



TURTLE ISLAND INDIGENOUS SCIENCE CONFERENCE

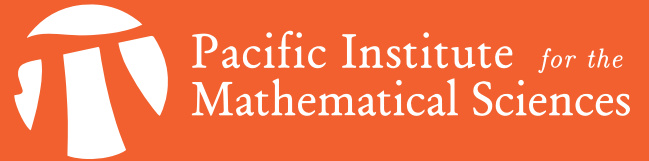
MAY 21 - 23, 2024

-CONFERENCE PROGRAM-





THANK YOU TO ALL OF OUR SPONSORS



The 2024 Turtle Island Indigenous Science Conference

After the resounding success of the University of Manitoba-hosted 2022 Turtle Island Indigenous Science Conference, the Universities of Lethbridge, Manitoba, Regina, and Waterloo committed to working together to share the hosting of the conference on a biannual rotation.

The 2024 Turtle Island Indigenous Science Conference takes place on Treaty 4 territory, the homelands of the nêhiyawak, Anihšīnāpēk, Dakota, Lakota, Nakoda peoples, and the Michif/Métis nation. The First Nations University of Canada, File Hills Qu'Appelle Tribal Council, and University of Regina have partnered to host this incredible conference, and wanted to give attendees the opportunity to see where Treaty 4 was signed, and the beauty of each campus. We deeply appreciate everyone's excitement about joining the conference, and are humbled by the overwhelming enthusiasm to participate.

Bringing people together to share knowledge and experiences, learn from each other, deepen our understanding and appreciation of Traditional Indigenous Knowledge, and renew or establish new relationships is vitally important to our current and future well-being. Our program this year features presenters from many parts of Turtle Island, both near and far, addressing the conference's main theme of *Advancing evidence-based approaches in Indigenous Knowledge and science*.

We are exceptionally grateful to our sponsors, who have contributed funds toward this conference. First Nations University of Canada, File Hills Qu'Appelle Tribal Council, and University of Regina have been enthusiastically supportive of this event, and we are thankful to staff and volunteers from each of these organizations.

Thank you for joining us at the 2024 Turtle Island Indigenous Science Conference. We look forward to meeting many of you again in 2026 at our next meeting.



Mel Hart, PhD
University of Regina

On behalf of the 2024 Turtle Island Indigenous Science Conference Steering and Organizing Committees, and the three conference hosting partners

TURTLE ISLAND INDIGENOUS SCIENCE CONFERENCE 2024

DAY 1:
MAY 21, 2024



First Nations University of Canada

- 7:00 AM Registration & Check-in Opens
- 7:30 AM Shuttle bus from Atlas Hotel to University campus
- 8:00 AM Opening Prayer & Ceremony
- 9:30 AM Opening remarks:
*First Nations University President
Jacqueline Ottmann & University of
Regina President Jeff Keshen*

University of Regina

- 10:15 AM Featured Presentation:
Jessica Hernandez
ED 106
- 11:15 AM - 12:15 PM Concurrent Sessions on
Thematic Topics
ED 191, 193, 106.1, 106.2
- 12:15 PM Lunch
ED Rotunda
- 1:15 PM Featured Presentation:
Gregory Cajete
ED 106
- 2:15 PM - 5:00 PM Concurrent Sessions on
Thematic Topics
ED 191, 193, 106.1, 106.2
- 5:00 PM - 6:00 PM Poster Session
ED 114
- 6:15 PM Shuttle bus from
University to Atlas Hotel

VENDOR EXHIBITS
9:00 AM - 3:00 PM
KHS Room 185



Tuesday May 21



	Relationships, Partnerships, and Sharing Knowledge in a Good Way <i>Education Bldg 191</i>	Authentic and Inclusive Approaches to Discovery and Teaching <i>Education Bldg 193</i>	Open Topics <i>Education Bldg 106.1</i>	Indigenous Engagement with Water, Land and the Environment <i>Education Bldg 106.2</i>
11:15-11:45	Sarah Haines et al.	Savannah Sloat et al.	Roland Kaye et al.	Lyndsey Prosper
11:45-12:15	Shawn Clark et al.	Sandy Bonny		Caroline B. Ofosu et al.
Lunch - ED Rotunda				
2:15-2:45	Indiana Best	Jamie Thomas	Jill Price & Heather Hadjistavropoulos	Jacqueline LaFlamme et al.
2:45-3:15	Jessie King	Carrie Selin et al.		Andrea Monica Ortiz et al
Refreshments - KHS Corridor				
	Open Topics <i>Education Bldg 191</i>	Engaging Youth in STEM <i>Education Bldg 193</i>	Indigenous Engagement with Water, Land and the Environment <i>Education Bldg 106.1</i>	Relationships, Partnerships, and Sharing Knowledge in a Good Way <i>Education Bldg 106.2</i>
3:30-4:00	Michelle Hogue and Ira Provost	Connor Kupchak	Andrew Miller	Dylan Seidler et al.
4:00-4:30	Omid Mirzaei	Latika Raisinghani and Frank Deer	Charles de Lannoy	Shelley Denny et al.
4:30-5:00	Omar El-Halfawy et al.	Mab Speelman	David Szonyi et al.	Dallas Pelly

TURTLE ISLAND INDIGENOUS SCIENCE CONFERENCE 2024

**DAY 2:
MAY 22, 2024**



Treaty Four Governance Centre *Fort Qu' Appelle, Saskatchewan*

- 7:30 AM Buses depart Atlas Hotel & Kisik Residence for Fort Qu'Appelle
- 9:00 AM Opening Prayer & Ceremony
- 9:30 AM Welcome remarks:
Chief Matthew Todd Peigan
Big Tipi & ED 191/193
- 10:30 AM Concurrent Sessions on
Thematic Topics
Big Tipi/Archive Room & ED 191/193
- 11:45 AM Lunch
Big Tipi & ED Rotunda
- 12:45 PM Concurrent Sessions on
Thematic Topics
Big Tipi/Archive Room & ED 191/193
- 1:45 PM Featured Presentation:
AJ Felix
Big Tipi & ED 191/193
- 3:30 PM Buses leave for Regina

Banquet at Atlas Hotel

- 5:45 PM Shuttle bus departs from
Kisik Residence to Atlas Hotel
- 6:00 PM Reception & Banquet
Featured Speaker:
Alyssa Wapanatâhk
- 9:15 PM Shuttle bus departs
for Kisik Residence

VENDOR EXHIBITS
9:00 AM - 3:00 PM
KHS Room 185





Wednesday May 22

	Relationships, Partnerships, and Sharing Knowledge in a Good Way <i>Big Tipi & Education Bldg 191</i>	NEIHR <i>Archive Room & Education Bldg 193</i>	Indigenous Engagement with Water, Land and the Environment <i>Boardroom</i>
10:45-11:15	Blair Stonechild	Student Panel	
11:15-11:45	Roxanna Dehghan et al.		
Lunch - <i>Big Tipi & ED Rotunda</i>			
12:45-1:15	Piper Fordham et al.	Mojtaba Shafiee	Elder Betty Mckenna: Plant Talk
1:15-1:45	Cassandra Opikokew Wajuntah	Katie Tolley	

TURTLE ISLAND INDIGENOUS SCIENCE CONFERENCE 2024

DAY 3:
MAY 23, 2024



University of Regina

- 8:15 AM Shuttle bus from Atlas Hotel to University campus
- 8:45 AM Opening prayer
ED 106
- 9:00 AM Elder's Panel on Indigenous Traditions & Science
ED 106
- 10:15 AM - 12:30 PM Concurrent Sessions on Thematic Topics
ED 191, 193, 106.1, 106.2
- 12:30 PM Lunch
ED Rotunda
- 1:30 PM Featured Presentation:
Lillian Dyck
ED 106
- 2:30 PM - 3:30 PM Concurrent Sessions on Thematic Topics
ED 191, 193, 106.1, 106.2
- 3:45 PM Farewell Remarks
ED 106
- 4:15 PM Shuttle bus from University to Atlas Hotel

VENDOR EXHIBITS
9:00 AM - 3:00 PM
KHS Room 185





Thursday May 23

	Authentic and Inclusive Approaches to Discovery and Teaching <i>Education Bldg 191</i>	Engaging Youth in STEM <i>Education Bldg 193</i>	Indigenous Engagement with Water, Land and the Environment <i>Education Bldg 106.1</i>	Relationships, Partnerships, and Sharing Knowledge in a Good Way <i>Education Bldg 106.2</i>
10:15-10:45	Colin Arit	Dawn Pratt	Bryce Jardine-Pelletier	Kelly Daniels and Reanna Daniels
10:45-11:15	Steven Alexander et al.	Emily Grafton	Reta Lingrui Meng et al.	Rosalie Dostie
Refreshments - KHS Corridor				
11:30-12:00	Arzu Sardarli et al.	Joel Gamache and Ethan Boyer	Kori Czuy et al.	
12:00-12:30	Carol Armstrong et al.	Mervi Salo	Tara Erb et al.	
	Relationships, Partnerships, and Sharing Knowledge in a Good Way	Relationships, Partnerships, and Sharing Knowledge in a Good Way	Indigenous Engagement with Water, Land and the Environment	
2:30-3:00	Vincent Ziffle	Bobby Henry et al.	Julie Teio'keráthe Delisle and Carlee Kawinehta Loft please view this video ahead of talk	
3:00-3:30	Richard Dosselmann et al.	Glanfield et al.	Katharine Baldwin et al.	

Featured Speakers

Professor Gregory Cajete

A Native American educator whose work is dedicated to honoring the foundations of Indigenous knowledge in education, Dr. Cajete is a Tewa Indian from Santa Clara Pueblo, New Mexico. He has served as a New Mexico Humanities scholar in ethno botany of Northern New Mexico and as a member of the New Mexico Arts Commission, and is a Native American Studies and Language Literacy Sociocultural Studies Scholar at the University of New Mexico.

The Honourable Dr. Lillian Dyck

Born in N. Battleford, Saskatchewan, member of the Gordon First Nation in Saskatchewan and a first generation Chinese Canadian, the Honourable Dr. Lillian Eva Quan Dyck is well-known for her extensive work in the senate on Missing and Murdered Indigenous Women and Girls. She was the first female First Nations senator and first Canadian born Chinese senator.

She earned her Ph.D. in Biological Psychiatry in 1981, from the University of Saskatchewan. She was conferred a Doctor of Letters, Honoris Causa by Cape Breton University in 2007 and a Doctor of Laws, Honoris causa from Trent University in 2022. She has been recognized in a number of ways, such as: A National Aboriginal Achievement Award for Science & Technology in 1999; A YWCA Woman of Distinction Award for Science, Technology & the Environment in 2003; an Atlantic Human Rights Center Award in 2019; the YWCA Saskatoon Women of Distinction Lifetime Achievement Award in 2019, and most recently was appointed as an Officer of the Order of Canada. She has been presented four eagle feathers by the Indigenous community

Former Senator Dyck was a Full Professor without term in the Neuropsychiatry Research Unit, Department of Psychiatry and Associate Dean, College of Graduate Studies & Research at the University of Saskatchewan.

Elder AJ Felix

AJ Felix is a member of Sturgeon Lake Cree Nation. He is the National Treaty fire keeper for Treaties 1-11, responsible for bringing fire from one Treaty meeting to the next. Felix is a translator of the spoken Plains Cree language. He provided the audio and video translations used in the e-book of *nēhiyawēwin awāsi-masinahikanis— A Little Plains Cree Book for Children*. He is also a member of the Indigenous Advisory Circle at St Thomas More College of the University of Saskatchewan.

