

UNBC Annual Research Report

2019

UNBC UNIVERSITY OF
NORTHERN BRITISH COLUMBIA



'En Cha Huná

('En = that person; Cha = also; Huná = lives)

UNBC's motto, from the Dakelh (Carrier) Elders, is used to remind us that all people have a voice and a viewpoint. Directly translated as "that person also lives," and interpreted as "respecting all forms of life," 'En Cha Huná encapsulates the spirit of academic freedom, respect for others, and willingness to recognize different perspectives.

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About UNBC

Located in the spectacular landscape of northern British Columbia, UNBC is one of Canada's best small universities. We have a passion for teaching, discovery, people, the environment, and the North.

UNBC provides outstanding undergraduate and graduate learning opportunities that explore cultures, health, economies, sciences, and the environment. As one of B.C.'s research-intensive universities, we engage students in making new discoveries and we work with community partners to address social, economic and environmental problems at local to global scales. In addition to fostering and celebrating academic excellence, UNBC is a welcoming place, with a working and learning environment that is friendly, inclusive, and supportive.

UNBC is a university both in and for the North. This mission has instilled a strong sense of ownership, purpose, and adventure among our students, alumni, faculty, staff, and the communities we serve. We are also Canada's Green University™, leading the way to a more sustainable future for all.

Mission

To be Canada's leading destination University, personal in character, that transforms lives and communities in the North and around the world.

Our founders established a University "in the North - for the North." They envisioned and built an institution where all are welcomed, learn, live, work closely with our faculty and staff, and transform the quality of life in Northern British Columbia, the province, and beyond.

Vision

To inspire leaders for tomorrow by influencing the world today.

UNBC strives to provide a safe and challenging learning environment where students gain leadership skills and stretch their boundaries, not only through academic discussion and debate but also through opportunities to work closely with faculty and staff on research projects and a wide range of initiatives that improve student life or contribute to a need in the community, the region or far beyond.

A message from Acting Vice-President Research

I am pleased to introduce UNBC's 2019 Annual Research Report. I came to UNBC more than 26 years ago and was attracted to an academic career in part because of the opportunity to be engaged in research. I have been fortunate to work with many research partners at UNBC. The importance of research in meeting the vision of UNBC – that of transforming lives and communities in the North and around the world – is much more apparent to me since my appointment as Acting Vice President Research.

The extent and impact of research activities here is impressive. It is also evident that there are many opportunities for growth and for UNBC to contribute to society through research. Three things have stood out for me so far.

The first is the strong connection between research and teaching at UNBC. A main goal of our academic plan is to “create, foster, and support undergraduate and graduate students access to high-quality, ethical and culturally appropriate experiential education embedded across disciplines.” I am proud to say that research activities in 2019 have supported this goal in many ways. Initiatives include our highly successful Research Ambassadors program, 12 Undergraduate Research Experience Awards, 19 Research Project Awards. We also supported an IGEM project which brought together a collection of students in biochemistry, biomedical studies, business and economics to research and develop a tool to address the opioid crisis.

I have also been impressed by the range of partnerships that UNBC researchers have engaged in. Partnerships with research forests and stations, with industry, communities, provincial organizations, and other universities. It comes as no surprise that in 2019 UNBC maintained its position as one of Canada's top 50 research universities, ranking first in the category for corporate research income growth. The value in research and knowledge exchange partnerships has never been more obvious than now, as we face an unprecedented challenge contending with a global pandemic.

Finally, I have become more aware of the tremendous positive impact that our research has on environmental and social systems. In this report you will see many important contributions by UNBC researchers, including studies on health outcomes of wildfires, climate change and human activity on water security, and wetlands, how a 19th century governor used his literary celebrity to argue against assimilation of Indigenous peoples, studies on mental wellness and suicide prevention in Elders, and how natural products from south Asian trees, and natural minerals can improve water purity.

UNBC researchers engage with important issues in the North and beyond, and it is critical that we continue to grow and develop our capacity in this regard. UNBC is in a state of transition in many ways and our research activities provide a stabilizing and positive influence on our ability to fulfill our mission.



