Poster Abstracts – Alphabetical by Presenting Author

Intraspecific Brood Parasitism as a Strategy to Increase Reproductive Success for European Starlings (Sturnus vulgaris) Raising Concurrent Broods

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Intraspecific brood parasitism (IBP) is a reproductive strategy used by certain bird species whereby a female lays an egg in a conspecific nest. This strategy may be used by females to increase reproductive success beyond their own broods. It has been suggested that, in this context, female parasites would be of high quality as they are able to incur the cost of additional egg laying. It has also been suggested that parasites may choose host nests based on the quality of potential host parents. European Starlings (*Sturnus vulgaris*) have a mixed reproductive strategy which includes IBP. My study examined a nestbox-breeding population of European Starlings located on the campus of Saint Mary's University to determine whether female starlings engage in IBP while raising concurrent broods. I also compared the body condition of parasitic females and their female host(s) and compared the body condition of adults from parasitized and non-parasitized nests. IBP nestlings were identified through microsatellite DNA analysis and parentage was assigned whenever possible (36 broods). Adults were measured to calculate body condition. Female starlings were found to engage in IBP while raising concurrent broods, and female parasites were found to be in significantly greater condition than the females they parasitized. Female and male body condition did not differ significantly between parasitized and non-parasitized nests. These results suggest that IBP is a strategy used by high quality female starlings to increase reproductive success beyond their broods, and that body condition alone does not influence host selection in European Starlings.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Modelling fire behaviour in hurricane-impacted stands of Prince Edward Island

Cyril Cook[1], Raphael Chavardes[2], Tristan Skretting[2], Christopher Wong[1], Rafaella Mayrinck[1]

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The Canadian Forest Fire Behaviour Prediction System (FBP) is currently undergoing a revision to address shortcomings in predictive efficacy regarding vegetation fuel types not represented in the current model. These include fuel types commonly found in the Maritimes that were not historically prone to fire relative to other fuel types in western Canada. Anthropogenic climate change is expected to increase the frequency and intensity of fires in the region. The current FBP also does not accurately represent several fuel types in disturbed stands, e.g. hurricane blowdown or hemlock woolly adelgid, that are present in the Maritimes. The fuel types are input into fire behaviour models that support effective fire management planning and monitoring of long-term effects of fire on forest dynamics. In this work, forest fuel data was collected from eight plots in hurricane-impacted stands on the north shore of Prince Edward Island during 2025 according to the sampling protocol for the Next-Generation Canadian Forest Fire Danger Rating System. The fuels data was modelled using the Forest Vegetation Simulator with the Fire and Fuels Extension under five local fire-weather scenarios. Results including flame length and fire type were analyzed and compared to FBP outputs using the REDapp interface. The results will be discussed in terms of implications on fire suppression capabilities and risk, and the potential influence on post-fire forest dynamics. Ultimately, we hope the results from this study can support fire management policy in the Maritimes.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Correlations Between Methane Fluxes, Vegetation Type, and Microbial Community Compositions in the Degraded Quince Bog

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[1]Saint Francais Xavier University

Peatlands store about 21% of the global soil carbon, even though they only make up 3% of land area. A high water table in natural peatlands creates anoxic conditions that allow peat to accumulate. Drainage of peatlands creates oxic conditions that allows aerobic bacteria to break down the organic matter and release carbon dioxide (CO_2) to the atmosphere. Herbaceous plants are a major source of CH_4 emissions from a peatland due to their aerenchyma and supply of labile carbon to the soil. In degraded peatlands, measured surface CH_4 fluxes can vary greatly within the span of a few meters. In peat, methane can be produced by methanogenic Archaea and consumed by methanotrophic Bacteria. This study aims to explore the correlations between methane fluxes, vegetation type, and microbial community compositions by analyzing gas flux measurements, water table level measurements, and 16S rRNA metabarcoding. Results show that methane and carbon dioxide fluxes were greater from the disturbed site than from the reference site on July 9 and July 23. Methane fluxes from sedges were greater than from grasses. NMDS plots do not show clustering of samples from grasses and sedges, indicating that their microbial community compositions are not unique to vegetation type, despite differences in methane emissions. However, microbial community compositions cluster strongly by the disturbance level of the site and the position relative to the water table. Future research should investigate clustering of samples by vegetation type, with samples from further below the surface.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Echoes of Bell: Investigating bumblebee foraging acoustics at Beinn Bhreagh Estate

