



Traditional Ecological Knowledge (TEK) of the Woodlands Cree and Denesuline Peoples of northern Saskatchewan, Canada: The land as teacher and healer

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Abstract

The purpose of this article is to explore and outline the *Traditional Ecological Knowledge* (TEK) of First Nation peoples in northern Saskatchewan, Canada. TEK and Western science are increasingly combined for a fuller portrait and understanding of the natural world. However, more research is needed using Indigenous protocols, methodologies, methods, and languages for conceptual clarity. For the Woodlands Cree and Denesuline (Dene) peoples, the land is a giver of life and is both a teacher and healer as represented in this article.

Keywords: Traditional Ecological Knowledge, Indigenous knowledge, First Nations culture, Woodlands Cree & Denesuline cultures, Northern Saskatchewan First Nations, Indigenous worldviews, traditions, Elders, identity.

Introduction

The Indigenous¹ knowledge systems of First Nations peoples in Canada consist of different strands of complex knowledge. The focus of this exploratory article is on *Traditional Ecological Knowledge* (TEK)² which is a strand of knowledge linked to the environment, land, and resource management activities aimed at the long-term sustainability of the planet (McGregor, 2006). As a field of study, TEK has grown rapidly. The literature base is extensive. However, Woodlands Cree and Dene people's global and specific written contributions are limited. There are increasing calls to combine TEK with Western science in research and environment-related projects. This has not always been the case. Historically and most notably during colonial times, land and resources were considered dead raw material to be extracted, used, consumed, and

commoditized to serve the capitalist and imperialist interests by European settlers. Indigenous worldview and knowledge of the environment were disregarded. The aim of this article is to share and introduce basic understandings of TEK rooted within Woodlands Cree and Dene cultures of northern Saskatchewan.

As authors of this article, we have lived with TEK all our lives. We wanted to find out what was written about it from our own area in northern Saskatchewan. The literature is sparse from the region. References are provided that make links with TEK discourse. We also provide a bibliography for further reading (*see Appendix*). It is time to share our knowledge in our own ways, unencumbered by scholarly etiquette. However, more research can be conducted to validate or add to what we have written with the involvement of Elders and knowledge keepers. No funding support was provided for this work. As authors, we do not claim to own TEK as it is the collective knowledge of each First Nation. Although we make reference to Denesuline peoples in this article, we do this out of respect as we have a common worldview but a different language and culture. We also have different stories. We are Woodlands Cree community members from northern Saskatchewan who grew up among traditional land users and self-determining peoples. We are nihithawak who speak the Cree language. *Nihithawi-pimâtisiwin* is the term we use for our Cree way of life. We work for the Prince Albert Grand Council (PAGC), a tribal council that plays an advocacy role for 28 northern reserve communities under the umbrella of 12 First Nations. PAGC represents three distinct cultural and language groups which are the Cree, Dene, and Dakota from treaties 5, 6, 8, and 10. During the course of our work, we hear many stories and teachings of TEK from within our families and communities. In the fall of 2018, PAGC was given a mandate to develop

a TEK protocol document for communities and researchers. This article is a starting point in understanding what TEK is all about. It is basically a guide that can be used for further research depending on the First Nations research site. We apologise ahead of time for any misinterpretations. It is always problematic when Cree and Dene knowledge and language terms are translated into English. So much is lost in the process. However, it is time to share basic understandings of our teachings about the land and natural world with our own people and with non-Indigenous peoples.

Historically, it was not uncommon for government officials and researchers to enter First Nation communities without permission. Indigenous protocols were often not followed. Tremendous harm was done, especially the way in which First Nations cultures and knowledge systems were perceived. Inaccurate representations, misinterpretations, and cultural bias fueled public perception. Trust was broken and still today there is fear of external researchers. However, much has changed in academia, and First Nations want to share their ways of knowing, especially for community projects. Cultural sensitive protocols have been developed in many communities that focus on access, usage, and storage of data. Misunderstandings of First Nations peoples and their knowledge systems occurred largely because of worldview differences. Racism is also still prevalent where cultural practices are depicted as pagan, heathenistic, simple, and static. At one point in time, traditional stories were regarded as nothing more than primitive folklore relegated to the distant path. However, there are hidden teachings in our stories that cannot be taken lightly. We write this article to challenge stereotypes and to share the complexity of northern Saskatchewan First Nations cultures and knowledge systems.