Dr. Kathy Lewis
Acting Vice President Research



13,639

UNBC Alumni

10 Post-Doctoral Fellows

6 Canada Research Chairs

5 Endowed Chairs

2 BC Leadership Chairs

1 Knowledge Mobilization Chair



Grand total of research funding

\$14,787,818

Tri-Agency Funding \$ Amount (19/20 Fiscal Year)

NSERC	\$1,464,790
SSHRC	\$482,411
CIHR	\$1,206,128
CRC	\$862,500

3,932 Total Students

3,221 Undergrad

711 Graduate

(2019/2020)

14%

**International
Students**

Degrees conferred

606 Bachelor

156 Masters

2019

RESEARCH CHAIRS + FELLOWS

UNBC is a very proud partner in the Canada Research Chairs Program created to ensure that Canadian research and development is globally competitive. It is the objective of the federal government to help universities become centres of leading-edge research and research training. To accomplish these objectives, research professorships—Canada Research Chairs—have been established in universities across the country.

The positions enable universities such as UNBC to create outstanding opportunities to attract and retain elite researchers. The British Columbia Knowledge Development Fund and the Canada Foundation for Innovation have also contributed to the success of the program at UNBC, by providing funds for the purchase of equipment critical to the research goals of the institution’s Canada Research Chairs.

Canada Research Chair (CRC)

Humanities and Health Inequities..... Dr. Sarah de Leeuw
 Integrative Physiology of Diabetes..... Dr. Sarah Gray
 Rural and Small Town Studies..... Dr. Greg Halseth
 Glacier Change..... Dr. Brian Menounos
 Cumulative Impacts of
 Environmental ChangeDr. Tristan Pearce
 Hybrid Wood Structures EngineeringDr. Thomas Tannert

Endowed Research Chairs

FRBC/Endowed Research Chair
 in Landscape Ecology Dr. Phil Owens
 FRBC/Endowed Research Chair
 in Landscape EcologyDr. Ellen Petticrew
 FRBC/Slocan Mixedwood Ecology Chair Dr. Ché Elkin
 FRBC/West Fraser Growth
 and Yield ChairDr. Oscar Venter
 Ian McTaggart Cowan Muskwa-Kechika
 Research Professor Dr. Heather Bryan

BC Leadership Chairs

Dr. Donald B. Rix BC Leadership Chair
 for Aboriginal Environmental Health..... Dr. Henry Harder
 BC Leadership Chair in Tall Wood and
 Hybrid Structures EngineeringDr. Thomas Tannert

Industrial Research Chair

NSERC/Rio Tinto Industrial Research Chair
 in Climate Change and Water SecurityDr. Stephen Déry

Knowledge Mobilization Chair

Northern Health – UNBC Knowledge
 Mobilization Chair.....Dr. Martha MacLeod

“My research draws on the fields of conservation physiology and disease ecology to develop predictive, theoretical frameworks and to identify the mechanisms by which wildlife respond to change.”

– Dr. Heather Bryan



RESEARCH INSTITUTES, FACILITIES + FORESTS

Institutes and Centres

- Centre of Excellence for Data Privacy, Security and Integrity
- Community Development Institute
- Cumulative Impacts Research Consortium
- Centre for Technology Adoption for Aging in the North
- Hakai Cryosphere Node
- Health Research Institute
- Institute for Social Research
- National Collaborating Centre for Indigenous Health
- Natural Resources and Environmental Studies Institute
- Pacific Institute for Climate Solutions
- Urban Aboriginal Knowledge Network Western Research Centre
- Women North Network/Northern FIRE

Research Forests and Stations

- Aleza Lake Research Forest
- Dr. Max Blouw Quesnel River Research Centre
- John Prince Research Forest

Research Facilities

- UNBC Research Data Centre
- I.K. Barber Enhanced Forestry Laboratory
- Northern Analytical Laboratory Services
- Northern BC Archives
- GIS and Remote Sensing Lab
- High Performance Computing Lab
- Tree Ring Lab
- Genetics Lab
- Northern BC Near-Infrared Spectroscopy (NIRS) Research Laboratory
- Northern Biobank Initiative (NBI)

**For more information on
Research Institutes, Facilities and Forests, please visit
www.unbc.ca/research**

GROWTH + PARTNERSHIPS



UNBC Welcomes New Research Chair

Dr. Tristan Pearce was appointed as an Associate Professor and Canada Research Chair (CRC) of Cumulative Impacts of Environmental Change in the Department of Global & International Studies.

Dr. Pearce is a geographer with an international research profile in the human dimensions of climate change. His research has made an impact to the understanding of how communities in the Arctic, Australia and the Pacific Islands region are experiencing and responding to climate change.

“I am delighted to bring my research program to UNBC,” says Dr. Pearce. “I will continue to work with communities in the north and globally to better understand how people are experiencing and responding to changes in the environment brought on by climate change and other forces. A key focus of my research is the engagement

of multiple knowledge systems, scientific and traditional knowledge, to better understand our relationship with the environment and how it is changing. UNBC faculty are at the vanguard of these issues and I look forward to building new collaborations.”