Lara Dalton[1], Alana Pindar[1]

[1]Cape Breton University

Ecoacoustics provides a non-invasive approach to studying pollinator behaviour and plant-pollinator interactions. Bumble bees (*Bombus* spp.) produce characteristic foraging frequencies that may vary among species and in response to floral identity and environmental conditions. This study examined whether the fundamental and peak frequencies of foraging bumble bees differ among species, flowering plant taxa within the families Rosaceae and Fabaceae. Field recordings were conducted at Beinn Bhreagh in Baddeck, Nova Scotia, the historic estate of Alexander Graham Bell. The site offers both diverse floral resources and historical significance in acoustic science. Bell's invention of the telephone, designed to transmit sound, provides a meaningful connection to this research, which uses modern smartphone technology—an evolution of Bell's work—to record and analyze pollinator acoustics in a natural setting. Recordings were collected from actively foraging bumble bees using an iPhone paired with a RODE Reporter microphone equipped with a wind cover. A total of 149 recordings were analyzed, representing seven *Bombus* species foraging on six flowering species (three per plant family). Fundamental and peak frequencies were extracted using Audacity. Linear mixed models were used to compare frequencies among bee species, plant taxa, and environmental variables including wind speed, temperature, flower color, and time of day. Both fundamental and peak frequencies varied among *Bombus* species and flowering taxa, with additional patterns linked to environmental conditions. These findings demonstrate that foraging acoustics are shaped by species identity, floral resources, and abiotic factors, highlighting the value of ecoacoustics for understanding pollinator-plant interactions.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Tracking Response of a Reference Lake to Environmental Change in New Brunswick, Canada

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Algal blooms and resulting water quality issues have become a common phenomenon in lakes across Canada, sometimes even pristine, remote lakes. Conditions favourable to the manifestation of harmful algal blooms are often the result of long-term environmental changes, e.g. land-use change and climate. We studied aquatic insect bioindicators within the dated sediments (~1860 CE to present) of Ayers Lake to infer conditions in a remote lake within a protected watershed of ecological significance. Ayers Lake serves as a strategic reference lake for a regional study of five other low-nutrient lakes experiencing late-summer algal blooms. The timing of a shift in chironomid assemblages that began in the 1970s may indicate a response to past widespread use of the pesticide dichloro-diphenyl-trichloroethane (DDT). Relative abundances showed a trend of decreased profundal taxa (low oxygen tolerant species) and increased littoral taxa (high oxygen preferred), which suggests impacts to profundal habitat. Timing of assemblage shifts will be further compared to historical air temperature data to understand potential influences by climate change. This study contributes to our larger understanding of anthropogenic impacts on lake ecosystems and our ability to better manage lakes for future conditions expected from a warming world.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Bioaccumulation of Hg and As in freshwater invertebrates from Ponhook Lake, Nova Scotia: effects of historical gold mine tailings

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Historic artisanal and small-scale gold mining in Nova Scotia has left a legacy of mercury (Hg) and arsenic (As) contamination in lacustrine ecosystems across the province. These contaminants pose a significant risk to environmental health due to their toxicity and ability to bioaccumulate (Hg, As) and biomagnify (Hg). Our research at a tailings site on the northern shore of Ponhook Lake, Queen's Co., NS, is focussed on quantifying Hg and As concentrations in benthic communities and shoreline sediments. In the summer of 2025, we collected sediment samples along a 10 km transect of Ponhook Lake's northern shoreline, as well as a 1 km reference transect of the southern shore. These sediments were dried and reduced to silt-clay sized sediment using a 200 µm stainless steel sieve. The sorted sediments were analyzed for total mercury (THg) and total arsenic (TAs) using a NIC MA-3000 direct mercury analyzer and Epsilon 1 X-Ray Fluorescence for As. Preliminary analyses have shown elevated levels of THg concentrations (ranging 2.7-5787.6 ng g^{-1}; mean = 494.7 ng g^{-1}; Std Dev. = 1049.6 ng g^{-1}; n = 58) and TAs (ranging 11.1-1060.1 µg g^{-1}; mean = 108.5 µg g^{-1}; Std Dev. = 183.3 µg g^{-1}; n = 60) at Ponhook Lake. THg concentrations near the mine tailings exceed the Canadian interim sediment quality guidelines (ISQGs) of 170 ng g^{-1}. TAs concentrations exceed the ISQG of 5.6 µg g^{-1} in all samples collected due to local geologic influences.

