond car dependency. They offer a curated selection of some of the best utility bicycles in the world and make them available to Londoners through their downtown location. Their shop features a wide selection of well-built and easy to maintain bicycles, from practical commuter choices to cargo bikes to move the whole family, along with full-service bike repairs and a café and espresso bar with coffee from some of Canada's top roasters.</i></p>
<b>Thames Region Ecological Association</b>	<p><i>TREA seeks to educate members and the community towards the development of an ecologically responsible and sustainable future through awareness, reflection, caring, and action. TREA supports new community leaders and their innovative projects from and for the community. This includes activities such as workshops, curricula, measurable projects, conferences, outreach, trainings, position statements, and public policy. Currently, TREA focuses on</i></p>

	<i>3 major areas for change: Waste Reduction &amp; Recycling, Active Transportation, and Reducing the Use of Fossil Fuels.</i>
<b>ReForest London</b>	<i>ReForest London is Southwestern Ontario's largest environmental charity, dedicated to preserving and expanding the urban forests of the region. Their vision is to see our region flourish through the impactful protection and enhancement of the natural world. As a bridge connecting individuals, organizations, and businesses, they actively collaborate with diverse stakeholders from across Ontario. By inspiring, educating, and empowering their community, ReForest London cultivates a collective commitment to environmental responsibility and sustainable practices.</i>
<b>Climate Crisis Coalition</b>	<i>The Climate Crisis Coalition (CCC) is a grassroots, student-run organization formed with the goal of helping Western University fulfill its responsibility of being a leader in the fight against the ongoing deterioration of the planet's environment. They prioritize advocacy work that targets the fossil fuel industry, such as fossil fuel divestment, and call for increased decarbonization efforts at Western.</i>
<b>Enviro USC</b>	<i>EnviroUSC is a USC student service that seeks to promote environmental sustainability at Western. Their mission is to make Western a more environmentally sustainable campus by leading events and initiatives to enhance student awareness of environmental issues on campus, incentivize eco-friendly student behavior, and provide a network for students to address their environmental concerns on campus and in the community.</i>
<b>Western sustainable Leaders Program</b>	<i>The Western Sustainable Leaders Program (WSLP) is a way for students to engage with sustainability throughout the year with a network of like-minded students from across campus interested in sustainability. Each month WSLP features a different theme connected to educational and experiential opportunities for students to get involved. The WSLP engages guest speakers from across campus and the broader London community, providing opportunities for students to network with professionals and peers involved with a wide range of sustainability initiatives on campus and in the community.</i>
<b>Ivey Degrowth Club</b>	<i>Degrowth is a multidisciplinary field that synthesizes an understanding of economics, history, anthropology, ecology, political science, and technology to form a broad critique of growth-dependent human development. The Ivey Degrowth Club (IDC) aims to spread awareness about degrowth while educating students on the concept's relevance in their respective career paths. IDC presents alternative economic structures that align with Earth's planetary boundaries while offering pragmatic solutions to</i>

	<p><i>the various crises we face today. The IDC also offers alternative discussions to common course programming, such as the infinite growth narrative taught in mainstream economic classes. IDC welcomes all community members to participate in dialogues and contemplate subjects that are not typically addressed at Ivey but hold significant value for aspiring business leaders.</i></p>
<b>Western Outdoors Club</b>	<p><i>The Western Outdoors Club consists of a fun group of people who love spending time in the outdoors! The club runs activities for all levels of outdoors enthusiasts, whether it be a scenic stroll on hiking trails or overnight backpacking adventures. Throughout the year, the Western Outdoors Club offers hiking, camping, skiing, snowshoeing, and more! In the fall, winter, and spring, the club offers a mix of both overnight and day trip adventures to appeal to a wide variety of members, while also offering free equipment rentals, including tents, hiking packs, sleeping bags, stoves, and first aid kits, for registered members.</i></p>
<b>Anabada Market</b>	<p><i>The Anabada Market is an initiative aimed at building a community through zero waste practices. The focus is on swapping less-used items rather than consuming through buying new. First conceptualized by the 2024 class of graduate students pursuing master of environment and sustainability degrees, the market follows the Anabada philosophy – a Korean phrase meaning to conserve, share, exchange and reuse.</i></p>