Dr. Jessica Hernandez

Dr. Jessica Hernandez (Binnizá & Maya Ch'orti') is a distinguished Indigenous scholar, scientist, and community advocate based in the Pacific Northwest. Her academic journey spans marine sciences and environmental physics, and she is a vocal advocate for climate justice and land rights through her scientific and community engagements.

Hernandez is the esteemed author of the award-winning book "Fresh Banana Leaves: Healing Indigenous Landscapes through Indigenous Science," and is currently working on her second book, "Growing Papaya Trees: Nurturing Indigenous Roots of Climate Displacement & Justice." Forbes recognized Hernandez as one of the 100 most powerful and influential women in Central America.

Elders' Panel on Indigenous Traditions and Science

Elder Margaret Keewatin

Okanese First Nation. Federation of Saskatchewan Indian Nations Senator and All Nations Healing Hospital (Fort Qu'Appelle) Knowledge Keeper

Elder Margaret Reynolds

English River/Patuanak First Nation. Elder Advisor on the First Nations University of Canada Board of Governor's and kēhtē-ayak Council

Elder Murray "Jumbo" Ironchild

Murray Ironchild is a former councillor and Chief of the Piapot First Nation in Saskatchewan. Currently working as a Cultural/Traditional Advisor with the All Nations' Healing Centre of the File Hills Qu'Appelle Tribal Council, Mr. Ironchild brings to the Aboriginal Healing Foundation his interest and experience in traditional medicine and Aboriginal health.

Featured Banquet Speaker

Alyssa Wapanatahk

Alyssa is a nehiyaw-iskwew (Cree woman) from Bigstone Cree First Nation, in Treaty 8 Territory. Born in Fort McMurray and raised in Conklin Alberta, Canada. The actress/film-maker/public speaker/activist prides herself in using the natural law and practices of Cree-based understanding. As a mother, daughter, and aunt; Alyssa's biggest goal in life is to nurture and cultivate wellness in those around her, to enrich the mind, body and spirit. A few of Alyssa's recent projects are Disney's Peter Pan & Wendy (2023) where Alyssa played the iconic role of "Tiger Lily". Bones Of Crows (2023) where Alyssa played "Perseverance". And she can be seen on CW's Riverdale where she played "Lizzo". When Alyssa is not seen working on set, you will find her serving the community in any way she can.

Story Medicine is Alyssa Wapanatahk's newest project, created completely by Alyssa for the community. Alyssa Wapanatahk is an actress, writer, film-maker and public speaker known for her role in Peter Pan & Wendy (2023) where she played the iconic role of Tiger Lily. A few other roles she has played are "Lizzo" in Riverdale (2023) "Perseverance" in Bones Of Crows. Alyssa is Cree, Indigenous from Bigstone Cree First Nation. Born and raised in Fort Mac Murray and Conklin Alberta. Story Medicine is all about telling stories to help others heal, inspiring creativity and opening up possibility. In Indigenous culture, oral stories are a pivotal part of who we are, it's how we learn something new. In Alyssa's story you will hear about her beginning, getting deep and vulnerable about where she started and where she is now. This will be the first time Alyssa is getting personal, sharing vulnerable parts of who she is, being a 3rd generation residential school survivor, experiencing sexual abuse, domestic abuse, racism, depression, anxiety and panic disorder, working through addictions and healing. Finding strength, culture, identity, and her passions. Becoming a leader and paving ways in her career, in the T.V and film industry. When joining Alyssa in her story telling you will have a powerful, transformative experience, leaving you feeling curious and inspired in leading your own life with agency and fire.

Welcome Remarks

Chief Matthew Todd Peigan

Chief Matthew Todd Peigan comes from Pasqua First Nation. He was elected as Chief on March 4th, 2011. When first elected in 1993, Chief Peigan was the youngest chief in Saskatchewan at the age of 26. Pasqua First Nation is located approximately 45 miles east of Regina, Saskatchewan in the Qu'Appelle Valley. The band's first Chief, Pasqua was a major negotiator and signatory to Treaty 4 and a historical leader in future treaty governance discussions.

Under Chief Peigan's leadership, Pasqua First Nation has advanced a wide range of strategic goals and objectives related to economic development, environmental stewardship, training and employment, and ensuring Aboriginal treaty rights are respected. Chief Peigan has also played a key leadership role with the Qu'Appelle Valley Indian Development Authority.

Dr. Jeff Keshen

Dr. Jeff Keshen assumed the role of President and Vice-Chancellor at the University of Regina on July 1, 2021. He joins the University after serving for three-and-a-half years as Vice-President of Memorial University's Grenfell Campus in Corner Brook, Newfoundland and Labrador. Previously he served as Dean of the Faculty of Arts at Mount Royal University in Calgary. He also served as Chair of the Department of History at the University of Ottawa and was an Adjunct Professor in the Centre of Military and Strategic Studies at the University of Calgary. Dr. Keshen holds a doctoral degree from York University with a research concentration in the history of war and conflict. He was the recipient of the Government of Ontario June Callwood Award for Outstanding Service in Volunteerism for his success with the establishment of the University of Ottawa's Experiential Learning Service. He was a double nominee for the 3-M National Teaching Fellowship Award, and was awarded both the Ontario Leadership in Teaching Prize and University of Ottawa's Excellence in Education Prize.

During his time at Memorial University's Dr. Keshen focused on two main initiatives. The first was the development of a strategic plan that supported all students, faculty, and staff at the Grenfell Campus. The priorities of the plan included commitments to student success, Indigenization, and Equity, Diversity and Inclusion. The enhanced support led to impressive growth, doubled research funding, and resulted in the development of new graduate programs. His second area of focus was strengthening Grenfell's connections to the Corner Brook community and region. Innovative partnerships with all levels of government, the education sector, and industry resulted in large-scale projects such as a new regional aquatic centre, a centre for research and innovation, and management of the Bonne Bay Marine Station. Dr. Keshen had great success developing programs that encouraged leadership in young people, including

programming for vulnerable and Indigenous students. He was also the driving force behind initiatives that recognized workplace excellence, promoted professional development, and increased employee satisfaction.

Dr. Jacqueline Ottmann

Dr. Jacqueline Ottmann is Anishinaabe (Saulteaux) from Fishing Lake First Nation in Saskatchewan. Prior to her academic career, Jackie was an elementary, high school teacher and principal. She remains an engaged scholar alongside her responsibilities as a senior academic leader. While at the University of Calgary, she was the Coordinator of the First Nations, Métis, Inuit undergraduate teacher education program, and Director of Indigenous Education Initiatives within the Werklund School of Education (WSE). She also co-chaired the WSE Indigenous Strategy, and alongside the Provost, the university-wide Indigenous Strategy.

After her time with the University of Saskatchewan as Professor and Vice-Provost Indigenous Engagement, Jacqueline Ottmann was appointed President of the First Nations University of Canada. Ottmann has been recognized as an international researcher, advocate, and change-maker whose purpose is to transform practices inclusive of Indigenous leadership, methodologies, and pedagogies. Jacqueline is driven to create schools and communities that foster a deeper sense of belonging and appreciation for Indigenous peoples – their histories, stories, ways of knowing and being. Ottmann is also the first Indigenous person to become President of the Canadian Society for the Study of Education.

Session Speakers

Authentic and Inclusive Approaches to Discovery and Teaching

A relationship hundreds of years in the making

Colin Arlt^{1,2}

¹SUNTEP, ²AAFC

Buffalo have been important to Indigenous people for time immemorial. Over the last year and a bit I have been working alongside with my team to further Buffalo Consciousness with some amazing people around the world. What I would be honoured to share about is how my relationship with the Buffalo has been something in my family for hundreds of years. That and the similarities between me reawakening my Michif culture and my relationship with the Buffalo have been stunningly similar.

Harley's Course - teaching undergraduate science students about perspective

Carol Armstrong¹, Harley Bastien²

¹Mt Royal University, ²Piikani Knowledge Holder

What is science? Whose knowledge do you value and why? These are core questions in the third-year Biology course officially titled Common Ground: Learning from the Land (BIOL3201) and commonly referred to as "Harley's course". Co-developed with Piikani Knowledge Holder Harley Bastien, this course is run as a two-week block course at the end of the summer. The purpose of the course is to expose students to difference scientific perspectives and encourage them to challenge their beliefs about what science is and who is a scientist, what it means to 'think scientifically', how to listen and observe and the validity of the immeasurable. The opportunity to experience land-based learning, and to have the flexibility and freedom to discuss and reflect on perspectives that are different than their own has a remarkable impact on the students. This presentation will include lessons learned from the first two cohorts of students who have participated in Harley's course and discuss challenges inherent in decolonizing the Western science curriculum.

Building academic skills through student-directed undergraduate research; stories and experiences from USask Indigenous Student Achievement Pathways

Sandy Bonny¹

¹University of Saskatchewan

USask Indigenous Student Achievement Pathways welcomes students with diverse K-12 preparation to post-secondary studies in the College of Arts and Science at USask with a combination of co-curricular and curricular programming. Through iterative development of a first year interdisciplinary course (INTS 102) which focuses on skills for success in STEM studies, student-directed research has emerged as a promising scaffold to build academic confidence, digital and applied literacies, and to motivate future-casting of student identity in STEM spaces. ISAP's course section of INTS 102 is supported by the USask First Year Research Experience (FYRE) initiative with an upper year or graduate student who provides near-peer coaching to students as they identify and pursue research on topics of personal relevance. In 2021 and 2023, ISAP partnered with Mitacs to facilitate a mentored cohort experience for Indigenous undergraduate student researchers May-September, translating experiences of first year research coaching into an opportunity to explore the role of "researcher" for students interested in graduate school, research careers, or professional college applications. This presentation will share lessons and stories from these initiatives, with hopes of fostering dialogue about strategies to increase the accessibility of STEM degree pathways and engagement with research and discovery careers in Saskatchewan.

Supporting Access to Care: Impact of Cultural Services Provided at the Dawson City Community Hospital on the Health and Well Being of Indigenous People Living in Dawson

Piper Fordham¹, Phyllis Vittrekwa², Jamie Thomas¹, Michelle Leach¹

¹Yukon University, ²Gu Nähtsey Elder and Knowledge Keeper

First Nations people experience the most socioeconomic disadvantage and hence the poorest health status in the country. They have higher rates of suicide, lower levels of income and employment, higher rates of school dropout, shorter life expectancy, and higher rates of disease. Many of these elevated health and social struggles have been linked to the legacy of colonialism and challenges to cultural identity. Indigenous Canadian scholars believe that the only way for Aboriginal people to truly heal from the intergenerational trauma is through traditional healing that attends to the spiritual, emotional, physical, and mental states.

This research, which has been co-created with the community, investigates what services could be provided to the Indigenous community of Dawson City at the Dawson City Community Hospital (DCCH) to rebuild and reshape the relationship between Indigenous people and the health care system. We developed a survey in partnership with the local First Nation Tr'ondëk Hwëch'in, Elders, Knowledge Keepers, youth, community members, and staff from YSPOR (Yukon Strategy for Patient Oriented Research) DCCH. The survey focuses on the importance of Traditional Indigenous Plant Medicine, nutrition, ceremonial practices, and adornment of the DCCH when accessing care. Data collection has been supported by Tr'ondëk Hwëch'in First Nation and in partnership with DCCH will support Indigenization of services. The research amplifies the voices of Indigenous people to create a positive and supported access to care physically, mentally, emotionally, and spiritually for the Indigenous People of Dawson City.

