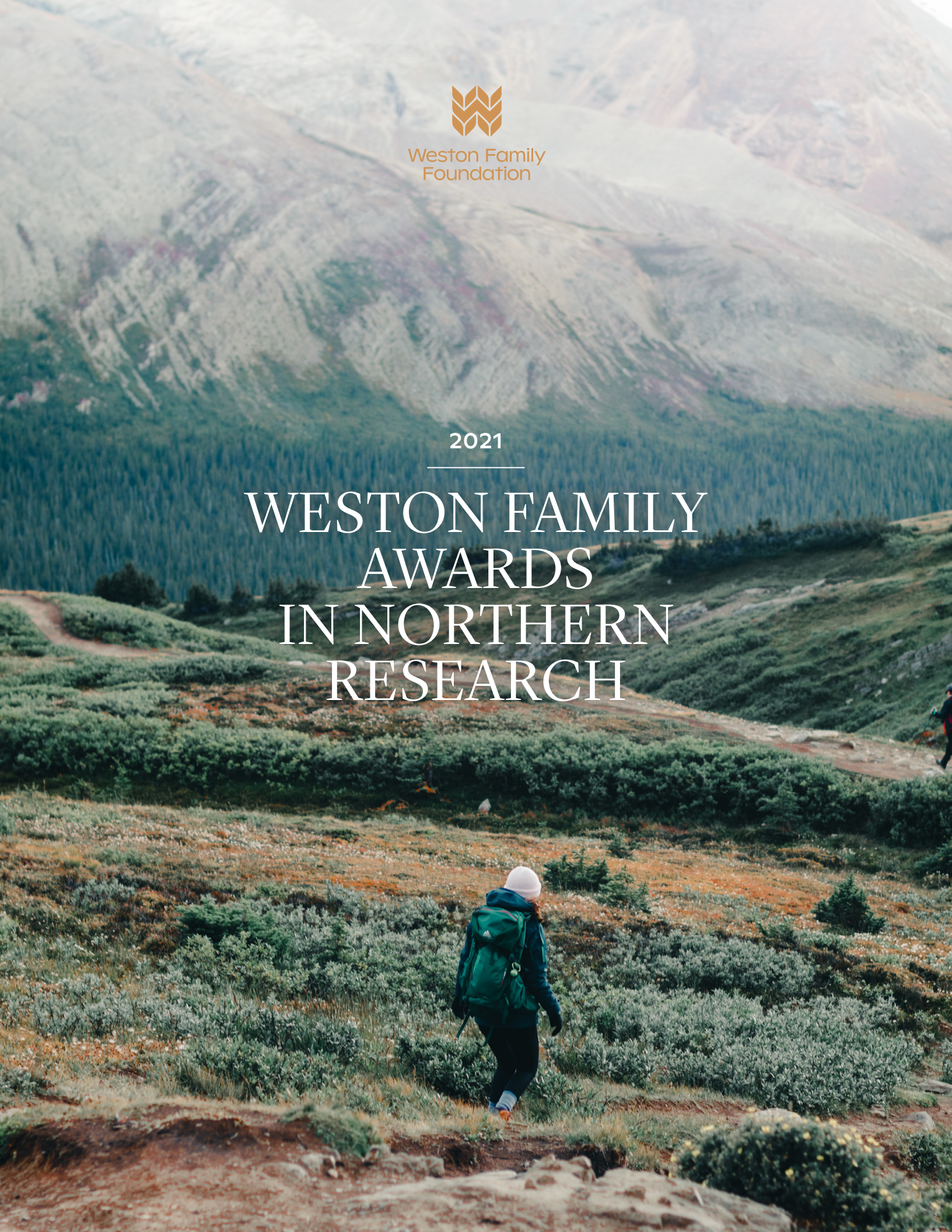

Weston Family
Foundation
2021
WESTON FAMILY
AWARDS
IN NORTHERN
RESEARCH

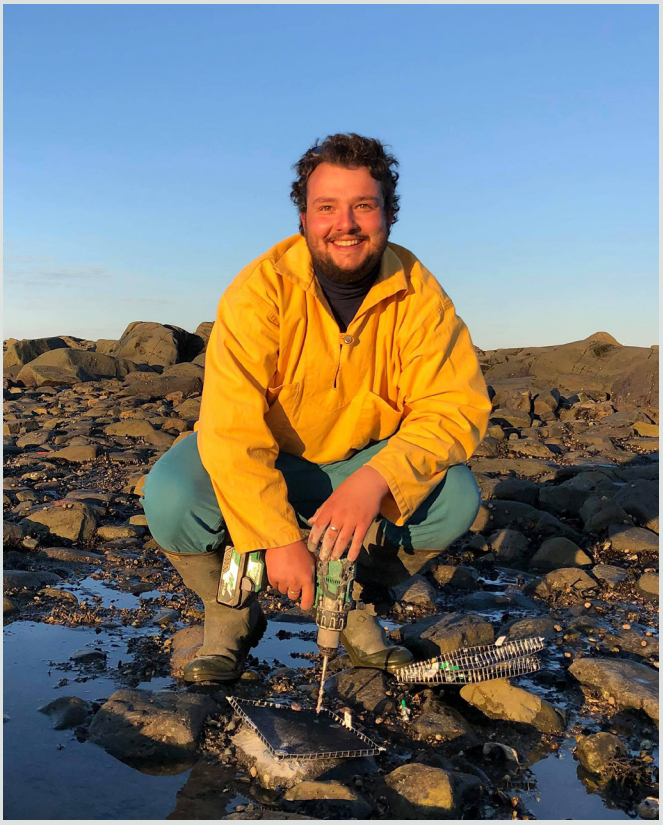
2021 AWARD
WINNERS

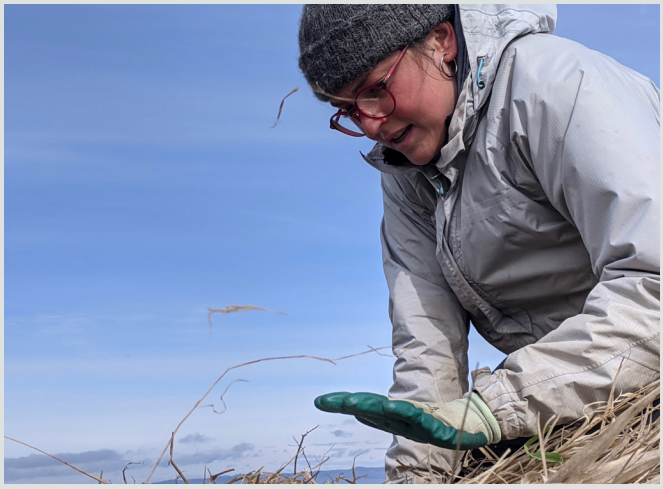
MASTER'S

Weston Family Foundation

Jérémie Boucher Fontaine

Jérémie, a Université Laval graduate student, is part of an ongoing effort to understand various factors that affect marine ecosystem biodiversity. Jérémie's original research in benthic diversity studied the impact of melting glaciers in West Greenland. His master's research is now focused on the microbiota of blue mussels. More specifically, this research examines spatial and temporal heterogeneity and the effects of multiple stressors, in order to develop a broader understanding of the defining characteristics of microbiota. The microbiome is poorly understood, but it is critical to the health of organisms, and can be used as a proxy for the health of mussels and an indicator of thriving ecosystems.





Madeleine-Zoé Corbeil-Robitaille

"The tundra drew me in," says **Madeleine-Zoé**.

Fascinated by the Northern light, the wind and the way of life, visual arts inspired the artist and master's degree candidate at Université du Québec à Rimouski to pursue her path in Arctic ecology.

She's looking at the importance of physical structures to bird biodiversity in the High Arctic, such as islets in lakes. Many of these islets serve as refuges from predation by Arctic foxes for several species of nesting birds.

The project is supported by inventory data collected in 2018 and 2019 and satellite imagery obtained in 2020 at Bylot Island, Nunavut. This data will identify geological processes that create islands, as well as key elements that influence the selection of these islands by nesting birds, such as distance to the shoreline and water depth. Ultimately, field experiments will finally determine the potential for fox predation on the islets.

Geneviève Degré-Timmons

A master's student at Université Laval, **Geneviève** is studying boreal caribou responses to post-fire habitat changes in the Northwest Territories.