# Research Talks & Presentations

## Room 1110: 10-Min Research Talks

9:40 AM     Examining Undergraduate Student Beliefs, Behaviours, and Resilience in Responding to Environmental Concerns  
*Ashley Rodrigues, Western University*

The project to be discussed in this talk studied Canadian young adult students' beliefs and behaviours in response to the climate crisis and examined how these beliefs and behaviours relate to resilience and hopefulness. Focus was placed on emerging topics in environmental psychology, such as climate responsiveness, mobilization efforts, and addressing eco-anxiety. These topics, and their relationship to positive psychology, were explored through student narratives collected through qualitative semi-structured interviews. Questions considered how environmental concerns have impacted the beliefs and choices of young adults and considered subjects such as environmental activism and ecological mindfulness in daily behaviours. Narrative Inquiry was used as the tool of analysis to uncover deeper meanings and experiences for undergraduate students related to these topics on the climate crisis and student psychological resilience. Interviews were transcribed verbatim and analyzed using narrative analysis to identify key themes. Results showed that young adults who experienced environmental concerns had salient negative perceptions and emotions attached to the environmental crisis. However, they engaged in various coping and pro-environmental behaviours which alleviated their negative symptoms and strengthened their resilience. The findings of this project contribute to the emerging research on climate anxiety, youth engagement, and resilience.

9:50 AM     Children's Right to Outdoor Experiences  
*Jessica L. Campbell, York University & Toronto Metropolitan University*

In recent decades, children's outdoor time has decreased while sedentary activities and technology use have increased. This shift has led to what scholars refer to as a nature-deficit disorder among children (Louv, 2005; Coe, 2016). There is considerable scholarship demonstrating the numerous benefits of playing and learning outdoors (Loebach et al., 2021; Olivos-Jara et al., 2020; Soleimani et al., 2024; Terada & Ermilova, 2024; Martins et al., 2024; Paulsen & Andrews, 2019). Furthermore, opportunities for children's outdoor experiences through play, learning, and culture are necessary to uphold their rights under the UNCRC (1989). Yet, despite the importance of outdoor experiences, many children spend more time engaged with technology and consuming digital media than in the natural environment, raising concerns about the consequences of this trend (Loebach et al., 2021; Terada & Ermilova, 2024; Trudeau, 2024). This presentation explores how factors such as intersectionality, adult gatekeepers, young people's biophobia, and their preferences for technology are barriers to exercising their right to outdoor experiences. In doing so, it critically examines ways to overcome these barriers. I will explore alternative approaches to promoting environmental relationships that challenge the anthropocentrism embedded in environmental stewardship pedagogies. This presentation also explores how children's cultures, through media

narratives and digital technology, can be leveraged to encourage more time spent playing outdoors. This work is situated within childhood studies, an interdisciplinary field that recognizes children as social actors who play a role in everyday life (James & James, 2012) and, more recently, as environmental actors (Biswas & Hylland Eriksen, 2023). In doing so, it emphasizes a children's rights perspective that prioritizes teaching children respect for the natural environment while promoting play, leisure, and healthy living standards (UNCRC, 1989).

10:00 AM **Terroir of Text and Graphs**  
*Orus Mateo Castaño-Suárez, OCAD University*

The trans-sensorial synaesthetic quality of tasting information about global warming is the terroir in Terroir of Text and Graphs (TTG), which is itself a trans-modal Topological Capta Analysis (TCA) of the land-thought relationship. The relationship between place and language influences fundamental characteristics of how we think. So, I propose TCA as a method for examining relationships between the ecological and conceptual to improve the translation of information from one ecologically located way of knowing to another. Examining the relationship between place and idea using TCA in TTG has significant implications for understanding contemporary classifications of city, country, and wilderness. In my illustration of a spatial gigamap with a Horn Torus Semantic Form network graph, I propose that rewilding as a means of ecological diversity in food supply can consistently inform the diversification of interdisciplinary forums in academic settings. Applying said solutions to siloed hyper-specialized monocultural over-work could provide insight into the best types of opportunities for disciplinary inter-pollination solutions. TTG would more explicitly delineate relationships between land and language in human and nonhuman ways of knowing. From an Indigenous perspective, the wisdom carried in story and cultural practice can be articulated through the expanded field of graphs of texts, including Semantic Forms, Query Isomorphs and a digital TCA Workspace in gigamaps, Systematic Combinations, topic models, and the vector graphs that form the basis of AI Large Language Models. TTG as the integration of diverse wisdom lineages, including the distinctly anthropo-symbiotic Indigenous ways of knowing, can be simultaneously an act of ecojustice and a means of informing Sustainability Transitions. At the core of TTG is my commitment to Indigenous data sovereignty in which "Indigenous practitioners are making the decisions that guide the development of AI themselves" (Lewis et al., 2024, p. 8) with and without AI.

