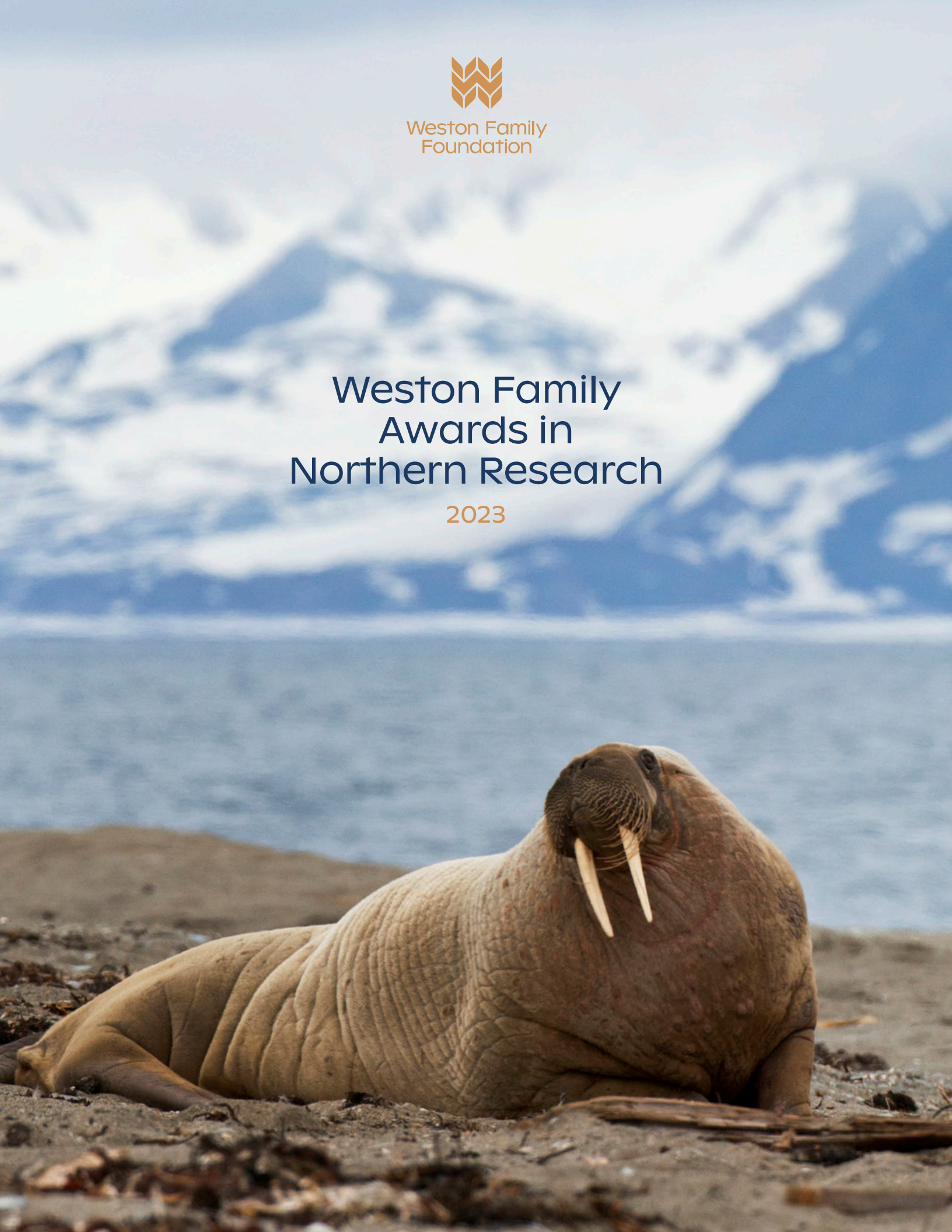
Weston Family Foundation

Weston Family Awards in Northern Research

2023



Weston Family Foundation

For the past 16 years, the Weston Family Awards in Northern Research have provided unparalleled support to early career scientists in Canada pursuing natural sciences research in Canada's North. Funded by the Weston Family Foundation, these annual awards are some of the most prestigious in the country for students pursuing a master's degree, a doctoral degree, or a postdoctoral fellowship. Weston Family Northern Scholars undertake research projects across a broad spectrum of fields and disciplines in the natural sciences, including the study of Canada's northern ecosystems, biodiversity, oceanography, glaciology, geography, and environment. The goal of the Weston Family Awards in Northern Research is to support the Scholars in furthering the understanding of Canada's northern ecosystems with the ultimate goal of protecting and restoring biodiversity.