Prevailing theory predicts that caribou will avoid recently burned areas due to limited foraging opportunities and high predation risk. Growing evidence suggests fire has less impact on caribou demography than anthropogenic disturbances, and that caribou response varies regionally.

This research examines the effect of barriers on habitat selection and movement over the first few decades' post-fire. This is particularly important in a context of climate warming, which is expected to increase the frequency and severity of wildfire. Understanding changes in caribou demography and behavior resulting from the effects of global warming is fundamental to conservation, management, and policy.

Celeste Kieran

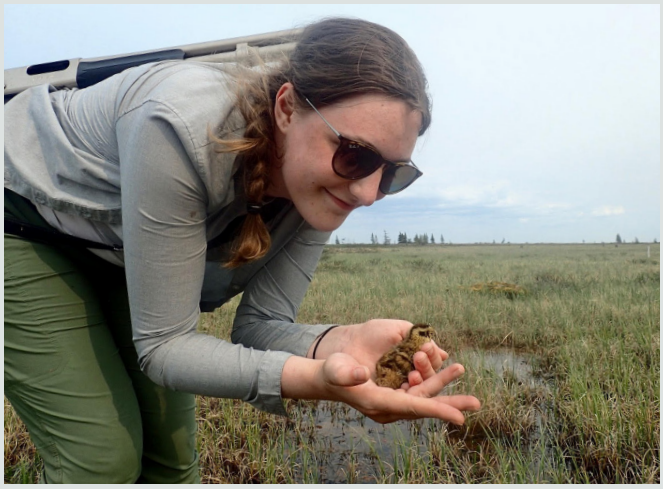
Celeste is a master's student at Simon Fraser University researching marine ecosystem dynamics in the North Pacific Ocean. She is determining how competition, anthropogenic pressures and changes in the environment affect the feeding and distribution patterns of Pacific salmon and how these patterns may have changed over time.

As a fish grows, it incorporates chemical tracers from its food and environment within its scales. For more than 100 years Northern fisheries have collected the scales of Pacific salmon returning to freshwater; scales which can now provide important information about how salmon behaviour and the ocean environment have changed throughout history. Using a century-old archive of sockeye salmon scales, Celeste is exploring connections between Pacific salmon, the North Pacific Ocean ecosystem and a changing environment.

Alexandra Langwieder

Alexandra is a master's student at McGill University's Centre for Indigenous Peoples' Nutrition and Environment. She is studying polar bear ecology in eastern James Bay with the Eeyou Marine Region Wildlife Board, Cree Trappers Association and the coastal communities of Eeyou Istchee. The polar bears in James Bay are the world's most southerly, and they face rapid environmental change. However, little is known about their ecology.

