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## Commentary

## Seasons of research with/by/as the Keweenaw Bay Indian Community

Emily L. Shaw<sup>a,\*</sup>, Valoree S. Gagnon<sup>a</sup>, Evelyn Ravindran<sup>b</sup><sup>a</sup> Michigan Technological University, 1400 Townsend Ave, Houghton, MI 49931, United States<sup>b</sup> Keweenaw Bay Indian Community Natural Resources Department, 14359 Pequaming Rd, L'Anse, MI 49946, United States

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## ABSTRACT

In response to generations of inequitable research to/for Indigenous communities, many have and are developing research practices that center Indigenous priorities. In this paper, we share the Seasons of Research framework developed by the Keweenaw Bay Indian Community and University collaborators. First, we outline the scholarship that provides the foundations for research and being researchers in Keweenaw Bay. This section includes a comprehensive table that summarizes resources for building, strengthening, and sustaining equitable research partnerships with/by/as Indigenous communities. Next, we share the guidance for research partnerships we created together that uses the Medicine Wheel to illustrate an interconnected system of partnership teachings. The guidance aims for balance between and among four seasons of research: relationship building, planning and prioritization, knowledge exchange, and synthesis and application. Research partnerships with/by/as the Community demonstrate respect for each other's differences, honor reciprocity in actions, exemplify responsibility for differing commitments, and express reverence for shared lands, waters, and living beings. Personal reflections by lead author Emily Shaw are shared to demonstrate the process and practices associated with seasons of research, bridging Indigenous wisdom, social and natural sciences, and environmental engineering. We conclude with a few words on the transformation of the research landscape with Indigenous peoples at home and abroad.

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## Introduction

## Positionality

As authors of this manuscript, we are researchers in different institutions and hold diverse roles, an environmental engineering graduate student, an assistant professor in human dimensions, and a natural resources director in upper Michigan. Our individual and collective energies are within food sovereignty research and action yet our approaches to this work are quite distinct. Together, we serve as mentors to each other, sharing our unique experiences and expertise, and contributing to each other's professional and personal growth in partnership research.

I am Emily Shaw, an environmental engineering graduate student, a white settler American scientist, with German and British ancestry, living and working in Northern Michigan. My path as an environmental scientist is grounded in education, teaching Great Lakes ecology at Inland Seas Education Association. My

involvement with this work reflects my path to understanding the centrality of relationships and the necessity for stewardship to grow from responsibilities rather than rights to the environment. It is these responsibilities that have shifted my understandings of fish relations, connecting them to dynamic food systems and their disruption by chemical contamination; I recognize anthropogenic contamination as an issue of food sovereignty rather than solely a remediation issue.

I am Valoree "Val" Gagnon, an early career human dimensions assistant professor (she, her, ki, kin), and a naturalized U.S. citizen and Korean adoptee, who lives and works within the homelands of the Ojibwa people. My interdisciplinary expertise is in environmental policy, Indigenous food sovereignty and community-engaged research. I focus on the socio-cultural and -ecological impacts of legacy toxic compounds and the policies intended to address them, particularly on fishing communities. My research, teaching, and service center on elevating Indigenous peoples and knowledge, facilitating equitable research practice and design, and guiding partnerships that prioritize the protection and restoration of land and life in the Great Lakes region.

\* Corresponding author.

E-mail address: [emilys@mtu.edu](mailto:emilys@mtu.edu) (E.L. Shaw).

I am Evelyn Ravindran, a natural resource director of a Tribal Nation in Michigan, and an enrolled member of the Keweenaw Bay Indian Community (KBIC), who lives and works along the shores of Lake Superior. In working for the KBIC for more than three decades, I serve in many capacities for the protection of treaty resources and revitalization of food sovereignty. My main priorities are to share KBIC stewardship and governance practices for Lake Superior and to work in partnership with others for the restoration and protection of relationships between water, air, fisheries, and forests, and many other plant and wildlife communities.

Through time, and our shared work, our experiences have remained a way to relate to each other. Our identities are braided together, maintaining their individual integrity in much the same way that we bridge Indigenous and Western sciences. Throughout this manuscript we use our names and alternate between pronouns to reflect Anishinaabe Ojibwa and settler experiences (Tuck and Yang, 2012). As we write, we use our individual as well as collective pronouns (e.g., our community) to describe and illustrate the research process and to denote our ongoing partnership. For two of us, this is not a declaration or claim of Ojibwa citizenship. We deliberately use both Indigenous peoples and Indigenous Nations. Indigenous peoples refers to a group of people who are Indigenous, including Nations, but may or may not be legally or politically recognized as Indigenous Nations. Indigenous Nations refers to groups of Indigenous peoples who are also legally or politically recognized by/as Nations. Both terms are necessary in/for different contexts; both are consequential of settler colonial practices and processes. Finally, we have chosen to use the capitalization convention (i.e., Nation and People) when referring to specific Indigenous peoples or nations. In some instances, we generally refer to Indigenous Nations (which is simultaneously generic and specific) to acknowledge that Indigenous Nations have specific place-based knowledge and history with their lands. This same convention applies to our other relatives, too. For example, we might refer to fish nations or the Walleye Nation.

### Background and Purpose

In this section, we begin with background information to establish the socio-political history and identity of the KBIC. Then, we briefly describe the story on the motivation and purpose for creating Seasons of Research together, including the importance of university-Indigenous community partnerships in research. The section concludes with an overview of the remainder of the paper centering Seasons of Research.

#### *The Keweenaw Bay Indian Community Lake Superior Band of Chippewa Indians*

The KBIC Lake Superior Band of Chippewa Indians is the successor in interest of the L'Anse and Ontonagon Bands of Lake Superior Chippewa Indians, and signatories to two treaties of peace with the United States (Treaty with the Chippewa, 1842, 1854). KBIC is the oldest federally recognized tribe in the State of Michigan (1936), and they retain the largest land base. Comprising large areas of forested land, and diverse aquatic and terrestrial plants and wildlife, the region has vast lake and river systems with more than one hundred sixty tributaries and seventy miles of southern Lake Superior shoreline (Sweat and Rheume, 1998). The KBIC are part of the Anishinaabe, meaning "original person" (Benton-Benai, 1988), one of the largest groups of Indigenous peoples on Turtle Island (present-day Americas) with nearly 150 different bands living throughout their homeland in present-day United States and Canada (Inawe Mazina'igan Map Project, 2021). The Anishinaabe are known as the Three Fires Council, composed of three tribes known by various names: 1) Chippewa, Ojibway, Ojibwe, or Ojibwa, 2) Ottawa or Odawa and 3) Potawatomi or Bodewadomi

(Gagnon et al., 2020). All are related to the Anishinaabe, the larger group of Indigenous people who migrated from the Atlantic shores of North America and began settling in the Great Lakes region before 1000 CE.

The disconnections, and many times direct separation, between Indigenous nations, Indigenous peoples, and Indigenous landscapes often share a common history: exploitation, dispossession, and extraction of Indigenous lands and livelihoods because of processes and practices inherent in/to colonialism and settler colonialism, capitalism, and industrialization (Simpson, 2017, Whyte, 2018). These relationships continue to be strongly influenced by settler colonial frameworks, particularly in law and policy (Gilio-Whitaker, 2019) as well as the sciences (Liboiron, 2021) that shape and reshape Indigenous lands and experiences (Hoover, 2017). These themes are also central to the disconnected relations and lands and the stories of being KBIC Ojibwa. (For more on the socio-political history and present of the KBIC, see Gagnon, 2016.) However, as many scholars have shown, research relationships are also being shaped and reshaped by Indigenous peoples, their priorities, and the Indigenous sciences. (For more on KBIC research partnerships and priorities, see Gagnon et al., 2017; Gagnon et al., 2018).

### Seasons of Research

Seasons of Research was created for/by researchers engaged in partnership within the Keweenaw Bay Indian Community and Michigan Technological University. The process for creating guidance began in 2018 with the goal to develop an overarching guide to inform expectations for external partnerships with KBIC. This was in response to an increase in external inquiries to KBIC to do research, participate in programs, and/or collaborate in projects. In June 2018, the first guidance draft was shared with the KBIC Tribal Council by staff and faculty from KBIC Natural Resources Department, KBIC Health System, Keweenaw Bay Ojibwa Community College, and Michigan Tech. As we shared the long list of potential partnership considerations, the Tribal Council requested that we 1) conduct a comprehensive review of existing research policies and protocols by other Tribal nations, and 2) share our recommendations for/with KBIC.