The overarching goal of Dr. Pearce’s research is to contribute to the development of more sustainable environmental and social policies that better reflect and support the needs, concerns and aspirations of communities.

Dr. Pearce was appointed as a Tier 2 CRC, awarded to exceptional emerging researchers, acknowledged by their peers as having the potential to lead their field. The CRC appointment is for five years and is supported by a grant of \$500,000.

UNBC Welcomes the Centre for Technology Adoption for Aging in the North

The Centre for Technology Adoption for Aging in the North (CTAAN) began work towards the creation of a community of researchers, older adults, caregivers, partners and future leaders that could accelerate the delivery of technology-based solutions that make a meaningful difference in the lives of Canadians.

CTAAN focuses on those in rural and northern regions where there is a substantial gap between technology development and its implementation. Through interlinked projects, CTAAN enhances a streamlined uptake of technologies supporting adaptation, piloting, and implementation.

In November 2019 CTAAN held a strategy session and workshop at UNBC attended by over 40 people from Northern Health, the Health Research Institute, and UNBC faculty, staff and graduate students. The workshop prioritized the top three technology types for CTAAN to focus on bringing to the region for immediate impact on health care delivery and/or aging in place in the north. Additionally, the workshop identified the need to develop a plain language summary of available technology solutions to support caregivers of older adults.

Recognizing community members as key partners, CTAAN hosted a public lecture entitled “Let’s Talk Technology and Aging in the North” at the UNBC campus. More than 50 interested members of the public attended with industry experts showcasing current technological research to address and assist issues that can be associated with aging.

Moving forward, CTAAN will expand its focus to support technology across the different care settings. Such technological expansion includes technologies to enhance in-home supports to promote care, rehabilitation technologies to support community based convalescent care and enable independent living, as well as virtual in-home palliative care, caregiver peer support, and education.

The intention of CTAAN and its partners is to build a sustainable center for collaborations between innovations in technology development and the implementation of those technologies to support older adults in rural and northern communities.

UNBC Researcher Part of GEN-FISH

UNBC’s Dr. Mark Shrimpton is part of the GEN-FISH research team (the Genomic Network for Fish Identification, Stress, and Health) that recently launched at the University of Windsor. The team consists of researchers from across Canada, and Shrimpton is the sole researcher from B.C. The GEN-FISH focus is to find a better way to determine the location and abundance of Canada’s 200+ freshwater fish species and measure how they are performing in the face of increasing (mostly human-made) stressors.



#ThisIs Research

UNBC Welcomes New Industrial Research Chair

The Natural Sciences and Engineering Research Council of Canada named UNBC's Environmental Science Professor Dr. Stephen Déry as the first NSERC/Rio Tinto Senior Industrial Research Chair in Climate Change and Water Security.

The \$1.5 million in research funding from NSERC and Rio Tinto will allow Dr. Déry to quantify the impacts of climate change and the role of collaborative water management on water supply from the Nechako River basin.

"This five-year program of research builds on the capacity my research group has developed over the past 15 years and will make use of the latest technology and state-of-the-art numerical models in advancing our knowledge on the impacts of climate change on water security in the Nechako watershed," says Déry. "It is important to collaborate with a private sector partner such as Rio Tinto, with a view to seeing our research findings applied to help manage the environmental impacts of industrial activity."

The objective of this Industrial Research Chair is to better understand the impacts of climate change and human activity on the long-term water security of the Nechako watershed. Water is of primary importance for the day-to-day operation of Rio Tinto's aluminum smelter in Kitimat, B.C., and is also critical for the wellbeing of the ecosystem. An expanded program of research and



monitoring in the Nechako River Basin remains a top priority for communities within the watershed, and for Rio Tinto.

"This partnership will build on Rio Tinto's long standing support for UNBC and commitment to managing the Nechako watershed responsibly," said Rio Tinto BC Works general manager Affonso Bizon. "We share UNBC's commitment to advancing education and research in the region, and look forward to seeing the findings from this work to build on our environmental management program for the Nechako."

The funding from NSERC and Rio Tinto will also support 13 students, ranging from doctoral candidates and post-doctoral fellows, to master's students and senior undergraduate researchers.





RESEARCH HIGHLIGHTS: INNOVATION, IMPACT, + COLLABORATION

Recreational Access Boosted through Community Collaboration

Exploring the beauty of outdoor destinations is something many British Columbians can sometimes take for granted. Several UNBC professors, with support from a SSHRC Partnership Engage grant, have been working to help more local residents enjoy the B.C. outdoors through increased accessibility.