“It should be, I’m at service to this Nation”: Lessons from Experiences of Collaborative Technical Research with Indigenous Nations

Heather Greenwood¹, [Alex Choi](#)¹, [Roxanna Dehghan](#)¹, Amy Bilton¹

¹University of Toronto

While research funders and institutions are supporting work on reconciliation, the education of researchers from technical fields (e.g., engineers, natural scientists) may not routinely train them for participatory and collaborative partnerships with Indigenous Peoples. This project grew from discussions between the Reconciliation Through Engineering Initiative (University of Toronto), the IISAAK OLAM Foundation, and the National Research Council Canada’s Ocean Program. These partners had all observed researchers from technical fields who were struggling with how to carry work with Indigenous Peoples in respectful ways, or who felt there was a lack of practical guidance for doing so. Well-intentioned efforts risked causing harm if not supported by informed and respectful engagement.

To help address this, this project sought to learn from past collaborative efforts in order to identify practical guidance and recommendations to better support respectful technical research with Indigenous Peoples. We carried out qualitative interviews to listen to the lived experiences of members of Indigenous communities and researchers who have engaged in collaborative technical projects. The aim was not to simplify complex experiences, but to provide a sense of what it can look like and feel like to work do this work, and to summarize sensitizing considerations for others to reflect on when planning similar endeavours. Drawing on quotes and narratives from the interviews, this presentation will describe key considerations and implications for technical researchers. Institutional-level recommendations will also be presented to inform changes to better support scientific research that is led and driven by the needs of Indigenous communities.

Toward an Ethical Space of engagement for bridging multiple ways of knowing in aquatic research and monitoring

Danika Littlechild¹, Steven Alexander², Christine Song³, Nicole Klenk³

¹Carleton University, ²Fisheries and Oceans Canada, ³University of Toronto

Ethical Space is an emerging practice that enables respectful engagement between and amongst Indigenous peoples, non-Indigenous peoples, and the natural world, and is a potentially transformative approach to working across multiple ways of knowing. We build upon the growing philosophical and applied work that has been done regarding Ethical Space in the context of decision-making, with a focus on research and monitoring. The work we present here brings together Indigenous oral tradition, professional experience, and philosophical work on Ethical Space in dialogue with recent scholarship on Indigenous community engagement. We present the results of a meta-analysis of 62 published case studies that aimed to bridge Indigenous science and Western science in aquatic research and monitoring in Canada. Based on a systematic review and in-depth qualitative analysis, we analyzed how levels of Indigenous participation and quality of participation varied in research implementation and identified 12 exemplar case studies. Through an iterative, dialogical approach, we further interpreted the exemplar cases to explain what Ethical Space means and how it can be more deeply and authentically practiced. By identifying and describing salient elements, our goal is to draw out and highlight a suite of pathways and qualities that can lead to the creation and maintenance of an Ethical Space of engagement.

Developing open education resources for the revitalization of Indigenous language

Arzu Sardarli¹, Ida Swan¹, Ting Zhou¹

¹First Nations University of Canada

In 2016, the United Nations Permanent Forum on Indigenous Issues reported that 40% of the world's languages were in danger of disappearing. Responding to this challenge, Dr. Arzu Sardarli and Ida Swan developed the open textbook - Cree Dictionary of Mathematical Terms with Visual Examples. The book has been published on the Pressbook platform (<https://opentextbooks.uregina.ca/creemathdictionary/>). In September 2023, the Dictionary became the book of the month on the Pressbook platform. Since its publication date, the Dictionary has been reviewed and downloaded by more than ten thousand readers.

The oral tradition is rooted in Indigenous cultures. This tradition has used spoken words to hand down stories, songs, prayers, spiritual teachings, histories, customs, and practical skills for generations. Recognizing the importance of oral-based learning for Indigenous People, Dr. Arzu Sardarli and Ting Zhou started working together to develop digital assets for the existing open textbook "Cree Dictionary of Mathematical Terms with Visual Examples". They create speech-based resources to emphasize and promote the oral nature of Cree. They also develop interactive media as open resources for educators, learners and Cree speakers to increase the accessibility of recordings and further promote Indigenous language in the digital age. This initiative is supported by the University of Regina's Open Education and Publishing Program.

In their presentation, Dr. Arzu Sardarli and Ting Zhou will share methodological and practical tools for developing content that engages learners of diverse learning preferences and increases the presence of Indigenous language online.

Illuminating Pathways to Success: Empowering Indigenous Science Students through the Wawatay Project.

Carrie Selin¹, Melanie Lalonde¹

¹University of Manitoba

The Wawatay Project, launched in May 2021, stands as an Indigenous-led initiative dedicated to empowering and supporting Indigenous science students on their educational journey. Rooted in the Anishinaabe term for northern lights, "Wawatay" symbolizes the project's commitment to illuminating pathways to success through culturally responsive methods and tailored initiatives. Embracing a "two-eyed seeing approach," Wawatay harmonizes Indigenous knowledge with classical science, fostering an environment where Indigenous students can thrive by bridging diverse worldviews. From enrollment to graduation, Wawatay provides holistic support, nurturing students through research, immersive learning experiences, and integration into the campus Indigenous community. This inclusive framework not only cultivates academic success but also nurtures cultural identity, preparing students to contribute meaningfully to both scientific endeavors and Indigenous community life in Manitoba. The presentation will shed light on the transformative potential of initiatives like Wawatay in expanding the value and interconnectedness within the scientific domain while promoting reconciliation and mutual understanding between Western and Indigenous scientific perspectives.

Integrating Indigenous Circle Pedagogy in Introductory Physics and STEM Courses

Savannah Sloat¹, Dr. Brenda Lee¹

¹University of Waterloo

As we move towards more inclusive and accessible classrooms, there is a need to integrate active learning techniques to help engage students and allow them to interact with each other to promote engagement and deep learning versus rote memory. This has been difficult to integrate in introductory STEM courses on a broad scale, especially in lectures. As a result, Savannah and Brenda collaborated to include Indigenous learning circle pedagogy into introductory physics course tutorials with the goal of deepening student understanding of content and to create a safe environment for more effective learning. Using Indigenous principles of relational learning, students engage in a learning circle protocol during weekly tutorials and work together to solve physics problems collaboratively. Student engagement and learning efficacy with the circles was assessed throughout the term at key points to collect data on the effectiveness of the approach. In this presentation we will share our approach, the learning resources provided to students and Teaching Assistants, and the data on student participation and engagement.

Why Indigenous Science was Safe Science

Blair Stonechild¹

¹First Nations University of Canada

Science as a knowledge system has the potential to be used for good or evil. Indigenous peoples were capable observers and manipulators of science but pursued such objectives only under strict guidelines. On the other hand, European science which forms the basis of contemporary approaches, is based upon rationalism. Under such an approach, most research is for curiosity, profit or to meet the exigencies of war; and spirituality is not an essential factor. Under the Indigenous approach, spirituality forms the higher guiding principle for intellectual inquiry. Such wisdom asks whether any developments are necessary, or are harmful to non-human relatives, or to future generations.

Engaging Youth in STEM

Land-based learning - A practitioner's perspective on the importance of holistic practices

Joel Gamache¹, Ethan Boyer¹

¹Actua

The importance of holistic land-based learning: The significance of Indigenous voices throughout the land-based journey.

This session will discuss some common misconceptions of Land-based learning in education and the benefits of its unique methodology to enhance our practice and reconciliation journey. Land-based learning is more than an educational approach that provides outdoor experiences. It is a way of being and thinking that fosters connection with the land, community, Elders, and Indigenous perspectives. Joel, a Métis man, will provide examples where holistic approaches to land-based learning have enhanced connections to STEM in their context, from creation to assessment.

Learning journeys: co-creating science camps for Indigenous youth in community

Emily Grafton¹

¹University of Regina

This presentation will report on our work and observations pertaining to a series of science outreach events called *Science Camps for Saskatchewan Indigenous Youth* (SCISiy). The initial purpose of SCISiy is to stimulate an interest amongst Indigenous youth in both traditional Indigenous scientific knowledge and western-based science. These science camps go beyond this primary objective by also contributing to the mental health and well-being of youth in community, and connecting youth with traditional practices and knowledge in ways that they might not have had available to them. Notably, these camps are built on specific Indigenous knowledge systems that are shared with local Indigenous knowledge keepers. In this sense, the program curriculum differs across the camps, reflecting that of the specific knowledge of local communities. This is a joint project run through the Indigenous Peoples Health Research Centre, File Hills Qu'Appelle Tribal Council, First Nations University of Canada, and University of Regina. The camp first ran in 2021; in this presentation, we share what we have learned over three years of camp offerings and detail what we hope to achieve as we go forward.

Engaging with Indigenous Youth in Moose Factory, ON, through Land-Based STEM Activities and Mentorship

Connor Kupchak¹

¹Lets Talk Science at UOttawa/CarletonU

Let's Talk Science is a non-profit organization that holds a commitment to inspiring and empowering Indigenous youth through its Indigenous Strategy (2024). This is achieved by increasing Indigenous representation on our teams, integrating Indigenous knowledge with Western science in our programming, and collaborating with communities and educators to engage in ways that honor Indigenous culture. Specifically, our Indigenous Mentorship Program has made a positive impact in this regard.

We will be presenting on the expansion of our program to Moose Factory, ON, where we established a new partnership at Delores D. Echum Composite School and worked with students in their Outdoor Education course. In collaboration with educators, we designed a set of tailored activities. The criteria included: i) relevance to the community's way of life, such as stories or teachings by Elders; ii) land- or water-based activities; iii) interactive engagement to facilitate relationship-building between youth and volunteers; iv) demonstration of an engineering /scientific process suitable for a research fair; and v) use of materials easily found in the community or easily transportable by helicopter. Visits to the community occurred in Spring 2023 where our team of Indigenous mentors led students through targeted, community-based activities. The expansion culminated in the students receiving a sponsored trip to the University of Ottawa, where they presented topics from their own personal land-based knowledge in a Western science format.

The expansion of our Program was successful. The focused, targeted, and intentional actions allowed for Indigenous students from remote communities to positively build on their strengths.

Reaching for the Stars with Indigenous STEM

Dawn Pratt¹

¹askenootow STEM Enterprise Inc.

As a member of Muscowpetung Nation, a scientist, educator, and entrepreneur, I am passionate about reinstating Indigenous knowledge, and practices into education. I integrate and highlight Elder and Knowledge Keeper Indigenous teachings into lesson plans and workshops for educators and organizations. askenootow STEM Enterprise provides the delivery of workshops like *Tipi STEM & Aerodynamics* which situates Elder teachings alongside Western scientific knowledge. This approach is inspiring to Indigenous youth, and I'm a role model for girls and women interested in science. This kind of learning, keeping traditional and scientific bound together is really an essential method for all learners to experience. I will speak to the Calls to Action from the Truth and Reconciliation Commission of Canada. These calls tackle improvements in environmental, economic, and educational issues and opportunities as well as support for language and cultural preservation and enrichment. Basically, a respect for and inclusion of Indigegogy across society. I will share stories from my own personal and professional interests and reflect on how my unique combination of expertise and experience can benefit the ways of doing things going forward. What I bring as one of only a few female First Nation Indigenous chemists, but also as an educator, community leader, and mother - is a means to empower learners and educators. My hope is that science and STEM can become more appealing to Indigenous children, youth, girls, and women, and overall, a more inclusive, more diverse, and more progressive field for the benefit of everyone, and the future.