To honor the Council's request, we began gathering information on the existing plans and strategies that guide university and Indigenous community's research partnerships. Although we had good intentions to complete this work in a timely manner, the research was frequently sidelined for other priorities. Fortunately, about midway through, a graduate student (Emily Shaw) joined the effort, made the work the foundation of her dissertation, and assumed the lead for completing the exploratory research, as well as its review and synthesis. Seasons of Research is the result of this work, informed by an extensive review of the scholarship and policies (regional, national, and international) pertaining to research guidance, tribal codes, the Indigenous Science Declaration, and the United Nations Declaration on the Rights of Indigenous Peoples. Early on, we decided to refrain from providing a checklist of institutional requirements or anything that resembled formalized institutional policy. Instead, our intentions were to provide holistic guidance and specify support that enriches KBIC efforts to protect and restore land and life.

Ojibwa communities, like the KBIC, have an important role in protecting and restoring Basin ecosystems, particularly because Ojibwa knowledge and practices have been sustained in the region for millennia. In his testimony to the United States Congress in 2017, former KBIC President Schwartz shared that in the beginning, the Ojibwa "accepted a responsibility to protect and sustain the natural resources that provide for the lifeways of our people" (Schwartz 2017, pg. 3). The challenges that Indigenous peoples in North America (Tribal, First, and Métis Nations) are facing are

many, including changes in seasonal weather patterns, increase in extreme weather events, habitat degradation, pollution, and toxic contamination, and loss of native plant, fish, and animal relatives (e.g., Wildlife Stewardship Plan, [Nankervis and Hindelang, 2014](#)). These challenges can be exacerbated by Indigenous peoples' limited capacity (e.g., funds and staff) and the ability to attain and retain needed expertise, restricted socio-political recognition and land base, and the lack of knowledge by others that make decisions that affect their everyday lives. Indigenous peoples must address ongoing threats while simultaneously revitalizing obligations to land and life and recovering and sharing the knowledge needed to do so. University-Indigenous community partnerships, when these relations are genuine and equitable, can begin to ameliorate some of these challenges. Indeed, many Western scientists within the region, and beyond, are requesting and taking direction from local knowledge holders and their observations (e.g., walleye fishing in the Portage Waterway and copper and mercury contamination; [Kerfoot et al., 2020](#); [Kozich et al., 2020](#); [Perlinger et al., 2018](#)).

Seasons of Research “with/by/as” the KBIC draws directly from the scholarship of Māori scholar Nan Wehipeihana who illustrates a model and strategy for Indigenous-led evaluation (2019). In *Increasing Cultural Competence in Support of Indigenous-Led Evaluation*, Wehipeihana describes evaluator positionality and community relations in terms of “to/for/with/by/as,” (2019, pg. 379). Situated into four quadrants (x-axis as decision-making, y-axis as community impacts), the preposition demonstrates the nature of the relationship *between* the ‘evaluator’ and the community; *to/for/with/by/as* determines the partnership result as variations of harm (imposed relations) escalating to positive outcomes (autonomous relations) for the partners and the region as a whole. We discovered Wehipeihana’s model particularly useful for also understanding positionality and relations within research partnerships. Research *to/for* no longer suffices; research *with/by/as* is the foundation to engage in equitable partnerships.

In short, the purpose for doing research and/or being researchers can be different between/for researchers and Indigenous communities (Absolon, 2011; [Holifield et al., 2009](#); [Nadasdy, 2004](#); [Whyte, 2017](#)). It is also true that Indigenous ontologies, often revealed in Indigenous languages, can be incommensurable ([Schelly et al., 2021](#)). For example, Anishinaabemowin (the Anishinaabe language) reflects the philosophy of learning that knowledge comes to us from people, but it is also shared with us by characteristics and beings within the land and interactions between life and livelihoods ([Noodin, 2018](#); [Noodin, 2019](#)). In Seasons of Research, partnerships are crucial to our relationships with the lands and waters, and especially for **honoring responsibilities** to all living beings who call this place home and have done so since time immemorial. Partnerships are known as **reciprocal teaching and learning through shared experiences** with one another, an accountability that fosters **progress towards shared goals**. As with all guiding principles, knowledge is living, open to adaptations, revisions, and other modifications that may arise in response to changes in the landscape, the community, as well as research partners.

### Foundations for research and being researchers with/by/as the Keweenaw Bay Indian Community

This section is a review of the scholarship that provides foundations for research and being researchers with/by/as the KBIC. First, we summarize work that asserts the practice of Indigenous self-determination includes recognizing autonomy as a key component of research with/by/as Indigenous peoples. Next, we draw on a body of scholarship in Indigenous knowledge systems to emphasize the relational nature of knowing as interconnected with cycles

of time, place, and being for different Indigenous peoples. The final section explores equity in research partnerships between Indigenous and Western sciences. As a practice often articulated as bridging knowledge systems, we highlight current scholarship that draws attention to the necessary acknowledgement for the plurality and integrity of different ways of knowing.

### *Practicing self-determination includes research autonomy with/by/as Indigenous peoples*

Research autonomy with/by/as Indigenous peoples is the ability to determine one’s own research priorities and approaches, and the capacity to design and practice research in appropriate and meaningful ways. Importantly, Indigenous research autonomy is centered in Indigenous knowledge systems and philosophies, and simultaneously, respects the autonomy of others. Throughout Turtle Island (present-day North America), long before European contact and influence, Indigenous knowledge and philosophy informed systems of governance ([Whyte, 2017](#)) and diplomacy ([Simpson, 2017](#)), resulting in thriving, interconnected Indigenous Nations that engaged in regenerative trade, farming, arts, recreation, and ceremony across the landscape ([Dunbar-Ortiz, 2014](#), [Witgen, 2012](#)). Indigenous knowledge systems have and continue to empower Indigenous Nations since time immemorial. Therefore, current and future revitalization of Indigenous self-determination practices asserts autonomy in research.

Indigenous peoples have been the subject of, and subjected to, vast research injustice. Further, inequitable research practices and prejudiced systemic approaches remain in place at the time of this writing. However, many scholars are actively working to redefine research relations with Indigenous peoples. Much of this work originated with Māori scholar Linda Tuhiwai Smith (Ngāti Awa and Ngāti Porou) in 1999, who uprooted and transitioned the conversation at the intersection of research and Indigenous peoples with the publication of *Decolonizing Methodologies* thereby shifting research to center on reclaiming Indigenous histories and futures.

Legacies of research to/for Indigenous communities have almost wholly been extractive and harmful. Often research has been conducted to document what soon would become ‘extinct’ ([Geniusz 2009](#)), to co-opt and/or appropriate knowledge ([Harding 2015](#)), or to illustrate Indigenous peoples’ deficiencies, what Palawa scholar Maggie Walter describes as *5D data - difference, disparity, disadvantage, dysfunction, and deprivation* ([Walter 2016](#)). Walter and other scholars assert the need for Indigenous data sovereignty practices, the “right of Native nations to govern the collection, ownership, and application of its own data” ([Rainie et al., 2017](#), pg. 1; [Carroll et al., 2020](#); [Wehipeihana, 2019](#)). The exclusion of Indigenous Nations and limitations on Indigenous self-determination, particularly by those who make decisions that affect the everyday lives and livelihoods of Indigenous peoples and environments, continue to perpetuate mistrust in the academic sciences, their researchers, and in particular, the systems by which they work ([Liboiron, 2021](#)).

Many Indigenous Nations are engaging in work to determine community-centered expectations and priorities for research partnerships that also reflect community values. Collaborations between Tribal Nations and outside researchers are distinct and thus not replicable. We cannot develop universal frameworks to guide such partnerships because knowledge and relationships are situated in unique places and people groups. In 2012, Anna Harding and partner researchers published a material and data-sharing agreement between the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Oregon State University (OSU) ([Harding et al., 2012](#)). To our knowledge, it was the first such agreement between a Tribal Nation and an academic institution.

Inspired by [Harding et al. \(2012\)](#), and motivated by our desire for transparency and sharing knowledge across Turtle Island and abroad, we have added a few resources prior to and several more since that publication (See [Table 1](#)). These collections, [Harding et al. \(2012\)](#) and [Table 1](#), informed the process for creating Research Guidance with/by/as the Keweenaw Bay Indian Community.