Graduate Student / Undergraduate Student

Graduate

Submission types

Poster

Tissue Culturing Balsam Fir in Atlantic Canada

Tatijana Hayes[1, 2, 3]

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Abies balsamea (Balsam fir) holds a dear spot in the hearts of Atlantic Canadians, with Lunenberg county known as ‘The Balsam fir Christmas tree capital of the world’. It is in the best interest of farmers to provide the best possible trees. Due to the changing climate, farmers are faced with many issues, including needle loss, foliage dieback after late spring frosts, and rising summer temperatures. The Christmas Tree Council of Nova Scotia (CTCNS) has partnered with the Nova Scotia Community College (NSCC) and Environment and Agriculture Technology Lab to use tissue culture to propagate trees with favourable genetics. The main goal is to provide a stronger, greener, and longer lasting tree for consumers worldwide. Through the implementation of somatic embryogenesis (generating many embryos from somatic tissue), ideal trees can be mass produced to meet the demands of industry, as well as provide information needed to confirm if a selected line is a viable investment. By cultivating the best selections, there may be increased interest in using real, traditional Christmas trees. As the Balsam fir project is still in the early stages, protocol optimization and data collection are ongoing, but the collaboration of CTCNS, NSCC, and consultants from Dalhousie and Acadia Universities shows the research strength within Atlantic Canada. Perhaps, together, we can provide our Christmas tree farmers with climate-adapted trees to better meet the needs of consumers.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

The Impacts of Clearcutting on Ectomycorrhizal Fungi

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Mycorrhizal fungi are one of the most important groups of organisms that exist in soil communities. A majority of plants species in the environment form a symbiotic relationship with these fungi, which is responsible for the trade of nutrients and information between the plant and fungi, as well as other individual plants. There is a natural variance in fungal community structure and composition between different ecosystems which depend on a variety of environmental factors. However, disturbances of an ecosystem can also disturb fungal communities, causing changes to composition and structure. Factors that influence how the mycorrhizal fungal community changes because of a disturbance include changes to the soil nutrients, plant cover, and carbon availability. Clear-cutting causes major changes to the environment. As such, changes to the fungal community can also be expected. After clear-cutting occurs, it is expected that more light will reach the forest floor, causing an increase in herbaceous plant cover. Additionally, there will be an input of carbon and other nutrients into the soil from woody debris. These environmental changes could cause an increase in biomass for the fungal community due to an increase in soil water, nutrients like carbon and nitrogen, and pH.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Influence of Nitrogen Availability on Growth Allocation in Boreal Forests Across Different Harvest Sites

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Nitrogen plays a key role in regulating tree growth, nutrient allocation, and forest productivity. Forest harvesting alters nitrogen cycling by removing nitrogen-rich biomass, affecting long-term growth patterns. This study aims to explore how nitrogen availability influences trade-offs between vertical and radial growth across three harvesting treatments: control (C), stem-only (SO), and whole-tree (WT) harvest. Nitrogen availability was assessed using soil nitrogen, foliar nitrogen, chlorophyll content, while growth responses are measured using DBH, annual ring width, tree height, and annual height increase. We hypothesize that increased nitrogen availability favors radial growth over height growth, reflecting greater carbon investment in secondary growth. We further predict that WT harvesting will have reduce lower radial growth due to nitrogen depletion and increased investment in root development. This study examines how harvesting intensity shapes nitrogen distribution within trees and alters growth allocation patterns in boreal forest stands. If harvesting shifts nitrogen availability enough to alter growth patterns, it may influence forest health and stability, carbon storage and nutrient cycling, and long-term timber sustainability.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Integrating geospatial data into acoustic receiver array planning in the Southern Gulf of St. Lawrence

Julia MacFarlane[1]