Through Cree Knowledge interviews, hair snares and camera traps, Alexandra is examining James Bay polar bear diet, habitat use and their possible genetic distinction from Hudson Bay bears. With this project, she hopes to advance the knowledge of polar bears at the southern edge of their range, answer community research questions and contribute to wildlife monitoring in Eeyou Istchee.



Erika Nissen

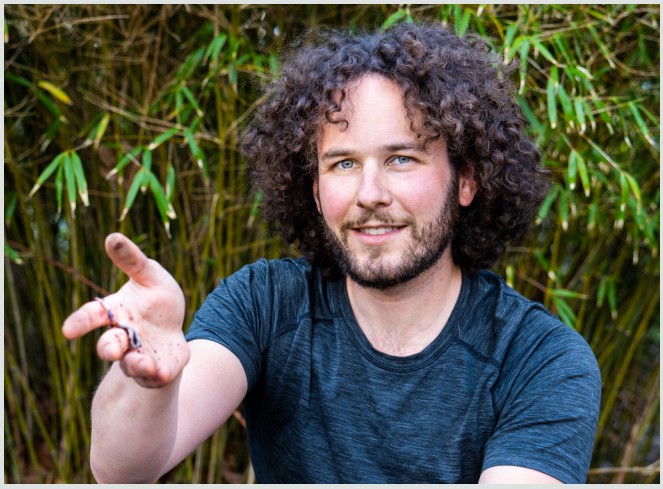
As long as she can remember, **Erika** has loved being outdoors and interacting with nature. Now a master's student of Science at the University of Windsor, she feels fortunate to explore the Arctic for her research project on common eiders at East Bay Island (Mitivik) field station within Qaqsaugtuug (East Bay) Migratory Bird Sanctuary, Nunavut.

Her research examines how female birds spend their time as they prepare to lay their eggs, how changing ice conditions impact their breeding success, and what areas in and around the study site are important habitats for birds. By using small GPS tracking units attached to study birds, Erika hopes by answering these questions she can aide the development of a Marine Protected Area around Southampton Island, Nunavut.

Jessica Norris

Jessica is a master's student at McGill University in Natural Resource Science. Originally from the Northwest Territories, she has had a lifelong passion and connection to the North, including the people and species that inhabit the unique landscape.

The Yukon North Slope is home to a population of reintroduced muskoxen. Since reintroduction, the population has expanded and is a significant figure on the landscape. However, there is limited information regarding current environmental drivers, impacts from a growing population, and further habitat expansion. Jessica's research focuses on investigating and understanding these knowledge gaps. She hopes to bring together her knowledge gained through her studies and experiences to help support overall conservation efforts in the North.



Stephen Paterson

Only a few years ago, **Stephen** would have ranked earthworms as one of the top-ten least interesting animals on earth. Times have changed.

Though he always wanted to be an ecologist, Stephen was initially drawn to colourful and charismatic marine species. He completed a BSc in biology at the University of Winnipeg and a master's degree in environmental management at the University of Queensland in Brisbane, Australia. All the while, he studied and worked in the field of aquatic ecology. Eventually, he found himself doing fieldwork in northern Saskatchewan, where earthworms entered his life.

While conducting habitat and biodiversity surveys, Stephen and his colleague kept discovering earthworms, which was surprising because earthworms don't belong in northern forests. Following the last glaciation, earthworms were uprooted from Canada and subsequently introduced by European settlers. He has become fascinated with understanding how earthworms are spreading through northern Canada and the consequences of this invasion. He is looking forward to carrying out this important research and open people's minds to how the smallest creatures govern the world around us.

Leah Pengelly

Growing up in the Canadian Rockies, **Leah** developed a passion for the outdoors and science. She fell in love with the Canadian Arctic in 2008 during a "Students On Ice" expedition along Baffin Island. After receiving her bachelor's degree in Marine Biology and Oceanography, she returned to Nunavut to work as a biologist with Parks Canada where she studied narwhals' responses to shipping traffic.

At the University of Manitoba, Leah is examining the soundscape ecology of Tallurutiup Imanga and how noise levels in underwater ecosystems change seasonally. Leah's research will determine the baseline levels of noise from marine mammals, wind and ice, and current shipping activity. Leah is also engaging with Inuit communities to promote knowledge exchange and will use Inuit knowledge to determine the current health of the Tallurutiup Imanga acoustic marine ecosystem.

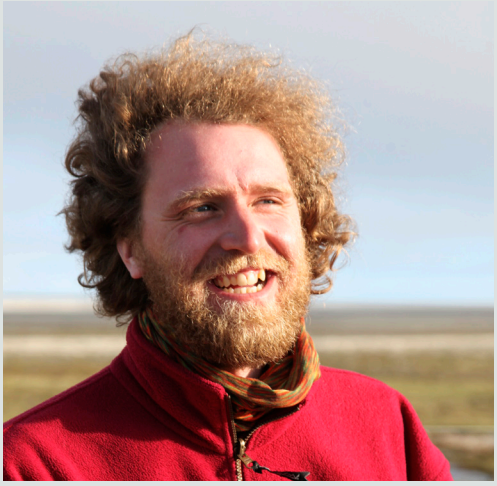
Tommy Pontbriand

Tommy was first introduced to Arctic marine research during his undergraduate studies in Biology at Université Laval. While working for the late Dr. Louis Fortier, a pioneer in scientific research in the Arctic and conducting field work on the CCGS Amundsen in the Canadian Arctic Archipelago, Tommy immediately fell in love with this remote, unknown, vast and sometimes harsh environment that still has so much to teach us. After graduating, he jumped right into his graduate studies at the University of Manitoba, where he currently studies the diet and foraging behaviour of bowhead whales in the eastern Canadian Arctic, which hold a subsistence and cultural importance for Inuit communities in the Canadian Arctic. After surviving the intense commercial whaling era, slowly recovering populations of bowhead whales now face the threats of climate change, which may alter their ability to thrive in Arctic waters. With his work, Tommy hopes to help assess the potential of bowhead whales to cope with changes in prey associated with climate change.