*Indigenous knowledge systems are relational, interconnected with cycles of time, place, and being*

It has been well established that Indigenous knowledge systems are rooted in and exist as dynamic land-based relationships. Like the land, knowledge is interconnected to all beings, climate and seasons, and the practices of the people who inhabit them and have done so since time immemorial. Specifically, knowledge is connected across a specific land base and a peoples' history to it ([Basso, 1996; Coulthard and Simpson, 2016; Geniusz, 2009](#)). Scholars have articulated Indigenous knowledge relationships in diverse ways (i.e., [Basso, 1996; Berkes, 1999; Cote, 2010; Kawagley, 2006](#)). In *Sacred Ecology* (1999, pg. 17), Fikret Berkes describes traditional ecological knowledge "as a knowledge-practice-belief complex", and the theory of grounded normativity asserts that knowledge is generated through people- and place-based practices ([Coulthard, 2014](#)). Knowledge is a state of being, enacted through belief and value-informed practices such as honorable harvesting, food and medicine practices, sharing stories, and engaging in ceremonies; these practices are pragmatic for maintaining good relations in everyday life ([Kimmerer, 2021](#)). In *Look to the Mountain: An Ecology of Indigenous Knowledge*, Tewa scholar Gregory Cajete (Santa Clara Pueblo) explains that "... knowledge gained from first-hand experience in the world is transmitted or explored through ritual, ceremony, art, and appropriate technology. Knowledge gained through these vehicles is then used in everyday living. Education, in this context, becomes education for life's sake" ([Cajete, 1994](#), pg. 25). In this way, education for *life's sake* does not prioritize the discovery of knowledge solely as the material or cognitive collection of information, but instead, embodies knowledge as a set of ethical and applied practices for sustaining life. Knowledge is lived and education is experienced, and as such, new knowledge is being continuously generated and applied ([Berkes, 1999](#)). Knowledge is flexible and adaptive to place and the people's relationships to all that exists in place, and because it is lived, it becomes shared across generations, creating a community's memory that is passed through generations.

Practicing Anishinaabe knowledge calls for a broad accounting of and respect for a constellation of relationships in which all things and of all time are interrelated and interdependent ([Johnston, 1976; Kimmerer, 2003; Whyte, 2017](#)). Anishinaabe knowledge is alive and present within the lands and all other beings (Absolon, 2011), including the seasons, the years, the days, and many recurring events ([Johnston, 2003](#)). However, as the youngest and most pitiful beings, the Earth's land, forests, rivers, and all other beings are humans' teachers ([Bell, 2013; Cordova, 2007](#)). Human pitifulness is borne from our dependence on all others: trees offer themselves so that we can build homes; and wind helps us to pollinate our foods. An illustrative example comes from Anishinaabe Ojibway scholars Martin [Reinhardt and Traci Maday](#) in *Interdisciplinary Manual for American Indian Inclusion* (2005, pg. 7): "[F]rom an Anishinaabe Ojibway perspective on education, Mother Earth is the original and primary teacher and classroom." They explain that the English word "education" is most closely related to the Ojibwa term *kinomaage* which literally translates to "the Earth, it shows us the way." Anishinaabe and Haudenosaunee scholar Vanessa [Watts \(2013\)](#) emphasizes the intentionality of all beings, not simply human beings, and that

the intentions of each being facilitates intimate relationships rooted in specific lands and waters and winds. Humans, through interactions with the land, careful observation and deep-listening, can learn from plants and animals as they share their teachings, their *gifts* ([Kimmerer, 2016, 2020](#)), with humans and other beings. In *As We Have Always Done*, Anishinaabe scholar Leanne [Simpson \(2017\)](#) describes these relations as *Nishinaabeg internationalism*, emphasizing the diplomacy to be practiced in relations with nations of many kinds, including plant and tree nations, fish nations, and other wildlife nations as well. Potawatomi scholar Kyle Powys Whyte in "What Do Indigenous Knowledges Do for Indigenous Peoples?" explains that Indigenous knowledge systems comprise the governance and identity of Indigenous peoples which contributes to the continuance of Indigenous Nations and the resurgence of their members ([Whyte, 2017](#)). In short, the beliefs and values associated with Indigenous knowledge systems cannot be separated from the people who practice them or the lands they are a part of.

In many Indigenous communities, the shared responsibilities of practicing knowledge and restoring relationships are being actively reclaimed ([Geniusz, 2009; Kimmerer, 2016; LaDuke, 2005; Todd, 2017](#)). In Anishinaabeg communities, the people's long-time, reciprocal obligation with *Gichi Manidoo* (the Creator) and all orders of creation is being articulated as the people's First Treaty. Also known as Sacred Law, the Great Laws of Nature, and the Original Instructions, the First Treaty obligates all created from rock, water, fire, and wind - the physical world of sun, stars, moon and earth, plant beings, animal beings, and human beings - to care for one another and support one another's autonomy ([Johnston, 1976](#)). Anishinaabe scholar Nicholas [Reo \(2019\)](#) terms these kincentric obligations as *relational accountability* - acknowledging one's more-than-human network of and obligations to relations both within and outside of research partnerships. The guiding principles for sustaining good relationships and being a good relative are, importantly, included in the landmark 2017 Indigenous Science Declaration, which at the time of this writing, has almost 2,000 signatories by Indigenous scientists and allies ([Kimmerer et al., 2017](#)). Originally presented at the March for Science, this letter endorsed collective action (e.g., organized marches and speakers across the U.S.) for science and simultaneously called for recognition of other ways of knowing. These examples, and many others, elucidate that relational and interconnected Indigenous knowledge systems are critical to everyday life and living, and this includes research and being researchers with/by/as Indigenous peoples.

*Bridging knowledge systems requires acknowledging the plurality and integrity of different ways of knowing*

To engage in bridging knowledge systems, one must first acknowledge that there are many distinct knowledge systems, including Indigenous sciences ([Simpson, 2000; Kimmerer et al., 2017](#)), and recognize that each way of knowing is integral on its own and viewed equally among knowledge systems ([Berkes, 2017; Cajete, 2000](#)). Like others, we use Cree scholar Willie Ermine's (Sturgeon Lake First Nation) "ethical space of[for] engagement" theoretical framework to illustrate partnership work between Western and Indigenous sciences ([Ermine, 2007](#)). We have added "for" engagement to illustrate that we view the concept of "bridging" as more than theory, but also a place of and for practice. Informed by Robert Poole's work on deep subjectivity ([Poole, 1972](#)), Ermine explains that ethical space is "formed when two societies, with disparate worldviews, are poised to engage each other," ([Ermine, 2007](#), pg. 193). As Western scientists and Indigenous people may have different research priorities and approaches, it is important to be deliberate about the distinct eth-



**Table 1**

Summary of resources for building, strengthening, and sustaining equitable research partnerships with/by/as Indigenous communities. Listed in reverse chronological order, this collection is intended as a continuation from [Harding et al. 2012](#).