[1]Dalhousie University

Acoustic telemetry uses transmitters and receivers to remotely monitor animal movement. Receivers are commonly deployed on the seafloor in an array, with the configuration varying depending on study objectives and logistical constraints. The data collected by receivers rely on accurate placement, yet there is currently no clear methodology to determine optimal placement locations, particularly at broad scales. This study investigates how a Geographic Information Systems network analysis can be used to identify optimal locations for large-scale acoustic receiver arrays that maximise animal detections and minimise risks to the infrastructure. The southern Gulf of Saint Lawrence represents a model study site, wherein a range of environmental variables (bathymetry, Marine Protected Areas and bottom substrate) and anthropogenic variables (bottom trawling, underwater cables, and an unexploded charge) can be considered. For each of the variables, a suitability criterion was established, and weightings were defined based on a literature review. A 10 by 10 km grid tessellation was generated, with each data layer represented as a standardized cost surface. These layers were combined to produce a cumulative cost surface for the study area. By applying a least-cost scoring and suitability analysis, locations with the highest suitability scores can be identified. Preliminary results suggest that areas with steep slope, and pelitic bottom substrate - such as those observed along shorelines, and the Northumberland Strait - result in higher cost, reducing the overall suitability of those locations. This network analysis integrates geospatial data into array planning, providing a novel perspective within aquatic telemetry research.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Chironomids as bioindicators of environmental change at Yoho Lake in New Brunswick, Canada

Catherine Minnaar[1], Joshua Kurek[1], Fernanda Charqueno-Celis[1], Marissa Emberly[1], Brenell Enman[1]

[1]Mount Allison University

Lake deoxygenation and harmful algae blooms are increasingly common issues worldwide in temperate freshwater lakes. These conditions are typically observed in lakes with high nutrient loading, however Yoho Lake in New Brunswick, Canada, is a low-nutrient lake that since at least 2020 has experienced algae blooms and possibly deep-water deoxygenation. Chironomid head capsules preserved in dated lake sediments were used to assess historical dissolved oxygen levels and compare them to potential drivers, such as land-use change and mean air temperature. Relative abundances of low-oxygen taxa doubled since the pre-1800s, while high-oxygen taxa decreased by 0.7 times. Changes in chironomid assemblage composition (NMDS1) positively correlated with increases in mean air temperature from the 1870s to 2024. The timing of more human settlements around the lake correlates with a 1.5 times increase in sedimentary chlorophyll-*a* concentrations from 1950-present, suggesting greater primary production. The goal of this study is to contribute to a larger understanding of when and how land use and climate change have altered oxygen conditions within the lakes of New Brunswick's Wolastoq watershed.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Evaluation of Phosphorous Acid as a Control Strategy for Potato Pink Rot (Phytophthora erythroseptica).

Grace Robertson[1, 2], Bennett Crane[1], Kim MacDonald[1], Cadence Lowe[1], Anne MacPhail[1], Eyitayo Ajibaibi[1], Christian Lacroix[2], Adam Foster[1], Emma Ladouceur[2], Rick Peters[1]

[1]Agriculture and Agri-Food Canada, [2]University of Prince Edward Island

Potato pink rot, caused by the oomycete *Phytophthora erythroseptica*, is a major soilborne disease responsible for significant losses in both field and storage. While non-chemical management practices can reduce disease incidence, they are typically supplemented with fungicides for effective control. The phenylamide fungicide Metalaxyl-m (Ridomil Gold®) has historically been used to manage pink rot; however, the emergence of resistant strains has created a need for alternative chemical options. This study evaluated the phosphorous acid fungicide Confine® Extra as part of a pink rot management strategy. A field trial using cv. Red Norland was conducted at the Harrington Research Farm in a randomized complete block design with four replications per treatment. Nine treatments were tested, including one to six foliar applications of Confine® Extra at 250 L ha^{-1}, and three or five applications at 60 L ha^{-1} to simulate aerial application volumes. Inoculated and non-inoculated controls were included. Except for non-inoculated controls, plots were inoculated in-furrow at planting with a mycelium/oospore slurry of a local *P. erythroseptica* isolate grown on V8 agar and blended before application. Disease incidence was assessed at harvest by determining the proportion of infected tubers. Post-harvest wound and zoospore inoculations were also performed to evaluate tuber susceptibility. Disease severity was measured as percent surface infection and depth of internal rot. Data will be analyzed to determine the effects of application timing, frequency, and spray volume on pink rot incidence and severity. Results from this study will provide direction for incorporating phosphorous acid into pink rot management strategies.