Samuel Richard

Samuel's research is multidisciplinary, bridging natural and social sciences with a focus on Indigenous engagement. The Carleton University master's student is studying common eider duck breeding ecology using coastal survey data collected by Inuit communities. Working in the Belcher Island archipelago, Hudson Bay, Samuel is combining new data with historical survey data to determine the current nesting population size of eiders and quantify changes in their population size and distribution over time in response to environmental factors. His research aims to inform Inuit communities and government agencies as they work together to establish a protected area in the region and to support sustainable eider harvest of this species given their significance and importance in Inuit culture.

He is also examining the social aspects involved in the long-term collaborations between Inuit communities and federal scientists, using coastal surveys of common eiders as a case study. By bridging Inuit and federal researchers' perspectives, he will determine keys to success and lessons learned from this unique, 60-year partnership. His thesis will be an important resource for other national and international Indigenous communities, striving to engage in community-led research partnerships.



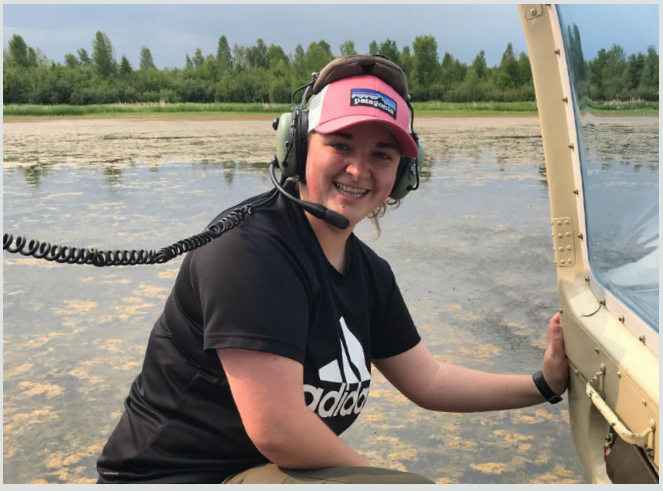
Jaedyn Smith

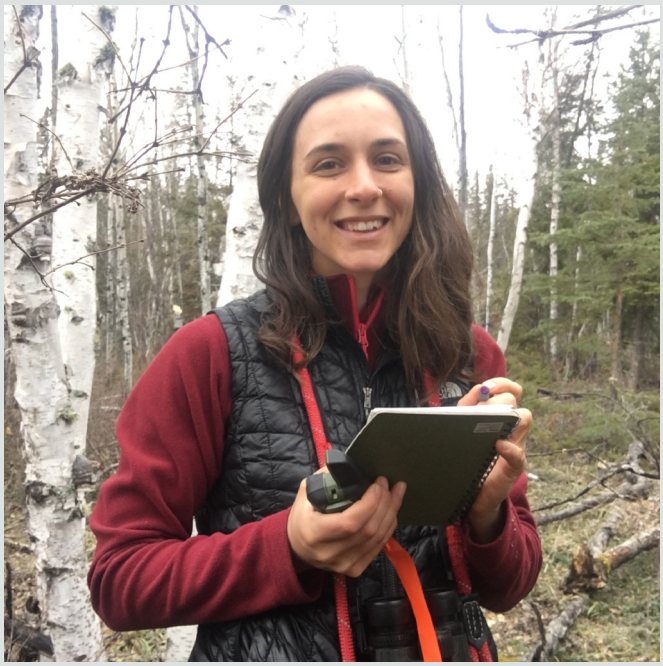
Originally from Whitehorse, Yukon, **Jaedyn** has always been connected to the North and fascinated by the resilience of both the people and the land in northern areas. The master's student from the University of Alberta is currently focused on assessing how changes in climate are impacting permafrost thaw in the Peel Plateau, Northwest Territories. Specifically, she is working on the Willow River to understand how thaw slumping activity within the catchment over the past 15 years has impacted downstream carbon cycling and sediment deposition within fluvial and lacustrine environments. She hopes to work with local land users to assess the local and global impacts of permafrost and landscape collapse features in the Canadian North.

Hannah Thibault

Hannah Thibault is in her first year of her master's of science degree in biology at the University of Waterloo. Her research takes place in northern Alberta and centres around the Peace-Athabasca Delta (PAD), which is an internationally recognized wetland that supports diverse wildlife.

As multiple stressors, including climate change and hydroelectric regulation, continue to threaten the PAD, observable long-term drying trends and decreased freshwater availability remain major concerns brought forth by local Indigenous communities. Upstream of the PAD are the Smoky and Wabasca rivers – key trigger tributaries contributing large amounts of flow to the Peace River, which helps flood lakes of the PAD. By studying lake sediment cores from these upstream watersheds, she aims to understand past temporal variation in local climate conditions and identify climate events that align with drying downstream at the PAD.





Carissa Wasyliw

A master's student in the Department of Geography at Memorial University of Newfoundland, **Carissa** is studying the recovery of plant communities after fire in northern Yukon. Climate-caused changes in fire patterns are altering the regrowth of plant species in this region, including sites that are shifting from tree-dominated to shrub-dominated habitats. This shift could have future implications on culturally valuable species which play important roles in the wellbeing of northern communities.