Source	Title	Primary Focus and Contributions
<a href="#">Nunavut Research Institute, 1988</a>	Nunavut's Scientists Act (1988)	Provides the research application process to receive a license, required to conduct social, health, land, or water-based research in the Nunavut settlement area
<a href="#">The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS), 2000</a>	Guidelines for Ethical Research in Indigenous Studies	Outlines three principles for ethical research: consultation, negotiation, and mutual understanding, respect, recognition, and involvement, and benefits, outcomes, and agreement <a href="https://www.wipo.int/export/sites/www/tk/en/databases/creative_heritage/docs/aiatsis_ethical_research.pdf">https://www.wipo.int/export/sites/www/tk/en/databases/creative_heritage/docs/aiatsis_ethical_research.pdf</a>
<a href="#">Association of Canadian Universities for Northern Studies, 2003</a>	Ethical Principles for the conduct of research in the North	Outlines 20 general principles to guide research, such as community consultation, mutual respect, enhancing local benefit, accountability, informed consent, on-going explanations, research summaries in local language, giving credit, and prioritizing greater consideration for risks and cultural value over the contribution to knowledge <a href="https://acuns.ca/wp-content/uploads/2010/09/EthicsEnglishmarch2003.pdf">https://acuns.ca/wp-content/uploads/2010/09/EthicsEnglishmarch2003.pdf</a>
<a href="#">Dehcho First Nation, 2004</a>	Traditional Knowledge Research Protocol	Assists Deh Cho First Nation in negotiating terms and conditions for the use of Traditional Knowledge in external research studies and industrial development, outlines a policy for Deh Cho to evaluate proposed projects, and articulates researcher steps to follow with Deh Cho <a href="https://dehcho.org/docs/traditionalknowledgeprotocol.pdf">https://dehcho.org/docs/traditionalknowledgeprotocol.pdf</a>
<a href="#">Ho-Chunk Nation, 2005</a>	Health and Safety Code- Tribal Research Code	Establishes the Nation's research priorities, including the full research application, terms of research, and IRB process to be considered to conduct research with Ho-Chunk Nation <a href="https://ho-chunknation.com/wp-content/uploads/2019/10/3HCC3-Tribal-Research-Code-05.05.05.pdf">https://ho-chunknation.com/wp-content/uploads/2019/10/3HCC3-Tribal-Research-Code-05.05.05.pdf</a>
<a href="#">Inuit Tapiriit Kanatami and Nunavut Research Institute, 2007</a>	Negotiating Research Relationships with Inuit Communities: A Guide for Researchers	Provides practical advice for researchers related to relationship-building and communication through the stages of research – project design, data collection, and analysis – with Inuit Communities <a href="https://www.itk.ca/wp-content/uploads/2016/07/Negotiating-Research-Relationships-Researchers-Guide_0.pdf">https://www.itk.ca/wp-content/uploads/2016/07/Negotiating-Research-Relationships-Researchers-Guide_0.pdf</a>
<a href="#">Tipene-Matua et al., 2009</a>	Old Ways of Having New Conversations- Basing qualitative research with Tikanga Maori	Formalizes Tikanga Maori (Maori traditions) into rituals of first encounter, as a part of the research process to create a setting that is conducive to by Maori, for Maori research <a href="http://www.communityresearch.org.nz/wp-content/uploads/formidable/M%C4%81oriProtocols.pdf">http://www.communityresearch.org.nz/wp-content/uploads/formidable/M%C4%81oriProtocols.pdf</a>
<a href="#">The First Nations Information Governance Centre (FNIGC). Ownership, Control, Access and Possession (OCAP™) (webpage) 2014</a> Last accessed Jan 28 2022	First Nations Principles of OCAP	Ties the First Nations Principles of OCAP (ownership, control, access, and possession of cultural knowledge, data, and information) rights and responsibilities to self-determination, the preservation of histories, and future development <a href="https://fnigc.ca/what-we-do/ocap-and-information-governance/">https://fnigc.ca/what-we-do/ocap-and-information-governance/</a>
<a href="#">Indigenous Geography (webpage) 2010</a> Last accessed Mar 16 2022	Research Ethics: A Source Guide to Conducting Research with Indigenous Peoples	A collection of literature and guidelines for conducting research with Indigenous Peoples. <a href="http://www.indigenousgeography.net/ethics.shtml">http://www.indigenousgeography.net/ethics.shtml</a>
<a href="#">Harding et al., 2012</a>	Conducting Research with Tribal Communities: Sovereignty, Ethics, and Data-Sharing Issues	Delineates an institutional-community research agreement that includes considerations for project scope and collaborators, and material and data collection types; outlines potential constraints such as material and data use, data access and security, community risks and benefits, and mutual review processes; and includes a table of partnership research resources <a href="https://ehp.niehs.nih.gov/doi/10.1289/ehp.1103904">https://ehp.niehs.nih.gov/doi/10.1289/ehp.1103904</a>
<a href="#">NCAI Policy Research Center and MSU Center for Native Health Partnerships, 2012</a>	Walk Softly and Listen Carefully: Building Research Relationships with Tribal Communities	Contributes five core values for working with Tribes: Indigenous knowledge is valid and valued, culture is a part of research, stewardship includes interpreting and understanding data and research, tribal sovereignty for research and data, and research must benefit Native people <a href="https://www.ncai.org/attachments/PolicyPaper_SpMCHTcixRRjMEjDnPmesENPzjHTwhOIOWxIWOIWdSrykluOggG_NCAI-WalkSoftly.pdf">https://www.ncai.org/attachments/PolicyPaper_SpMCHTcixRRjMEjDnPmesENPzjHTwhOIOWxIWOIWdSrykluOggG_NCAI-WalkSoftly.pdf</a>
<a href="#">Yukon Research Centre, 2013</a>	Protocols and Principles for Conducting Research with Yukon First Nations	Describes research best practices aligned with Yukon First Nations interests as five principles and protocols: ethics, accountability, participatory approach, intellectual property rights, and research outcomes <a href="https://achh.ca/wp-content/uploads/2018/07/Protocol_YukonFN.pdf">https://achh.ca/wp-content/uploads/2018/07/Protocol_YukonFN.pdf</a>

(continued on next page)

Table 1 (continued)

Source	Title	Primary Focus and Contributions
Climate and Traditional Knowledges Workgroup (CTKW) 2014	Guidelines for Considering Traditional Knowledges in Climate Change Initiatives	Explains eight guidelines for considering traditional knowledges (TKs) in climate change initiatives: understand key concepts related to TKs, recognize indigenous peoples right to not participate, understand and communicate risks, establish institutional interface, provide training for agency staff, provide specific directions for ensuring TKs are protected, recognize the role of multiple knowledge systems, develop grant review guidelines that recognize value and are protective. <a href="http://climatetkw.wordpress.com/">http://climatetkw.wordpress.com/</a>
First Nations Development Institute, 2015	Research Policy	Illustrates research protocols that acknowledge and affirm Native nation's rights to control their data, including, informed consent, voluntary participation, data ownership, protection of identity, and the right to review before publication <a href="https://www.firstnations.org/wp-content/uploads/2019/04/First-Nations-Research-Policy-2016.pdf">https://www.firstnations.org/wp-content/uploads/2019/04/First-Nations-Research-Policy-2016.pdf</a>
Wilkinson et al., 2016	The FAIR Guiding Principles for scientific data management and stewardship	Details FAIR Data Principles (Findable, Accessible, Interoperable, Reusable) for scientific data management and stewardship with focus on the infrastructure of data reusability and increasing the ability of automated data searches <a href="https://www.nature.com/articles/sdata201618">https://www.nature.com/articles/sdata201618</a>
CLEAR Lab; Max Liboiron (webpage) 2016 Last accessed Jan 28 2022	CLEAR's guidelines for research with Indigenous groups	Governs the practices of CLEAR (Civic Laboratory for Environmental Action Research) with a commitment to good relations to land and partnerships with Indigenous groups, emphasis on research invitations, knowledge co-creation, and data sovereignty <a href="https://civillaboratory.nl/2016/09/28/guidelines-for-research-with-indigenous-peoples/">https://civillaboratory.nl/2016/09/28/guidelines-for-research-with-indigenous-peoples/</a>
Great Lakes Indian Fish and Wildlife Commission, 2016	Guidelines for Conducting Traditional Ecological Knowledge Interviews	Specifies protocols for asking Anishinaabe elders and/or knowledge holders to share traditional ecological knowledge stories and expertise in an interview, provides guidelines for handling interview audio and transcripts, and offers a sample interview question structure <a href="https://glifwc.org/ClimateChange/GLIFWC%20TEK%20Interview%20Guidelines.pdf">https://glifwc.org/ClimateChange/GLIFWC%20TEK%20Interview%20Guidelines.pdf</a>
Northwest Indian College (NWIC), 2017	Indigenous Research Policy	Informs NWIC faculty, staff, and external researchers how research is conducted, and specifies responsibilities related to cultural grounding, ownership, control, access, and possession of data, informed consent, and gratitude <a href="https://www.nwic.edu/wp-content/uploads/2017/03/Indigenous-Research-Policy.pdf">https://www.nwic.edu/wp-content/uploads/2017/03/Indigenous-Research-Policy.pdf</a>
Inuit Tapiriit Kanatami, 2018	National Inuit Strategy on Research	Supports the Inuit Nunangat strategic plan for research: advancing Inuit research priorities, enhancing the ethical conduct of research, aligning funding with Inuit research priorities, ensuring Inuit access, ownership, and control over data and information, and building capacity <a href="https://www.itk.ca/national-strategy-on-research-launched/">https://www.itk.ca/national-strategy-on-research-launched/</a>
Gentelet, Basile, and Gros-Louis Mchugh, 2018	Toolbox of Research Principles in an Aboriginal Context: ethics, respect, fairness, reciprocity, collaboration, and culture	Delineates an Aboriginal Context research toolbox including memorandum of understanding (MOUs), protocols, guidelines, and worldwide open data sources; includes resources <a href="https://centredoc.ccsspnq1.com/cgi-bin/koha/opac-detail.pl?biblionumber=1308&amp;query_desc=kw%2Cwrd%3A%20toolbox">https://centredoc.ccsspnq1.com/cgi-bin/koha/opac-detail.pl?biblionumber=1308&amp;query_desc=kw%2Cwrd%3A%20toolbox</a>
Wehipeihana, 2019	Increasing Cultural Competence in Support of Indigenous-Led Evaluation: A Necessary Step toward Indigenous-Led Evaluation	Illustrates a model and strategy for Indigenous-led evaluation and describes researcher positionality and community relations to/for/with/by/as researchers <a href="https://doi.org/10.3138/cipe.68444">https://doi.org/10.3138/cipe.68444</a>
National Park Service (webpage) 2019. Last accessed Jan 28 2022	Tribal Research Policies, Processes, and Protocols	Includes policies, processes, and protocols related to traditional ecological knowledge (TEK) for many Tribal Nations within the United States <a href="https://www.nps.gov/subjects/tek/tribal-policies-processes-and-protocols.htm">https://www.nps.gov/subjects/tek/tribal-policies-processes-and-protocols.htm</a>
Memorial University (webpage) 2020 Last accessed Jan 28 2022	Research Impacting Indigenous Groups Policy and Procedures	Specifies policy that requires researchers to seek relationships, involvement, and approval from Indigenous groups prior to the University approval <a href="https://www.mun.ca/research/Indigenous/consent.php">https://www.mun.ca/research/Indigenous/consent.php</a>
Carroll et al., 2020	The CARE Principles for Indigenous Data Governance	Describes CARE principles (Collective Benefit, Authority to Control, Responsibility, and Ethics) for Indigenous data and the collective benefit and autonomy for/of Indigenous peoples, including secondary data; intended to complement the FAIR guiding principles <a href="https://www.gida-global.org/care">https://www.gida-global.org/care</a>
Whyte, 2020	Sciences of Consent: Indigenous Knowledge, Governance Value, and Responsibility	Explains the research context within the Indigenous philosophy of science which prioritizes consent as an ongoing system of governance, responsibility, and accountability