Meet the 2023 award winners! These inspiring Scholars are at the forefront of northern scholarship and are helping shape a better future for Canada and the world.

Master's Level

2023 Award Winners

Master's
2023

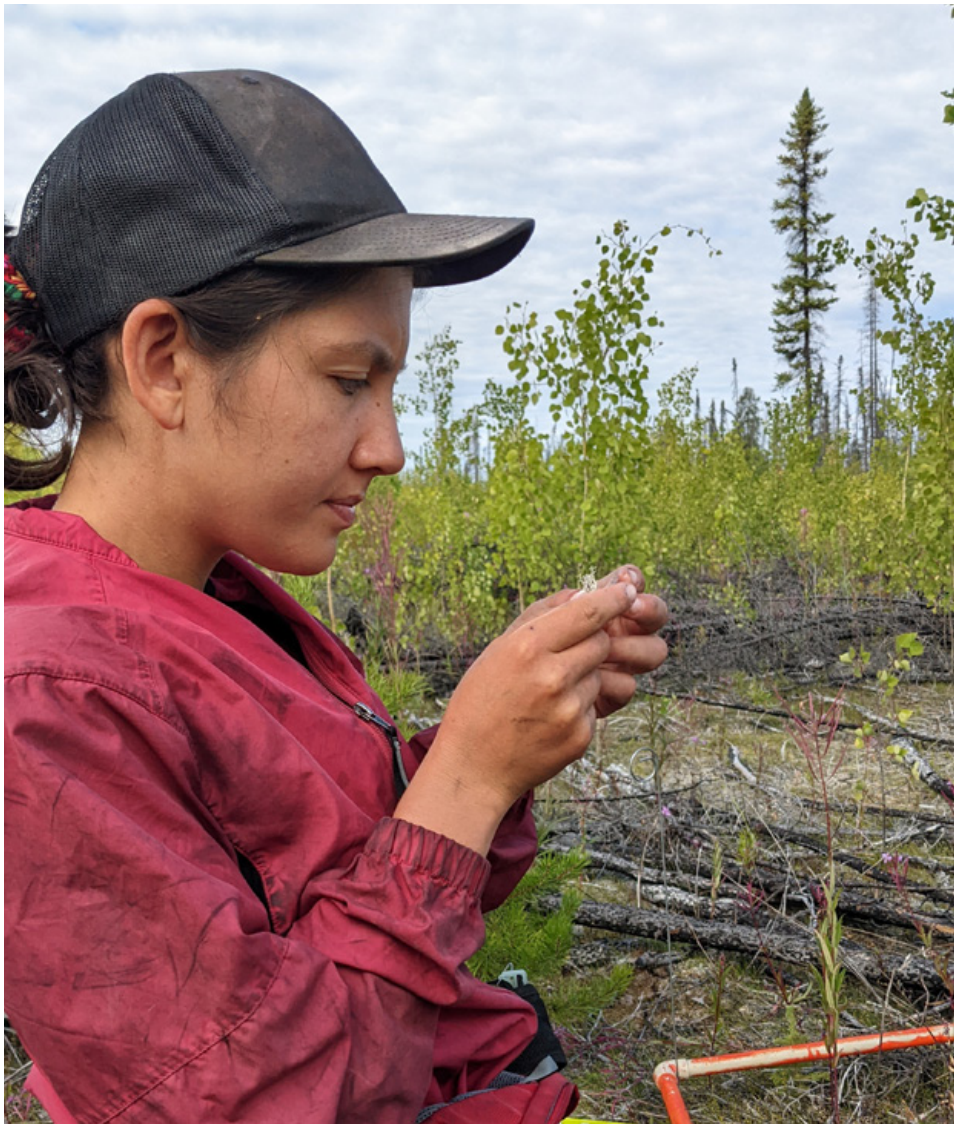
Alexis Bazinet

From a young age, Alexis has always been fascinated by the ocean. Originally from Prince George, British Columbia, she pursued her passion for marine biology and ocean science through her studies at the University of Victoria and by working with Fisheries and Oceans Canada after graduation. Alexis' undergraduate honours thesis investigated the diet of dominant zooplankton in the northeast Pacific using molecular techniques; now, her research is focused on bigger marine life. This Dalhousie University master's student in oceanography is studying the population health and demographics of bowhead whales—an endemic Arctic species.

The focus of Alexis' current research is on the East Canada-West Greenland population of bowhead whales in both Cumberland Sound (foraging ground) and Foxe Basin (calf rearing area). Using multiple years of drone imagery, she plans to take body measurements of individual whales to evaluate trends in body condition between different age-sex groups over time. Specifically, she seeks to better understand the impact of climate-caused shifts in ocean conditions and prey on the foraging success, and subsequent body condition, of bowheads.

Alexis hopes her work will provide insight into age-adjusted patterns in body condition that can contribute to a long-term monitoring program of bowhead whales within a changing ecosystem.

Master's
2023



Elise Brown-Dussault

A resident of the Yukon, Elise harbours a great love for the boreal forest and all who dwell in it. Her research, conducted in the Deh Cho region of the Northwest Territories, looks at an innovative method of protecting and recovering critical caribou habitat.

Caribou lichens are an important winter food source for caribou, but they are vulnerable to habitat disturbance and high-intensity forest fires. Caribou lichens may take up to 80 years to recolonize a heavily burned area due to slow growth and very slow dispersal rates. A new climate change-induced fire regime threatens lichen-rich caribou winter habitat, reducing available winter food and prolonging natural lichen recovery.

