



Braiding Knowledges: The Canadian Mountain Network Experience

Authors: Kassi, Norma, Humphries, Murray M., Dubé, Monique, Dragon, Joe, Olivier, Nicole, et al.

Source: Mountain Research and Development, 42(4)

Published By: International Mountain Society

URL: <https://doi.org/10.1659/mrd.2022.00026>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Braiding Knowledges: The Canadian Mountain Network Experience



Norma Kassi¹, Murray M. Humphries^{1,2,*}, Monique Dubé¹, Joe Dragon¹, Nicole Olivier¹, Kirsten Bowser^{1,2}, and Matthew Berry¹

* Corresponding author: murray.humphries@mcgill.ca

¹ Canadian Mountain Network, CW-405 Biological Sciences Building, University of Alberta, Edmonton, AB, Canada T6G 2E9

² Centre for Indigenous Peoples' Nutrition and Environment, McGill University, Ste Anne de Bellevue, QC, Canada H9X 3V9

© 2022 Kassi et al. This open access article is licensed under a Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>). Please credit the authors and the full source.

The Canadian Mountain Network (CMN) is the country's first Network of Centres of Excellence (NCE) focused on the resilience and health of mountain systems, peoples, and regions, and the first to recognize Indigenous governments and organizations as NCE-eligible partner organizations. CMN's Indigenous-led and -co-led research, training, knowledge mobilization, and networking programs represent a first-in-a-generation learning opportunity focused on how to support the weaving of Indigenous and Western knowledge systems towards respectful and impactful mountain systems research.

Introduction

Weaving or braiding knowledges involves the constructive, respectful, and holistic exchange between Indigenous and Western knowledge systems. The essence of knowledge braiding is a recognition of and respect for the inherent validity of different ways of knowing. It involves the understanding that strength can be achieved not by trying to turn one way of knowing into another or assessing which is right and which is wrong, but by bringing them together in a space of equality. There they can work together toward something more and better. Indigenous scholar Robin Wall Kimmerer (2013) writes about Indigenous knowledge and Western science being intertwined like a braid of sweetgrass in reciprocity and care. In 2004, Willie Ermine et al (2004: 20) described ethical space as “a space between the Indigenous and Western spheres of culture and knowledge” that “inspires an abstract, nebulous space of possibility” and “the urgent necessity for a neutral zone of dialogue.” As interpreted by Crowshoe and Lertzman (2020: 10), these “ethical spaces ... unfold through processes of authentic intercultural dialogue and exchange, offering the possibility for new insights into human identity and purpose with emergent outcomes across cultures to address shared challenges of sustainability.” The principle of *Etuaptmumk*, or 2-eyed seeing, shared by Mi'kmaq Elder Dr Albert Marshall holds that scientific and Indigenous knowledges each have their own strengths, which are stronger when working together toward a common goal (Bartlett et al 2012; Reid et al 2021). This is referred to by Elder Albert as “the gift of multiple perspectives” (Bartlett et al 2012: 340).

As generous and inclusive as these invitations to honor multiple forms of knowledges are, they are offered and emphasized amid a colonial context in which science and research have actively contributed to the marginalization and disempowerment of Indigenous Peoples (Nadasdy 1999; Smith 1999; McGregor 2021). In the past, and still to this day, research too often fails to meaningfully include Indigenous Peoples' knowledge, address their priorities, or support and advance the wellbeing of their communities or their access to lands. In the words of Indigenous scholar Professor Linda Tuhiwai Smith (1999: 3):

At a common sense level research was talked about both in terms of its absolute worthlessness to us, the indigenous world, and its absolute usefulness to those who wielded it as an instrument. It told us things already known, suggested things that would not work, and made careers for people who already had jobs.

Or, according to Nadasdy (1999: 1):

since it is scientists and resource managers, rather than aboriginal hunters and trappers, who will be using this new “integrated” knowledge, the project of integration actually serves to concentrate power in administrative centers, rather than in the hands of aboriginal people.