Table 1 (continued)

Source	Title	Primary Focus and Contributions
Poitra et al., 2021	Reciprocal Research: A Guidebook to Centering Community in Partnerships with Indigenous Nations	Supports practices for growing research partnerships, including communicating needs, outcomes, and goals in a consistent, transparent, and respectful manner, ensuring projects are representative of community values and goals, and furthering research with practical applications that are based on community understandings of their own needs; includes five 5 scenarios, reflections, and resources <a href="https://www.canr.msu.edu/resources/reciprocal-research-guidebook-partnerships-indigenous-nations">https://www.canr.msu.edu/resources/reciprocal-research-guidebook-partnerships-indigenous-nations</a>
Kitasoo/Xai'xais Stewardship Authority, 2021	Informing First Nations Stewardship with Applied Research: key questions to inform an equitably beneficial and engaged research process	Outlines phases for researchers and First Nation stewardship staff to engage in an equitably beneficial research process, including initial engagement, delineating commitments, methods, data analysis and results, and reciprocity and benefits <a href="https://klemtu.com/research-guide/">https://klemtu.com/research-guide/</a>
University of British Columbia (webpage) 2021 Last accessed Jan 28 2022	Indigenous Research Methodologies	Serves as a guide to Indigenous methodologies, and provides research resources and examples in practice <a href="https://guides.library.ubc.ca/IndigResearch">https://guides.library.ubc.ca/IndigResearch</a>
TEK Task Team (United States Caucus of the Traditional Ecological Knowledge Task Team Annex 10 Science Subcommittee), 2021	Guidance Document on Traditional Ecological Knowledge Pursuant to the Great Lakes Water Quality Agreement	Provides guidance and support for working with Indigenous nations and knowledge holders to aid in the protection of, and respect for, the Great Lakes and their ecosystems as part of the Great Lakes Water Quality Agreement responsibilities <a href="https://www.bia.gov/sites/bia.gov/files/assets/bia/wstreg/Guidance%20Document%20on%20TEK%20Pursuant%20to%20the%20Great%20Lakes%20Water%20Quality%20Agreement.pdf">https://www.bia.gov/sites/bia.gov/files/assets/bia/wstreg/Guidance Document on TEK Pursuant to the Great Lakes Water Quality Agreement.pdf</a>
Gagnon, Ravindran, and Shaw, 2021	Guidance for Research Partners with/by/as the Keweenaw Bay Indian Community	Illustrates research as an iterative process of seasons, including relationship building, planning and prioritization, knowledge exchange, and synthesis and analysis; provides partnership guidance in principles of respect, reciprocity, responsibility, and reverence; and shares resources <a href="http://nrd.kbic-nsn.gov/sites/default/files/KBIC_Rsch_Guide_TriFold_2021.pdf">http://nrd.kbic-nsn.gov/sites/default/files/KBIC_Rsch_Guide_TriFold_2021.pdf</a>
Unama'ki College of Cape Breton University (webpage) n.d. Last accessed Aug 31 2021	Mi'kmaw Ethics Watch (MEW)	Specifies application and research proposal review process by the Watch committee to conduct research with and/or among Mi'kmaw people <a href="https://www.cbu.ca/indigenous-affairs/mikmaw-ethics-watch/">https://www.cbu.ca/indigenous-affairs/mikmaw-ethics-watch/</a>

ical values that will inform the research practices in partnership with one another.

We have come to use the concept of a bridge to illustrate the space and *place* for ethical engagement. In our research, we envision the bridge as the place(s) for the co-construction of knowledge where everyone brings their own research toolbox. Using the bridge signifies that people must physically come together, bringing their different philosophies, including community members and professionals who work across and from different disciplines and institutions (Gagnon et al., 2016; Wilson, 2005). Further, bridging knowledge systems avoids assimilative and supplementary treatment for/of Indigenous knowledge (Reid et al., 2021; Whyte, 2017). Also described as “two-eyed seeing” (Bartlett et al., 2012), building and maintaining the bridge requires different intellects, methods and approaches, and various expertise and skill sets (Mantyka-Pringle et al., 2017; Reid et al., 2021). Finally, doing this work together is a process which, over time, can facilitate the development of shared expectations and vocabularies, shared visions and goals, and the creation of ethics in common for joint action and justice (Wilson, 2005).

It is true that Western and Indigenous sciences have different philosophies and values, and it is also true that each has unique strengths that can be complementary to one another, which also strengthens knowledge and understanding between differences (Ausubel, 2008; Deloria Jr. and Wildcat, 2001; Kimmerer, 2016; Mantyka-Pringle et al., 2017; Reid et al., 2021; TEK Task Team, 2021). Western science has enhanced our attention and abilities to see, particularly physical materials and strengthening cognitive intellect (Kimmerer, 2019; TEK Task Team, 2021). Just think about

ways of seeing and what we have learned from the microscope to the telescope, the development of models and modeling complex systems, and the places that various sensor equipment and autonomous vehicles can venture to see and monitor. Indigenous science enhances our attention and abilities to listen, particularly relational and emotional intellect, contributing to our human intuitive ways of knowing (Kimmerer, 2019; TEK Task Team, 2021). Think about various ways of listening and what we have learned from other beings, processes, and interactions in natural systems. Both sciences enhance our abilities to learn, but Indigenous science asks us to prioritize listening so that we might be better relatives and support one another's autonomy.

In summary, it is critical to recognize that the bridge is not a divider, but a pathway. The engagement is not intended to be in opposition of each other but complementary. Engagement activity is not for consultation or confrontation but for interaction and cooperation. Importantly, the purpose is not to integrate knowledge differences but to maintain integrity and distinctness in ways of knowing. And, as a reminder, the ethical space theory must be accompanied by an ethical place in practice.