Caribou lichen transplantation is the method of removing some caribou lichen from healthy habitats and manually dispersing them into disturbed areas. Research has so far shown that transplanting caribou lichen into a disturbed area can result in the development of lichen patches, potentially reducing dispersal time by decades. Elise's objective is to identify the biotic and abiotic conditions promoting lichen transplantation success in recently burned forest stands. These findings will hopefully optimize caribou lichen transplantation methods, maximizing lichen establishment and minimizing the amount of lichen taken from healthy habitats.

Master's
2023

Pénélope Gervais

Pénélope is a Master of Science student in glaciology at the University of Ottawa. She developed her interest in glaciology during her undergraduate studies, also at the University of Ottawa, when she attended a glaciology field course at the University Center in Svalbard, Norway, and a field course in Iceland.

Pénélope's research assesses the spatiotemporal changes in supraglacial hydrology across Ellesmere Island in the Northern Canadian Arctic Archipelago (NCAA) by evaluating the utility of semi- and fully-automated methodological frameworks for supra-glacial stream mapping. Her work will provide the first quantification of the evolution of supraglacial hydrological networks through time (approximately 60 years) across the NCAA, which is important when considering the recent increases in surface melt there since 2005. By combining field measurements and remotely sensed data, she hopes to provide a better understanding of the connection between glacier hydrology, dynamics, and mass balance to inform future sea level predictions and impacts on northern communities.

Master's
2023

Patrick Gibeau

Patrick is a master's student at McGill University who is currently living in Whitehorse to help generate knowledge about the Yukon North Slope. This area is ecologically, nutritionally, and culturally important to the Inuvialuit and Gwich'in people, and it faces uncertain ecosystem trajectories in the era of climate change. Northern communities are concerned with climate-driven increases in moose abundance and whether their movement into tundra ecosystems will drive a change in predator-prey systems, potentially resulting in adverse consequences for the culturally important Porcupine Caribou Herd. Patrick's research aims to better understand the mechanisms of ongoing change within the predator-prey relationships of wolves, with the goal of helping decision makers understand system shifts and their impacts on wildlife, people, and habitats.