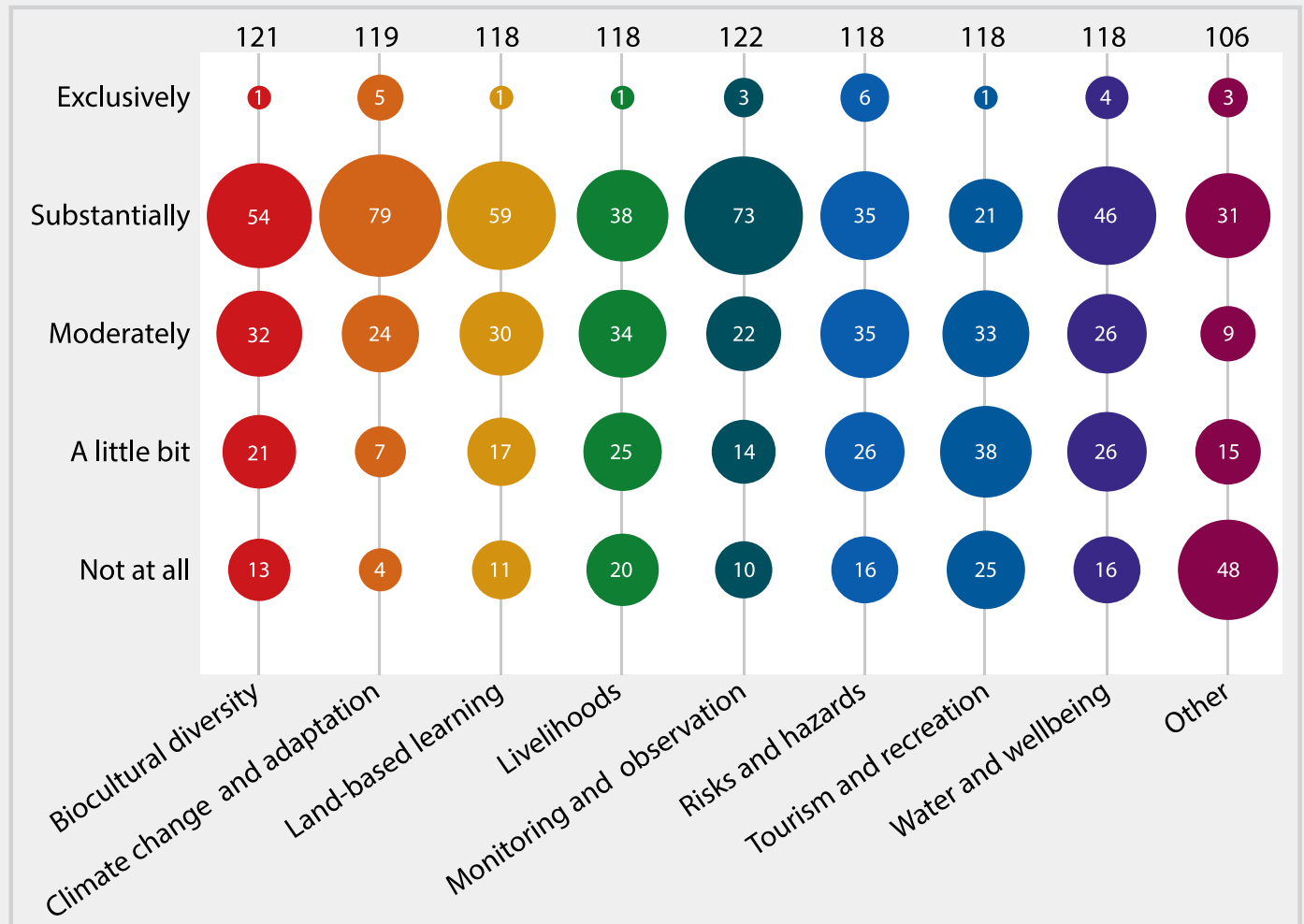
Thus, knowledge braiding must be more than knowledge exchange and sharing. Knowledge braiding has to recognize and seek to redress historical and systemic injustices, and must be supported by a commitment to working together over the long term toward equity, self-determination, reconciliation, and transformation.

Developing a Canadian mountain network

The Canadian Mountain Network (CMN) is Canada's first formal research organization dedicated to advancing understanding of mountain systems (Kassi et al 2020). CMN was established in 2019 as a national not-for-profit organization, when it was selected to receive support from the government of Canada's Networks of Centres of Excellence (NCE) program.