Embracing Indigenous Ways of Knowing: Creating Pathways for Decolonizing Science Education

Latika Raisinghani¹ and Frank Deer¹

¹University of Manitoba

Colonization and its impact on the socio-cultural, political, economic, and environmental strata of life and schooling are omnipresent in Canadian and many other countries that were colonized. One lasting impact of this colonization is the cultural hegemony of Eurocentric, White, Male, Middle-class modes of schooling and perpetuation of Western Modern Science as the “normal” science or the only science that works. In this presentation, I will share my lived experiences of enduring through and witnessing epistemic violence of colonized, Eurocentric modes of schooling and science that continues to marginalize and alienate many students in diverse cultural contexts. I will then share the learnings that happened through my engagement in exploring science and mathematics that is embedded in cultural ways of knowing. The key focus will be on highlighting the importance of beginning the journey of unlearning and relearning as informed by the Truth and Reconciliation Commission’s Calls to Action, the recent emphasis on inviting Indigenous ways of knowing in all curricula, and teaching for “good life”. I will discuss the successes and challenges experienced in this journey as I strive to learn and embrace potential pathways for respectful integration of Indigenous Ways of Knowing in science and mathematics and eco-centric perspectives of sustainability in collaboration with the students, Indigenous Elders, and larger community members. I hope to engage in a dialogical conversation to discuss these learning further with the guidance of audience and Indigenous Elders and reimagine possibilities for decolonizing science education in Canada and in broader international contexts.

Indigenous Brilliance in the Classroom: STEM for a New Generation

Mervi Salo¹

¹University of Saskatchewan and University of Tromsø

This session focuses on engaging youth in STEM through projects at the Toronto District School Board (TDSB), which has a large and diverse urban Indigenous population from across Turtle Island and globally. The TDSB has formally committed to enacting the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Truth and Reconciliation Commission's Calls to Action. This commitment includes culturally responsive teaching as a cornerstone for decolonizing education, integrating Indigenous perspectives, and mandating Indigenous course requirements in a Kindergarten to Grade 12 system. Educators are reevaluating educational practices and learning to embed Indigenous perspectives into their classrooms.

The presentation will showcase innovative and practical youth engagement projects in STEM by the TDSB Science & Technology, STEM, and Robotics Department, developed in collaboration with the Urban Indigenous Education Centre (UIEC) and various partners. Examples include a project to open pathways for youth underrepresented in STEM through the use of experiential technologies which extends into a Work-Integrated Learning Experience in a research laboratory; a project leading to the creation of transdisciplinary units for students; a teacher collaborative inquiry using high-impact math strategies and Indigenous-focused problem-solving; a virtual world project that centers Indigenous understandings and challenges students to reimagine the land; and a coding and music project that enables students to learn Python coding skills and create their own songs using beats provided by Indigenous artists. We aim to unlock the potential of youth, eliminate barriers, and pave pathways for them to become future innovators in STEM.

Bridging and Braiding: Lessons from a STEM land-based education program

Mab Speelman¹

¹SuperNOVA at Dalhousie

In this session, participants will gain practical knowledge about the purpose, planning, design, and implementation of a locally-informed, land-based education program that bridges Indigenous Knowledge and Western science through Etuaptmumk (Two-Eyed Seeing). Hosted by SuperNOVA, the presentation will cover program logistics, risk management, partner relations, longevity, and lessons learned from running their land-based STEM program, Mlkiknewawti. Based in Mi'kma'ki, Mlkiknewawti is an overnight program for high school Indigenous youth accredited by the Nova Scotia Department of Education. The program is a collaborative effort that centres educational priorities and goals of local Indigenous communities to engage youth in STEM education through land-based learning. As an accredited program, Mlkiknewawti bridges Indigenous and Western sciences, braiding the two ways of knowing to provide students with an environment in which they can engage with STEM through culturally-relevant and locally-informed activities. Students learn from Elders, Knowledge Keepers, facilitators, and the land as they explore STEM concepts and activities that braid personal experiences, Indigenous science, and Western science to build an authentic learning experience.

SuperNOVA is a not-for-profit initiative of Dalhousie University, located in Kjiptuk (Halifax, Nova Scotia) that provides youth across Mi'kma'ki (Atlantic Canada) with accessible science, technology, engineering and mathematics (STEM) education, regardless of geographic location, socio-economic situation, ability, gender or lived experience.

Indigenous Engagement with Water, Land, and the Environment

Climatic and economic transitions for Indigenous peoples in Northern Canada

Katharine Baldwin¹, Bob Kayseas¹, Juleah Duesing¹

¹First Nations University of Canada

Climate change is impacting Canada's north at a rapid rate. The Indigenous peoples of northern Canada are facing changes in their environment that affect their subsistence lifestyles, culture, and economy. This project examines how ecosystems in the territorial and provincial north are changing and how northern people and communities can benefit economically, socially, and culturally to the inevitable and rapid transitions. Our research focuses on the economic opportunities for Indigenous communities associated with these transitions. We are part of a larger group of scientists who specialize in climate change, soil science, dendrology (the science of trees), forest management, and northern Indigenous affairs. The goal of this larger group is to determine the potential impacts of afforestation on carbon storage in boreal forests in Canada.

Carbon offsets from forestry have the potential to help Indigenous communities gain income from their lands via carbon storage instead of logging. This change can fund guardian programs, Indigenous Protected and Conserved Areas, cultural programming, and land restoration, while maintaining cultural uses of the land. Renewable energy projects can offset diesel fuel usage and create economic returns through ownership, job creation, utility sales, and carbon credits. Additional economic opportunities for Indigenous communities due to climate change include active participation in land restoration and management, food security, tourism, and cultural revitalization. This early-stage research captures the current state of knowledge on the impacts to land, people and economies in the territorial and provincial north of Canada with a particular focus on the associated economic opportunities.

Land-based or Indigenous Science, what's the difference?!

Kori Czuy¹

¹Relational Educational Science Consultant

What is the difference between Land-based or Indigenous Science? Let's go back in time, thousands and thousands of years ago when humans were deeply connected to the Lands....from here let's explore the origins of science, and how they have branched out into Land-based, Indigenous, and Global Science. From this, we can better understand the importance of retaining the unique protocols and methods for each way of knowing, being, doing, or teaching science.

Science and mathematics originated when humans learned from the Land and Cosmos how best to thrive and survive. But science has become more and more disconnected from its origins, becoming too abstract and no longer knowing which Lands or Indigenous communities those knowledges first were connected with.

Co-developing surface water sensors in Six Nations of the Grand River

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¹McMaster University, ²Six Nations Environmental Office

The Six Nations of the Grand River (SNGR) community has long suffered from water quality stressors. Their local water (the Grand River watershed and the McKenzie-Boston sub-watershed) are vital for the community's health, recreation, and Haudenosaunee cultural and spiritual well-being. The concerns of the community regarding the quality of their water led to the co-development and implementation of a network of field-installed low-cost water quality monitoring stations (WQMS). The purpose of these WQMS is to characterize the waterways of SNGR and detect point anomalies in water quality. Three cost-effective floating WQMSs were co-designed, built, and co-deployed with community members for hourly monitoring along the McKenzie Creek. These WQMSs measured water temperature, DO, pH, conductivity, and turbidity over a period of two autumn months while providing real-time updates on a publicly accessible website. Acquired hourly data was compared with spot sample data and historical data to assess the validity of the WQMSs' readings. Temperature data was consistently and accurately transmitted to the server, yielding expected and coherent outputs. DO, pH, and conductivity results had greater variability but demonstrated correlative relationships to spot sampling. Turbidity data was the least reliable. Further research is planned to identify the causes of data transmission unreliability, including lowering power consumption, and minimizing fouling. Overall, we demonstrated a constructive and creative working relationship between First Nations scientists, community leaders, and western-trained engineers to create, and validate small water quality monitoring stations that have the potential to be deployed in many other rural and remote communities.

Traditional Ecological Knowledge in the Canadian Impact Assessment Process

Bryce Jardine-Pelletier¹

¹University of Calgary

The Impact Assessment Agency of Canada (IAAC) regulates the environmental approval of designated projects through the Impact Assessment Act (the Act), and the associated *Physical Activities Regulations*. Proponents of projects designated under the Act are legally required to use any traditional ecological knowledge (TEK) provided with respect to the project, along with scientific information in determining whether the project should proceed. However, a comprehensive review revealed that one of the most frequently cited obstructions to regulators and western scientists in fully recognizing the value of TEK is their lack of understanding in how Indigenous People learn and develop knowledge about the land and environment.

The aim of this project is to describe the epistemology of TEK and investigate the suitability of new approaches to environmental impact assessments. This project also seeks to investigate issues of equivalency, perceived value, and applicability of both western science and TEK approaches.

This project involves research with Indigenous people, done by an Indigenous researcher, based on an Indigenous and decolonizing research methodology. The project will use a qualitative and semi-quantitative research process to gain a deeper understanding of participant experiences and perceptions and enable finding quality responses in the research information. The proposed methodology also incorporates Indigenous values, as well as equity, diversity, and inclusion considerations.

Findings from this study will be disseminated to the Impact Assessment Agency of Canada, the participants, and to the larger Indigenous community as well as the public through oral presentations, publications, teaching and discussions.

Meaningful Indigenous Engagement in Ocean Science: Two Case Studies from Ocean Networks Canada

Jaquelynn LaFlamme¹, [Pieter Romer](#)¹, Maia Hoeberechts¹, Brianna Brown¹

¹Ocean Networks Canada

This session introduces Ocean Networks Canada's approach to meaningful Indigenous engagement in ocean science with coastal Indigenous Communities across Canada. We will present two case studies: the Northwest Coast of Vancouver Island Tsunami Risk Assessment Project (NCVITRA) and the Advancing Indigenous Partnerships in Ocean Science for Sustainability (AIPOSS) project, along with examples of other initiatives.

The NCVITRA project delves into the rich history of Indigenous tsunami resilience on the Pacific West Coast and highlights the significance of combining Indigenous Knowledge with ocean science to enhance community preparedness for future natural disasters. The project was community- led and emphasized the importance of early engagement, regularly holding community advisory group meetings, and bringing the knowledge back to community when each milestone completed. A documentary, *Tsunami 11th Relative*, was produced, showcasing the Indigenous Knowledge of historical 'great saltwater floods' that impacted northwest Vancouver Island.

The AIPOSS project brought together a diverse group of Indigenous ocean experts from across Canada to define a roadmap for Indigenous contributions to the UN Ocean Decade. Over the last three years, AIPOSS has held four summits across Canada - Pacific, Arctic, Atlantic, and National. Through its Indigenous-led framework and focus on Indigenous priorities, AIPOSS aims to empower Indigenous communities, ensuring their voices and perspectives drive the project and that outcomes directly benefit coastal communities and ocean health.

Ocean Networks Canada (ONC), an initiative of the University of Victoria, is an ocean science and technology organization, which currently holds partnerships with 34 Indigenous communities across Canada.

Indigenous-Engaged Knowledge Co-Production for the Conservation of Freshwater Turtles in the Anthropocene

Reta Lingrui Meng¹, Keith Nahwegahbow², Stephen McGregor², Patrica Chow-Fraser¹

¹McMaster University, ²Whitefish River First Nation

Recovery efforts for species at-risk populations offer both a complex and timeless problem for natural scientists and communities alike to tackle. To ensure long-term management and conservation success, it is critically important to involve all stakeholders and rightsholders at the initial project planning phase to ensure community needs and research interests are met, and a holistic approach can be adopted through co-creation. In this presentation, we discuss a successful, ongoing conservation project that focuses on the recovery and protection of the at-risk Blanding's Turtle (*Emydoidea blandingii*) within the traditional territories of Whitefish River First Nation located at the northern shore of Mnídoo Gamii (Georgian Bay, Lake Huron). We emphasize the importance of knowledge co-production through weaving multiple knowledge systems, including Indigenous Knowledge (IK) and Western Science (WS), in species recovery plans and outline project progress to date. We describe the use of data collection using ArcGIS Online surveys, collaborative field work, community meetings, and knowledge holder interviews, with preliminary findings to date. This study highlights opportunities, methods, and successes through collaboration between IK holders and WS researchers for an elevated, greater understanding towards long-term species at-risk conservation and advancing ecological sciences.

paskahtêw - “burning the grass”: Plains Cree and Saulteaux Traditional Use of Fire

Andrew Miller¹

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Very little literature exists exploring the use of fire by Indigenous peoples in the prairie grasslands. This is despite the widespread recent acknowledgment of the importance of traditional burning in creating and maintaining living spaces, cultural values, and managing fire risks. This short paper offers a review of 18th and 19th-century observations by settlers of First Nations burning practices in the prairie and preliminary interviews with Plains Cree and Saulteaux Elders on the traditional use of fire in the prairie parkland region of Treaty Four, Saskatchewan. Elders underscored the spiritual dimensions of fire as a living force within their landscapes, fire's role in pasture maintenance, and the need to further document Indigenous language, practices, and impacts associated with traditional burning. We call for greater efforts to document the relationship that First Nations desire to have with fire within the prairie ecosystem.