10:50 AM **Fluvio-Tidal Sedimentary Responses to Climate Change for Coastal Sustainability**  
*Araminta Neog Bharali, Western University*

Modern climate change, largely driven by human-caused greenhouse gas emissions, is rapidly transforming coastal and fluvio-tidal environments through sea-level rise, altered hydrodynamics, and shifts in sediment supply and ecosystem structure. The Bay of Fundy Canada has the highest tidal range in the world (16m) and offers a unique natural setting to investigate the links between climate forcing and coastal geomorphology. This study focuses on the Upper Salmon River (USR), a small, coarse grained, fluvio-tidal system shaped by both terrestrial and marine influences. The objective of this project is to assess whether climate-driven environmental changes over the past two decades have affected sediment supply, grain-size distribution, geomorphology, and biogenic activity within the USR. Fieldwork was carried out in August 2025 and involved sampling at seven locations along the lower 1.5–2 km of the river, where water-quality parameters (e.g., water, temperature, pH, oxidation reduction potential, conductivity, turbidity, dissolved oxygen, total dissolved solids, salinity) were measured at high and low tide, and surface sediment samples were collected from various depositional settings. Gravel fraction was photographed and analyzed in ImageJ using a grid (1m × 1m). Laboratory work includes grain-size and textural analyses, mineralogical characterization, determination of total organic carbon and carbonate content and image analysis of gravel fractions. Multivariate statistical methods are applied to identify sedimentary patterns, while ichnological observations are used to evaluate infaunal activity as indicators of environmental conditions. Geomorphological changes are examined using digital elevation models and comparisons of aerial imagery from 1930 to 2026, alongside regional climate records. Overall, this research aims to provide an updated evaluation of climate change impacts on a highly dynamic and small fluvio-tidal system and establish baseline information to support future monitoring and coastal management efforts in the Bay of Fundy region.

11:00 AM **Deep-sea trace fossils as indicators of rapid climate change: Lessons from the Paleocene–Eocene Thermal Maximum**  
*Martina Duarte, Western University*

The Paleocene–Eocene Thermal Maximum (PETM, ~56 Ma) represents one of the most rapid and intense global warming events in Earth's history, triggered by a massive carbon dioxide release that caused pronounced ocean acidification, warming, and ecological disruption for infauna. Moreover, being global in scale, the PETM offers a powerful natural analogue to evaluate how marine ecosystems respond to climate stressors relevant to today. In this project, I analyze intervals of deep-sea sediment core recovered during the International Ocean Discovery Program (IODP) Expeditions 390&393 that correspond to the PETM using ichnological observations integrated with high-resolution CT scanning to quantify trace-fossil abundance, distribution, maximum diameter, and tiering patterns. Trace fossils record organism (infauna) behavior in response to seafloor conditions, such as oxygenation, organic-matter supply, and substrate consistency, among others. Previous studies on benthic community responses to PETM from other areas show shifts in bioturbation intensity and trace-fossil assemblages across the PETM, suggesting rapid benthic ecosystem

reorganization under warming and changing carbon-cycle conditions. These behavioral signals provide direct evidence that marine infauna can adjust their strategies to cope with stress, including changes in burrowing depth, sediment mixing, and colonization patterns, thereby demonstrating ecological resilience. This project aims to answer the following questions about climate change and adaptation: 1) Do results of previous ichnological studies from deep sea cores correspond to signals observed in the South Atlantic Ocean? 2) How do they compare? 3) Were they really global in scale?, and 4) Which physico-chemical parameters played the major role in shaping the ichnofossil assemblages, helping us refine ecosystem resilience and vulnerability in marine ecosystems under ongoing anthropogenic warming?