Master's
2023

Karl-Antoine Hogue

Karl is a M.Sc. candidate at the University of Guelph's School of Environmental Sciences. Originally from southern Québec, Karl now lives in Old Crow, Yukon, where he works in close partnership with the Van Tat Gwich'in Land Guardians to investigate local concerns around linear corridors and caribou predation. More specifically, his research aims to measure the impacts of roads, trails, and seismic lines on the movements of wolves, moose, and caribou in the traditional territory.

Karl uses a two-eyed seeing approach, combining the strengths of Western and Indigenous Knowledge systems to answer his research questions and address community concerns. Karl's work will support the ongoing Van Tat Gwich'in caribou stewardship efforts and strengthen local Land Guardianship activities in the community.

Master's
2023

Arya Horon

Arya is a Master of Science student studying ecology at the University of Guelph. Driven by a lifelong love for wildlife and the outdoors, Arya is passionate about understanding the interactions between animals and their environment. Her journey in wildlife biology has brought her to some incredible places worldwide, and she is thrilled to be spending time in the Far North region of Ontario for her master's fieldwork.

Arya's research aims to evaluate how seasonal changes in diet quality drive woodland caribou migrations. To answer this question, Arya plans to create maps of "digestible energy" across northern Ontario by combining vegetation samples of abundance and digestibility with satellite-derived remote sensing data. She hopes these energy maps will help bring a fresh perspective to caribou conservation in Canada and contribute to a recent push for more accurate mapping of ungulate migrations worldwide.

Master's
2023

Caila Kucheravy

Caila is a master's student at the University of Manitoba studying the demographics and population structure of killer whales seasonally present in the eastern Canadian Arctic. Killer whale sightings in the region have increased with declining sea ice concentrations, suggesting a growing killer whale presence. Her goal is to determine the size, demographic structure, and population growth rate of killer whales around Baffin Island, Nunavut. A better understanding of the population dynamics of killer whales in this region will help to predict the potential impact of killer whales in the ecosystem and inform conservation and management decisions.

Born and raised in Winnipeg, Caila fell in love with northern research in 2018 while completing her undergraduate thesis project in Churchill, Manitoba. Following her master's degree, she hopes to continue studying how the changing environment is affecting Arctic marine ecosystems, with a focus on conservation.

Master's
2023

Jessica Lagroix

Beavers are well known for their ability to cause drastic changes to an ecosystem through dam construction and pond creation. Water flow is altered by these natural dams, which can lead to downstream ecosystem and water chemistry changes. With the return of beavers to the Dehcho region of Canada's Northwest Territories, Jessica is studying water chemistry changes occurring in beaver ponds in the peatlands of the Taiga Plains. Specifically, she is focused on studying mercury and methylmercury transformations in the ponds to support a better understanding of toxic methylmercury sources on the landscape.

Jessica completed her undergraduate degree in conservation biology at the University of Alberta, where her long-term interest in ecology and nature evolved into a focused interest on wetlands and northern systems. Jessica is now a master's student in the university's Department of Renewable Resources.

Master's
2023

Bruno Lecavalier

Growing up in Gatineau, Québec, Bruno was fortunate to have the opportunity to discover a rich natural environment close to home. Eventually, this led him to follow studies in the environmental field, where he found his academic home in geography at the Université de Montréal. For his master's, he is studying one of the primary sources of uncertainty in climate projections: clouds.

Bruno's work is focused on the transition from forest to tundra in the Inuvialuit Settlement Region. Specifically, he aims to disentangle the interplay between the ecosystems along this gradient, their connections to the atmosphere, and their subsequent role in cloud formation. Given the widespread ecosystemic modifications induced by climate change, it is becoming increasingly crucial that we deepen our understanding of the interaction between the land and the atmosphere. Changes to the land hold significant potential to impact regional and global weather patterns. Bruno feels deeply fortunate to work in Canada's North—an environment rich in interesting peoples and nature—and hopes his findings will contribute to reducing climate uncertainty in the Inuvialuit Settlement Region.