Integrating Traditional Knowledge and scientific inquiry to develop an ecological understanding of Arctic char towards their sustainability in Nunatsiavut

Caroline B. Ofosu¹, Susan E. Ziegler², Ian A. Fleming³, Dave Côté⁴, Joey Angnatok⁵, Maurice Jacque⁶

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Arctic char hold immense nutritional and cultural value for indigenous communities including those in Nunatsiavut. However, the fast-changing climate poses a significant threat to char. For example, warming temperatures and accelerated melting of sea ice may disrupt the timing of food availability, feeding habits, and ultimately, their ability to grow, survive, and reproduce. Hence, safeguarding char populations necessitates community-driven, informed fisheries management strategies that rely on understanding the ecosystems and food sources sustaining char.

By integrating Inuit Knowledge with leading-edge science, this research investigates how the diet of anadromous Arctic char varies by habitat, latitude, and season in Nunatsiavut. Knowledge exchange among Inuit research coordinators (IRCs), community members, government, and academic researchers facilitated the study's design, including identifying feeding sites (e.g., fjord vs. headland), sampling methods, and collecting a comprehensive sample set spanning five coastal ecosystems in Nunatsiavut from diverse seasons (2021-2023). Qualified Nunatsiavut Government staff trained IRCs to sample char, who then shipped specimens to laboratories for analysis. Collaborative efforts of IRCs and community members also enabled sampling of prey for dietary reconstruction, and initiation of new research on the role of diet in the flesh colour of char, a potentially sustainable future monitoring tool.

Our collaborative research integrating knowledge systems will aid the interpretation of results and deepen communities' understanding of char foraging behavior and how it influences their ecology. Results from this work should serve as a foundation for long-term monitoring, providing tools to track char dietary or nutritional changes useful for management practices within Nunatsiavut.

Ecology for social transformation: Engaging with Indigenous Peoples in the ecological sciences

Andrea Monica Ortiz¹, Ivette Ulloa Caniú³ [Bruno Eleres Soares](#)², Patricia Huinca³

¹Universidad de Concepción, ²University of Regina, ³Mapuche people

Nearly 30 ecological researchers and practitioners from 15 countries and members of 16 professional and academic ecological societies gathered in Conguillío National Park in *Wallmapu* (Central-South Chile), to discuss the roles and responsibilities of ecologists towards the social transformation that we need to address sustainability challenges. We met with local Mapuche elders, who performed a ritual to ask for the consent of the ancestral spirits, the *Pillan* and *Ngen*, for our conduct of the meeting in their territory. They requested us to assist in raising awareness of the substantial land use change and the impacts of climate change in their territory. They also sought our help in finding scientific evidence for the social-ecological issues that constitute their daily lived experiences.

In light of our shared commitment to engage with local communities and Indigenous Peoples, we present an audio-visual presentation to amplify their voices and highlight the major ecological challenges that their communities face. Moreover, we offer suggestions for the scientific community to reassess the values that inform our work, and collaboratively transform ecological science alongside Indigenous Peoples and local communities. We argue that ecological science is not responding to the urgency of the biodiversity crisis and its impacts on Indigenous People and local communities.

Our intention is to foster greater understanding, collaboration, and mutual respect between academic ecologists, practitioners, and the communities most affected by ecological issues. By incorporating diverse perspectives and knowledge systems, we can forge more holistic and effective solutions to the pressing environmental challenges we collectively face.

Wlo'tmnej samqwan aq kmikinu - Let's take care of our water and land

Lyndsey Prosper¹

¹Eskasoni Fish & Wildlife Commission

“Wlo'tmnej samqwan aq kmikinu”, let's take care of our water and land, is a phrase in Mi'kmaq that provides a deeper meaning to sustainability and protection of the biodiversity and culture in and around the community of Eskasoni. This project, Indigenous Protected & Conserved Areas (IPCA) provides the support needed for this powerful Mi'kmaq expression. The proposed IPCA area is located in the district of Unama'ki (Cape Breton) within Mi'kma'ki - the unceded, ancestral territory of the Mi'kmaq people. The area of interest is adjacent to the Eskasoni First Nation and encompasses both crown & private land. The protection of the watershed is of utmost priority to the community, it provides a variety of habitats including the wetlands and woodlands that affect the community's water supply and infrastructure. Protecting the watershed will not only allow the ecosystem of the area to thrive but also to protect the community's drinking supply. The Mi'kmaq culture, land, and water are interdependent, our vision is to protect the people, biocultural diversity and critical habitat that live interdependently within the Eskasoni watershed. Etuaptmumk (Two-eyed Seeing) helps us to broaden our understanding and support the relationship between the people of Eskasoni and the rest of the natural environment. This relationship is communicated through cultural teachings shared by elders and knowledge keepers with the full support of the Eskasoni Band Council.

Land-based learning as a determinant of health for Indigenous graduate students in British Columbia

Jeffrey Reading¹, Krista Stelkia¹, Tara Erb¹

¹Simon Fraser University

The purpose of this presentation is to explore land-based learning as a determinant of health for Indigenous graduate students in British Columbia (BC). In 2023, Binche Whut'en First Nation, which is a BC Network Environment for Indigenous Health Research (BC NEIHR) funded Indigenous community, invited eight Indigenous graduate students from across BC to their traditional land for experiential, land, and cultural-based learning.

This gathering was examined as an intervention, investigating land as a determinant of health. In response to requests for more land-based gatherings for Indigenous graduate students, the Binche Whut'en event was planned. The gathering was held for three days, with the goal of students learning from community members about the Binche Whut'en land, traditional medicines, and healing. The participants engaged in cultural activities, learned to identify local plants and know their uses, and learn about the history of Binche Whut'en. The students learned from community identified knowledge holders, and oral teachings.

After the event, the participating students expressed that this kind of education reaffirmed the importance of Indigenous ways of knowing and being when pursuing Indigenous health research as well as science and medicine. The students felt supported and did not have to leave parts of themselves out of their research and studies. The students shared that they felt inspired and recharged engaging with their peers and community in this experience. The results of the event were overwhelmingly positive.

In conclusion, land-based learning was a critical and effective method for promoting health and wellness among participating Indigenous students.

Monitoring the land: Ya'thi Néné Lands and Resources and the Canadian Nuclear Safety Commission partner on the Independent Environmental Monitoring Program

David Szonyi¹, Dana Kellett², Jeffrey Lam¹, Margaret Powder², Ryan Froess¹, Kate Peters¹

¹Canadian Nuclear Safety Commission, ²Ya'thi Néné Lands and Resources

A number of operating and decommissioned uranium mines and mills exist within Nuhenéné, the traditional territory of the Athabasca Denesuliné First Nations of Hatchet Lake, Fond du Lac, and Black Lake. Ya'thi Néné Lands and Resources (YNLR) works with these three First Nations and the municipal communities of Camsell Portage, Uranium City, Stony Rapids, and Wollaston Lake Post to protect lands and waters of Nuhenéné and promote the interests of all Athabasca Basin residents. The Canadian Nuclear Safety Commission (CNSC) actively consults, builds relationships, and works with Indigenous Nations and communities in Canada to ensure the safe and effective regulation of nuclear energy and materials. For the last four years, the CNSC and YNLR have partnered on the implementation of the Independent Environmental Monitoring Program (IEMP). Through this partnership, the CNSC has sought and integrated the input of YNLR members to ensure that the program reflects local traditional land use values and knowledge in order to provide meaningful results to Athabasca Basin residents. To accomplish this, the YNLR have interviewed local community members about how and where they use the land pertaining to water, land, plants, and animals around and downstream of nuclear facilities. The CNSC and YNLR have worked collaboratively to integrate Indigenous Knowledge provided by community members into the IEMP. YNLR Community Land Technicians are stewards of the land and have helped guide field activities to build this partnership and share knowledge in a good way.

Entewahnekahserón:ni: We are Rejuvenating the Waters

Julie Teio'keráthe Delisle¹, Carlee Kawinehta Loff¹

¹Kahnawà:ke Environment Protection Office

The Kanien'kehá:ka (Mohawk) community of Kahnawà:ke sits on the south shore of the Saint Lawrence River across from Tiotià:ke (Montreal). Kahnawà:ke's land and water have been drastically altered over the past 70 years, including by the violent and destructive construction of the Saint Lawrence Seaway and alterations to the creeks that feed the river. North Creek once flowed freely through the heart of the community and holds a special place in the memories of many Kahnawákehró:non. The creek is now impacted by invasive phragmites, silt, and culverts. As the creek's health has declined so too has the community's relationship with it. That said, the creek still serves as a habitat for fish, herons, and beavers, and there are community members who feel strongly about caring for it. The North Creek Community Visioning Project and the broader project it is a part of, Entewahnekahserón:ni, was launched by the Kahnawà:ke Environment Protection Office (KEPO) in part inspired by those community members. The goal is to restore North Creek and reinvigorate the community's relationship with it. This project has four stages: 1) building and sharing a collective memory, 2) visioning and planning restoration 3) implementing preliminary restoration works, and 4) long-term community-based stewardship and project evaluation. The project uses a two-eyed seeing approach which centers community needs, perspectives, stories, and expertise while also incorporating Western science methodologies and collaborations with external consultants. We will be sharing our experience of the project to date and discussing the process and future of community-led work.

Relationships, Partnerships, and Sharing Knowledge in a Good Way

Journey of a Seed, a Métis specific cultural framework to integrate Métis culture into addictions treatment programming

Indiana Best¹, Barbara Fornssler^{1, 2}

¹University of Saskatchewan, ²School of Public Health

Colonization in Canada continues to plague Indigenous Peoples (First Nations, Métis and Inuit) with intergenerational trauma, social inequities and poor health outcomes. The absence of Métis specific cultural programming in addictions treatment means off-reserve treatment centers are often unable to provide appropriate services and supports to Métis clients. Through a community-based research approach, the project aims to development a framework outlining Métis specific cultural elements that should guide the development of addictions programming curriculum. Grounded Theory methodology was utilized to generate a theory outlining Métis specific cultural elements that could be included in addictions treatment programming (e.g., inpatient, outpatient and day programming). Research activities were guided by the metaphor, *Research is Beading*, which authorized an iterative process to occur throughout the research project. Data was collected from two focus groups with three Métis cultural experts and individual interviews with four addiction counsellors; analysis occurred simultaneous to data collection as per the iterative nature of the project. The Métis cultural framework, titled *Journey of a Seed*, outlines the main themes of history, culture, kinship and identity as critical Métis core values to be integrated into Métis specific cultural programming. This foundational understanding will be used to further research and the development of Métis cultural curriculum within addictions treatment programming, ultimately enabling Métis clients to incorporate culture into their healing journey.