Working together with Spinal Cord Injury BC's Access BC team, Drs. Mark Groulx, Shannon Freeman and Pamela Wright are supporting work to create more barrier-free destinations in the province. The sharing of ideas and interests during many discussions led to a research partnership and an initiative that would draw from their different research backgrounds, including community-based planning, the well-being of vulnerable populations and sustainable tourism activities.

"We live in a province, and a country, that has some of the most magnificent natural environments," says Groulx, an Associate Professor in UNBC's School of Environmental Planning. "The essence of this research really looks at whether or not all members of society have equitable access and opportunity to experience these amazing spaces."

The larger project team included UNBC grad student Jacob Cameron and Dr. Chris Lemieux from Wilfred Laurier University, Spinal Cord Injury BC as well as numerous tourism and recreational partners that work with Access BC.

As part of the \$24,000 research grant, visits were made to outdoor tourism and recreation sites around B.C. in conjunction with the ongoing work that Access BC already undertakes to collect data on accessibility needs.

"Access BC audits and measures where infrastructure, as well as environments, are accessible and where deficiencies might present barriers to those with mobility or visual limitations," says Freeman. "As researchers, we are trying to use our tools to help further improve their processes and efficiencies, and hopefully help build capacity for them so that they can do more of the great work that they do."

Audits consider a wide variety of potential barriers to accessibility that may exist at sites, such as the widths of paths, slopes of trails, gaps between grates, and heights of washroom sinks and toilets.

"We have to think about equity all the way through the experience a visitor might have, from the early stages of deciding what they want out of a trip to when they actually arrive and use things like pathways, buildings, washrooms, shorelines, docks and other infrastructure," says Wright. "Access BC also looks at ensuring that specific site information is easily found online and is accessible, so that even before a trip, visitors can determine if an environment will meet their needs."

The research work has led to the development of a new digital tool that will help Access BC in further streamlining of processes and collation of data for reports that can be shared with recreational, municipal and tourism stakeholders as part of ongoing discussions around accessibility and potential planning for space upgrades.

"This project has been such a great example for me on how much positive benefit can be found in working more closely with community partners in research," notes Groulx. "Either in taking more direction from community regarding needs, for example, or working hand in hand to identify problems and finding ways to address those issues. If we're looking to have positive impact through our research, then this kind of collaboration seems to be a really worthwhile process in terms of time, effort and funding investment."

Researchers Team Up to Protect B.C.'s Forested Watersheds

Faculty and students at UBC's Okanagan campus, Thompson Rivers University and the University of Northern British Columbia—which together make up the Interior University Research Coalition (IURC)—are collaborating on three research projects that will examine natural disturbances and their impacts on various watershed processes in forests, hillside slopes and crown land.

“We want to establish inter-institutional and interdisciplinary research teams to address an important and complex research area,” says Janice Larson, director of the Tri-University Partnership Office, which oversees the IURC. “Climate change and increased land development have emerged as influential factors in the occurrence of wildfires, floods and other natural disasters. The Disaster PR3 grant will fund research that will allow us to better plan for, respond to, and recover from natural disasters.”

UNBC Researcher Partners with Lake Babine Nation to Lead Field School

Dr. Farid Rahemtulla, an Assistant Professor in UNBC's Department of Anthropology directed his 11th archaeology field school at Babine Lake, B.C. This research and training project is part of a long-term partnership between UNBC and the Lake Babine Nation that began in 2010. A primary goal of the project is to shed light on the deep history of the Lake Babine Nation with research guided by the community. In November the field school was featured nationally in two episodes of “Wild Archaeology” on the Aboriginal Peoples Television Network (APTN).

