

# UNBC Research Week

## Wednesday, March 2<sup>nd</sup>, 2022

9:00am–10:00am

**Presentations – Health Research Institute, water treatment assessment, and Indigenous youth science camps**

**In-person: Conference Centre 6-205 \*Masks must be worn as per PHO and UNBC policy**

**Online: <https://unbc.zoom.us/j/64175410354?pwd=VE5LV0lOcXNQVHlvWnd5MmVOVGc0dz09>**

**Passcode: 363957**

### **What exactly is the UNBC Health Research Institute?**

*Leanna Garraway, Manager, Health Research Institute*

In this presentation learn about the Health Research Institute (HRI) and its place in facilitating and supporting collaboration in health research in the north. Hear about HRI activities and services, and the benefits of becoming a member. There are many different types of health research that takes place in northern BC, and various different career paths possible in health research across a broad spectrum of disciplines. Find out about the HRI's place in the engaging and dynamic area of health research in northern BC, and how anyone can become involved.

The UNBC Health Research Institute (HRI) is designed to enable UNBC's experienced and emerging health researchers (faculty, staff and students) from across the 5 Faculties and the Division of Medical Sciences, to join together for the purpose of furthering health research and innovation. The Institute provides a venue for collaboration among the diverse group of researchers from many disciplines, who undertake various forms of health research, including research on the determinants of health. The Institute encompasses researchers working in the areas identified in the UNBC Strategic Research Plan (Determinants of Health, Health Services and Policy, Population and Public Health, Indigenous Health, Health and Environment), as well as others who engage in health research at UNBC.

### **Site-specific water treatment objectives using economic optimization**

*Dave Tamblyn, Senior Lab Instructor, Engineering*

A procedure to estimate the economically efficient site- or system-specific treatment objective for enteric viruses in drinking water is presented. The health benefits of treatment are estimated using an existing quantitative microbiological risk assessment (QMRA) model for Rotavirus, which yields a reduction in burden of disease, measured in DALYs. The community's willingness to pay for this reduced disease burden is then inferred using an estimate of the value of an avoided DALY from the literature. Economically efficient treatment occurs where the marginal cost of additional treatment equals the marginal benefit in terms of willingness to pay for avoided illness. In a case study on a small water system, capital and operating costs are estimated for four alternative treatment levels using commercially available UV disinfection systems. The case study results compare the economically efficient virus disinfection level, risk of infection and burden of disease to international guidelines. A

sensitivity analysis suggests that source water quality, population served, and the dose-response model are key inputs. Site-specific treatment objectives offer a viable alternative to prescribed national standards while respecting water safety and local autonomy.

### **The Fine Art of Delivering Science During a Pandemic: Critically Reflecting on the 2021 Northern Indigenous Youth Summer Science**

*Marion Erickson, Health Arts Research Centre Research Manager, Northern Medical Program*

In July 2019, an inaugural in-person Indigenous Youth Summer Science Camp was launched at UNBC through a unique partnership between: the Health Arts Research Centre (HARC) in UNBC's Northern Medical Program (NMP); the First Nations Health Authority (FNHA); and Northern Health. In 2021, HARC responded to the unique challenge of running the Indigenous Summer Science Camp for Indigenous youth (ages 12-14) in Northern British Columbia during the pandemic. Many First Nations communities closed access to off-reserve First Nations people and visitors. This presented a unique challenge for the HARC team. By expanding partnerships, drawing on best available public health evidence, and engaging longstanding relationships with northern communities, the HARC team adapted Summer Science. Facilitation of the camp took a strengths-based approach. In partnership with five different Indigenous communities and supported by two Indigenous organizations across northern BC (including FNHA and Carrier Sekani Family Services- CSFS), the HARC team offered a unique and uplifting hybrid in-person/online 2021 Indigenous Summer Science Camp.

This presentation, which includes summaries, evaluations, and images of the Summer Science Camps, is a conversation about how we implemented the camps and the research that informed our work. The successful facilitation of the 2021 Indigenous Summer Science Camp demonstrated how Indigenous-led, research-informed, projects can positively impact communities, build relationships, and honour the self-determination of Indigenous peoples in northern rural communities. In working towards inspiring Indigenous youth to pursue health careers, and as we work towards combatting anti-Indigenous racism in healthcare, the experiences and lessons learned during the implementation of the 2021 Indigenous Youth Summer Science Camp can inform leadership decisions about successful university-community partnerships and relationships in northern BC and beyond.