### Room 4110: 10-Min Research Talks

9:40 AM      The genetic diversity and distinctiveness of newly discovered bog copper (*Tharsalea epixanthe*) populations in Georgian Bay  
*Madison Robinson, Western University*

Bog coppers (*Tharsalea epixanthe*), a cranberry specialist butterfly species, were thought to only be found in peatlands. Recently, new non-peatland island populations have been discovered in Georgian Bay. Bog coppers are poor dispersers, limiting their ability to move between habitat patches. Due to this, island colonization is unusual for the species. To determine whether these colonizations were isolated, historical events, or ongoing movements, we will characterize the genetic diversity of, and the differentiation between, island and mainland populations through genotyping eleven microsatellite loci with capillary electrophoresis and comparing individual allele lengths. To protect these unique bog copper populations, our study will inform alternative conservation strategies, provide evidence of their origin, and further the understanding of Georgian Bay's biodiversity.

9:50 AM      Light at night and the migratory stopover behaviour of thrushes  
*Parker Vanbelleghem, Western University*

As urban development continues, artificial light at night (ALAN) is becoming a growing concern, especially for nocturnally migrating songbirds that rely on environmental cues such as photoperiod to trigger migratory movements. Although migrating songbirds are naturally exposed to some light at night from moon illuminance and reflections from cloud surfaces, excess exposure to light from anthropogenic sources can disrupt migration behaviour by attracting and disorienting passing birds. This study investigates how light at night affects songbirds (specifically *Catharus ustulatus* and *Catharus guttatus*) at stopover in Long Point, Ontario by quantifying the relationships between nightly sky brightness and (1) the daily count of thrushes arriving to the stopover site, based on data obtained from Long Point Bird Observatory (LPBO); (2) the intensity and frequency of nocturnal flight calls, recorded throughout the migration season using a song metre; and (3) the probability of departure from the stopover site, determined using automated radio telemetry. Preliminary results suggest that although these relationships are not significant, a subtle correlation between sky brightness and migratory activities does exist, where birds tend to be more active on brighter nights.

These insights provide a base for future work exploring how songbirds are affected by light at night during migration, which can help inform policies for songbird conservation and urban planning that considers the effects of ALAN.

- 10:00 AM The genetic monitoring of mottled duskywing (*Erynnis martialis*) during reintroduction to Norfolk County  
*Emily Laver-Shareski, Western University*

Insects, despite comprising most of the biodiversity on Earth and facing significant declines, are often overlooked for conservation. One conservation practice to combat these population declines is reintroductions. However, we do not know how many reintroductions are unsuccessful due to genetic factors. The mottled duskywing (*Erynnis martialis*) is an endangered butterfly species that historically existed across Ontario but now exists in a limited number of areas within the province. The Ontario Butterfly Species at Risk Recovery Team recently reintroduced the mottled duskywing to Norfolk County, Ontario. To assess the success of these recovery efforts, I aim to monitor the genetic diversity in reintroduced populations of mottled duskywing in the years following reintroduction. These results will provide a deeper understanding of the role of genetic variation in reintroduction success, while also providing crucial information to a recovery team allowing for adaptive management of an endangered species in Ontario.

- 10:10 AM No pedigree, no problem: genomic inbreeding tracks genetic rescue with high resolution  
*Carson Mitchell, Western University*

With increasing habitat fragmentation and population isolation, inbreeding becomes a pressing concern for the persistence of wildlife populations. Inbreeding raises homozygosity, revealing harmful recessive alleles that lower survival and reproduction and accelerate population decline. Thus, detailed inbreeding monitoring is crucial for assessing extinction risk and evaluating the effectiveness of conservation management strategies. Traditionally, pedigree-based inbreeding estimates have been used. Genomic approaches now provide more powerful alternatives. For my MSc project, I compared pedigree and genomic inbreeding estimates in a long-term study of wild bighorn sheep (*Ovis canadensis*) from Ram Mountain, Alberta, Canada, monitored from 1972 to the present. This population experienced a severe bottleneck followed by genetic rescue through the translocation of 35 individuals over 13 years. I found that genomic inbreeding coefficients dropped by 24% after genetic rescue efforts began. In contrast, pedigree inbreeding coefficients increased, likely because greater pedigree depth improved our ability to detect inbreeding in later cohorts, highlighting a methodological bias and the need for genomic monitoring. By demonstrating that genomic tools provide clearer, more responsive measures of conservation outcomes, we can better conserve wildlife populations threatened by the changing world.