Master's
2023

Qian Yi (Cindy) Li

During her undergraduate studies, Qian Yi (Cindy) pursued academic and mineral resource industry work experiences associated with Canada's North—specifically focusing on resource development and its environmental and societal impacts. She now brings her passion for field work and environmental research to her Master of Applied Science work in hydrogeology at the University of Guelph's Morwick G360 Groundwater Research Institute.

Earth's liquid fresh water is 99% groundwater, which sustains 50% of surface water flows and maintains ecosystems and biodiversity along its path. The threat of future oil and gas developments in Canada's North exposes a knowledge gap in assessing ecosystem vulnerability in relation to groundwater-surface water interactions in these regions. Hydrogeological units hosting groundwater resources are rarely characterized or understood in Canada's remote North.

Cindy's research aims to develop a robust baseline groundwater assessment with a focus in hydrochemistry. Her studies will be conducted in the Northwest Territories where the Dunvegan Formation overlies Canada's second largest oil and gas reserve and serves as an important potential water supply aquifer for surrounding natural ecosystems and communities.

Master's
2023

Emily MacDonald

Emily's passion for northern avian systems first began while working on her undergraduate honours project on energetics and reproduction in thick-billed murrues—an Arctic, cliff-nesting seabird. This largely inspired her to pursue a master's project at the University of Windsor, studying thermal stress effects in Arctic-breeding common eiders.

Emily will visit East Bay (Qaqsauqtuuq) Migratory Bird Sanctuary in Nunavut to monitor female eiders'physiological and behavioural response to environmental conditions during their incubation. Female eiders at Qaqsauqtuuq are highly attentive to their nests; they fast for 24 to 26 days to avoid leaving their eggs unattended. As they also nest in open rocky landscapes with little shelter from the sun, they may be particularly vulnerable to heat stress effects under warming Arctic conditions driven by climate change. Her research will help determine the vulnerability of common eiders to rapid environ-mental change to inform future management and policy action.

Master's
2023

Jessie Olson

Growing up in the Northwest Territories inspired Jessie's passion for understanding animal health and pushed her to become a veterinary technician. Given that veterinary care is limited and often inaccessible in the North, her career has been focused on providing veterinary medical access to remote Arctic communities. Jessie's position as Head Veterinary Technician in the Galapagos allowed her to apply her medical skills while also leading a team of veterinary students for the duration of her time there. Throughout these endeavors, Jessie became aware of the interconnectedness of cultural ways of life, domestic animal health, and wildlife health in remote communities, and developed an interest in the complexities of viral ecology. She obtained her biology degree to enhance her knowledge of ecology and immunology in hopes of bringing this education back to the North.

Jessie's graduate research will focus on determining what viruses are infecting barren-ground caribou in the Northwest Territories, developing better tests for monitoring caribou and understanding how these viruses affect caribou reproduction and survival. Barren-ground caribou are a key component of northern culture and ecosystems and it is vital to support the recovery of this species by understanding changes in their health and the agents responsible for these changes.

Master's
2023

Claire Parrott

Claire is a master's student at the University of British Columbia researching the unique plankton ecosystems found at glacier-ocean interfaces in the Canadian Arctic. She focuses on how glacier meltwater influences coastal-ocean properties near marine-terminating glaciers.

The presence of meltwater significantly impacts the distribution of nutrients in these ecosystems. It contributes nutrients directly from the meltwater itself and transports nutrients from deeper water through a process known as entrainment. These nutrients mix with the surrounding ocean water and are utilized by phytoplankton, located at the bottom of the food web.

Claire's region of interest is Jones Sound, Nunavut, a coastal region rich in glaciers in the Canadian Arctic. Jones Sound is home to the Inuit Community of Ausuittuq, whose traditional hunting and livelihood activities depend on the ocean. To investigate the near-coastal oceanography of these environments, Claire is utilizing four years' worth of ocean property observations collected in collaboration with Ausuittuq, focusing on marine-terminating glacier sites. The goal of this is to investigate the near-coastal oceanography of these environments.

Her work will help the scientific community and Ausuittuq better understand these environments as well as present and future changes within Jones Sound.