Canada's NCE program was initiated in 1989 to support large-scale, academically led research networks that harness

FIGURE 1 Prioritized knowledge areas communicated in 2020 to the CMN through Knowledge Hub Expressions of Interests. Respondents were asked, “Which of the following answers (y axis) best describes your interest in contributing to a hub focused on these 8 possible themes (x axis)?” Numbers above the bubbles are the total number of respondents and numbers inside of bubbles are the number of respondents indicating a given level of prioritization. This breadth of prioritized knowledge areas, combined with location-specific place-based knowledge priorities (results not shown), led the CMN to support broadly themed, place-based knowledge hubs.



the creativity and inventiveness of Canadian health, natural, and social scientists and engineers. In the original NCE application (Boutin and Kassi 2018: 5), the rationale for CMN was communicated as:

Canada is a country of mountains. They watch over a quarter of our land mass and are essential to the environmental, economic, spiritual, socio-cultural identity, and well-being of Canada's diverse peoples. However, mountain landscapes and communities, as well as places downstream, are facing unprecedented change pressured by: climate change; local, regional and globally driven shifts in industrial, economic or recreational activities; and the increased movement of people within and through mountains. Although Canada has considerable expertise in mountain research, it is not always coordinated or interdisciplinary. To improve research outcomes and better enable their effective and comprehensive application and use, it is imperative that Canada coordinate its mountain research agenda and programs.

Just as CMN was granted funding as a new NCE in 2019, the Canadian government announced that the entire NCE program would be terminated in 2024. At the same time, reviewers of CMN's proposed approach, including the NCE review panel, were clear that while the focus of the network on mountain systems was important, the network's

prioritization of Indigenous Peoples—their knowledge, inclusion, and leadership within the network—represented CMN's most important innovation and opportunity. With the end of the NCE program looming, CMN had only 5 years to make good on the opportunity offered.

Four critical challenges, 3 modes of research, and elevating Indigenous-led research

CMN focused on 4 critical challenges: (1) the decolonization of policy and decision-making in mountain regions; (2) the management of the impacts of change affecting mountain ecosystems and ways of life; (3) the certainty that Indigenous ways of knowing and doing inform land use decision-making, policy, and practice; and (4) the support for mountain communities as they diversify their economies.

These 4 challenges were addressed through 3 modes of research. Mode 1 projects were academically led. Mode 2 projects adopted partnered research approaches that engaged government, industry, and communities in the research. Mode 3 projects were Indigenous led.

CMN has been guided by our Indigenous co-research director Norma Kassi, CMN's Indigenous Circle of Advisors,

FIGURE 2 Before launching the 7 Knowledge Hubs, the CMN developed this ethical space representation in collaboration with Indigenous knowledge leader Danika Littlechild, biocultural ethics scholar Kelly Bannister, and illustrator Alexandra Langwieder. The presentation of Western knowledges on the left and Indigenous knowledges on the right reflects CMN's prioritization of both knowledge systems and our recognition of their distinctions, diversity, commonalities, inherent validity, and potential complementarity. Necessary conditions for ethical and responsible research are presented along the forest floor, on the left if more directly related to Western knowledge, on the right if more related to Indigenous knowledge, and in the middle if related to where the knowledge systems meet. The water connecting the 3 groupings reflects their potential to complement and coinform. Desired states attainable through successful collaboration and collective action are presented as a cloud ceiling, with the left and right sides respecting the possibility of distinct goals and cloud connections encouraging the opportunity of shared aspirations. Ethical space is represented by the large circle at the center of the image, described by Willie Ermine et al (2004: 10) as "a space between the Indigenous and Western spheres of culture and knowledge." Place-, culture-, and knowledge-specific principles for working well together support awareness and capacities for cocreating ethical space. Ethical space, understood as an invitation for action rather than a noun, inspires our relationships with mountain places and one another, within the work of Knowledge Hubs.



and many other Indigenous knowledge leaders. They inform us that (1) Indigenous-led research is research that is based on Indigenous ways of knowing and doing; (2) Indigenous knowledge is place-based knowledge that emerges from many thousands of years of lived experience and relationship; and (3) CMN needs to work collaboratively with diverse researchers, trainees, and knowledge users across Canada to design and deliver new approaches to research that respect and empower Indigenous knowledge.

Following the guidance of our Indigenous Circle of Advisors, CMN research projects and initiatives must meet several criteria to be considered Indigenous led, including (1) being led by an Indigenous person, (2) responding to identified Indigenous community needs and research priorities, (3) receiving formal and detailed support from Indigenous community leadership, and (4) prioritizing community engagement and capacity building, including Indigenous trainee development.