¹ For the purposes of this article, the term “Indigenous Peoples” is used to refer to the original peoples who have a long-standing occupation of land that date back to pre-contact times. The term “First Nations Peoples” is used to refer to Indigenous peoples who are recognized under section 35 of the Canadian Constitution and who are part of treaties with the British Crown. The terms Woodlands Cree and Denesuline are used to refer to First Nations peoples who occupy northern Saskatchewan.

² An extensive literature base exists on TEK and contributions made by Indigenous peoples, too numerous to cite in this paper. Please refer to the reference list provided (*see Appendix*) and in particular the following authors and researchers: Corsiglia and Snively (1995), English (1993), Johannes (1989, 1993), Johnson (1992), Weatherford (1988, 1991), Williams and Baines (1993).

In more recent times and with increased environmental concerns, it appears the pendulum has swung back where many people regardless of race are turning to Indigenous cultures, worldviews, knowledge, and values on how to maintain balance in their lives, how to relate to other humans, and how to practice sustainable ways of knowing and being (Bowers, 1995; Christie 1990; Corsiglia & Snively, 1997; Healy, 1993). Schools and universities are incorporating TEK in science subjects. Many Western scientists have tremendous respect for TEK because it is linked to First Nation's long term relationship with the land and natural world. TEK is essential in environmental work and impact assessments that call for the participation of Indigenous peoples (Johannes, 1993). There are challenges related to the environment in northern Saskatchewan that require a combination of First Nations knowledge and Western science. Some of the issues include climate change, wildfires, green energy, clean-up of abandoned mines, restoration of lands and habitats back to their original state, and recovery of species at risk such as the Boreal and Barren Land Caribou herds.

First Nations cultures, worldviews (ontologies), knowledge, languages, ceremonies, traditional values, songs, dances, prayers, and day-to-day practices are rooted in the land (Snively, 1990). Many Elders say, "we are the land and the land is part of who we are". We have a different perception of knowledge. Cree and Dene epistemologies are about accessing knowledge from humans and also from the natural and spiritual worlds. Hunters, trappers, fishermen, and gatherers of wild foods and medicines play a critical role as teachers in modern times. There are many types of methodologies for seeking and passing on knowledge that are rooted in the land and culture. We leave this work for other researchers from our traditional territories. Land-based education using First Nations pedagogies have taken root in schools and universities as a response to the intergenerational impacts of Residential Schools (Michell, 2018; Tuck et al. 2014; Wildcat et al., 2014). The goal in Residential Schools was to *tear down the child* and make them into the likeness of European settlers (Truth and Reconciliation Commission [TRC], 2012). For over a 100 years, these schools separated children from the land, their families,

communities, and traditional knowledge keepers (Michell, 2015). The damage is multi-layered and multi-dimensional. Reconciliation has many meanings for different people. For the purposes of this article, it is about mending First Nations relations with the rest of Canada. It is about restoring worldviews of interdependence with the natural world and with our families and communities which are nurtured by being immersed *on and with* the land (Michell, 2017). Practical day-to-day activities on the land help with mental, spiritual, emotional, and physical development to regain balance, health, and wellness.

Although it has existed in First Nations cultures for centuries in various forms, the term Traditional Ecological Knowledge (TEK) came into widespread use in scholarly circles during the 1980s. However, there is no universal agreed-upon definition. TEK and Indigenous knowledge literature are extensive (English, 1993; Johannes, 1989). There are diverse perspectives on TEK. The term *traditional* in reference to the ecological knowledge of Indigenous people has been critiqued by Corsiglia and Snively (1995). They state that labelling Indigenous people's knowledge as traditional reinforces the stereotype that modern formal systems of knowledge are more superior or that Indigenous knowledge is something that belongs in the past with no utility in the present. However, all knowledge from various cultures evolves and transcends time. There are many modern scientific principles that were discovered centuries ago but are not labelled traditional. Why then is Indigenous knowledge branded as traditional? In addition, the word *ecology* is problematic because it is defined, as a branch of biology in the domain of Western science; so technically there can be no TEK if it is subsumed within a Euro-Western scientific framework. Philosophical and definition debates are ongoing.