### Guidance for Research Partnerships

The Guidance for Research Partnerships with/by/as the KBIC is an assertion of self-determination and research autonomy to reclaim our history, restore relationships, and revitalize our future. In this section, we describe the shared responsibilities and reciprocal expectations associated with collaborative, participatory and community-engaged research: relationship building, planning

and prioritization, knowledge exchange, and synthesis and application. Strengthening research partnerships is a priority because we know that working together contributes to the resiliency of our shared communities, landscapes, and future. As illustrated in Fig. 1, we chose the Medicine Wheel as the research guidance model to reflect Anishinaabe Ojibwa understandings and worldview (Johnston, 1976). The Medicine Wheel is an interconnected system of teachings and teachers relating to seasons, directions, elements, and the cyclical nature of life (Johnston, 2003). Beginning in the East and moving clockwise, it aims for balance between and among time, space, and all beings, a balance that is sustained when we **ask for permission and receive consent** (Whyte, 2020).

Informed by the Indigenous Science Declaration (Kimmerer et al., 2017), respect, reciprocity, responsibility, and reverence illustrate our intentionality as researchers throughout the seasons. Situated deliberately around the Medicine Wheel, these characteristics demonstrate a commitment to respectful, reciprocal, responsible, and reverent interaction and being. Research partnerships with/by/as the Community **demonstrate respect** for each other's differences, **honor reciprocity** for each other's actions, **exemplify responsibility** for individual, organizational and community commitments, and **express reverence** for shared lands, waters, and all living beings. Respect, reciprocity, responsibility, and reverence guide our thoughts and actions in research partnerships as they do in everyday life.

### Relationship building

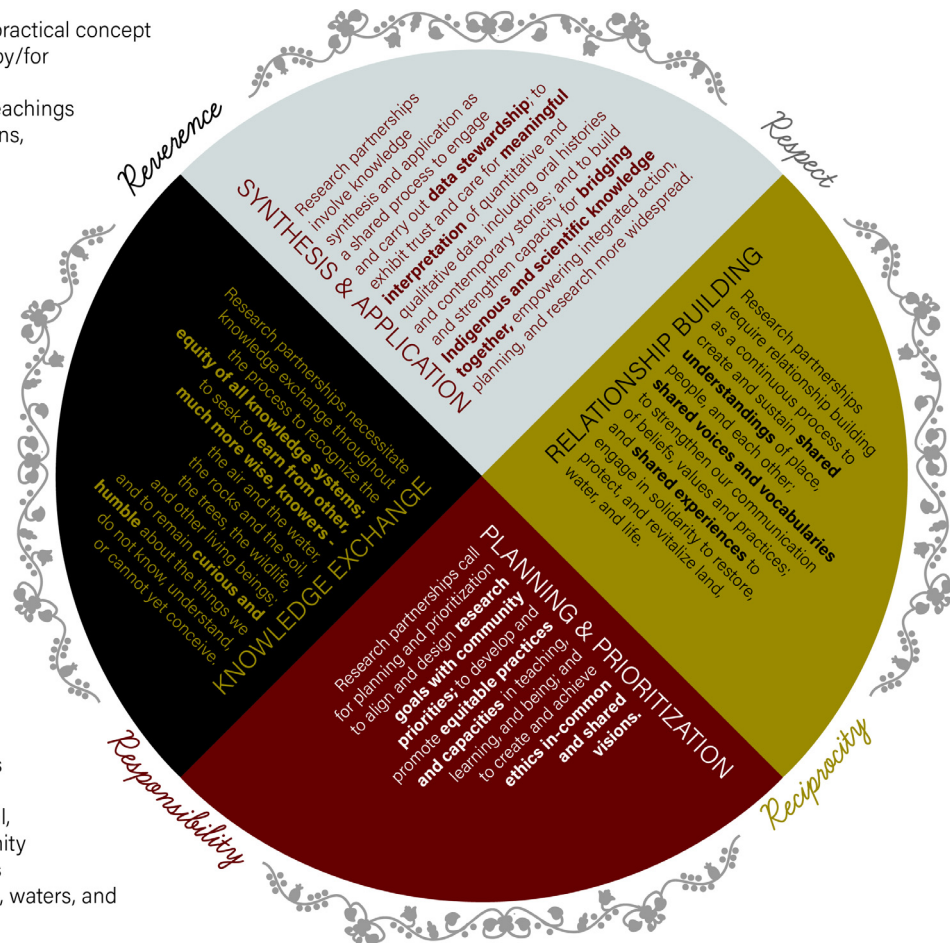
Research partnerships require relationship building as a continuous process to create and sustain **shared understandings** of place, people, and each other; **shared voices and vocabularies** to strengthen our communication of beliefs, values, and practices; and **shared experiences** to engage in solidarity to restore, protect, and revitalize land, water, and life. Critical to the development of shared understandings is the foundational acknowledgement that colonialism is endemic to the Americas, and that the lived experiences of all places, peoples, and relations are a part of this interconnected story (Brayboy, 2005). Partnerships must be built upon the understanding that Indigenous peoples are the original people and knowledge holders of these lands. Our shared voices and vocabularies need to assert, in unison, that Indigenous peoples retain inherent rights and responsibilities, and Indigenous place-based beliefs, values, and practices have sustained relationships across the landscape since time immemorial.

Building relationships in a genuine way necessitates shared experiences that are sustained throughout various stages of the research process. Some shared experiences may or may not directly be related to research, but instead, are directly related to building relationships. This simple truth cannot be overstated. To build relationships, research or otherwise, one must invest actual time and effort with each other. Relationships are work, and as such, require a commitment by those involved to share time together, participating in activities and engaging in dialogue, and in short, to be accountable to one another (Reo, 2019). The strength

**The Medicine Wheel** is a practical concept to illustrate guidance with/by/for research partners – it is an interconnected system of teachings relating to seasons, directions, elements, and the cyclical nature of life.

Beginning in the East and moving clockwise, it **aims for balance** between and among time, space, and all beings, a balance that is sustained when we **ask for permission and receive consent**.

Research partnerships with/by/for the Community **demonstrate respect** for each other's differences, **honor reciprocity** for each other's actions, **exemplify responsibility** for individual, organizational and community commitments, and **express reverence** for shared lands, waters, and all living beings.



**Fig. 1.** This figure illustrates Guidance for Research Partnerships with/by/as the Keweenaw Bay Indian Community. Used with permission from the Keweenaw Bay Indian Community Natural Resources Department.



of one's relationships reflects one's commitment, a commitment that does not correspond to a project's end date. Relationship building, we assert, is an on-going practice to grow intellectually and socially, as a partnership and as an individual, in ways that transcend research and inform one's identity and place in the world.

### *Planning and prioritization*

Research partnerships call for planning and prioritization to align and design **research goals with community priorities**; to develop and promote **equitable practices and capacities** in teaching, learning, and being; and to create and achieve **ethics in-common and shared visions**. Critical to aligning research goals with community priorities is the recognition that research is a practice of sovereignty (Tuck, 2009). Orienting research goals in this way is to prioritize restoration, revitalization, and protection, ultimately contributing to Indigenous Nations' capacity to rebuild relationships to the land, water, and life. Individual and community healing centers on reconnecting to place and reclaiming the knowledge and practice necessary to do so. Aligning with community priorities requires two very practical activities: do your homework and listen. In most cases, there is an abundance of learning resources that already exist—do not expect community members to teach you what you can learn by doing your homework. Prioritize listening to understand and not listening to respond. Think about and be open to different community understandings of problems and solutions. Remember, it is not the community's responsibility to serve as the site for your research outreach and education plans.

To facilitate equitable practices and capacities, research partnerships must share leadership, decision making authority, and when applicable and available, research funds (Walter et al., 2018). This necessitates early involvement and planning to ensure intentional inclusion rather than addendums to existing plans (Gagnon et al., 2017). Important to equity in research is the understanding that each research partner will be both a teacher and learner (Reid et al., 2020), and that the research plan and budget reflects and supports each partner in both roles. This shift is deliberate, and as such, Indigenous people need not be assigned as research human subjects but rather as human researchers. As a part of the process of enacting equity, the intention is also to realize the ethical values that the researchers have in common which informs the shared visions for the future, the research process and expectations, and importantly, guides interactions with the research foci as well as with one another. Shared ethics are crucial to building the research foundation, co-learning throughout, and strengthening the research relationship (Ermine, 2007). Ethics and vision sustain the partners' commitment to achieve research and relationship expectations. Planning and prioritization, we assert, is a process of affirming equity, in research partnerships and across personal and professional boundaries, to rebuild relationships between university and community partners.