Graduate Student / Undergraduate Student

Graduate

Submission types

Poster

Assessing Vulnerability of Salt Marshes to Coastal Squeeze and Simultaneous Relative Sea Level Rise, via GIS-Based Case Study of West Chezzetcook, Nova Scotia

Kate Sparling[1]

[1]Dalhousie University

Coastal salt marshes are highly productive ecosystems that provide critical services, including carbon storage, nutrient cycling, shoreline stabilization, and wildlife habitat. In Nova Scotia, these marshes are central to coastal resilience but face increasing threats from relative sea-level rise (RSLR) and coastal squeeze, where human infrastructure restricts natural landward migration. Despite extensive research on sea-level rise impacts, there remains a lack of spatially explicit, locally grounded analyses that integrate inundation exposure with migration constraints to inform adaptation planning.

This research develops a geospatial framework to evaluate salt marsh vulnerability under projected RSLR, using the greater West Chezzetcook area of Halifax Regional Municipality as a pilot study site. High-resolution digital elevation models, land-cover data, and infrastructure mapping are integrated with worst-case flooding projections for 2050 and 2100 to identify areas of potential inundation and constrained migration. Spatial intersection techniques are used to delineate zones where marshes are simultaneously exposed to rising water and restricted from inland transgression.

Preliminary results indicate that marsh surfaces experiencing water-level increases of 0.65 m or more are at high risk of drowning, often converting to mudflats or open water. Spatial analysis also identifies areas where existing infrastructure coincides with potential migration pathways, illustrating how barrier presence influences the distribution of projected coastal squeeze. These findings provide spatially explicit vulnerability mapping and demonstrate a scalable methodology for broader coastal assessment and planning.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

Epibiont and Endobiont Communities of Freshwater Mussels: Implications for Translocation Planning

Joseph Villo[1]

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Translocation, the deliberate movement of organisms from a source population to augment declining populations or establish new ones in suitable habitat, is considered a conservation tool when natural recovery is unlikely for at-risk species. In Nova Scotia, the Yellow Lampmussel (Lampsilis cariosa) persists in only three lakes and is provincially listed as Threatened and federally as Special Concern under the Species at Risk Act. In Blacketts Lake, recruitment has ceased following the illegal introduction of Chain Pickerel (Esox niger), which eliminated the mussel's required fish host, White Perch (Morone americana), through predation. Although aging adult Yellow Lampmussels, which can live approximately 25 years, persist in the lake, local extirpation is expected within a decade, prompting consideration of translocation as a recovery action. However, translocation may unintentionally transfer associated organisms, including parasites, pathogens, commensals, and symbionts, potentially altering disease dynamics and ecosystem function at recipient sites. This study documents epibiont and endobiont communities associated with Yellow Lampmussel and co-occurring Eastern Elliptio (Elliptio complanata) and compares sampling approaches to inform pre-translocation risk assessment. We sampled mussels from Blacketts Lake and two additional lakes in separate watersheds. Yellow Lampmussel were sampled non-lethally, whereas Eastern Elliptio were also sampled lethally to assess tissue communities. Samples were examined microscopically, photographed, assigned voucher IDs, categorized into morphotypes, and analyzed using metabarcoding. By documenting associated organism communities and evaluating sampling methods, this study contributes to the development of evidence-based protocols for assessing biological transfer risk prior to freshwater mussel translocation in Nova Scotia.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster

The Impact of Macroalgal Richness on Biodiversity: an Artificial Reef Study

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[1]UPEI

As an ecosystem engineer, macroalgae is often associated with increased biodiversity. This study aims to test the effect of macroalgae diversity on the local community structure and associated species' biodiversity in Brackley Bay, Prince Edward Island. An artificial reef was created using concrete blocks placed in the shallow subtidal seabed. The artificial reef contained four levels of algal diversity to evaluate the effects on biodiversity. To examine the influence of the number of marine algae present in a module over the associated species biodiversity, a bi-weekly monitoring was conducted during the summer months of 2024 and 2025. This monitoring used Baited Remote Underwater Video capture (BRUV) to record epifaunal species, sediment core sampling to analyse sedimentary animals, and also assessed macroalgal growth by measuring biomass.

Based on research that was previously conducted, the expectations were as followed: 1) A diverse assemblage of macroalgae will result in a more diverse ecosystem by providing additional physical structure and food availability for herbivore species, which is expected to cascade and benefit other trophic levels, improving the overall richness of epifaunal and pelagic animals. 2) There may be a positive correlation between seaweed diversity, abundance, and richness that is driven by complementarity between each macroalgal species. 3) Both infaunal and epifaunal organisms should make evident a possible link between macroalgae and animal biodiversity.

Graduate Student / Undergraduate Student

Undergraduate

Submission types

Poster