- 10:50 AM Implications of a Comprehensive Plastic Debris Sampling Program Across 60 Beaches of the Laurentian Great Lakes  
*Robert Silber, Western University*

Plastic pollution is a global issue affecting multiple environmental compartments, including water, soil, sediment, air, and biota. Shoreline sediment is an important sink for plastic debris accumulation, as it reflects both local and basin-wide sources. In October 2024, we sampled pellets and other visible plastic debris (VPD) from 60 beaches of the Laurentian Great Lakes, and sediment was sampled from 25 of these beaches to determine microplastic (< 5 mm long) content. The sampling program was designed to: (1) compare the concentrations of the three types of plastic debris pollution between beaches, and (2) compare the VPD and pellet results with the data from a 2018 survey. A total of 1,679 items of VPD were found in 2024 (average 2.8 items/m<sup>2</sup>), which represents a substantial decline compared with the 9,025 VPD items recorded from 2018 (average 13.7 items/m<sup>2</sup>). Only 13 of the 53 resampled beaches showed an increase in plastic debris in 2024. After pellets and unidentifiable fragments, cigarette butts were the most commonly identified item. A total of 3,218 plastic pellets were recovered from the surveyed beaches in 2024 (average of 5.4/m<sup>2</sup>) compared to 19.1/m<sup>2</sup> in 2018. Pellet distribution was variable, with three beaches accounting for 78% of the total pellet count in 2024. This result indicates that localized inputs, such as plastic manufacturers and pellet spill sites, are controlling factors on pellet pollution. A total of 385 microplastic particles were found in sediment sampled from 25 beaches. Concentrations ranged from 20 particles per kilogram of dry weight sediment (20 kg<sup>-1</sup> dw) to 580 kg<sup>-1</sup> dw. Comparing plastic debris type concentrations for beaches sampled in 2024 indicates there are no correlations, which highlights the need for addressing and mitigating plastic pollution according to different sizes and types. There is, however, a moderate positive correlation when comparing pellet abundances in 2018 and 2024. Additional data analysis will reveal the specific beaches on each lake that should be targeted for additional clean-ups and used for informing plastic policy initiatives.

11:00 AM **Predictive And Generative Deep Learning for Biodiversity: Behaviour, Monitoring, And Migration**  
*Jorge Lizarazo, Western University*

Deep learning is increasingly used in ecology, but two paradigms are still often blurred: predictive and generative modelling. Predictive models learn mappings from observations to targets (e.g., classification or regression) and are typically evaluated with accuracy, precision–recall, and calibration. Generative models instead learn the structure of the data, enabling simulation, gap-filling, uncertainty-aware scenario exploration, and biologically plausible counterfactuals. This presentation clarifies the distinction and shows how both approaches can work together to improve inference and conservation decisions. Two predictive case studies are used here. First, BoutScout extracts incubation behaviour from nest temperature time series by classifying on/off bouts at fine temporal resolution, converting raw sensor streams into interpretable behavioural events and derived metrics such as bout durations and nest attentiveness. Second, the Telmato-Finder project focuses on high-elevation stream frogs (~3,000 m a.s.l.), identified through automated analysis of acoustic recordings. A deep-learning model detects and classifies calls, supporting scalable monitoring in remote mountain river systems where visual surveys are limited. The closing section outlines how generative modelling can extend these tools beyond detection towards

forecasting and mechanism. Generative sequence models can help reconstruct missing observations, simulate plausible movement or behavioural trajectories, and test “what-if” scenarios under climate and habitat change with uncertainty made explicit. A forward-looking application is highlighted for avian migration, where generative approaches may support track reconstruction, uncertainty quantification, and exploration of changing migratory strategies under extreme weather

### Room 1110: 5-Min Lightning Talks

10:15 AM Exploring Power, Identity, and Nature in Paediatric Mental Wellness Care: A Qualitative Study on Nature-Based Prescriptions and Provider - Patient Relationships