National Research Council of Canada Arctic and Northern Challenge Program

Shawn Clark¹, Dan Houser¹, Anne Barker¹

¹National Research Council of Canada

The Arctic and Northern Challenge Program (ANCP) was launched by the National Research Council of Canada in February 2022 and will run until March 2029. The objective of the program is to bring together NRC researchers with northern, Canadian and International researchers in order to collaborate on projects that will improve the daily lives of Northerners through technology and innovation. The ANCP program team has engaged widely with Northern and Indigenous partners to continuously define and refine program parameters and build off important Northern policy documents, such as the Government of Canada's Arctic and Northern Policy Framework and submissions to it such as the Gwich'in Tribal Council submission, and the Inuit Tapiriit Kanatami National Inuit Strategy on Research. Early program development involved 3 different phases (thematic focus groups, online survey and technical sessions) across more than 20 formal engagement sessions. Due to the challenges of the COVID-19 pandemic, these sessions were virtual. The feedback received from Northern peoples included advice on priority research areas, program mechanics, and the importance of cross-cutting themes such as capacity building. During the first full funding call in 2022, more than 50 letters of intent were received and 10 proposals were funded across the four key thematic areas of Housing, Health, Water and Food. An overview of the research program will be provided along with a discussion of lessons learned during the creation of the program and its first funding calls, as well as future collaboration opportunities.

Land-based teachings

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Relations, connections, and the land are tenets in Indigenous ways of knowing. Indigenous people have their own stories for different areas of Turtle Island that convey historical context. The land-based historical contexts hold a nation's identity through their knowledge and understanding of the land, water, and the environment. First Nation people name particular areas to explain areas with poor water supply, where different animals nest, and history of diseases in particular areas to name a few (Real Bird, 2017). First Nations people also have their own traditional names for themselves and other tribes. Schools need to incorporate these into their instruction to give students a better understanding of themselves and the land on which they live. Including ancestral knowledge into the school addresses the TRC's calls to actions, Saskatchewan Science curriculum and Treaty Education Outcomes from kindergarten to grade seven. This session will focus on the traditional names of places and the historical context it conveys. Understanding the meaning of the traditional names allows us to reclaim and re-shape our identity and our relationship to Mother Earth which fosters self-esteem and community connections.

Apoqmatulti'k: working together for a healthy and resilient ocean

Shelley Denny¹, [Meghan Borland](#)², Alanna Syliboy³, Skyler Jeddore¹, Evelien VanderKloet²

¹Unama'ki Institute of Natural Resources, ²Ocean Tracking Network, ³Confederacy of Mainland Mi'kmaq

A collaborative and holistic approach is essential to achieve a healthy and resilient aquatic environment. This requires bringing together diverse perspectives and knowledge systems to understand challenges and co-develop solutions that foster shared stewardship of aquatic resources. Apoqmatulti'k (Mi'kmaw for we help each other) is a partnership among the Ocean Tracking Network, Unama'ki Institute of Natural Resources, Confederacy of Mainland Mi'kmaq/Mi'kmaw Conservation Group, Marine Institute of Natural and Academic Science, Acadia University, Dalhousie University, and Fisheries and Oceans Canada. Apoqmatulti'k is built on shared participation from Mi'kmaw, local, and western scientific knowledge holders to better understand valued aquatic species in Pitu'pa'q (Bras d'Or Lake) and Pekwitapa'qek (Minas Basin). Guided by the principle of Etuaptmumk (Two-Eyed Seeing), Apoqmatulti'k offers a model for how incorporating diverse perspectives enhances knowledge, ensures transparency and accessibility of information, and can transform fisheries management and conservation. This presentation will focus on challenges, lessons learned, and achievements from working together, and building a strong partnership, and will highlight how this research approach can be used by communities and decision-makers. Attendees will gain firsthand insight into how different knowledge systems strengthen research, inform stewardship and management decisions, and contribute to a healthy ocean.

Data Replenishment of the Prince Albert Historical Society Collection Using Indigenous Knowledge and Modern Science

Richard Dosselmann¹, Arzu Sardarli¹, Michelle Taylor², Andrei Volodin³

¹First Nations University of Canada, ²Prince Albert Historical Society, ³University of Regina

The oral tradition is rooted in Indigenous cultures. This tradition has used spoken words to hand down stories, songs, prayers, spiritual teachings, histories, customs and practical skills for generations. As part of a project known as “Data Replenishment of the Prince Albert Historical Society Collection Using Indigenous Knowledge and Statistical Analysis”, this research investigates Indigenous artifacts using scientific methods and Indigenous Knowledge. The first of three components pertains to information about the artifacts, which is housed in a database maintained by the Society. Existing data is validated. Measurement and identification of other pieces is to be completed. Through chemical composition analyses and radiocarbon dating, the second component explores various properties of the artifacts. This second component is supplemented by input from Indigenous Knowledge Keepers and Elders. Such input enables this research to contextualize the artifacts within a framework of traditional understanding and teachings. In the third component, the database is digitized. The data is plotted, using the Python programming language, as a multi-dimensional visualization. The visualization is enhanced by images of the artifacts. A user can interactively explore the visualization. This technology allows for a deeper awareness of the relationships that exist among the data. The visualization is part of a website that is to be made available to the public. An extended version of the website that includes statistical analyses is to be made available to interested parties. This research is supported by the Ministry of Canadian Heritage under the Museums Assistance Program, Indigenous Heritage Component.

Experiencing Relationships

Florence Glanfield¹, Dawn Wiseman², Elmer Ghostkeeper¹, Anita Lafferty¹, Simon Slyliboy³, Lisa Lunney Borden³, Melissa Daoust⁴, Loretta Robinson⁵, Kyla Bernard⁵, Monica Nooskey⁵, Karen West¹

¹University of Alberta, ²Bishops University, ³St. FX, ⁴McGill University, ⁵Community

Our research kinship comprises of Métis, nêhiyaw, Naskapi, L'nu'k (Mi'kmaq), and non-Indigenous voices attempting to rise above colonization and the limitations noun-based European language. Relationships amongst this family embody a purpose of sharing knowledge, wisdom and understanding to renew and reimagine science education as a site of animacy, hope and love. We connect with Indigenous language for guidance, allowing us to resonate, share across creation stories and ways of knowing to guide insights of learning and knowledge of our collective worldview experiences embedded in gifting relationships (Ghostkeeper, 2007).

Dynamically, we offer insight of our interconnections, ethical relationality, and reciprocity (Ermine, 2007). On each visit, we begin in Ceremony, learning emerges from a wonder, a context, a concept, or a phrase (Wilson, 2008). Through imagery, poetic interpretations, and dialogue we unravel complexities of colonial logics and tensions within academic science and mathematics spaces (Donald, Glanfield, Sterenberg, 2012). Through conversation, we uncover synchronicity across space and find similarities in our experiences (Robinson et al., 2023). Beauty arises from these spaces, offering healing, comfort, and acknowledgment of our collective responsibility while reaffirming our path of continuing this vital research in the field of science and mathematics education.

Our hope is that sharing our experiences of this research collective inspires good relationships. More importantly, however, it addresses the importance of collective voices coming together to offer strength, support one another, and embrace listening that extends beyond the physical landscape of academics and embodying and resonating ahcâhk (spirit) (Robinson et al., 2023).

Co-developed community centered housing in Saskatchewan First Nations

Sarah Haines¹, Helen Stopps², [Russel Richman](#)², Michael Wong², [Natalie Clyde](#)³

¹University of Toronto, ²Toronto Metropolitan University, ³RockTree MgO

There is a widespread housing crisis on First Nations reserves across Canada, with a lack of available units, unaffordable prices, and inadequate housing conditions. However, improving housing quality and availability in First Nations communities is not solely a technical problem and initiatives to address community well-being and infrastructure challenges frequently fail due to the application of situationally inappropriate solutions. As such, our multi-disciplinary research program “From Harvest to House” addresses these issues head on by taking a co-developed approach to housing solutions involving collaboration between several Saskatchewan First Nations represented by the Prince Albert Grand Council (PAGC) and researchers in sociology, anthropology, and engineering from Toronto Metropolitan University and the University of Toronto. Our 2-day housing centered workshop took place in Saskatoon, Saskatchewan, September 12 -13, 2023 where we implemented narrative research inquiry methods to qualitatively review perceptions of on-reserve housing quality by exploring the lived experiences of residents and band-owned housing professionals. Community-based participatory action research was used to encourage and amplify community voices and sharing of Traditional Knowledge. The workshop was designed with a focus on co-creating narratives surrounding the state of housing in the communities and collectively developing conceptual pathways for appropriate sustainable housing development. The key findings from the workshop will be used to identify opportunities to improve housing development and operation and will apply knowledge from building science, public policy, sociology, and anthropology. The successfulness of our program highlights the critical need for multi-disciplinary collaborations bridging Traditional and Academic Knowledge to co-create solutions.

Creating digital stories with Métis cancer survivors living in Northern Saskatchewan, Canada: supporting sovereignty and wellbeing

Dr. Robert (Bobby) Henry¹, Dr. Chelsea Gabel², Terri Hansen-Gardiner³, Fleur Macqueen Smith⁴

¹Associate Professor, University of Saskatchewan. Nominated Principal Investigator, Saskatchewan NEIHR, Co-Lead, NEIHR National Coordinating Centre, ²Associate Professor, McMaster University. Co-Lead, NEIHR National Coordinating Centre, ³Knowledge Keeper in Residence, Saskatchewan NEIHR, ⁴Manager, Saskatchewan NEIHR

This presentation focuses on digital storytelling at Back to Batoche in 2023 with Métis cancer survivors and the idea of researchers "tending the fire" within community-engaged research. Digital stories are short videos that share personal stories through pictures, video, music and voiceover. They are a powerful way to contribute to social justice and advocate for policy and practice changes that support Indigenous wellbeing, sovereignty, and self-determination.

In the summer of 2023, researchers with the *nātawihowin* and *mamawiikikayaahk* Research, Training and Mentorship Networks (Saskatchewan Network Environments for Indigenous Health Research [NEIHR]) brought together older Métis cancer survivors to participate in a legacy digital storytelling project. The SK-NEIHR facilitates First Nations and Métis health research, training, and knowledge mobilization throughout Saskatchewan, grounded in community and led by Métis and First Nations people. It is funded by the Canadian Institutes of Health Research.

This project was inspired by the SK-NEIHR's knowledge keeper in residence, Terri Hansen-Gardiner, and her advocacy to support Métis cancer survivors in Northern Saskatchewan. Terri, a survivor of breast cancer, lives in Île-à-la-Crosse in Northwestern Saskatchewan and is fluent in Cree and Northern Michif.

Over three days, we worked alongside the StoryCentre Canada to support people as they created their stories. This process highlighted the strength of this research method when participants later gathered to share their stories with one another. The seven digital stories can be seen on the SK-NEIHR website, skneihr.ca, under News. They are part of a larger Indigenous digital storytelling project, online at indigitalstorytelling.ca.