An early and critical accomplishment of CMN in support of Indigenous-led research was the establishment of Indigenous governments and organizations (IGOs) as NCE-eligible partner organizations. These were able to receive funds directly from and enter into their own network agreements with CMN. This represented a first for the NCE program, which initially envisioned its Centres of Excellence as being limited to academic institutions. For the first time, IGOs were recognized in Canada as centers of their own knowledge excellence.

From research projects to place-based knowledge hubs

A second CMN call for proposals, launched in 2020, dissolved these 3 modes of research and the network's initial focus on project-specific funding into a collective emphasis on Indigenous-led and -co-led initiatives. CMN Knowledge Hubs were envisioned by our Research Management

FIGURE 3 Seven Knowledge Hubs currently supported by the CMN.

The **Porcupine Caribou Ecological Change and Livelihoods Hub** documents changes in wildlife populations and landscapes, adaptation strategies, and their impacts on traditional food security of local communities.



The **Nio Nę P'ęnę - Trails of the Mountain Caribou Hub** strengthens existing community-led initiatives enabling Indigenous-led governance and stewardship of wildlife, land, and livelihoods in the Mackenzie Mountains.



**CANADIAN
MOUNTAIN
NETWORK**

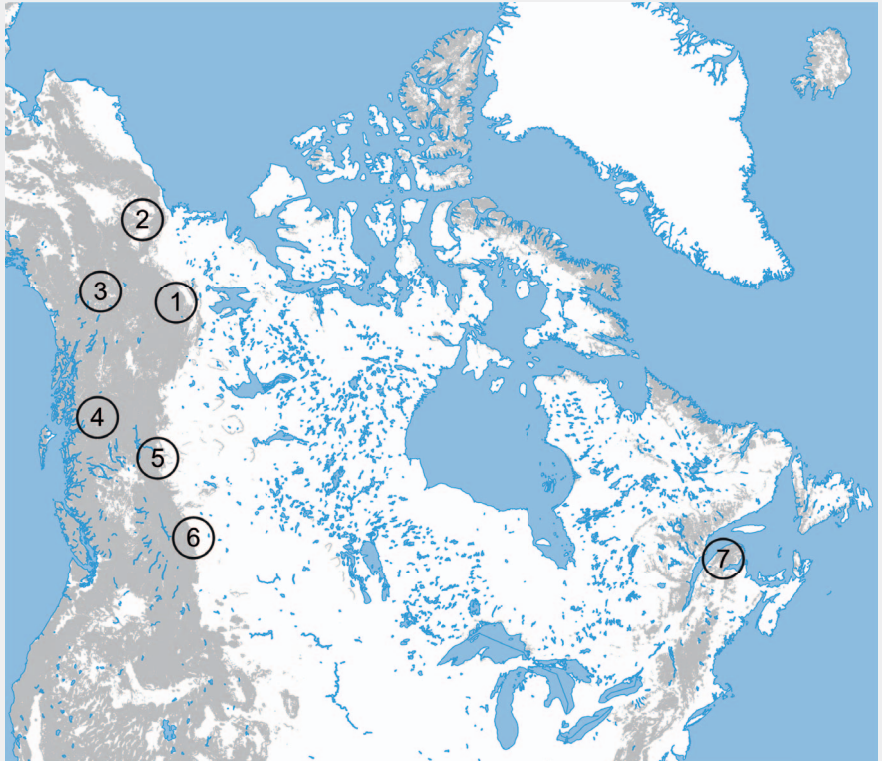
7 Knowledge Hubs



The **Yukon Salmon Culture Hub** identifies pathways to more meaningfully include Indigenous knowledge in salmon governance to contribute to decolonized and reconciliatory management of species, lands, and water.



The **Pacific Indigenous Protected and Conserved Areas (IPCA) Innovation Centre** brings together Western science and Indigenous knowledge systems to restore and conserve biocultural diversity.



The **Rekindling Indigenous-led Land Stewardship and Cultural Connections in the Rockies Hub** brings knowledge systems together to recover mountain caribou, restore landscapes, and reimagine a new future for caribou and people.



Niitsitapi-led Network for Blackfoot Guardian-ship of Rocky Mountain East Slopes Hub is developing a Blackfoot Biocultural framework focusing on water, land, air, and fire within Blackfoot Territory.