Research Launched to Study Health Outcomes of B.C. Wildland Firefighters

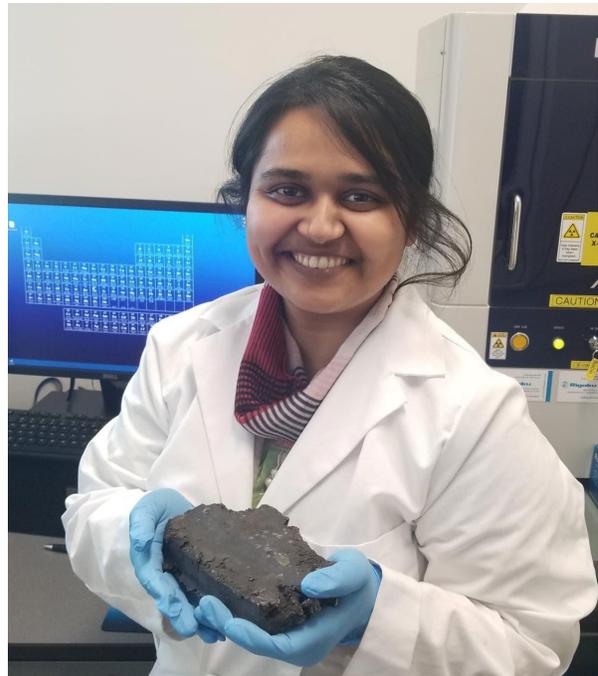
Dr. Chelsea Pelletier, a UNBC health sciences researcher, and her team will spend the next year studying what is known about the health impacts of occupational exposure to wildfires that B.C. wildland firefighters and related personnel face on the job. She and her team are seeking to understand the health outcomes for the firefighters and related personnel by examining previous literature and talking to key stakeholders. They will also identify mitigation strategies or policies implemented to reduce negative health impacts.

“This project is important because it establishes a partnership between UNBC and the BC Wildfire Service,” explains Dr. Pelletier. “We are hoping to help the BCWS develop a program of research that reflects the priorities of key stakeholders, most importantly wildfire fighters themselves so that we can better understand the health risk and mitigation strategies.”

Once complete, the results, combined with previous research, will support the development of a collaborative strategic research plan for the BC Wildfire Service, which is funding the project for \$125,000 through Canada Wildfire, the Canadian Partnership for Wildland Fire Science, with additional support from the Health Research Institute and the newly created Knowledge Synthesis Centre at UNBC.

Researchers Investigate Vegetation Patterns in the Nisga'a Memorial Lava Bed Park

UNBC's Dr. Philip Burton received funding from the BC Parks Living Lab for Climate Change and Conservation Program to lead research on changing patterns of vegetation in the Northwest's Nisga'a Memorial Lava Bed Park. As evidence suggests that the climate in this area is becoming wetter and milder, forest cover in some areas is rapidly developing and could eventually cover the lava bed. Together with other UNBC researchers, Burton is studying the area to understand the differences between normal changes in vegetation, and changes associated with climate change.



Researchers on UNBC's Northern Analytical Laboratory Services (NALS) Team Are Studying Possible Ways to Combat Climate Change and Improve Drug Delivery

The NALS team has been working hard on a variety of fascinating projects that demonstrate potential to have real-world impact on climate change, cleaning the natural environment, and improving drug delivery.

Several projects examine a new class of metal organic frameworks (MOFs) and their potential to store gas, remove harmful dyes and toxins from the environment, as well as improve drug delivery.

A project with a local connection will determine the air quality in downtown Prince George by quantifying polycyclic aromatic hydrocarbons and the chemical composition of atmospheric Particulate Matter (PM_{2.5}). Other members of the NALS team will compare the quality and composition of Prince George air to other Canadian and international cities.

Team members have also been investigating the ability of natural clays and modified zeolites to remove toxins and bacteria from water and the natural environment. Another modified zeolite is being used to modify the composting processes to improve absorption capacity of valuable nutrients such as nitrogen and phosphorus.



(Left to right) Mostafa Marzi, Dr. Wei Zhang, Dr. Hossein Kazemian, Erwin Rehl, Lon Kerr, Charles Bradshaw, Navjot Kaur, Peter Zhao, Ann Duong, Sahar Ebadzadsahraei, Simisola Idim, Mandeep Kaur, Dorna Sobhani, and Sakshi Satish



STUDENTS IN RESEARCH

Students seek reliable solutions for opioid drug tests

Science and business undergraduate students on UNBC's iGEM team (International Genetically Engineered Machine), received a prestigious Promega iGEM grant valued at USD \$2,000 (CAD \$2,600) in Promega molecular biology product. This research will support development of a sensor to alert anyone handling drugs to the presence of opioids. Of the 150 applicants, UNBC's iGEM team was one of only 10 teams to receive funding.