Trickster Pedagogy and Co-Journeying: Learning by Doing

Jessie King¹

¹University of Northern British Columbia

This presentation will focus on an example of co-journeying in post-secondary classrooms engaged in First Nations Studies topics in Northern British Columbia. Engaging learning that is founded upon Indigenous knowledge transmission pathways embeds the student in the co-production of knowledge that goes beyond the classroom. In the example provided, I will offer an introduction to a class project designed to activate learning beyond assignments and coursework in such a way where the learner obtains critical skills for coordinating events and opening culturally safe spaces beyond their academic experience and into their professional domains. Hosting events in public spaces is often a challenge regarding inclusion, respect, responsibility, reciprocity, and relevance (the four Rs from Kirkness & Barnhardt, 1991). In First Nations Studies 306: Indigenous Women's Perspectives, students choose an Indigenous Woman or Two-Spirit individual to celebrate in poster format. While doing this work, we explore topics relating to: cultural safety and humility, historical injustices faced by Indigenous Women, resistance and resilience, healing through storytelling, patriarchy, gender, and being a responsible ally. Students are separated into working groups with the expectation of fully coordinating a Gallery Event intended to celebrate their work with the university community while upholding Indigenous Women. This presentation will cover that journey from start to finish and provide tips on how to incorporate this teaching method into your pedagogy in classes interrogating the space of Reconcili-Action and the responsibility we should place upon academia to give back by creating safe Indigenous spaces on campuses across Turtle Island.

From Barriers to Empowerment: Supporting Indigenous-Engaged Research Through the Ethics Process

Cassandra Opikokew Wajuntah¹

¹College of Medicine - University of Saskatchewan

Typically, Indigenous-engaged research projects with community partners are funnelled through a western colonial ethics approval process that is ill-designed, or even contrary to, Indigenous methodologies and processes of community-driven research. This presentation introduces a new model for research ethics approval processes that is supportive and reflective of the realities of research with Indigenous community partners. It seeks to remove barriers and create a more conducive process that is responsive to the unique needs of Indigenous-engaged research. Topics covered will include: a general overview of the typical western colonial ethics approval approach; special considerations and requirements for Indigenous-engaged research; and an overview of this new model of the research ethics approval lifecycle of an Indigenous-engaged research project from an Indigenous lens.

Weaving Indigenous Knowledge with Mainstream Science using Canada's Synchrotron in STEM Education

Dallas Pelly¹

¹Canadian Light Source

The Canadian Light Source (CLS), Canada's only synchrotron, is a national facility the size of a (Canadian) football field. CLS has an education team that delivers programming to support educators and their high school students to connect science research and science curriculum through inquiry-based teaching and learning that includes hands-on opportunities. In this presentation, Dallas Pelly, Education Coordinator- Indigenous programs, will share knowledge and tips on how to promote science inquiry in a reconciliation context. We will share insights about the Indigenous programming that has been established through the work of the CLS. We will also learn about the work that CLS is doing to change who sees themselves in science, including increasing Indigenous participation in STEM education and learning. Participants will also gain valuable insight into the many program offerings of the CLS including: Students on the Beamline, Teacher PD, seminars & workshops, and more.

Reshaping Research Paradigms: Insights from a Large-Scale Project Based in Nunatsiavut, Labrador Canada

Dylan Seidler¹, Michelle K. Saunders², Carla Pamak², Melanie Zurba¹, Paul McCarney³, Megan Bailey¹, Hekia Bodwitch¹

¹Dalhousie University, ²Nunatsiavut Government, ³YukonU Research Center

Across Inuit Nunangat (the Inuit homelands) researchers have been called to engage ethically and meaningfully with community members to develop projects that support local goals. In 2022, we conducted 27 interviews with researchers, Inuit community members, Inuit government representatives, and NGO representatives, associated with the transdisciplinary SakKijânginnaKullugit Nunatsiavut Sivunitsangit (Sustainable Nunatsiavut Futures) Project. The SakKijânginnaKullugit Nunatsiavut Sivunitsangit Project began in 2020 and was designed in part to facilitate the co-production of knowledge about climatic changes between researchers and Inuit community members in Nunatsiavut. Through the interviews, we explored what ethical and meaningful community engagement means in the context of a large-scale transdisciplinary project. Drawing on analysis of interview data, this paper examines how project members and partners engage with Inuit community members, and how Inuit members of the project team have experienced these engagements. University researchers described institutional constraints to long-term engagement. Community based government officials and Inuit Research Coordinators emphasized that extractive forms of engagement can negatively impact communities. To minimize the likelihood of such negative effects, interviewees described how a) relationship building, b) using plain language and c) acknowledging mistakes made throughout the research process within publications should be core considerations for researchers when it comes to ethical and meaningful community engagement.

Reclaiming and Promoting our Traditional Knowledge: How a Group in the Yukon Works to Revitalize Traditional Indigenous Plant Medicine Knowledge

Jamie Thomas¹, Cody MacInnis¹, Phyllis Vittrekwa², Deena Titus³, Fran Morberg-Green³, Piper Fordham¹, Jem Titus³, Gladys Netro³, Natasha Negreiff⁴, Lana Welchman⁴, Michelle Leach¹

¹Yukon University, ²Elder/Knowledge Keeper, Gu Nähtsey, ³Gu Nähtsey, ⁴Tr'ondëk Hwëch'in First Nation

The Traditional plant medicine working group, Gu Nähtsey, is a proud group of Tr'ondëk Hwëch'in First Nation Citizens and community partners with a goal to reclaim and promote the intergenerational sharing of medicinal plants and traditions to promote the health of their community. Gu Nähtsey is the Hän translation for 'plants we all pick/harvest'. Hän is the language spoken by the Tr'ondëk Hwëch'in First Nation. The Tr'ondëk Hwëch'in people have a rich history in the Dawson City region of Yukon. Traditional Knowledge has been passed down for generations to survive in an area with an unforgiving climate.

Gu Nähtsey has been endorsed by Tr'ondëk Hwëch'in Government in collaboration with Yukon Strategy for Patient-Oriented Research (YSPOR) at Yukon University. Gu Nähtsey is composed of Tr'ondëk Hwëch'in citizens and allies. The group includes a Tr'ondëk Hwëch'in Elder, Knowledge Keeper/Seeker, youth, citizens, and Tr'ondëk Hwëch'in Government representatives.

Gu Nähtsey hosts various workshops throughout the year taught by medicinal plant experts. Gu Nähtsey is collaborating with the First Nations Health Program at Dawson City Community Hospital (DCCH) and YSPOR towards a shared goal of Indigenizing the DCCH environment. Gu Nähtsey has also collaborated with YSPOR's Junior Research Assistant's to contribute to Indigenous-led research and the development of learning tools for generations to come.

Tr'ondëk Hwëch'in people value the strong relationships they have fostered with each other and the land. Since time immemorial, their Traditional Knowledge has passed from generation to generation teaching people how to live in good health, mentally, spiritually, physically and emotionally.

Indigenous Knowledge and Science: Development of Novel Chemistry and Biochemistry Research Reliant on Indigenous Medicinal Plant Traditions, Science and Communities

Vincent Ziffle¹

¹FNUniv

Chemistry and Indigenous Knowledge can go hand-in-hand in university classrooms, labs, and research projects. An ongoing Indigenous Medicinal Plant survey at First Nations University of Canada, and its connection to Indigenous Food Traditions, medicinal chemistry, biochemistry, and infectious disease will be discussed. Emphasis will be placed on working with Elders and Knowledge Keepers while following best practices to reduce Community Harm and increase appreciation of Indigenous Healing Traditions. Courses and research projects with an emphasis on practical knowledge in chemistry, Indigeneity and EDI will also be considered.

Network Environments for Indigenous Health Research (NEIHR)

Criminalizing Indigenous Kinship Systems in Saskatchewan

Danielle Bird¹

¹University of Saskatchewan

Academic research, government reports, and commissions of inquiry reveal that Indigenous people are incarcerated at higher rates than their non-Indigenous counterparts (Office of the Correctional Investigator 2023) and underscore that Indigenous Peoples are more likely to be victims of violent crime and are subjected to increasing levels of interpersonal violence (Rizkalla et al., 2021; MMIWG-FFADA 2019). The ongoing recognition of Indigenous peoples' incarceration has resulted in a cannon of literature that provides a diverse range of perspectives that link Canada's racist practices and policies, including the effects of residential schools, to individual pathologies (e.g. intergenerational and/or historical trauma) which are considered conducive to criminalization (RCAP 1996; TRC 2015; MMIWG-FFADA 2019). However, such explanations have yet to unsettle inherently flawed foundation from which the criminal justice system in Canada continues to operate (Cunneen and Tauri 2019) and fails to interrogate the role that settler colonialism plays in the disruption of Indigenous kinship systems in the larger goal of securing access to Indigenous lands (Nichols 2014; Stark 2016; Blagg and Anthony 2019). This paper draws upon critical Indigenous and anti-colonial scholarship to interrogate the criminal justice system's ongoing attacks on Indigenous kinship systems within the context of Saskatchewan. Instead of shielding carceral control within the rhetoric of reconciliation, this paper argues that settler colonial Saskatchewan must consider how the ongoing criminalization, stigmatization, and surveillance of Indigenous peoples' connections to one another and to the land hinders the resurgence and revitalization of Indigenous peoples' communal well-being.

Exploring telerehabilitation for Indigenous children: A call for culturally responsive research

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Telerehabilitation is proposed as a promising avenue to address service gaps, improve access to services in rural and remote areas, and help reduce healthcare disparities. While there is growing evidence on telehealth for Indigenous populations, little is known about its application for Indigenous children. Additionally, it is widely recognized that conducting research in a culturally safe and community-directed manner is of utmost importance for upholding and respecting Indigenous knowledges and creating results that are relevant for communities.

We followed the PRISMA-ScR framework to guide the scoping review. We systematically searched 10 scholarly databases, seven grey literature databases, conducted a manual search of included references and contacted international experts. Our inclusion criteria targeted documents discussing telerehabilitation for Indigenous children and caregivers, involving rehabilitation professionals (OT, SLP, PT).

Seven studies reported in eight publications were included. While some studies explicitly acknowledged cultural responsiveness within both the research process and the intervention, most were not designed with or for Indigenous children and their caregivers. Instead, they typically included both non-Indigenous and Indigenous children in the same studies, rather than developing care models in a community-directed manner to ensure culturally responsive interventions exclusively for Indigenous children. This raises questions about the relevance and impact of these telerehabilitation interventions for Indigenous children. To successfully assess the potential of telerehabilitation to address the rehabilitation needs of children and families in Indigenous communities, future research must be conducted from an ethical standpoint, striving to decolonize methodologies to produce responsive and relevant results with and for Indigenous Peoples.

Exploring healthy eating perceptions, barriers, and facilitators among urban Indigenous peoples in Saskatchewan

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Urban Indigenous populations confront distinct challenges to maintaining traditional dietary practices due to socio-economic and environmental factors. This study explored the perceptions of healthy eating, along with the facilitators and barriers to such practices, among urban Indigenous peoples in Saskatoon, Regina, and Prince Albert. Through 14 virtual interviews conducted via Zoom, we engaged participants from these cities, totaling 10 women and 4 men, aged 21 to 61, including 13 First Nations and 1 Métis individual. Utilizing NVivo for thematic coding, we applied inductive thematic analysis to reveal relevant themes. The perception of healthy eating was captured in eight themes: Focus on Nutrient-Rich Foods, Natural and Unprocessed Food Choices, Minimization of Unhealthy Foods and Ingredients, Emphasis on Cultural and Traditional Foods, Home-Cooked Meals and Cooking Practices, Adherence to Dietary Guidelines, Balanced and Diverse Diet, and Health-Adjusted Diet. Barriers to healthy eating emerged across nine themes: Economic Constraints and Poverty, Access and Availability Issues, Lack of Nutrition Education and Awareness, Urban Lifestyle and Technological Influences, Governmental and Policy Barriers, Cultural and Community Factors, Psychological Effects of Historical Trauma, Climate Change and Seasonal Variations, and Personal Dietary Preferences and Attitudes. Seven themes related to facilitators of healthy eating were identified: Community and Family-Based Food Support Systems, Connection to Traditional Practices and Knowledge, Accessibility and Availability of Resources, Health Consciousness, Nutritional Knowledge and Educational Initiatives, Self-Reliance and Skill Development, and Economic and Employment Factors. This research underscores the complex interplay of cultural, economic, and environmental factors in shaping dietary practices of urban Indigenous peoples.