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**10:00am–11:00am**

### **FEMINIST INSTITUTE FOR RESEARCH & EVALUATION (Northern FIRE): Who we are, what we're doing and how you can get involved!**

*Professor Dawn Hemingway, Associate Professor, School of Social Work*

*Dr. Jacqueline Holler, Associate Professor, History/ Women's and Gender Studies*

*Dr. Indrani Margolin, Associate Professor, School of Social Work*

*Dr. Jonathan Alschech, Assistant Professor, School of Social Work*

**Zoom link:**

<https://unbc.zoom.us/j/65948623389?pwd=MIJsdFpiZnY0NkpDdEtId2FveVU3UT09>

**Passcode: 614120**

The [Northern Feminist Institute for Research and Evaluation](#) (Northern FIRE) has a longstanding presence at UNBC, conducting and communicating research on gender and health and connecting women and women-serving organizations throughout northern BC through the [Women North Network](#). In this presentation, Northern FIRE team members - Professors Dawn Hemingway, Jacqueline Holler, Indrani Margolin and Jonathan Alschech - will discuss the history and mandate of Northern FIRE and past, current, and future projects. Join us to learn about the institute, our vision for its future, and how you can get involved!

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**10:00am–11:00am**

### **Making the most of data at UNBC**

*Susie Wilson, Data Services Librarian*

*Dr. Shannon Freeman, Academic Director, Research Data Centre*

This presentation will cover the range of data services available to students and researchers at UNBC, including examples of how these resources have been used for innovative research here at UNBC.

#### **Zoom link:**

<https://unbc.zoom.us/j/68924186837?pwd=M09kc1dCd1B1YTRsNDlManBldUsyZz09>

**Passcode: 471001**

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**11:00am–12:00pm**

### **Housing Precarity, Homelessness and Housing-Justice in Northern BC: A Community-Based Intersectional Exploration of Lived Experiences Needs and Barriers**

*Niki Lindstrom and Sylvia Olsen, First Nations Housing & Infrastructure Council*

*Dr. Heather Peters, Professor Dawn Hemingway and Dr. Jonathan Alschech, UNBC School of Social Work*

*Juls Budau, UNBC School of Social Work and Amelia Merrick (OISE, U of T), Together We Stand*

#### **Zoom link:**

<https://unbc.zoom.us/j/68205588975?pwd=c0FwbG5VdjBPavIveGdDeXJhMlpVUT09>

**Passcode: 341017**

This session is organized by researchers and research students from the School of Social Work, at UNBC and the First Nations Housing and Infrastructure Council (FNHIC-BC), aimed at discussing the characteristics and needs of people experiencing housing precarity and homelessness in northern BC in view of the long and troubled history of housing injustice in northern BC, first and foremost regarding first nations and people identifying as indigenous both on and off reserves.

Grounded in principles of self-determination, empowerment, decoloniality and indigenization, the presented research partnership aims to align with FNHIC-BC objective of First Nations taking full

responsibility for their housing and infrastructure. The partnership shares FNHC 7 research principles of Transparency; Multiplicity; Diversity; Respect; Acceptance; Collaboration; and Consensus and is meant to forge a community of allies in support of FNHC key goals of knowledge gathering, interpretation and sharing. Focused on the homeless/precariously housed end of the housing spectrum, the proposed research partnership aims to first decolonize knowledge and service provision to people experiencing barrier to stable housing as an inescapable pre-condition for a genuinely indigenized housing system. Recognizing that de-housing and barriers to regaining stable housing are intersectional, that is irreducible to a single axis of discrimination, but rather the emergent overall effect of converging systems of oppression, the project aims to map how racism, settler colonialism, patriarchy, free-market fundamentalism (neoliberalism), heteronormativity, ablism (notably ablism against people living with mental disabilities and/or substances dependence), interlock in structuring the highly constrained spaces of opportunities, people who are insecurely housed are forced to navigate.