Witchcraft in Zug, Switzerland

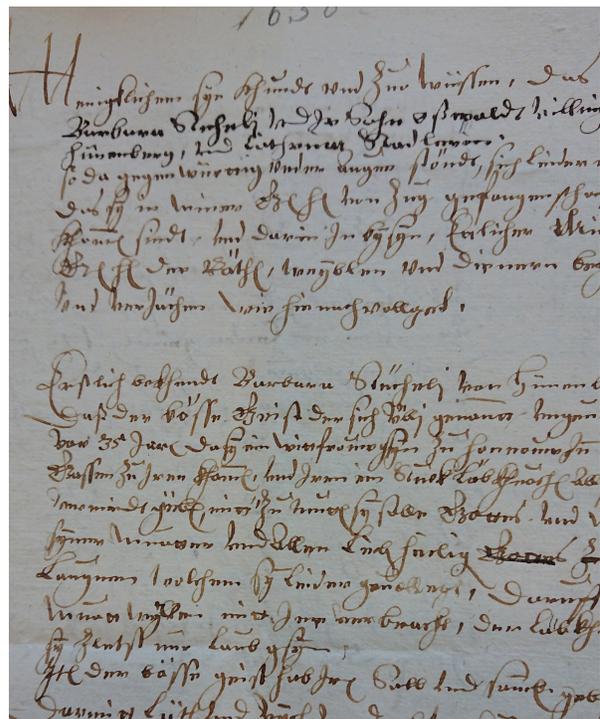
Master's student Aaron Larson is the first English-Speaking historian to examine the last major witch hunt (1737-1738) in Zug, Switzerland. Larson explores the links between space, borders and witchcraft using a self-designed methodological approach.



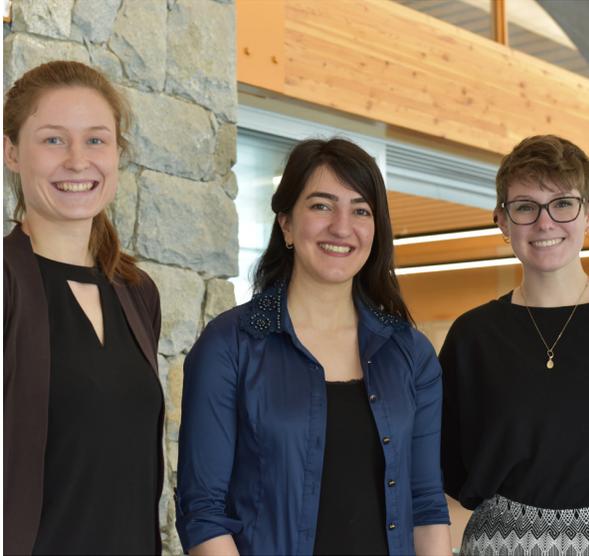
Above photo: Zyturm in Zug where accused witches were held.

"I have pioneered a new methodological approach to primary source analysis that I have called Archival Source Mapping," says Larson. "This technique allows me to examine sources held in the archives for location data mentioned by the author. I then collect the data, put it into GIS mapping software and create a visual representation of the spatial element of a historical source."

Larson will use this information to explore the borders of a woman's world in eighteenth century Switzerland and learn more about their lives. He also won the Master's student presentation competition at the Western Division Canadian Association of Geographers (WDCAG) annual conference that was hosted by UNBC this year.



Above photo: Trial documents held by Staatsarchiv Zug



Research Ambassador Program

The Research Ambassador program is an opportunity for undergraduate and graduate students who are eager to utilize their knowledge, skills and interests to enhance research culture at UNBC. As champions for research at UNBC, Research Ambassadors bring research experience across a broad spectrum of fields, including humanities and the physical, natural, health and social sciences.

Following the success of the pilot, the Research Ambassador program returned this year and expanded from six to eight ambassadors. This year's ambassadors were involved with a number of different projects and included student mentorship, creation of a 'Student Research Opportunities' webpage, 'Research the North' podcast, and development of an online platform that aims to support student research efforts and involvement at UNBC.

The Research Ambassadors were also involved with recruitment activities on and off campus. They contributed to UNBC's Discovery Day open house in Prince George where high school students experienced a day in the life of a UNBC student with tours, classes and more. Research Ambassadors also traveled to local and out-of-province high schools to share their UNBC academic and campus life experience.

UNBC graduate student competes at Western Regional 3 Minute Thesis Competition

Jennifer Coburn, a graduate student in Gender Studies, represented UNBC at the Three Minute Thesis (3MT) Western Regional Competition with her topic: "The 'Girl Push-Up:' The Effects of Gender Stereotypes on Women's Competence and Participation in Physical Activity. This year's competition was hosted by UNBC at the Wood Innovation and Design Centre in downtown Prince George and included 18 graduate students from universities across B.C., Alberta, Saskatchewan and Manitoba.

UNBC Research Week 2020

UNBC's Research Week profiled more than 70 oral and poster presentations from researchers and their teams including faculty members, master's, PhD, and undergraduate students. This year's theme was "20/20: Research in Focus."

Each day of the five-day event highlighted the exceptional research happening in each of the proposed new faculties: 1. Business and Economics 2. Environment 3. Human and Health Sciences 4. Science and Engineering 5. Indigenous Studies, Social Sciences, and Humanities.