*Nevada Burwell, Western University*

Nature prescribing—where healthcare providers formally recommend time in parks, green spaces, or with other nature-related activities—has emerged as a strategy to support child and youth health. Research links exposure to natural environments with improved mental health, stress reduction, physical activity, and overall well-being. However, the environmental and social conditions that shape families’ ability to engage with these recommendations remain underexamined. This presentation describes an ongoing qualitative study exploring how nature prescribing is implemented in paediatric healthcare and how environmental access and social inequities influence its uptake. The study involves semi-structured interviews with paediatric outpatients, healthcare providers and parents or caregivers of children receiving outpatient care. Using thematic analysis, the research examines how clinical recommendations for nature engagement are understood, negotiated, and enacted within diverse family and neighbourhood contexts. Guided by an environmental justice perspective, the study considers how unequal access to safe and high-quality green space intersects with income, race, disability, transportation, and neighbourhood infrastructure. Although nature prescribing is often framed as a low-cost and universally accessible intervention, structural barriers—including limited park availability, safety concerns, time constraints, and experiences of exclusion in outdoor spaces—may limit participation for some families. The research also explores how clinical authority interacts with environmental conditions in shaping health decision-making. By situating paediatric health interventions within broader environmental systems, this study highlights the need for collaboration between healthcare providers, urban planners, and community organizations to ensure that nature-based health initiatives are equitable, inclusive, and responsive to diverse lived realities.

10:25 AM Eco-Anxiety in Youth: A Scoping Review of Programs and Their Treatment

*Bridget Hollmann, Western University*

Eco-anxiety is an umbrella term describing mental distress related to climate change, characterized by emotions such as fear, anger, exhaustion, powerlessness, feelings of loss, and helplessness (Baudon, 2021). As climate change intensifies, eco-anxiety is becoming increasingly prevalent across communities. Research suggests that certain groups, including youth, Indigenous peoples, and individuals with strong personal connections to the natural environment, may be particularly vulnerable to experiencing climate-related distress (Léger-Goodes et al., 2023). The growing recognition of eco-

anxiety highlights an urgent need for research to guide mental health professionals in selecting developmentally appropriate and evidence-informed interventions. Although the literature on eco-anxiety is expanding, there remains limited research examining interventions specifically designed for youth, particularly within a Canadian context. Our study sought to identify and review existing programs and interventions aimed at supporting youth populations experiencing eco-anxiety. Using a scoping review methodology, 690 potential articles were reviewed, with a total of 24 programs and interventions identified for final analysis. With these articles identified, the review sought to code and analyze thirteen different dimensions for each intervention, including program characteristics (e.g., length, program format, setting, facilitator type, participant age range) and treatment mechanisms (e.g., active treatment components, outcome variables, theory of change) used within each program. This presentation will present the findings of the scoping review, highlighting the diversity of program delivery models and therapeutic approaches currently used to support youth with eco-anxiety. Key gaps in the literature and methodological limitations will be discussed. Implications for how to better support youth with eco-anxiety will also be explored, with a focus on next steps in research and clinical practice.

11:10 AM **Exploring Early Earth: Characterization of Banded Iron Formation (BIF) and Associated Organic Matter from the Gunflint Formation**  
*Jawad Khan, Western University*

As high-grade mineral ores become increasingly depleted, societies must rethink how essential resources like iron are formed and how they can be sustainably accessed. Although iron remains abundant in the Earth's crust, economically viable deposits are becoming harder to extract. Nearly 90% of global iron production comes from banded iron formations, including the Gunflint Formation in Canada, the focus of this research. Beyond its economic importance as a major source of iron ore, the Gunflint Formation is also scientifically significant for preserving some of the oldest evidence of complex life on Earth. Uncertainty remains over whether biological activity contributed to the formation of these iron rich layers. Banded iron formations are no longer forming on Earth, so their origins must be understood through detailed study of existing deposits. Preliminary field studies in 2024 identified filamentous, bacteria like structures within Gunflint samples, which this study confirmed as microfossils. This project builds on those findings by examining possible spatial and chemical associations between iron minerals and microbial remains. By analyzing these relationships, the study aims to determine if biological processes played a role in iron formation, and if modern analogs could help recreate their formation. Understanding how nature concentrated iron billions of years ago may provide insights into more efficient and sustainable extraction strategies today. By learning from natural systems, Canada moves closer to adapting resource use in a world where high grade ores are no longer guaranteed.