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### **12:00pm–12:15pm Break**

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### **12:15pm–1:15pm**

#### **Presentations – Acoustic telemetry, climate change in the Nechako, and caribou feeding**

**In-person: Conference Centre 6-205 \*Masks must be worn as per PHO and UNBC policy**

**Online: <https://unbc.zoom.us/j/63916959613?pwd=SVdmVmR1TkdlJSG15WEEdXc3VvK05vdz09>**

**Passcode: 962030**

#### **Estimating the Detection Efficiency of Acoustic Receivers in a Riverine Environment**

*Devon Smith, BSc student, Wildlife and Fisheries*

Advances in technology have allowed researchers to study organisms in ways they have never been able to previously. However, it is also accompanied by certain degrees of variability/error caused by environmental factors found commonly in field-based studies. Acoustic telemetry is used extensively in fisheries research to track the movement of aquatic species throughout their environments. Small acoustic tags with unique identification numbers are attached to aquatic organisms and their transmissions are picked up by receiver arrays placed throughout the environment. The transmissions sent by the tag are not perfectly detected by the acoustic receivers due to environmental factors such as: substrate type, water turbulence, velocity, and depth. Because of this, tag transmissions are often partially received by the receiver and cannot be decoded or, in other situations, completely attenuated before reaching the receiver. The objective of my thesis is to develop a model where detection efficiency (a percentage of transmissions successfully received out of the total transmissions possible during a given time interval) is a function of noise quotient (a measure of acoustic interference) and standard stream measurements including river discharge, depth, and substrate. In my study I analyze the impact these variables have on acoustic receivers to develop a machine learning model which can be used to estimate the detection efficiency of a riverine site.

### **Preliminary analysis of future hydroclimate changes in Nechako River Basin, BC**

*Dr. Jingwen Wu, Postdoctoral Fellow, Department of Geography, Earth, and Environmental Sciences*

Spanning 47,200 km<sup>2</sup>, the Nechako River Basin (NRB) forms the second largest sub-basin of the Fraser River Basin. In response to climate change, the NRB has already experienced rising air temperatures and precipitation changes during last six decades. Climate models play an important role in assessing the impact of climate change, particularly in establishing adaption and mitigation strategies to climate change. This study addresses potential future climate changes in the NRB using statistically downscaled data of the Climate Model Inter-comparison Project Phase 6 (CMIP6) outputs for the SSP5-8.5 scenario over 2030 to 2099. Results are also compared between climate models participating in CMIP6 and their CMIP5 predecessors. We find annual mean temperature of the NRB shows a significant increasing trend, rising by ~5 °C with concurrent increases in annual total precipitation ~110 mm by the end of the century. Robust increases in rainfall follow declines in snowfall, implying the NRB may shift from a snowmelt to rainfall-dominated system. In addition, we find a considerable part of future extreme precipitation events (e.g., maximum 1-day and 2-day precipitation events) to occur in the form of rainfall from September to November. We also find total precipitation changes in CMIP5 and CMIP6 to be very similar; both agree on the trajectory for future warming, although CMIP6 models are more aggressive in air temperature increases. The study is expected to advance the understanding on the future hydroclimate changes in the NRB and contribute to improved water management in the context of anticipated climate change.

### **Effects of Supplemental Feeding on Caribou Reproduction and Physiology**

*Lauren Rose Elviss, MSc student, Ecosystem Science and Management – Biology*

Most Populations of woodland caribou (*Rangifer tarandus caribou*) are declining, and many are at risk of extirpation. In northeastern British Columbia, the nutritional environment of plant communities available to caribou during summer may be inadequate to fully support nutritional demands of lactating caribou, which has implications to productivity of caribou populations, recovery, and conservation because inadequate nutrition in summer is a contributor to mortality of adult female caribou. In response to population declines and to increase population growth rate, supplemental food has been provided to caribou in the Kennedy Siding herd in fall for 8 years (2014-15 through 2021-22). This approach appears to have had a positive effect on herd growth, but the mechanism by which population increases are occurring is unclear. This project will examine physiological bio indicators (estrogen, progesterone, cortisol, and thyroxine) in the hair and feces of adult female caribou to investigate whether supplemental feeding a) increases the proportion of females that breed in multiple years and/or b) whether feeding increases the viability of calves. Quantifying between these mechanisms is important for evaluating and optimizing supplemental feeding programs. If females in poor body condition fail to become pregnant in fall, then spring feeding may result in the greatest pregnancy rates. By contrast, if females in poor condition produce calves with poor viability, then fall feeding may have the greatest effect on calf recruitment.