Carissa is examining the specific drivers behind these changes and focusing on the recovery of culturally significant species, including berry producing plants and lichen, which is an important food source for caribou. Results from this study will help to predict future northern plant recovery patterns and inform management of these biologically and culturally significant areas.

2021 AWARD
WINNERS

DOCTORAL

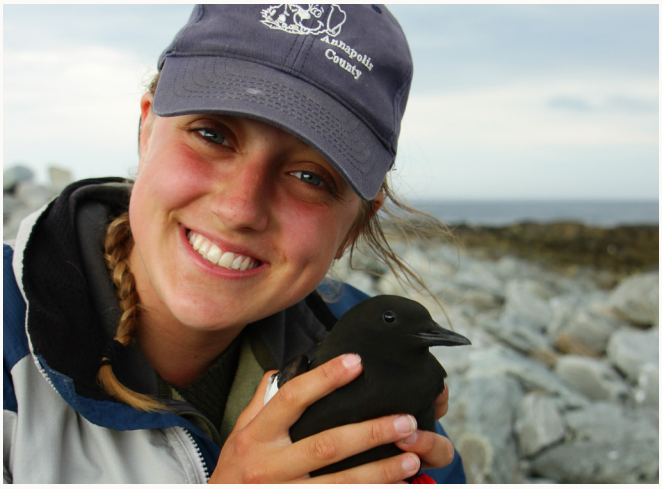
Julia Baak

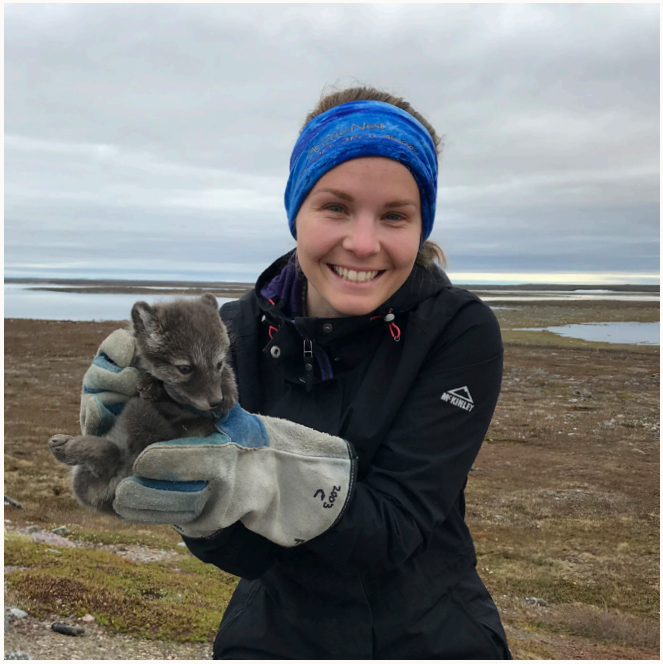
Julia is a PhD student at McGill University studying the occurrence, fate and effects of plastic pollution in Arctic seabirds.

Marine plastic pollution is an increasing environmental problem in the Arctic, yet knowledge about plastic and plastic-related contaminants in Arctic seabirds is limited, particularly in the case of Arctic gulls. As human and shipping activities continue to increase in the Arctic, Julia's research will focus on quantifying plastics and plastic-related contaminants in glaucous gulls and black-legged kittiwakes as indicators of plastic pollution in Arctic ecosystems; examining the transport of plastics and plastic-related contaminants to the Arctic by glaucous gulls and black-legged kittiwakes; and assessing the impacts of plastics and plastic-related contaminants on these two Arctic seabirds.

The results of this research will contribute to an ongoing international effort to better understand plastic and plastic-related contaminants in the marine environment and how these contaminants may impact northern seabirds in a rapidly changing Arctic.

For more information about Julia and her research, visit her website at: www.juliaellenbaak.com.