11:15 AM **How can we turn gold tailings into gold mines?**  
*Tsz Ho (Alex) Chiu, Western University*

Gold mining contributes significantly to the Canadian economy, making Canada the world's fourth-largest gold producer. Conventional gold-extraction methods use toxic chemicals such as cyanide and generate a large amount of tailings. Canada has

approximately one billion tonnes of tailings that contain 0.5-1.5 g/tonne of residual gold. Upcycling these tailings could recover residual gold worth an estimated \$10 billion. In addition, the accidental release of cyanide-bearing tailings from a Yukon gold mine in 2024 highlights the need for more environmentally friendly extraction methods. Microbial gold mining offers an alternative approach that enables gold recovery while mitigating environmental liabilities, thereby improving the sustainability of the Canadian mining sector. While recent studies on gold biogeochemistry focused predominantly on bacteria, the role of fungi in gold weathering and distribution in the biosphere remains poorly understood. This study investigates the metabolic capabilities of fungal communities associated with gold grains collected from Australian, New Zealand, and Finnish rivers known for historic placer gold mining. Using high-throughput DNA-based profiling and microscopy, diverse fungal taxa colonizing gold grain surfaces were consistently detected. These fungal communities share a similar set of metabolic traits linked to heavy metal tolerance despite differences in geographic origin and climatic variation. Genetic evidence reveals metabolic capabilities for metal chelation, redox cycling, detoxification of heavy metals such as copper and mercury, and processes contributing to gold dissolution and precipitation (i.e., gold biogeochemical cycling). These results highlight fungi as microbes capable of directly or indirectly influencing gold biogeochemical cycling. This research on gold grains deepens our understanding of fungal-gold interactions and provides fundamental insights into the potential application of fungi for recovering residual gold from tailings. Leveraging naturally occurring fungal adaptations to metal-rich environments could support the development of “greener” and low-impact biotechnologies for supporting resource resilience and improving environmental sustainability.

### Room 4110: 5-Min Lightning Talks

11:10 AM     Climate-driven changes on modern temperate tidal flats, Chignecto Bay, New Brunswick  
*Tess Gates-Flaherty, Western University*

This research employs field work, laboratory work, and statistical analysis to examine changes in the sedimentology and ichnology of modern tidal flat environments of the Bay of Fundy, in relation to climate change. The Bay of Fundy, located in Atlantic Canada, is characterized by world-record-breaking high tides and extensive muddy tidal flats that are sensitive to shifts in sea level, sediment supply, and hydrodynamic forces and which host a variety of sediment-dwelling invertebrate communities. Previously published research from the 1980's and early 2000's will be used as a baseline for comparison to identify main drivers for environmental change in the Bay of Fundy. Decadal changes in trace morphology are expected to correspond with climate-related changes of tidal flat characteristics, physico-chemical stressors, and/or atmospheric influences. Field methods included grab sampling, box coring, and suction coring to collect sediment samples from Waterside Beach, Mary's Point, and Shepody Flats. Trenching and photography were utilized to document sedimentary structures and infauna traces, while a water probe was used to measure physico-chemical water properties, namely water temperature, water pH, oxidation reduction potential, conductivity, turbidity, dissolved oxygen, total dissolved solids, salinity, and specific gravity of seawater. Laboratory analysis includes grain size, carbonate content, and total organic carbon measurements. Trace density will be quantified using the image

analysis software ImageJ/FIJI, and grain size statistics will be obtained using GRADISTAT 8.0. Despite the importance of this environment, minimal recent sedimentological and ichnological research has been conducted at these locations. This work will increase our understanding of climate change impacts on sediment-burrowing organisms and vulnerable coastal habitats, providing valuable context for developing adaptive management strategies, and coastal protection plans. Results of this research may also be extrapolated to better understand other vulnerable coastal areas and temperate tidal flat environments facing similar stressors.