### *Knowledge exchange*

Research partnerships necessitate knowledge exchange throughout the process to recognize the **equity of all knowledge systems**; to seek to **learn from other, much wiser, knowers** – the air and the water, the rocks and the soil, the trees, the wildlife, and other living beings; and to remain **curious and humble** about the things we do not know, understand, or cannot yet conceive. To practice equitable knowledge exchange is to first recognize that Western science is simply one system of knowing, albeit young, diverse, and contentious, and as such need not claim to be the source of authority (Harding, 2015). Many systems of knowledge

are practiced and have been passed through the generations since time immemorial. We must also acknowledge that all human learning originates *from* the world that surrounds us, and that wisdom is not solely a human feature but belongs to many (Kimmerer, 2019, 2021). Learning *about* the natural world, and its many features, interactions, and beings, can be argued as a relatively new practice. As researchers, we must periodically ask ourselves what we can learn from the plant and tree beings, from the processes between the air and water, and from climatic shifts and the transformations between seasons. We cannot assume to know; we need to listen: what are their intentions, what is their work, and what accumulated wisdom are they trying to share with us?

Learning from others, particularly from more-than-human beings, requires lifelong curiosity from a position of humility (Deloria Jr. and Wildcat, 2001). As humans we experience the world with a set of senses that are particularly confined, and others have gifts that we as humans do not (Kimmerer, 2009, 2020). Knowledge exchange, we assert, is an iterative process to refine and transform our understandings of the world and our relational interactions with others, all others, so that we might learn to be better residents and relatives in our communities, societies, and of the Earth.

### *Synthesis and application*

Research partnerships involve knowledge synthesis and application as a shared process to engage and carry out **data stewardship**; to exhibit trust and care for **meaningful interpretation** of quantitative and qualitative data, including oral histories and contemporary stories; and to build and strengthen capacity for **bridging Indigenous and scientific knowledge together**, empowering integrated action, planning, and research more widespread. Critical to the practice of data stewardship, to being data stewards, is the recognition that Indigenous peoples have and retain procedures and protocols associated with caring for many different forms of knowledge (Whyte, 2017). Being good data stewards will not always align with federal regulations, thus it is critical to establish a data stewardship plan from the forefront. Part of this responsibility is to also discern and be respectful of everyday knowledge, belonging to everyone, and guarded or sacred knowledge, belonging to particular knowledge holders (Geniusz, 2009). Put simply, some knowledge does not belong to/in research. As a strong word of advice, researchers need not seek out guarded knowledge.

Historically, knowledge and research findings have not only been extracted and misused, but they have also been sorely misrepresented, sowing distrust between academic researchers and Indigenous peoples (Absolon, 2011). Thus, shared decision-making authority is crucial throughout the stages of data analysis and synthesis. In data interpretation, emphasis is focused on scientifically sound, legally defensible results, but partnership research must also be culturally sound and defensible. This means that the data interpretation, and its process, must be meaningful to all research partners, including Indigenous partners. Meaningful interpretation strengthens the ethical space, place, and partners of engagement, and when conducted respectfully, contributes to building capacity for partnership research, for bridging Indigenous and Western sciences together, in the future. Meaningful interpretation is the foundation for integrated action and planning. Synthesis and application, we assert, are the practices that determine, and/or ensure, the continuation of seasons in seasons of research.

In borrowing the wisdom of the natural seasonal cycle, this section has shared partnership guidance as seasons of research. In the physical world, and in research partnerships, seasons move forward in time and return us to where we are, building on the histories that have come before. To create a foundation for equity in future generations, each seasonal and cyclical iteration must be

bound by thoughts and actions that **demonstrate respect and reciprocity** for diverse ways of knowing and being, and **embody responsibility and reverence** for timeless commitments to land, water, and life (Kirkness and Barnhardt, 1991; Kimmerer et al., 2017). Such actions contribute to socio-ecological equity in the real world as well as equity in research partnerships; these practices are inseparable as professionals and as everyday citizens of Earth.

### Practicing Seasons of Research

Extending from more than a decade-long partnership between authors Valerie Gagnon and Evelyn Ravindran, this section provides a reflection of Emily Shaw's experiences to engage in seasons of research as a doctoral research practitioner. Here I (Shaw) demonstrate my seasons of research through a project in progress that seeks to elucidate patterns in mixture toxicity (i.e., toxicity that results from exposure to multiple contaminants simultaneously) of fish tissue to inform food sovereignty work and rebuild relationships with fish. In sharing these experiences, I have come to realize the many ways that research seasons overlap and interconnect. Often, one can be engaged with multiple seasons simultaneously. Overall, practicing seasons of research is a multidirectional commitment and system of accountability to the land and communities of life.

As a foundation, I discovered that my grounding in Indigenous scholarship allowed me to cultivate and center my research on **building relationships** with the land, waters, and beings. As a settler scholar, I had much to unlearn and relearn. Beginning with the literature, I built intellectual relationships with scholars and came to understand that knowledge comes from sacred relationships and their grounded nature means they are non-transferrable (Watts, 2013; Kimmerer, 2013). I realized that without place-based relationships for myself, I could not transfer others' teachings as my own learning. This motivated me to build relationships with the lands, and KBIC and community members. Moving north from lower Michigan, I recognized many plant and animal relatives, but I did not know their names. Learning names is the first gesture of respect (Kimmerer, 2016). So, I ventured to learn who they are. With my plant ID app on my phone and my guidebooks in hand, my joy for walking in the woods transformed into an adventure to know the plants and animals who lived here, too. Simultaneously, in relationship building with the KBIC, I first attended a Food Sovereignty Lunch and Learn in the summer of 2016. That afternoon, I learned about a community-guided research project that centered on the question, *when can we eat the fish?* (ASEP Project, 2020). This event was an introduction to my understanding of how fish-human relationships are affected by chemical contamination (Gagnon et al., 2017; Todd, 2014, 2017). I began to see 'anthropogenic stressors' differently, shifting in terms of impacts to socio-cultural practices in Ojibwa food systems.

Aligning my research goals with the Community's needs has grown from intentional project **planning and prioritization**. Since the Lunch and Learn, and while I was in my master's program, I was simultaneously building relationships with KBIC partners to establish a foundation for doing a dissertation project in partnership. In doing so, I have participated in a number of community events to build and strengthen my relationships within KBIC: I became a Lake Superior water protector and engaged as a water walker; I have spent hours at the KBIC Debweyendan Indigenous Gardens (DIGs) planting, weeding, listening, and harvesting; I accepted invitations to share research talks at Tribal Water Day and staff meetings, and attended an assortment of other events that aligned with my personal and professional interests. Building relationships is an ongoing practice and as such, it includes the expectation to show up, share expertise, and work together. I could not have expected

to create and sustain shared understandings, voices, and vocabularies without these shared experiences. Through building relationships, we are also contributing to each other's capacities to do shared work together in the present and future.

Engaging in seasons of relationship building and planning and prioritization helped me to recognize the distinction between 'research informed by' and 'research in partnership with' (Minkler, 2005; LaVeaux and Christopher, 2009). However, this was not always easy; it was an especially complicated process because I was transitioning from being a science 'educator' to being a graduate 'student.' I have long recognized the creative capacity of science and research; for years I had used it as a tool in hopes of inspiring Great Lakes stewardship in others. My experiences in stewardship and outreach served me well, especially for my transition to do indiginist research and to be an indiginist researcher. Indiginist research, as described by Opaskwayak Cree scholar Shawn Wilson and White Settler American scholar Margaret Hughes in *Research and Reconciliation* (2019 pgs. 7–8), must be interdisciplinary and represents a transformation through accountability and responsibility to Indigenous philosophies and laws. For me, this process has been a transformation of my mind-set; it has redefined my understanding of being a scientist.

My official transition to the season of planning and prioritization with KBIC began on a wintry December afternoon a few months after I defended my master's thesis. I drove an hour south to the L'Anse Indian Reservation to share my thesis results with KBIC Natural Resources Department staff in Pequaming. At a cramped conference table, we considered ways we might use Lower Michigan river-fish-PCB results for a dissertation research study related to mixture toxicity. Our dialogue revealed significant overlap in our visions for the future of fish-human relationships. As a fishing community, KBIC's concern about both PCB and mercury accumulations in fish, particularly in inland water bodies frequently harvested by their members, provided the trajectory for dissertation research on mixture toxicity. With their consent to move forward, I could work on a research proposal and return to share more about what I was learning along the way.