The **Chic-Choc Mountains Aquatic Ecosystem Hub** generates collaborative research, management and training efforts between the Mi'gmaq, university researchers, and management organizations of aquatic ecosystems.

Committee and Indigenous Circle of Advisors as innovative initiatives that would support knowledge braiding and the integration of research, training, and knowledge mobilization. “Knowledge” was communicated as inclusive of scientific research and Indigenous ways of knowing and a

“hub” as a center of activity that brings together a diverse group of participants oriented around shared priorities and objectives. CMN Knowledge Hubs actively engage Indigenous communities, youth, Elders, and knowledge holders, as well as academic and government scientists, to

foster the codevelopment of research agendas, leading to learning and teaching among all knowledge holders.

CMN's research management committee, working in collaboration with the network's co-research directors, staff, and Indigenous Circle of Advisors, designed a 4-stage knowledge hub development and selection process. This was intended to be responsive to the knowledge needs of those we sought to support (Figure 1) and to honor different ways of knowing, including ethical principles in knowledge sharing and collaboration (Figure 2).

The 7 CMN Knowledge Hubs, selected and initiated in 2021 and funded through to 2024, are situated in diverse mountain geographies, and address diverse challenges related to the wellbeing of mountain places and peoples. However, they have a shared emphasis on valuing and elevating Indigenous knowledge and finding new ways for diverse knowledges to work well together (Figure 3).

From a Canadian mountain network to Braiding Knowledges Canada

CMN hopes to grow into a larger organization—Braiding Knowledges Canada (BKC)—beginning in 2024. This growth includes expanding beyond Canadian mountain regions, honoring our original focus on mountain systems, place-based research, and Indigenous-led research. Further, it follows the waters from the mountains to the continental interior and the coasts to broaden the sharing of approaches and benefits. The desired outcome of BKC is (Dubé et al 2022: 7):

to significantly enhance the influence of self-determined, place-based, and co-produced knowledge within Canada's science culture such that, over time and on a path towards reconciliation, Indigenous and local knowledge approaches contribute more to public policy and decision-making and become more fully and equitably reciprocal with federal science priorities.

Some lessons learned along the way

Knowledge weaving is more easily envisioned than accomplished. Context, history, and questions of power and positionality loom large in place-based and Indigenous-led research. In this context, research legacies and institutional conventions are often a barrier rather than an enabler of ethical and effective knowledge braiding. We have worked hard as a network to support a different and better way forward for mountain places, for Indigenous Peoples, and for science and policy. Across CMN-supported initiatives focused on, for example, Stoney Nakoda cultural monitoring of bison reintroduction in Banff National Park (Stoney Nakoda Consultation Team 2022), recovery of endangered caribou populations (Lamb et al 2022), Indigenous and Protected Area innovation centers (Shore and Enns 2021), or assessing the state of mountains across Canada (Kassi et al 2020), connections between ecological, sociological, spiritual, cultural, and economic wellbeing are at the core of what we do. CMN has demonstrated innovation, capacity, commitment, and experience in bringing different ways of knowing together in a good way by supporting and promoting relationships between Indigenous knowledge holders, Indigenous communities, academic researchers,

not-for-profit and nongovernmental organizations, and local, regional, and national decision makers. We have tried our best to create a space of possibility between Western and Indigenous knowledges where the 2 paradigms can respectfully coexist and collectively inform action that is evidence based and ethically grounded. In our doing, trying, and mistakes made along the way, we have found that many things, whether small or large, are important. Words and language matter. Respecting the time and knowledge of Elders is important. Focusing on youth is critical. Kindness and respect are essential. Institutional conventions must be persistently and patiently reimagined. Nothing is easy in place-based and Indigenous-led or -co-led research, but everything is important.

ABOUT THE AUTHORS

Norma Kassi and Murray M. Humphries are the co-research directors of the Canadian Mountain Network. Monique Dubé is its executive director. Joe Dragon chairs the board. Nicole Olivier is the programs manager, Kirsten Bowser is the scientific engagement coordinator, and Matthew Berry is a strategic advisor.