Examining the Impact of Colonization on Métis Sexual Health and Wellness

Katie Tolley^{1, 2}

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The enduring impact of colonization includes the pervasive influence of heteropatriarchy and sexism rooted in Christian principles, leading to the enforcement of colonial gender norms, marginalization of non-conforming individuals, and intergenerational consequences that affect the sexual health and well-being of Indigenous youth today (Wesley, 2015). Currently, Indigenous youth experience a disproportionate representation in HIV and other sexually transmitted and blood borne infections. My research investigates the direct and indirect impacts of colonization on the gender identity and sexuality of Métis youth in Saskatchewan, and how it influences their decisions surrounding sexual health. It aims to identify gaps in knowledge, attitude, and practice of culturally appropriate sexual health among Métis youth. Additionally, it seeks to explore how Métis youth access sexual health services in conventional healthcare settings and identify barriers that may adversely impact their experience. The research method employed in this study is the conversational method. This approach prioritizes the relationship between researchers and participants, emphasizes orality as a means of knowledge transmission, and adheres to the specific tribal epistemology and protocols of the Indigenous communities involved (Kovach, 2010). Missing from the middle years and high school curricula are opportunities for students to better understand diverse First Nation and Métis perspectives on sexuality, sexual identity, and sexual health. As such, the findings of this research will help to inform the development of an arts-, land-, and culture-based wellness program that aligns with existing public-school curriculum.

Indigenous Peoples in the 21st Century: Resilience, Reform & Residency

Doris Wesaquate¹

¹University of Saskatchewan

Considering the past and present, what does the future hold for our grandchildren's grandchildren? What do our people contemplate for their futures? How are they involved in generational healing and in keeping Indigeneity alive? What impact do the systems have on them and what will the future hold? These are questions to consider now and in the future. First, recognize we are at a turning point. The systems are not by us! They are legislated attempts to disrupt and destroy our livelihood. We are treated as numbers that need to be regulated. Destruction is documented across centuries of encroachment, extraction, and extermination.

Second, foreign law, politics, and legislation displaced us to the margins of society. We are beggars on our lands. The missing and murdered, abused, and traumatized are still genocidal outcomes (under the guise of post-colonial legislation and government frameworks). The Justice system incapsulates while the Courts of Law are to the detriment of Indigenous People.

Third, governance, sovereignty, and natural law are compromised. The Indian Act (1876) and its amendments assure this.

Finally, education and health funding limit social development. Caps exist to our detriment. Mental and physical health deteriorate with intersections of poverty, stress, illness, addiction, incarceration, child apprehension, poverty, housing, homelessness, crime, violence, and more.

Values, beliefs, customs, traditions, languages, and ways of being are sacred and originate from natural law. The Indian Trust and the Treaties have been compromised through legislation, and frameworks foreign to our ways of knowing. There is a better way forward!

Open Topics

Genomics and Indigenous ways of knowing: An interdisciplinary approach to tackle antibiotic resistance

Omar El-Halfawy¹, Colin Rieger¹, Ahmed Soliman¹, Elder Florence Allen², Elder Margaret Reynolds³, Elder Betty McKenna⁴, Elder Archie Weenie⁵, Elder Thomas Favel⁶, Fidji Gendron⁷, Vincent Ziffle⁷

¹University of Regina, ²Peter Ballantyne Cree Nation, ³English River First Nation, ⁴Shoal River Band, ⁵Sweetgrass First Nation, ⁶Kawacatoose First Nation, ⁷First Nations University of Canada

Antimicrobial resistance (AMR) is rising at an alarming rate, posing a global health crisis. Unfortunately, the legacy of colonialism and the associated intergenerational trauma have led to troubling gaps in health outcomes between Indigenous and non-Indigenous peoples in Canada, including rates and prognosis of infectious diseases. Methicillin-resistant *Staphylococcus aureus* (MRSA) is the leading cause of wound and bloodstream infections, posing severe clinical problems worldwide. Several reports indicate that this drug-resistant pathogen disproportionately affects Indigenous peoples who suffer higher rates of MRSA skin and wound infections, which often progress into serious invasive bloodstream infections. Indigenous peoples have long used natural remedies to treat infections and other diseases; however, their knowledge has rarely been considered for modern medicine. The stagnant antibiotic discovery pipeline, coupled with resistance to currently available antibiotics, prompted us to turn to Indigenous medicine as an untapped source of antimicrobials. This talk will describe our collaborative project with Indigenous Elders and Knowledge Keepers from Treaties 4, 6, and 10 Territories, who have knowledge of and access to diverse traditional plants. It will discuss our work testing the antimicrobial properties of Indigenous remedies extracts against MRSA under infection-mimetic conditions and studying the bacterial responses using high-throughput drug discovery and genomics approaches with the goal to co-create new antimicrobial solutions for drug-resistant MRSA infections inspired by Indigenous medicines. Together, our work endeavors to strengthen partnerships, promote Indigenous Science, and serve as steps toward Reconciliation. By combining modern and Traditional approaches, this project charts a path for new treatments for MRSA infections.

Ts'eke'e'ulhtsih Ts'eztidoh wheni 'alhgoh 'uztit'elh: We will all work together to wake up the midwife

Marion Erickson¹

¹University of Northern British Columbia

No Dakelh Midwives practice in Dakelh territory. Removal of Dakelh women as midwives from birth work is an outcome of Euro-western colonial biomedical domination. Colonization has led to less knowledge transmission about birthing and decreased safety in the predominantly rural residing Dakelh communities. Timely health research evidences Indigenous-led, trauma-informed Doula care is proactive in advancing rural birth culture and outcomes. The social impacts of colonization, birth evacuation policies, the opioid epidemic, and the COVID-19 pandemic highlights the needs for rural Indigenous women to have autonomy and investments in community-based perinatal care. This research is focused on revitalizing Dakelh midwifery through the implementation of a Dakelh Doula training curriculum to enhance perinatal health outcomes in a predominately rural Dakelh nation. This research seeks to identify strategies that can optimize the implementation process, address potential challenges, and maximize the long-term impact of the curriculum. This research seeks to make advancements particularly as it pertains to the restoration of Dakelh midwifery practices the enhancement of perinatal health outcomes in Dakelh communities. This research aligns with the United Nations Declaration of the Rights of Indigenous Peoples, supporting Dakelh-led certification and the right to improve health and vocational training. Through collaboration with Dakelh knowledge holders and integration into traditional governance structures, this research seeks to systematically enhance a community-led Doula training curriculum, bridging Dakelh and Euro-western knowledge systems in a more sustainable and community-centred way.

Bridging Indigenous and Western Ways Through C4-R4 to Enable Indigenous Environmental Stewardship

Michelle Hogue¹, Ira Provost²

¹University of Lethbridge, ²Piikani Traditional Knowledge Services & Piikani Consultation

Recently, environmental monitoring approaches call for greater inclusion of Indigenous Traditional Ecological Knowledge (TEK) alongside 'Western' or 'conventional' scientific knowledge. As such, ecological restoration and monitoring depend on effective coordination of science and traditional ecological knowledge that can contribute to adaptive management and policy decisions. The focus of this community-based research was to co-develop a co-management plan to engage Indigenous youth to connect back to culture through land-based stewardship. A research team of Indigenous and non-Indigenous university students were trained in a variety of domains such as: project functionality, environmental monitoring techniques, cultural sensitivity, geographical and landscape assessment, and community engagement. Elders were included to oversee cultural protocol and be a resource of traditional knowledge. The program was co-developed, housed, and operated through Piikani Traditional Knowledge Services (PTKS) center, an inclusive community space, so all in community had equitable access. The trained team developed and led three summer camps focused on: a) invasive species, b) water quality and, c) ecological perspectives, with the expressed goal of engaging community youth in Indigenous Land Stewardship (ILS). The ultimate goal is for Indigenous peoples and non-Indigenous allies to co-design, co-develop, co-create and co-share programming that will build Indigenous capacity in land and cultural stewardship. In this work-in-progress presentation, we share outcomes of our work-to date focused on the Piikani Nation which will serve as a framework to be extended to the other Blackfoot Confederacy Nations and perhaps more broadly to those interested in working in the Indigenous-Ally space.

Roland Kaye

oskâpêwis (Elders' Helper), FNUniv Regina Campus, Sakimay First Nation, SK

Dennis Omeasoo, *Knowledge Keeper, Piapot First Nation, SK/Maskwacis, AB*
And Elder Margaret Rockthunder (tentative) *Piapot First Nation, SK*

For over twenty years, Roland Kaye has been the oskâpêwis at First Nations University of Canada's Regina Campus and has assisted many Elders and Knowledge Keepers be a part of the university community, on campus and across Treaty 4 and Treaty 6 territories where FNUniv has its four campuses. This will be a Circle Talk/Presentation with other Elders present and will be an opportunity to learn more about how assisting Elders in a good way allows for a richer experience for countless students, teachers and community members that benefit from Indigenous Knowledge and Traditions. Best practices and Protocol may also be discussed.

Investigating Indigenous Engagement in the Agriculture Sector in Canada

Omid Mirzaei¹

¹University of Regina

This study provides an overview of Indigenous engagement in the agriculture sector in Canada. Linking data between the Census of Agriculture and the Census of Population in 2016, I used a unique dataset to provide a statistical snapshot of Indigenous involvement in the sector using 'census farm' data in ten provinces. I define an Indigenous 'census farm' operation as a 'census farm' where at least one operator self-identifies as Indigenous. Results show that the majority of Indigenous 'census farm' operations are located in Western Canada (72%), engaged in beef cattle, hay farming, and horse and other equine production (52%), arranged as a sole proprietorship (52%) and run by operators older than 35 years of age (89%). Findings also include information about Indigenous 'census farm' operators' sociodemographic profiles. Results are significant for policymakers and leaders in informing policies supporting Indigenous engagement with the sector.

PSPNET Advisory Group: An ethical space to support the mental health of Indigenous PSP

Jill Price¹, Heather Hadjistavropoulos¹

¹University of Regina

Public safety personnel (PSP) refer to individuals who ensure the safety and security of their citizens (CIPSRT, 2023). As a result of their job, PSP are exposed to high rates of potentially psychologically traumatic events that pose unique challenges for their mental health and barriers to treatment (Carleton et al., 2019). A clinical research unit called PSPNET was developed in 2019 at the University of Regina, with funding from the Government of Canada, to help address the mental health disparities of Canadian PSP. Specifically, PSPNET develops, implements, and evaluates free Internet-delivered cognitive behavioural therapy (ICBT); which centers on identifying and modifying thoughts and behaviours to improve psychological functioning (Cuijpers et al., 2016). To date, over 2,000 PSPNET clients have been screened. Initial mental health outcomes of PSPNET demonstrate statistically significantly decreased in PSP's symptoms of anxiety, depression, and posttraumatic stress (Hadjistavropoulos et al., 2021). In January 2024, the PSPNET Advisory Group was developed to provide an ethical space to review and inform PSPNET research, services, and outreach for Indigenous (First Nations, Métis, and Inuit) PSP in Canada. Membership consists of an Elder, Indigenous PSP, Indigenous and PSP researchers, as well as a student and community member. One of the topics members highlighted at these meetings is the lack of published data on Indigenous PSP mental health. As per the group's recommendation, data will be shared relevant to PSPNET clients who self-identified as Indigenous to help fill this void.



2024