Some academics regard TEK as a subset of *Indigenous science* (Ogawa, 1995). Indigenous science interprets how the world works from a particular cultural perspective. However, the word *science* is a Western term. We prefer *First Nations knowledge systems* as an umbrella term for a set of cumulative and complex knowledge strands. TEK represents only one strand of knowledge. Although many men and women

carried out the same duties on the land, another knowledge strand is women's ways of knowing. More research is needed by women for women. There are stories by women that remain to be shared. In the Cree culture, the earth is viewed as a life-giver. Women are the first teachers of the natural world. We hear the rhythm of life inside our mothers for nine months. Women teach us to walk gently on the land. They have knowledge of plants, medicines, healing practices, and animals we depend on for our existence. For the first five years of our lives, they teach us values of respect, sharing, caring, and honesty. The perspectives of Indigenous women are important in research and consultations, especially when it comes to land-based knowledge and leadership.

First Nations peoples are beginning to use their own language terms as a way of reclaiming and naming their knowledge systems. *Nihitbami-kiskitbicikwin* is one of many terms we use in the Cree language that is linked to the way we perceive knowledge. There are other language terms. In the Cree culture, extended family members were the mentors and teachers as they had different types of knowledge and skill sets. In our Cree language, even one word has links to other concepts which are then connected to other meanings and understandings. There are relational terms like *wahkohtowin* that is connected to similar terms that define how we think, talk, and relate to one another in our families, communities, and with the land (McLeod, 2008). Western science is only one way of coming to know the natural world. Science separates the physical from the emotional and spiritual. It is reductionist, although scientific theories are changing. Scientists try to break down the natural world to understand it. Western science dominates societal institutions, including the legal system, hospitals, mental health, universities, colleges, and schools (Horsman, 1975). However, Indigenous educator, Gregory Cajete (2001) argues that the definition of *science* is dependent on the culture/worldview/paradigm of the definer. Cajete (2001) also refers to Indigenous science as *ethnoscience* and *Native science*.

In Canada, Indigenous knowledge is defined in the Royal Commission on Aboriginal Peoples report (1996) as a “cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the

relationship of living beings (including humans) with one another and their environment” (p. 324). Cree and Dene ontologies, epistemologies, methodologies, and pedagogies require articulation with examples. For example, the Dene peoples follow the circular migration route of the caribou herds, which reinforces the way they see the world and their place in it. Traditional stories are a major way of passing on knowledge of the natural world. They have extensive connected knowledge and wisdom based on centuries of land-based experiences. Their whole cultural way of life revolves around herds that share their northern existence. They know their habitats and behaviour, including how to track them. They know how to harvest them, so they are not depleted to extinction. In traditional times every part of the Caribou was used. Meat was shared with families. The hide was used for different purposes from coverings for shelters to beautiful stitched clothing. There is a strong ethic of conservation framed by spiritual ceremonies and protocols that honour and respect all life.

The diversity of First Nations peoples in Canada mirrors the diversity of the natural world. There are differences and commonalities that create vibrancy and beauty in First Nations cultures. There are communities within communities. Not all Cree and Dene peoples know about their history and their First Nations knowledge systems and how they are rooted in the land because of the impacts of over 500 years of colonisation, assimilation, and religious conversion. It is important to note that First Nations people did not live a utopian existence. It is hard work to live off the land. Everyone has to do their part for survival reasons. There were wars, peace treaties, and governance systems long before European contact. We had our share of hardships that made us strong and resilient people. Our stories of origin teach us to embrace ambivalence, flux, change, and transformation. Indigenous people worldwide share a common worldview of interdependence with the land, water, animals, and plants. There are common characteristics of Indigenous knowledge that have been described as personal, experiential, holistic, and transmitted through Indigenous languages (Castellano, 2000). This list is not exhaustive by any means.