Master's
2023

Nicola Rammell

Nicola is a master's student at the University of British Columbia studying Arctic plant ecology. Throughout the summer months she can be found working in the field—most recently in the High Arctic tundra of coastal Ellesmere Island, Nunavut.

Her M.Sc. research is focused on the effects of climate warming on northern plant communities. Specifically, she uses long-term warming experiments to investigate how plant functional traits at the species and community level are responding to increased air temperatures in the High Arctic. Furthermore, she aims to link climate-driven shifts in above- and below-ground traits to changes in ecosystem function.

This project is part of the International Tundra Experiment (ITEX) taking place at the first and longest-running site in the ITEX network. Nicola's work will contribute to an improved understanding of climate change impacts in Canada's High Arctic tundra ecosystems where temperatures are rising rapidly.

Master's
2023

Audrey Tremblay

Audrey is currently pursuing an M.Sc. degree at the Université du Québec à Chicoutimi (UQAC). Her research project focuses on defining and describing the year-round succession of zooplankton communities in Lake Greiner in Nunavut and enhancing our understanding of the impact of the winter season on the lake environment where they live.

Combining her long-time passions for nature and the North, Audrey feels fortunate to engage in fieldwork within the polar environment and to establish connections with the Inuit Community of Ikaluktituak. She hopes this project in winter limnology will allow her to bridge the existing knowledge gap in this area and contribute to a better understanding of northern ecosystems.

Master's
2023

Emily Williams

Emily is a master's student at the University of New Brunswick, Saint John, where she studies how the hearts of fish species, with different overwintering strategies and from temperate to polar latitudes, cope with temperature extremes. Emily's research focuses on several Arctic fishes, including Arctic char—a culturally, economically, and ecologically important species in the Canadian North. Specifically, she is interested in how the tolerance and sensitivity of their hearts to extreme temperatures is adjusted following cold or warm acclimation and the extent to which adjustments are driven by the control of adrenaline, a central hormone in the "fight-or-flight" response.

Emily has a lifelong passion for wildlife and the outdoors, but her love for fieldwork developed while carrying out research at a seabird breeding colony on a small island in the Bay of Fundy. Her current research will be based out of Ikaluktutiak, Nunavut, and she is excited by the opportunity to work in such a unique environment and collaborate with the local community.

Doctoral Level

2023 Award Winners

Doctoral
2023

Michelle Blade

Michelle is a PhD student at McGill University studying continuous-permafrost landscape dynamics in the Kivalliq Region of Nunavut, Canada.

Continuous permafrost is often considered cold, stable, and less susceptible to climate change impacts when compared to warmer, permafrost-containing regions. Yet, those who have lived with continuous permafrost for generations, such as the Inuit, have long witnessed permafrost-related changes in their environment.

Michelle is working with Kivalliq community members to pair permafrost science with Inuit Qaujimajatuqangit (Inuit Knowledge and acquired ways of knowing) to study overland travel routes between and around Kivalliq fly-in/out only communities. Methods of discovery for this research project are based on Inuit land use priorities and community values, and this project is among the first to pair Indigenous Knowledge with continuous permafrost science.

Living in Iqaluit, Nunavut—Iqaluit meaning "place of fish" and nuna meaning "land"—Michelle has lived and worked in the Arctic for almost two decades and has diverse experience conducting northern academic research.

Doctoral
2023

Alexandre Chiasson

Originally from Québec, Alexandre is a PhD student at the University of Alberta. He completed his undergraduate and master's degrees at Université Laval, where he worked with Dr. Michel Allard, and was later hired as an Associate Researcher at the Centre for Northern Studies.

Currently, Alexandre is a member of the Permafrost ArChives Science Laboratory (PACS Lab) and PermafrostNet's research network on the characterisation of permafrost. His initial PhD project focused on developing a geological model of ground ice along the proposed central Mackenzie Valley Highway right-of-way. Due to the pandemic, he shifted his research focus to studying the dynamic and intra-variability of peatland morphology in the central Mackenzie Valley, with a particular interest in dendritic peat plateaus—an understudied permafrost peatland landform.