The Three Minute Thesis Competition returned to Research Week this year with seven students competing. First place winner, Louisa Hadley, will travel to the University of Alberta to compete in the Western Regionals with her thesis topic, "Removing Barriers to Climate Action."



GRANTS + AWARDS

Two UNBC international students share \$23,500 in P.E.O. scholarships

The international Philanthropic Education Organization (P.E.O.) awarded two UNBC Doctoral students -- Christiana Onabola and Hooi Xian Lee -- with International Peace Scholarships worth a combined total of \$23,500.

Onabola has a background in health and is interested in the intersection of health and its broad determinants in the environment. "My current research is focused on using GIS (Geographic Information Systems) to map the Sustainable Development Goals in a watershed setting. This is a way to downscale global goals and promote watersheds as units of analysis to track implementation and monitoring metrics for the goals," Onabola explained. "This will ensure the sustainable development efforts start from local people and reach communities that need them the most."

Lee's PhD research is focused on searching for small molecule inhibitors of cancer cells. "I am glad to be one of the recipients of the International Peace Scholarships as it provides me with financial support for my PhD study in Canada," Lee said.

Other Notable Grants and Awards

The Office of Research is pleased to report that many of UNBC's exceptional researchers received awards and grants this year, some of which were:

- BC Real Estate Foundation Partnering Fund
- AGE-WELL Pilot Innovation Hub Program (seed funding)
- CIHR Project Grant
- Vancouver Foundation Systems Change Grant
- MSFHR Convening and Collaborating Award
- BC SUPPORT Unit Pathway to Patient-Oriented Research (P2P) Award
- SSHRC Insight Development Grant
- MSFHR Research Trainee Award
- NSERC Discovery Grant
- UNBC Bridge Grant
- UNBC Undergraduate Research Experience Award

PUBLICATION HIGHLIGHTS

Glacier sediments act as a sponge for contaminants

UNBC and University of Plymouth researchers published their paper titled, “Extreme levels of fallout radionuclides and other contaminants in glacial sediment (cryoconite) and implications for downstream aquatic ecosystems,” in the journal, *Scientific Reports*. Their findings suggest that sediments on the surfaces of a glacier in eastern B.C. and elsewhere in the world are acting as a sponge and absorbing large amounts of contaminants that are contained in glacial meltwater.

“This is of interest given the increase in glacier retreat due to climate change, and thus more meltwater, which is releasing contaminants that were previously locked up in glaciers. As glaciers melt, they release water, sediment and contaminants to downstream rivers, which could affect aquatic ecosystems and human health,” explains Dr. Phil Owens, an Environmental Science Professor at UNBC, the lead author on the paper.



New book analyzes Indigenous self-governance in Canadian Arctic

UNBC Political Science professor, Dr. Gary Wilson, is the lead author of a new book titled *Nested Federalism and Inuit Governance in the Canadian Arctic* that traces the political development of three Inuit regions in northern Canada over the past 40 years. The book is the result of a decade long SSHRC-funded research project. It offers new insights into the evolution of Indigenous self-government, as well as its consequences for Indigenous communities and the future of Canadian federalism.

New book explores human-animal relations in mountainous inner Asia

UNBC Anthropology professor, Dr. Alex Oehler, is co-editor of the new book, *Multispecies Households in the Saian Mountains: Ecology at the Russia-Mongolia Border*.

For more than 100 years, scholars from around the world have debated the exact location in which reindeer were first domesticated. One of the hotbeds of this debate has been the Saian-Altai Mountain range on the Russia-Mongolia border. Here local Indigenous hunting communities may have come to tame and ride reindeer for transportation, going as far back as the early seventeenth century. However, scholars of Siberia have paid little attention to the importance of other species cared for by Indigenous reindeer herders. Bringing together a group of international anthropologists – two of whom are Indigenous to the Saian-Altai area – the book explores how today’s descendants of the ‘original reindeer tamers’ live with reindeer, as well as dogs, bears, wolves, and horses.

Investigating the controversial life and works of Sir Francis Bond Head

Sir Francis Bond Head was a best-selling British journalist and travel writer who governed the British colony of Upper Canada from 1836 to 1838. Unusual for his time, Bond Head held a contrarian position to his peers and colleagues regarding the ideology of assimilation that came to inform Canada's residential school system. Now he is the subject of a literary study spearheaded by UNBC's Dr. Kevin Hutchings.