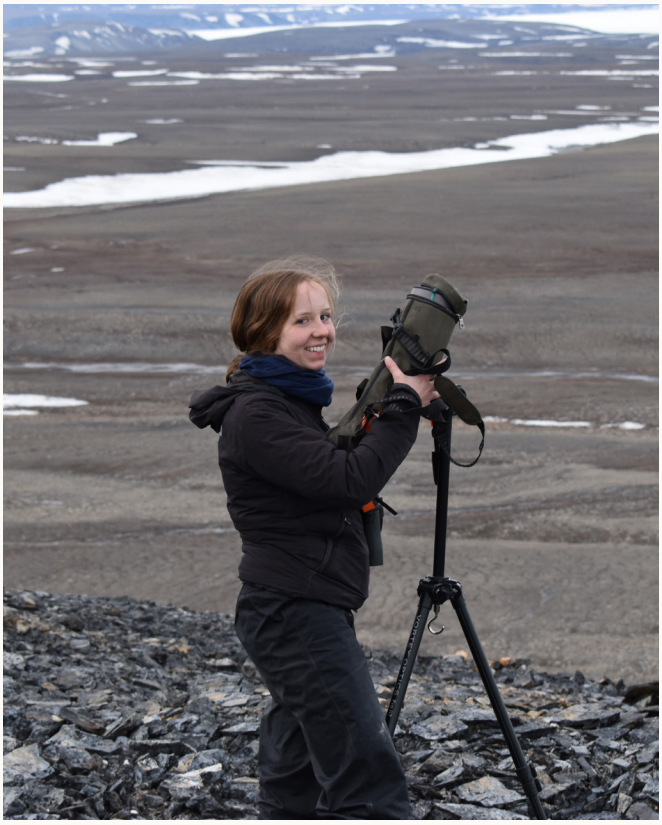
Kayla Buhler

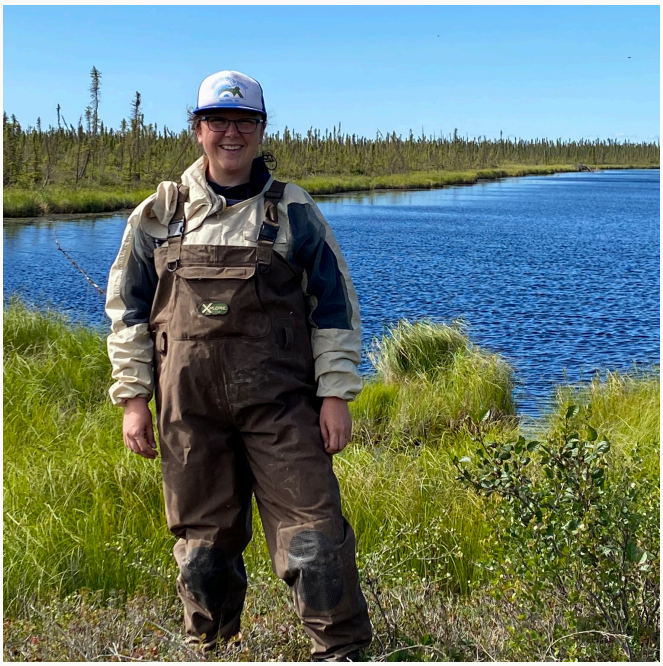
Kayla is a PhD candidate at the University of Saskatchewan studying the distribution and effects of diseases that are transmitted by insects in Arctic wildlife. Her passion for wildlife conservation and health originally sparked her interest in emerging zoonotic diseases (those that can be transmitted between animals and people).

Wildlife has a significant subsistence, cultural and economic importance to Arctic peoples. This, along with the accelerated rate of climate warming, led Kayla to study the disease ecology of viruses, parasites and bacteria carried by insects in the North. Changes in precipitation and temperature will most likely impact the distribution and diversity of insects and the pathogens that they carry. Kayla's research creates a baseline to monitor the prevalence of these diseases in Arctic wildlife and investigates how these pathogens are maintained and transmitted in Arctic ecosystems.

Émilie Desjardins

Émilie is a PhD student in biology at Université du Québec à Rimouski. She is studying the structure and functioning of the polar desert ecosystem surrounding the Canadian Forces Station Alert (Ellesmere Island, Nunavut) to actively contribute to its conservation through a biodiversity management plan. Her research will provide a temporal baseline as well as information on vascular plant diversity and abundance, spatial distribution of vegetation communities, habitat use by wildlife, consequences of snowbank shrinkage on local biodiversity, and spread of non-native plant species. It is her commitment to biodiversity conservation and a love for outdoor activities that were the impetus to pursue postgraduate studies in conservation of the Arctic ecosystem.





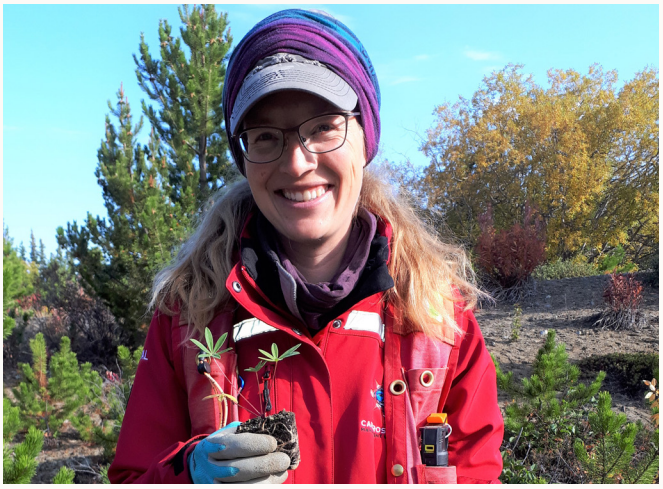
Erika Hille

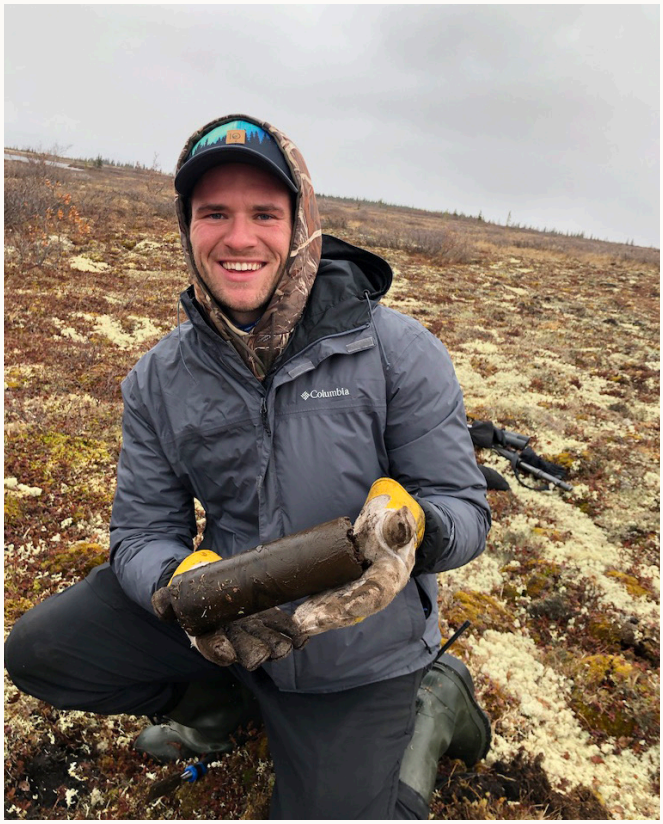
A resident of Inuvik, Northwest Territories, **Erika** has lived in the North for more than 10 years. During that time, she has worked closely with local community, government, Indigenous and co-management organizations to study the effects of permafrost thaw on the water quality of aquatic systems in the Beaufort Delta region. As a PhD student at Queens University, her research focuses on the questions of how and why the water quality impacts of permafrost thaw vary across the Canadian Arctic. This work will culminate in a conceptual framework for characterizing the effects of permafrost thaw on freshwater systems. It is her hope that decision makers can use her work to mitigate the effects of projected climate change on northern water resources.