## Room 1110: Poster Presentations

### #1 Tracking the Ocean's Sentinels: Mobile Predators and Climate Resilience in the Deep Sea

*Alessandra Walsh, Western University*

This doctoral project investigates how deep offshore marine ecosystems will respond to climate change, using mobile predators as indicators of ecosystem resilience. This research centers on highly mobile pelagic predators, including conservation targets such as leatherback turtles (OSP AR). As climate change acts to destabilise marine ecosystems and alter prey distributions/trophic interactions, many pelagic predators are highly vulnerable to extinction (Bornatowski et al., 2018). Despite this vulnerability, many pelagic species remain data deficient (Braun et al., 2023). Further, current monitoring cannot fully explain the mesopelagic predator-prey dynamics that are central to maintaining ecosystem resilience (Lindegren et al., 2016). This is because current mesopelagic assessment methods do not explore ecological condition, population connectivity, or predator habitat use (Fortuna et al., 2024). By utilising predator movements to gauge ecosystem functioning, this research can develop our understanding of mesopelagic spatial dynamics holistically, whilst addressing critical knowledge gaps in marine biological data (Morales et al., 2010). As pelagic predators exhibit complex migrations that cross national jurisdictions, their management will benefit from this project's international cooperation and cross-border observation frameworks (Andresen et al., 2024). This research is embedded within the MOSAIC programme; supported through PEACEPLUS and the EU, UK, and Irish Governments. Ireland's deep offshore waters provide natural buffers against climate impacts and support ecosystem services critical to coastal communities and commercial industries (Norton et al., 2018). These mesopelagic systems, while essential to ecosystem connectivity, carbon cycling, and food-web stability, have received less attention than coastal habitats (St. John et al., 2016). Despite this research gap, Irish governments have committed to designate 30% of marine areas as protected by 2030 and expand offshore renewable energy development (Barnes, 2020). Balancing biodiversity protection orders with fisheries and renewable energy development will present a major spatial planning challenge, with success depending on the availability of robust biological evidence capable of capturing broad spatial dynamics (Crowder et al., 2008). We aim to quantify how pelagic predator-prey systems in the North Atlantic will function, respond, and adapt under climate change, translating this understanding into actionable tools for conservation and marine spatial planning. To do so, we will integrate predator movement data with prey-field and environmental datasets, providing hands-on analytical experience while contributing clearly defined outputs to the PEACEPLUS collaboration. Throughout the project, we will take ownership of multi-sensor

observation methods that go beyond conventional movement ecology, synthesizing analytical workflows and developing models for impactful research outputs.

#2 **The Oil Sands Tailings Problem: Searching for a Silver Bullet**  
*Nicholas Cheng, Western University*

Oil sands production will remain part of the global energy system for decades to come, even under aggressive energy transition scenarios. Given the existing and anticipated regulatory frameworks, the long-term viability of Canadian oil production depends on how effectively operators can manage water and tailings. As of today the academic world has yet to come up with a 'silver bullet' to deal with the tailings problem. In my poster I will explore enhanced non-segregated tailings (eNST) whose geotechnical behavior, dewatering characteristics, and field-scale implementation is outperforming all other potential solutions. Research Question: Can polymer-treated fluid fine tailings (FFT) blended with sand at controlled sand-to-fines ratios (SFR) achieve sufficient geotechnical stability and dewatering performance to function as a trafficable reclamation material without requiring conventional capping? Methods/Research Process: FFT were treated with the polymer flocculant and blended with sand to produce engineered materials at three SFRs: 0, 1.5, and 3. These values were selected to evaluate how increasing sand content influences dewatering behavior, floc structure, and geotechnical stability. Initial 300g bench-scale tests were conducted to establish repeatable procedures followed by 1L production-scale trials to assess scalability. Performance was evaluated using net water release (NWR), solids content within formed flocs, polymer dosage required to achieve optimal flocculation, and a qualitative assessment of release water clarity/colour. The influence of SFR on flocculation characteristics was explicitly examined including how sand addition affected the hydraulic conductivity and structural integrity of the resulting material. Results: The eNST method significantly influenced dewatering performance and resulting material behaviour. An SFR of 1.5 demonstrated consistent NWR, repeatable flocculation protocols, and a material structure that most closely emulated soils common to the Athabasca region. By performing an eNST treatment with an SFR of 1.5 operators could achieve improved structural integrity relative to the other tested conditions.

#3 **Biological aging and life history variation in female grey seals (*Halichoerus grypus*)**  
*Cassidy Moline, Western University*

Despite predictions that finite energy availability should result in a trade-off between survival and reproduction, there are many species where some individuals both live longer and reproduce more. This results in the presence of both higher- and lower-quality individuals. While such gradients in individual quality are often studied using life history traits, I also aim to investigate quality at a molecular level. This is possible using DNA methylation as a biomarker of biological age (i.e., an individual's physiological state). I will apply this approach to a long-term dataset of grey seals (*Halichoerus grypus*) on Sable Island, Nova Scotia, where individual quality differences among females have been observed. I will develop a tool to estimate grey seal age based on DNA methylation and use it to assess the relationship between individual quality and biological age. This study

will be one of the first to assess the relationship between biological age and individual quality, addressing a prevalent knowledge gap that may inform how quality gradients arise in long-lived mammals. Additionally, this study will result in a grey seal age-estimation tool, which has broad applications for future ecological and conservation research on grey seals.