"Sir Francis lived an exciting and adventurous life, and played a fascinating and controversial role in our nation's colonial history, to which past scholarship has failed to do justice," says Hutchings. "Although he published numerous influential books and articles during the course of a lengthy literary career, those writings are now largely forgotten. My investigation of the relationship between his literary and political activities will demonstrate the important role that literature played in English Canada's early colonial history."

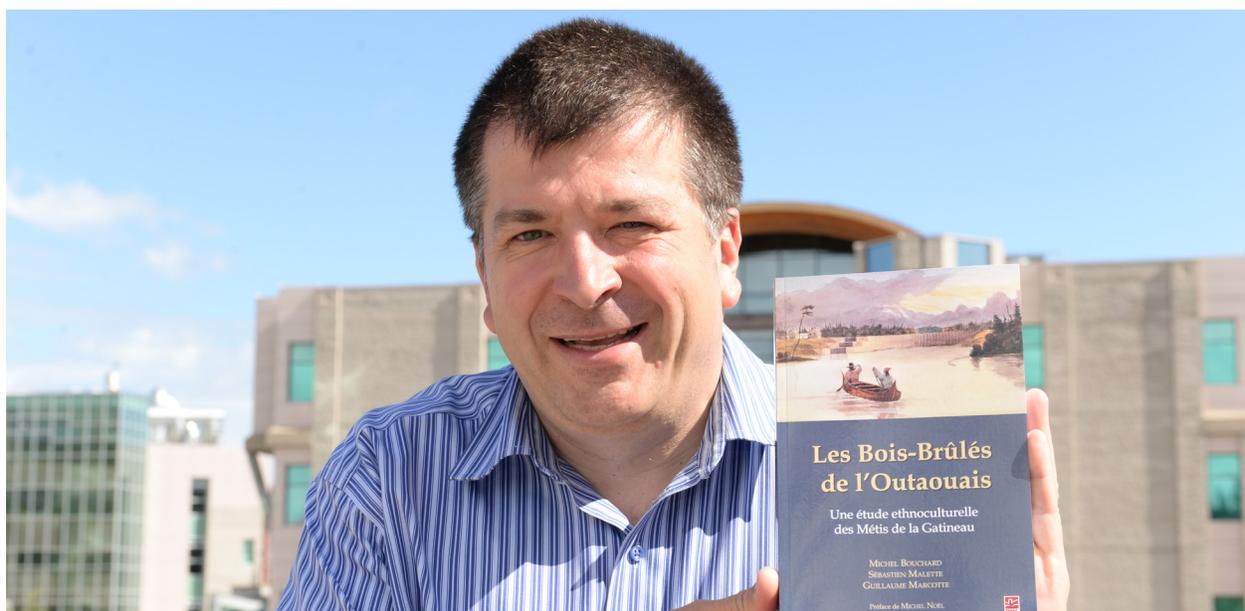
With the support of a SSHRC Insight Grant, Dr. Kevin Hutchings will produce the first detailed literary study of Sir Francis Bond Head's life and times, with a goal of demonstrating how he exploited his literary celebrity to support his often-controversial political work, including his business activities in colonial Argentina, his treaty-making among First Nations in Upper Canada, and his controversial role in both inciting and crushing the 1837 Upper Canada Rebellion.

New book celebrates rich Métis history and seeks recognition as Indigenous population in Canada

UNBC Anthropology Professor Dr. Michel Bouchard is a co-author of the book, *Les Bois-Brûlés de l'Outaouais*. The book demonstrates, through a rich documentary, that a regional Métis culture and community formed in the valleys of the Gatineau and the Lièvre – a community fully integrated within a Métis Diaspora that is found from East to West across the North American continent.

"Through a detailed analysis of unpublished sources, we demonstrate that the 'freemen' of the fur trade, as well as their spouses and children, constituted a core of families that would soon form a historical Métis community in western Québec," explains UNBC's Dr. Michel Bouchard, one of the authors.

"The book *Les Bois-Brûlés de l'Outaouais* calls into question the historical stereotypes related to both the Métis as well as the colonization of the territory," adds author Sébastien Malette, an Assistant Professor of Law and Legal Studies at Carleton University. "We find Louis Riel who is reputed to have spent some time in the area as he is pursued by bounty hunters during his exile after the resistance of 1869-70 which led to the creation of the province of Manitoba. The local oral history testifies to the fact that he found refuge among these Métis families of western Québec."



The Office of Research would like to recognize all of the exceptional researchers at UNBC, however only some of the highlights from the past year are included in this Annual Report.



UNBC UNIVERSITY OF
NORTHERN BRITISH COLUMBIA
Office of Research