To achieve his research objectives, Alexandre employs a multi-disciplinary approach that involves fieldwork, laboratory analysis, coding, geophysical methods, and semi-remote sensing mapping. In addition to his PhD studies, Alexandre has worked as a GIS specialist intern with Drs. Steve Kokelj and Ashley Rudy at the Northwest Territories Geological Survey. Overall, Alexandre's work aims to better understand the complex dynamics of permafrost peatlands and their susceptibility to climate change, focusing on environmental conditions and factors controlling peatland morphology.

Doctoral
2023

Alyssa Eby

Alyssa is a PhD candidate at McGill University studying the direct and indirect impacts of sea ice loss on thick-billed murres, an Arctic nesting seabird. Following her M.Sc. degree—where she studied the foraging behaviour and nutritional state of thick-billed murres—Alyssa's PhD will take a deeper dive into murre ecology, focusing on murre fine-scale sea ice use and the influence of shipping on murre foraging ecology and fitness.

As sea ice extent continues to decline in Arctic regions, species that rely on sea ice for foraging opportunities may be especially vulnerable. By combining GPS tracking, camera logging and satellite imagery with nutritional physiology, Alyssa will compile a snapshot of where murres are foraging, the environmental conditions at foraging sites, prey items caught while foraging, and how these conditions impact the overall nutritional state of murres.

Sea ice loss can also lead to increased industrial development and shipping in Arctic waters. By combining GPS tracking and nutritional physiology from a murre colony adjacent to a high traffic shipping lane, Alyssa plans to investigate whether increases in shipping impacts where murres forage and their nutritional state.

Doctoral
2023

Claudia Haas

Claudia has lived and worked in Northern Canada for most of her adult life, having moved to Yellowknife in 2006. Despite northern ecosystems being home to some of the last intact boreal forest in the world and to healthy wildlife populations, including at-risk species, limited comprehensive ecological information about these ecosystems exists. To address this knowledge gap, Claudia co-founded a program bringing together Indigenous, territorial, and federal government partners to take part in a territorial-wide biodiversity monitoring network using large arrays of wildlife cameras and audio recorders.

Working directly with Indigenous communities, Claudia's research is focused on finding better ways to describe northern wildlife species distributions and activity patterns using structured survey tools, such as cameras and audio recorders, as well as through unstructured incidental sightings. A primary objective of this research is to streamline and standardize data processing to ensure timely results for decision makers, specifically Indigenous communities, who rely on these species to support their livelihoods.

Doctoral
2023

Amanda Little

Having grown up in a small, industrial town, Amanda has been passionate about the environment and understanding the legacy effects of contamination her entire life. After completing her undergraduate degree in environmental toxicology, she began investigating the long-term impacts of mining-related arsenic exposure to lake ecosystems in the Cobalt, Ontario region. During this time, she fell in love with field-based research and exploring the complexities associated with contaminant biogeochemical cycling and their toxicities in real world settings.

Amanda's current PhD research explores the legacy impacts of arsenic in lake ecosystems in Yellowknife, Northwest Territories, with a focus on freshwater plankton communities. She is particularly interested in how arsenic mobility and toxicity are linked to seasonality and climate change, and the implications for plankton biogeography and pollution tolerance in the region. Her research combines methods from paleolimnology, ecology, and eco-toxicology to tackle the complex challenge of understanding arsenic biogeochemical cycling and remediating legacy mining contamination in lakes in a rapidly changing landscape.

Doctoral
2023

Cody Malone

Cody is a PhD student at the University of Saskatchewan studying *Trichinella*, a zoonotic food-borne parasite that can infect both terrestrial and marine mammals as well as humans. *Trichinella* infection poses a significantly higher human health risk in Northern Canada, with an incidence rate nearly 800 times higher than in the rest of the country. Ensuring food safety and sovereignty in the Canadian North is of paramount importance given its subsistence and economic significance, along with its role in identity and culture.

Cody's interest in zoonoses (diseases that can be transmitted between animals and humans) and in contributing to solving complex problems in complex environments has led him to work in the spectacular Canadian North. By investigating the prevalence of *Trichinella* species across a diverse range of hosts in the North, Cody's work will expand current knowledge of the parasite, while also characterizing the newly found species, *Trichinella chanchalensis*. This research will increase our understanding of the prevalence, maintenance, and transmission of *Trichinella* in the North.