WEBSITES

Canadian Mountain Network: <https://canadianmountainnetwork.ca/>
Networks of Centres of Excellence program: <https://www.nce-rce.gc.ca/>
Programs-Programmes/NCE-RCE/Index_eng.asp

ACKNOWLEDGMENTS

The CMN approaches and outcomes presented here would not have been possible without the wisdom, guidance, understanding, and support of CMN's Indigenous Circle of Advisors, Research Management Committee, and Board of Directors, as well as our funded researchers, knowledge holders, and network members. We also acknowledge and express our appreciation for the vision and innovation offered by many CMN initiators and early champions who created a mountain path that many have been able to follow and be elevated by.

REFERENCES

- Bartlett C, Marshall M, Marshall A.** 2012. Two-eyed seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences* 2:331–340. <https://doi.org/10.1007/s13412-012-0086-8>.
- Boutin S, Kassi N.** 2018. Canadian Mountain Network's submission to Government of Canada's Networks of Centres of Excellence competition. Unpublished full application submitted in July 2018. Edmonton, Canada: University of Alberta. Available from corresponding author of this article.
- Crowshoe R, Lertzman D.** 2020. Invitation to ethical space: A dialogue on sustainability and reconciliation. In: Colbourne R, Anderson RB, editors. *Indigenous Wellbeing and Enterprise*. London, United Kingdom: Routledge, pp 10–44.
- Dubé M, Dragon J, Kassi N, Humphries MM.** 2022. Canadian Mountain Network's Braiding Knowledges Canada submission to Government of Canada's Strategic Science Fund Competition. Unpublished full application submitted on 21 September 2022. Edmonton, Canada: Canadian Mountain Network. Available from corresponding author of this article.
- Ermine W, Sinclair R, Jeffery B.** 2004. *The Ethics of Research Involving Indigenous Peoples: Report of the Indigenous Peoples' Health Research Centre to the Interagency Advisory Panel on Research Ethics*. Regina, Canada: Indigenous Peoples' Health Research Centre. <https://doi.org/10.13140/RG.2.2.23069.31200>.
- Kassi N, Humphries MM, McDowell G.** 2020. The Canadian Mountain Network. *Mountain Research and Development* 40(4):P8–P10. <https://doi.org/10.1659/MRD-JOURNAL-D-21-00004.1>.
- Kimmerer RW.** 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Minneapolis, MN: Milkweed Editions.
- Lamb CT, Willson R, Richter C, Owens-Beek N, Napoleon J, Muir B, McNay RS, Lavis E, Hebblewhite M, Giguere L, et al.** 2022. Indigenous-led conservation: Pathways to recovery for the nearly extirpated Kline-Za mountain caribou. *Ecological Applications* 32(5):e2581. <https://doi.org/10.1002/eap.2581>.
- McGregor D.** 2021. Indigenous knowledge systems in environmental governance in Canada. *KULA: Knowledge Creation, Dissemination, and Preservation Studies* 5(1):1–10. <https://doi.org/10.18357/kula.148>.
- Nadasdy P.** 1999. The politics of tek: Power and the 'integration' of knowledge. *Arctic Anthropology* 36:1–18. <https://www.jstor.org/stable/40316502>.

Reid AJ, Eckert LE, Lane JF, Young N, Hinch SG, Darimont CT, Cooke SJ, Ban NC, Marshall A. 2021. “Two-eyed seeing”: An Indigenous framework to transform fisheries research and management. *Fish and Fisheries* 22:243–261. <https://doi.org/10.1111/faf.12516>.

Shore M, Enns E. 2021. Pacific IPCA Innovation Centre: Anchoring a new movement of Indigenous-led conservation. *Conservation Through Reconciliation Partnership*. 30 August 2021. <https://conservation-reconciliation.ca/blog/pacific-ipca-innovation-centre-anchoring-a-new-movement-of-indigenous-led-conservation?rq=Enns>; accessed on 11 October 2022.

Smith LT. 1999. *Decolonizing Methodologies: Research and Indigenous Peoples*. London, United Kingdom and Dunedin, New Zealand: Zed Books and University of Otago Press.

Stoney Nakoda Consultation Team. 2022. *Enhancing the Reintroduction of Plains Bison in Banff National Park Through Cultural Monitoring and Traditional Knowledge: Final Report and Recommendations*. Morley, Canada: Stoney Nakoda Tribal Administration. https://a.storyblok.com/f/112697/x/d0b9253d5a/stoney_bison_report_final_rev2.pdf; accessed on 11 October 2022.