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**1:15pm–1:30pm Break**

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**1:30pm–2:30pm**

**Presentations – Peer-run support groups, land-based practice, and pediatric nursing**

**In-person: Conference Centre 6-205 \*Masks must be worn as per PHO and UNBC policy**

**Online: <https://unbc.zoom.us/j/68488633396?pwd=TTMvRGg5RStvV2lJZzBTdFVWk09OZz09>**

**Passcode: 101887**

**Bridging the Gap: The efficacy of peer-run support groups for survivors of sexual assault**

*Mariah Curry, BA student, Women's Studies/First Nations Studies*

This presentation will look at a current research study being conducted through the Women's Studies department at UNBC. This research focuses on the efficacy of peer-run support groups for survivors of sexual assault/sexualized violence. We explore how these groups bridge a gap in support systems/care that might not be met through individualized counselling on a case-by-case basis. The research conducted looks at peer-led groups as well as on-campus support systems of five Canadian post-secondary institutions. This presentation will highlight the strength/resilience of survivors and what methods can provide adequate care in order to mitigate the impacts of these events. The opening of this presentation will include pieces of creative writing from survivors and will conclude in an appropriate manner for the severity of content; providing resources for those in need.

**'Walking the talk' of Environmental Social Work: Lessons Learned from Social Workers Committed to Land-based Practice in the NWT**

*Meg Labron, MSW student, Social Work*

This presentation will report on the findings from the presenter's MSW thesis research. The research explored the subfield of environmental social work, which calls on the profession to consider the physical environment and human connection to land in our work. The research responded to a gap in the literature regarding a clear practice model for social workers to follow and aimed to learn more about how environmental social work might be done in practice. Having recognized the widespread public interest in and support of land-based healing programs in the Northwest Territories (NWT), Canada, the research looked to self-identified social workers living and working in the NWT, who are working in ways that integrate land, place, and the physical environment in their social work practice. The researcher conducted 6 in-depth interviews with social workers who shared their experiences of land-based practice in their personal and professional lives. Findings took the shape of five themes: Lessons from the Land, Lessons in Ways of Being for Social Workers, Lessons from Being in Relationship, Lessons for our Workplaces & Profession, and Lessons in Practice which will be the focus of the presentation.

**Exploring the Value of Pediatric Practicum in Undergraduate Nursing**

*Oghenerukevwe Onororemu, MScN student, Nursing*

Practicum placements are the signature andragogy used in undergraduate nursing programs to bring about knowledge consolidation. Literature review conducted to direct this study showed the existence of limited research on pediatric practices in undergraduate nursing education. This qualitative

descriptive study explored the placement experiences of nursing students and the value they ascribed to their learning. The acute and community pediatric practicum experiences of 15 nursing students/recent graduates in British Columbia were explored using online-facilitated semi-structured interviews. Knowles' adult learning theory framework oriented the study. Thematic analysis of interview data generated four overarching themes, namely: relationship, knowledge consolidation, identity formation, and exposure. Findings from the study showed that nursing students valued pediatric placement opportunities that provided a variety of learning experiences and allowed them to work within their scope. Information from this study provided insight into how nursing faculty might plan pediatric practicum for their student bodies and how students might appreciate all presenting learning opportunities in practicum settings.