Krystal Isbister

Born and raised in Whitehorse, Yukon, **Krystal** comes from a long line of farmers. After studying natural resource management and exploring several different environment-related jobs, Krystal finally realized that she, too, was destined to pursue a career dedicated to plants and completed a master's degree in Plant Science, established FloraTek Consulting, and worked for industrial, First Nation and other government clients, providing technical and training services in applied plant ecology. Through the course of her work, she realized that there was a lack of available native plant material, meaningful involvement of Yukoners and few examples of northern revegetation techniques. To work on these challenges, she began a PhD in land reclamation.

Her research aims to explore community expectations for mining revegetation and develop feasible, culturally relevant revegetation techniques. She believes the best results will be achieved by integrating local, traditional and scientific knowledge.





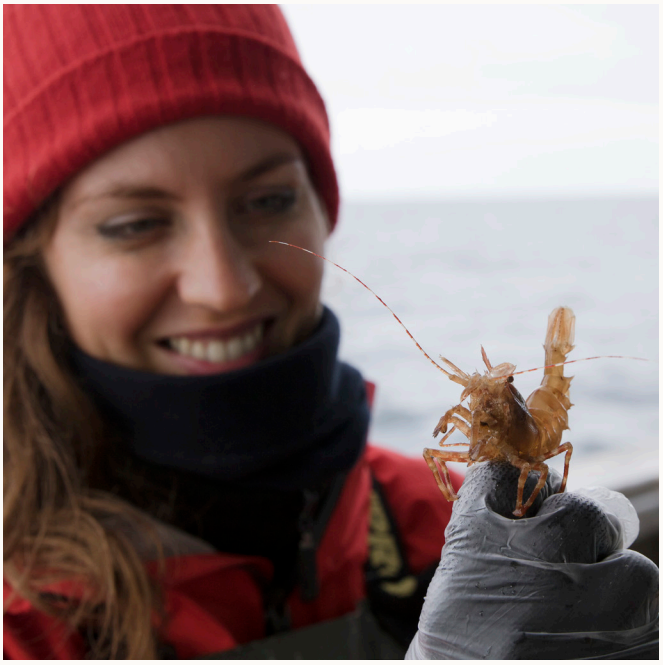
Adam Kirkwood

Adam is a PhD candidate in Boreal Ecology at Laurentian University who works in the sub-Arctic Hudson Bay Lowlands, the world's second largest peatland where an immense amount of carbon and mercury is stored. He is currently researching how permafrost is changing in the region, and what these changes mean for the cycling of mercury in the soils. He is investigating the concentrations of mercury stored in permafrost and permafrost thaw features, and the potential for it to be converted to organic mercury by microbial communities living in the permafrost.

Camille Lavoie

Camille's main field of interest is marine ecology of the polar regions. The Université Laval PhD candidate works as a member of the ArcticKelp research team, focusing on the study of kelp forests in the Canadian Arctic. Her objective is to describe and understand how these giant algae help support marine life in coastal areas spared by or below the ice.

Canada is such a vast country with an extraordinary polar biodiversity which mostly relies on marine habitats. It was only recently that lush kelp forests hosting schools of mysids and polar cods were discovered along Arctic coastlines, and there is much to learn about them. Camille hopes that her work might contribute to our understanding and appreciation of the biodiversity around this peculiar feature of our polar regions.



Don-Jean Leandri Breton

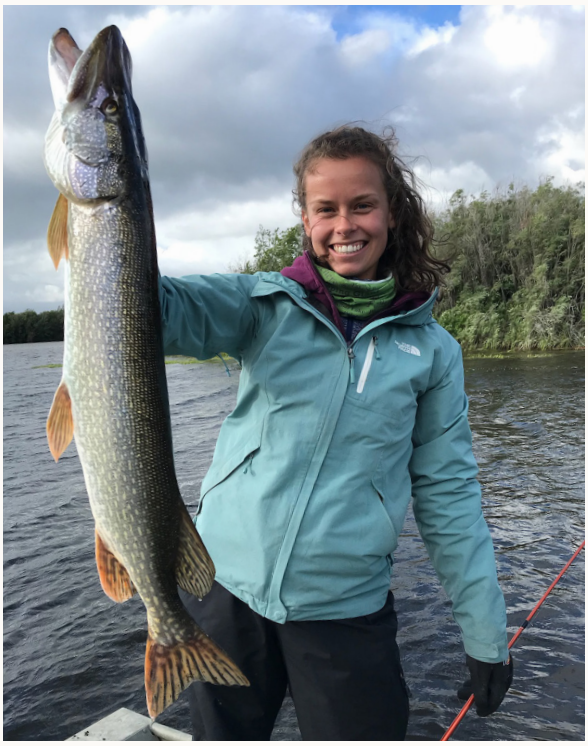
Don-Jean can't imagine spending summer anywhere else than above the Arctic Circle. The PhD candidate at McGill University is studying seasonal interactions and stress physiology on two of the most abundant Arctic-nesting seabirds, the thick-billed murre and the black-legged kittiwake.