Doctoral
2023

Stephen Paterson

Stephen is a PhD student at Saint Mary's University. He enjoys spending time outdoors and is curious about the natural world. Stephen became interested in earthworms when he started finding them—at first by accident—in remote forests of northern Saskatchewan. This was intriguing because earthworms were wiped out during the last ice age and most earthworms in Canada are introduced species from Europe. While they can be beneficial for agriculture, non-native earthworms reduce biodiversity and carbon storage in northern forests.

Stephen is conducting research in northern Saskatchewan, northern Alberta, and the Yukon to understand how non-native earthworms are spreading and how their distributions will change in the future. This will help to quantify the large-scale impacts of earthworms in northern Canada and inform management plans to limit their spread.

Doctoral
2023

Sandra Yaacoub

Boreal forests are particularly vulnerable to climate shifts because of the cascading impacts that accelerated rates of warming have on disturbance frequency and severity. Although biotic disturbances are as prevalent and detrimental to forest ecosystems as abiotic disturbances, research looking at the dynamics of biotic disturbances are relatively limited. Conventional methods of monitoring forests lack the essential qualities of being spatially extensive while being informationally precise, raising the need to develop operational, remote sensing-based methods for forest management.

Using integrative approaches, Sandra's PhD research at Queen's University aims to model insect-disturbed forests in Kluane, Yukon, which were struck by a spruce bark beetle epidemic from 1994-2012. The integrative approaches will involve using multiscale, multisource, and multitemporal remotely sensed data to generate models of forest disturbance dynamics. Sandra is excited to be pursuing this research because of its implications locally, regionally, and globally. Model-generated disturbance and regeneration maps of Kluane's forests will be disseminated locally, and the developed methods have the potential to be applied to similar forests in the region. The models could also be used as a framework for application to other insect disturbed regions in Canada or across boreal forests globally.

Postdoctoral Level

2023 Award Winners

Post-doctoral 2023

Véronique Dubos

Véronique's postdoctoral research at Université Laval is conducted in Iqaluktuuttiaq (Cambridge Bay), Nunavut. She studies Arctic char and lake trout habitat use and movements in freshwater and marine environments. The project combines fine-scale acoustic telemetry, environmental monitoring techniques, and Inuit Knowledge to investigate the relationship between environmental conditions and fish behavior in a model system for High Arctic conditions. Understanding fish movements and interaction will help local communities make informed co-management decisions.

After obtaining a master's degree in hydrodynamic modeling, Véronique worked for several years in the field of consulting engineering as a specialist in hydrology and river hydraulics. With a long-time passion for and appreciation of Inuit culture, she was pleased to have the opportunity to integrate traditional Inuit Knowledge into her PhD research at the Institut national de la recherche scientifique on the freshwater habitats used by Nunavik Arctic char. Her current research combines her interest in northern environments and cultures with her in-depth knowledge of ecology and modelling.

Post-doctoral 2023

Tara Howatt

Tara's postdoctoral research with the Wildlife Conservation Society Canada and Yukon University explores ocean and ship noise influences on whale distributions in the eastern Beaufort Sea. Climate change in the Arctic can lead to shifts in ocean conditions that can impact whales. Ocean temperatures may increase, ocean currents may change, and sea ice loss may open pathways for ship traffic creating underwater noise.

Conservation efforts for bowhead and beluga whales are especially important for supporting the food sovereignty of Inuit communities, and being able to identify and predict current and future core-use areas used by these whales can make conservation efforts more effective. Recent observations suggest that bowhead whales are already migrating later and further offshore. To identify current whale core-use areas and measure ocean and noise conditions in those areas, Tara will use an autonomous underwater glider to collect ocean and acoustic data in the eastern Beaufort Sea. Understanding the mechanisms influencing whale distributions is especially critical to support whale population conservation, particularly under continuously evolving conditions due to interannual variability, climate change, development of shipping routes, and oil and gas activity.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