First Nations knowledge is both personal and collective. It is rooted in personal experience and lays no claim to universality. We are gifted in different ways for the benefit of the collective. We all come into this world for a reason. We learn knowledge and skill sets directly and indirectly from our extended family members, including from animals, plants, dreams, and ceremonies. There is some knowledge that cannot be replicated. For example, one cannot replicate what a healer does as the powers are both spiritual and physical. There are also aspects of Indigenous knowledge that cannot be shared in public and/or explained using Euro-western frameworks and languages. Sensitivity and respect are required. It is important to approach respected and knowledgeable Elders about what is appropriate to talk and write about. There are community protocols around compensation for sharing their wisdom. First Nations knowledge systems are not fixed and static. They evolve and change. They are validated through collective analysis, consensus, and a process of *putting our minds together*.

First Nations knowledge is experiential and connected to a particular place of origin or environment. It is properly examined and interpreted contextually through the vehicle of First Nations languages. First Nations knowledge must be *lived*. One cannot be an instant expert in a one hour workshop. Researchers cannot rely on interviews alone; they need to experience being out on the land in all of its facets under the guidance of knowledge keepers. Our stories are written all over the land. If you listen carefully to the words spoken, you can hear sounds from the natural world. In order to be a good hunter, you have to learn to be the prey, including the habitats, behaviours, animal pathways, stories, and cultural connections. Identification and structural examination of a plant may be meaningless without talk about its traditional uses within a context of a particular family or community and may include stories of origin, ceremonies, preparation, and strict protocols related to conduct.

First Nations knowledge is holistic in the sense that the world is viewed as an interconnected whole like a spider's web. When one aspect of the land is destroyed, there is a domino effect. It is often said there are only two things you have to

remember about being First Nations. One is that everything is alive, and the second is that we are all related. First Nations worldviews frame a common belief system that all life is connected and imbued with the breath of *kibci-manitow* (the Great Spirit), often also called *Creator*, or *the Great Mystery*. There are other language terms based on culture. There is no separation between the physical and spiritual realms. Everything in the biosphere, humans, animals, plants, and minerals are personified and considered *relatives* with no entity more superior than the other. Ceremonies and healing practices are rooted in the land. We use water, fire, air, and earth for cleansing and healing. These elements are the foundation of Western science. However, the spiritual element in Cree culture is an added dimension that filters through all life.

Indigenous peoples worldwide have made contributions in conservation, medicine, pharmacology, agriculture, astronomy, navigation, engineering, architecture, military science, mathematics, and ecology (Weatherford, 1991, 1988). In northern Saskatchewan, First Nations people were instrumental in teaching the newcomers how to survive. More research is needed in Cree and Dene communities. There is extensive literature on traditional plant foods and natural medicines (Kuhnlein & Turner, 1991; Leighton, 1985; Waldrum, 1990). A large percentage of modern medicines stem from the knowledge of Indigenous peoples without revenues returning back to communities. Although unique differences exist in contrast to Western science, the *process of science* including rational observation of natural events, classification, and problem solving are also a part of Indigenous knowledge systems (Cajete, 2000). Knowledge is passed on in symbolic and coded forms that include practical teachings, oral stories, metaphor, songs, dances, art, ceremonies, and daily cultural activities that encapsulate abstract and practical principles of the natural world (Johnson, 1992).

In Woodlands Cree families, learning about the natural world begins at infancy. Many Cree children were wrapped in moss bags from the moment of birth. With only head, eyes, and ears exposed, they learned quickly from the richness of the environment in which they lived. Moss bag babies were carried in cradle boards from camp

to camp on the backs of mothers and family members. Sometimes they could be seen hanging from a tree while they watched. From this reference point, they developed keen observational, analytical, and critical thinking skills necessary for survival. Woodlands Cree children observed, learned, and understood the way of the world around them through practical day-to-day activities on the land. As they became rooted in the land, they understood they were but a mere strand in an interconnected web of life. By observing relationships and patterns, they learned aspects that can be linked to physics, chemistry, biology, math, and other sciences necessary for survival. From these understandings and through the stories of the old ones, they were able to exercise and fulfil their responsibilities as stewards of the northern landscape.