Learning to orient my work for the sake of rebuilding relationships rather than protecting resources meant that I had to invest time in learning from Indigenous knowledge holders in the Great Lakes basin. To do this, I volunteered to help organize and facilitate speaker events at my university, and I also attended many seminars by Indigenous speakers. Building a foundation to support and sustain **knowledge exchange** undoubtedly comes from building these genuine relationships. For this reason, in my experiences, the seasons of relationship building and knowledge exchange are deeply interconnected. Early on, these exchanges were intellectually personal and part of a rattling process of unlearning and relearning. Reflecting on the work of Indigenous scholars challenged my existing understandings of science and knowledge. Connecting Indigenous philosophies to my Western science knowledge required that I recognize the necessity for weaving and bridging rather than integrating. I was responsible for unlearning knowledge hierarchies and recognizing that integrating knowledge reinforces them; instead, weaving and bridging maintains their distinct values and priorities.

Recognizing my role as a caretaker, I began to understand knowledge exchange as a system of accountability and reciprocity (Kimmerer 2015; Todd 2017). Critical to caring for our relationships and facilitating equitable knowledge exchange is careful listening. Lingering over coffee and snacks during Tribal Water Day in 2019, I listened to conversations with KBIC staff and commercial and recreational fishermen that helped to expand my understanding of the significance of repairing fish-human relationships. Ogaa (walleye) is not just an important food source. Citizens of the many fish nations sacrifice themselves so that their human relatives have

sustenance (Hoover, 2013; Todd, 2014). For this gift, humans express gratitude to fish by tending to their habitats and harvesting only what they need. Realizing how chemical contamination disrupts many reciprocal exchanges, the gravity of expecting some people to harvest less to avoid contamination struck me. I came to understand chemical contamination as a food sovereignty issue. My responsibility, as a research partner, is to work towards the elimination of fish consumption advisories. At the Debweyendan Indigenous Gardens (DIGs) workdays, I also listen to bees, butterflies, and other pollinators. I noticed their affection for bee balm (*Monarda fistulosa*) and so I planted them near my vegetable garden at home. This year, my zucchini and tomatoes are thriving, returning their gratitude to me! Practicing listening in this way has reconceptualized my understanding of who is an expert; I no longer overlook the wisdom shared by pollinators and bee balm.

Engaging in research partnerships promotes **synthesis and application** in ways that embrace knowledge as everyday practice and a series of relationships that sustain daily life. This brings me to the present moment reflecting and looking inward. Although I have not yet conducted analysis on mixture toxicity, I find myself wrapped within a season of reflexive and action-oriented work. My memory travels to the Guidance review process with the KBIC Tribal Council. Amid a worldwide pandemic, KBIC had a slew of priorities that superseded our research. Sometimes, it felt selfish to take their time and consume their focus and efforts on wordsmithing Seasons of Research. And, on one occasion, some Council members expressed concerns about the lack of explanation on “Consultation” and “consultation,” (See BOR 2012 pgs. 5–6 for more information about “Big C” and “Little c”). They did not wish to encourage outsiders to use the Guide as an alternative to Consultation with the KBIC. And they especially did not want to open the floodgates for researchers to request KBIC partnerships. In response, we incorporated revisions to address their concerns and ensure the purpose and intention of the guidance reflected KBIC self-determination and sovereignty. The KBIC Tribal Council approved the Guidance for Research Partnerships with/by/as the Keweenaw Bay Indian Community in April 2021.

It is also worth noting that early on, and for an extended time, we called the north season ‘analysis and synthesis.’ While it accurately represents a Western science approach (i.e., a project end date), it conveyed a terminus that was inauthentic to what I/we wanted our partnership to be. Renaming the season ‘synthesis and application’ emphasizes the importance of action; it compels us to act on what we have learned, tying together theory and practice (Brayboy, 2005). ‘Application’ also seamlessly connects a partnership pathway for another cyclical iteration through the seasons; for our partnership, we will soon begin a seasonal round of research focused on mixture toxicity, continuing our work to rebuild fish-human relationships. In doing so, I aim to embody all the lessons imparted to me in co-creating guidance as seasons of research with/by/as the KBIC.

Research conducted in these ways changes you - the questions you ask, the answers you hear (and where you hear them), and the conclusions you make, and especially, the actions you do or do not consider or take. I am brought back to insights shared by Anishinaabe scholar Kathleen E. Absolon (Minogizhigokwe) in *Kaandosisiwin: How We Come to Know* (2011) about research. Absolon describes “re-search,” as “journeys of learning, being, and doing...” (pg. 10). And although I did not fully comprehend initially, I can now realize the transformations she speaks of, of what we/I know, and of who we/I are, as part of an Anishinaabe research practice and process. I have come to know, and will continue to grow, re-search as an indiginist researcher.

## A Prelude to the Future

Seasons of research with/by/as the KBIC, and the foundational scholars and scholarship it is built upon, is an acknowledgement of a changing landscape in partnership research with/by/as Indigenous peoples. The guidance shared here is a research practice in respect, reciprocity, responsibility, and reverence intended to support, revitalize, and protect the autonomy of others. Research equity is simply one part of a necessary transformation. These changes are also part of a larger, much longer, and more complex context of resistance and survivance by Indigenous peoples (Daigle 2019; Ketchum 2021; Vizenor 2008) as well as other marginalized populations and their allies.

This leads us to close with a hopeful prelude - the current landscape of equitable partnership research, we believe, is an introduction of more significant transformations to come. Like many today, we have been thinking a lot on the future of bridging knowledge systems in science, governance, and education. As a society, our consciousness is changing. It feels like we are in the midst of moments that are transforming shared beliefs and values, and what we consider to be ‘normal.’ This is also true in the sciences and research landscape. The concept and application of bridging knowledge systems and expertise, for example, has broadened its reach across groups and institutions, the Wildlife Society (Learn 2020), NASA (Native Skywatchers 2021), and many academic disciplines. Importantly, “bridging” was a primary theme for a conference in May 2021, the International Association for Great Lakes Research (IAGLR). This was especially significant because in the IAGLR 2020 annual meeting, there was one paper in the last session of the five-day conference that was inclusive of Traditional Ecological Knowledge. This year, a session called “bridging knowledge systems” spanned three days of the conference with 41 participant presenters.

Also of significance, we are witnessing a rise in court cases concerning the legal personhood of ecological systems and other beings, leveraging the precedent set by the legal personhood granted to corporations. The citizens of Ohio are aiming for the implementation of legal personhood for Lake Erie (Chiasson, 2019; Daley, 2019); Ojibwe citizens are exerting legal efforts on behalf of manoomin (wild rice) rights (LaDuke, 2019; Pember, 2021); and the legal personhood for Magpie River in Quebec Canada became official in the spring of 2021 (Townsend et al., 2021). This is taking place in other U.S. states (e.g., Florida and California) as well as in other parts of the world (e.g., India, Ecuador, and New Zealand).

We would also like to note a recent American precedent: Debra Haaland, a member of the Pueblo of Laguna, was sworn in as the 54th Secretary of the Department of the Interior on March 18, 2021. This means that in the entire history of the U.S., it has only been a matter of months and days that a descendent of the original peoples, stewards, and knowledge keepers has overseen its lands, species, natural resources, and Indian peoples. More importantly, at the time of this writing, less than one year has passed since an Indigenous person is leading the Cabinet agency that oversees the government-to-government relations between American Indian Nations and the United States. Also, in early September 2021, Bryan Newland (Ojibwe), a Bay Mills Indian Community citizen, joined Haaland as the Assistant Secretary for Indian Affairs, Department of Interior (DOI, 2021). Although these precedents give us great cause to celebrate, it also gives us great pause of the tremendous tasks that remain in front of us. We have much work to do.

These, and others, are the transformations taking place that will open new doors and provide new pathways for novel inquiries and approaches concerning equitable partnerships with/by/as Indige-



nous communities. Seasons of research guidance offers an opportunity to build and sustain a new era of discoveries in research as well as for life's sake.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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