Migratory species connect the Arctic regions with the rest of the world. Understanding changes in breeding populations in the North requires a profound knowledge of how conditions experienced by the individuals further south can carry consequences over to the next stages of their annual life cycle.

Taking place in Nunavut and Svalbard, Norway, his research focuses on interactions between the different stages of the annual life cycle of seabirds and how these interactions are governed by endocrinological and behavioural mechanisms. He tracks the birds' movement throughout the year using small biologgers attached to the birds and combines his findings with demographic and physiological data collected at the seabird colonies.

Laura Neary

Laura is a PhD student at the University of Waterloo and has been lucky enough to visit and work within the Peace-Athabasca Delta (Treaty 8), on the traditional homelands of the Mikisew Cree First Nation, Athabasca Chipewyan First Nation and Métis. Her research addresses concerns over lake drying and has culminated to the development of a hydrological monitoring program for the shallow lakes within the delta. This work has contributed to a key priority of the Federal Action Plan, through implementation of the monitoring program which is now financially supported by the federal government and led by local Parks Canada employees and community-based monitoring groups. The next step in her research journey is to apply similar methods and tools used in the Peace-Athabasca Delta to another Ramsar Wetland in the Northwest Territories, the nesting location for the endangered whooping crane, to understand lake hydrology at primary nesting site locations.



Enooyaq Sudlovenick

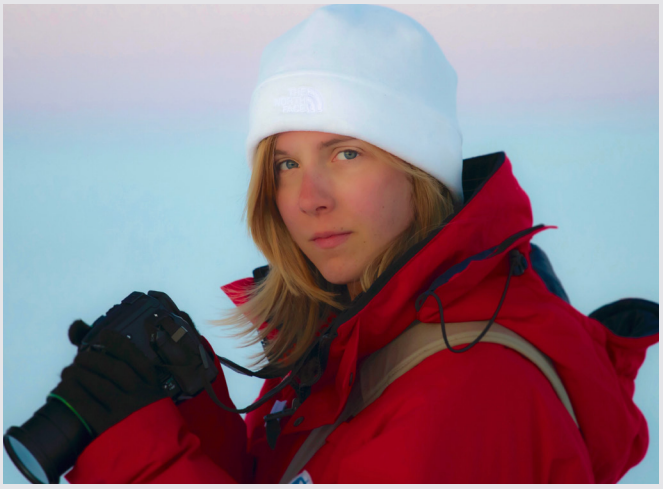
Enooyaq Sudlovenick is a PhD student at the University of Manitoba, working on beluga health and Inuit Qaujimajatuqangit (Inuit Knowledge). Born and raised in Iqualuit, Nunavut, Enooyaq grew up camping and hunting on Baffin Island. She now specializes in Arctic marine mammal health through contaminant and pathological studies. She also works to document Inuit knowledge and uses it as a research framework in her projects. She has completed a Master of Science in veterinary medicine at the Atlantic Veterinary College, working on ringed seal health in Iqaluit, which was also supported by the Weston Family Foundation. Additionally, she holds a BSc in Marine Biology from the University of Guelph. She is an active member in the Arctic research community, volunteering with the ArcticNet Student Association as the President.

2021 AWARD
WINNERS

POSTDOCTORAL

Marianne Falardeau-Côté

Marianne is a postdoctoral fellow at the Université Laval's Institute of Integrative Biology and Systems. She has over 10 years of experience working in polar marine sciences, including five oceanographic missions, on-the-land camps, and extensive community-based work. She studies marine ecosystems in the context of climate change in the Arctic, and how ecosystem change can affect marine resources, especially Arctic Char fisheries, which are critical to food security and health in Indigenous coastal communities. Her research further aims to guide sustainable management and conservation of Arctic marine ecosystems and resources. Her collaborative approach seeks to engage with communities and bring together different knowledge to address critical questions about the changing marine Arctic. She is an eager science communicator, sharing her research through articles, conferences, short films, interactive workshops and new media. She also advocates for inclusion and diversity in science, so far spearheading training initiatives on collaborative research and leading activities about women in polar sciences.



Melanie-Louise Leblanc

Melanie is a postdoctoral fellow at the University of British Columbia. Her research focuses on assessing Canada goose habitat use along the eastern coast of James Bay, Canada, in partnership with Cree hunters. She is looking to determine the extent to which individual Canada geese forage between marine and terrestrial biomes and evaluate the relationship between diet and body condition of geese. This study is part of the Coastal Habitat Comprehensive Project, a large multi-disciplinary research program that aims to better understand the current state of coastal habitats along the eastern coast of James Bay and assess the impact of the current state of these habitats on waterfowl presence and, subsequently, Cree hunting activities.

Chantel Michelson

Chantel is a postdoctoral fellow at Acadia University researching how the Arctic marine food web is responding to changes in sea ice dynamics. She grew up in the Canadian Prairies and fell in love with the Arctic during her undergraduate degree at the University of Saskatchewan. She has pursued a career that allows her to learn and understand polar ecosystems and conduct research that may help maintain their environment.

The Arctic is undergoing unprecedented, rapid change, threatening the survival of many marine organisms and the health of the Arctic Ocean ecosystem. Chantel's research uses biomarkers from seabirds – which track their diet and resource use over the last several decades – to identify food web alterations to climate change. Evaluating past and present food web modifications will improve our understanding of how ecosystems will respond to future climate change and potential contaminant exposure routes to vulnerable marine organisms.

CONGRATULATIONS TO ALL 2021 WINNERS