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## **2:30pm–2:45pm Break**

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### **2:45pm–3:45pm**

**Presentations – Health equity, firefighters' mental health, gender discrimination and assault, and mindfulness**

**In-person: Conference Centre 6-205 \*Masks must be worn as per PHO and UNBC policy**

**Online: <https://unbc.zoom.us/j/68500192604?pwd=N2R4eElsWGZlZjJGdnIzc1dSQitpdz09>**

**Passcode: 220733**

### **Bodies of Strength: Promoting Adolescent Reproductive Justice in Northern British Columbia**

*Kelsey Chamberlin, MA student, Interdisciplinary Studies*

The teenage (15-19) pregnancy rate in Northern British Columbia (NBC) is the highest in the province. Compared to adults, *pregnant, birthing, and early parenting* (PBEP) adolescents and their infants experience greater adverse physical, social, emotional, and financial consequences. While a small body of research explore experiences of PBEP adolescents in Prince George, no research looks beyond the relatively urban geography of Prince George, nor does any research explore action-oriented solutions to foster PBEP adolescents' wellbeing in the diverse communities across NBC. This research presentation explores that gap, offering early conversations about the question: What promising practices promote PBEP adolescents' wellbeing in NBC? Objectives, as discussed in the presentation, are to: 1) Explore the application of promising practices emerging from urban and southern areas to the unique context of NBC, and 2) Recommend service delivery policies for a new supportive housing project being built for PBEP adolescents in Smithers/NBC through an established partnership with the Northern Society for Domestic Peace. This presentation will explore the use of an anti-colonial and community-based methodology that invites PBEP adolescents and service providers to share their lived experiences through land- and story-based interviews in the Summer of 2022. Recognizing that Indigenous adolescents experience higher rates of pregnancy compared to non-Indigenous youth, this presentation discusses research focused on cultural safety, Indigenous representation, and self-determined solutions. The presentation also explores evidence rooted in strengths- and equity-based approaches,

determinants of health, and reproductive justice frameworks, to consider *place-based* and *action-oriented* solutions to achieving health equity for northern and Indigenous adolescents.

### **Mental Health Outcomes in Wildland Firefighters**

*Alexandra Lane, MA student, Psychology*

The British Columbia Wildfire Service (BCWS) employs approximately 1700 staff as wildland firefighters, of which 460 identify as women or gender-diverse individuals. Despite the breadth of research on the mental health impacts of occupational stress in first responders there is little evidence exploring mental health in wildland firefighters. Research on stress in other emergency response occupations has identified higher rates of post-traumatic stress disorder (PTSD), burnout, anxiety, depression, problematic substance use, and increased suicide rates compared to the general population. Gender differences in stress response and post-stress development of mental health problems has been noted in previous research. Women are more likely to respond to overwhelming stress by developing PTSD, depression and anxiety, and men are more likely to respond through aggression and substance abuse. This research aims to explore changes in occupational stress and associated mental health issues including PTSD, anxiety, depression, problematic substance use, and suicidality in wildland firefighters across a wildfire season. Cross-season changes in mental health outcomes will be compared in men, women, and gender-diverse individuals to better understand potential gender differences in response to occupational stressors. Taking a gendered approach to this research may help to identify important differences to better inform decision-makers for the development of mental health support systems.

### **Narratives of Gender-Based Sexual Violence and Ethnographic Fieldwork**

*Dr. Tara L. Joly, Assistant Professor, Anthropology*

In this paper, I use published literature, auto-ethnographic accounts, and interviews with ethnographers about field experiences with gender discrimination and sexual assault to analyze the unique and often undocumented challenges, opportunities, and traumas that affect and shape ethnographic research in northern extractive zones. I discuss how contemporary anthropology in the North can reproduce narratives and expectations of the heroic/masculine ethnographer. I argue that women, queer, and gender diverse researchers create unique networks of support in which to conduct their research successfully, often requiring unexpected divergences from what could be considered conventional method, ethics, and professional outputs. The gendered challenges faced by researchers cannot be resolved by “leaning in” (Sandberg 2013) to a male-dominated field, but rather by challenging or creating space to conduct research beyond that very structure.

### **Mindfulness based stress reduction reduces stress in medical students**

*Donovan Sneddon, Medical Student, NMP*

Mindfulness is a type of cognitive training that aims to mitigate cognitive susceptibility to emotions and frames of mind that would otherwise elicit negative feelings, stress, and emotional distress. Mindfulness based stress reduction (MBSR) is a technique that utilizes mindfulness in order to engage in intentional stress reduction techniques. MBSR has previously been shown to reduce stress in physicians and improve therapeutic relationships between physicians and patients. Some studies have suggested MBSR

may be useful for stress reduction in medical students. This presentation details the results of a literature review aimed at consolidating, appraising, and summarizing the literature available on the efficacy of MBSR in reducing stress in medical students. Findings suggest that MBSR is effective at reducing stress in medical students based on a variety of stress measurements, but the literature is heterogeneous in nature. More study is necessary on what, if any, negative effects of MBSR are elicited in medical student practitioners. Larger studies using validated stress measurement tools are necessary further elucidate the extent of the benefit of MBSR in stress reduction in medical students.