First Nations peoples and their knowledge systems are increasingly being challenged to the point of extinction as a result of environmental degradation and displacement. When you destroy the earth from which our cultures are rooted, you destroy who we are as First Nations peoples. Traditional food sources and medicines are depleted by environmental impacts. First Nations have a Treaty right to food sovereignty and security, which are linked to sustainable ways of living. According to the Cree ethic of reciprocity *what we take from the land we give back something in return*. Traditional foods have cultural, medicinal, and spiritual significance to First Nations peoples. In the Cree belief system, animals consume medicinal plants that have an indirect pharmaceutical effect leading to health and wellness. Beavers and muskrats eat river medicines which are especially important during the winter for colds, fevers, and flus. There are numerous undiscovered plants and medicines. First Nation Elders and healers are passing away, with their medicinal knowledge and wisdom left undocumented. When we lose one Elder, it is like losing an entire library. First Nations languages that are used to communicate knowledge of the natural world are disappearing at an alarming rate. In 2018, the government of Canada proposed to pass an Indigenous Languages Act in order to preserve, protect, maintain, and promote First Nations languages.

Indigenous and non-Indigenous scholars worldwide are calling for the protection of

Indigenous knowledge systems (Battste & Henderson, 2000). Guiding documents exist. The Principles of Ownership, Control, Access, and Possession (OCAP) were developed in Canada as a standalone framework for researchers to follow with respect to conducting culturally relevant studies (Assembly of First Nations, 2007). Major federal government university funding bodies have adopted these principles. OCAP frames how data is collected and how information is managed prior to, during, and after a project has been completed. These principles need to be embedded in protocol documents and First Nations research agreements. OCAP principles are used to decide what research will be approved, how collected information and data will be used, where information will be stored, and who will be able to access that information. Additional tools can be developed to establish appropriate standards of practice for researchers working *with and for* First Nations communities. These tools include a code of research ethics, research agreements with appropriate compensation for those sharing TEK wisdom; and data sharing protocols.

National and international intervention may offer some hope in ensuring that First Nations knowledge is preserved for future generations. First Nations never gave up their cultures, languages, knowledge systems, lands, and resources when treaties were signed with the British Crown as they are regarded as gifts from the Great Spirit. Canada has endorsed the United Nations Declaration on the Right of Indigenous Peoples (United Nations, 2007) so that Indigenous cultures, languages, and knowledge systems are protected. Article 31 states:

Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions (United Nations, 2007, pp. 21-22).

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The Truth and Reconciliation Commission Report on Residential Schools (TRC, 2015) also has 94 calls to action that strongly recommend preserving, maintaining, and restoring Indigenous knowledge systems and languages that were diminished as a result of institutionalisation and assimilation. Fulfilling the TRC calls to action is a shared responsibility between all Canadians and First Nations peoples. Reconciliation is about repairing and restoring systemic balance across different societal sectors (Michell, 2017). From our perspectives as authors of this article, the perspectives and knowledge base of First Nations people combined with Western science is necessary in coming up with collaborative solutions to the many challenges that exist in northern Saskatchewan.

In conclusion, building bridges between knowledge systems is necessary in order to enrich how we think about the world and our place in it (Aikenhead & Michell, 2011; Colorado, 1988). The traditional structure of the Cree *mikimahp* (Tee Pee among Plains Cree) is symbolic of a women's shawl. The poles are arranged in a circle and joined tightly at the top. As authors of this article, we have a vision that strands of knowledge rooted in different cultures will come together like the circular formation of the poles. We must respect and learn from one another. TEK must be looked at as an equal form of knowledge strand in an era of reconciliation (Hunn, 1993). The transmission of First Nations knowledge systems is critical. Youth are the next generation of nation builders. It is encouraging to see educators in schools and universities developing curriculum that integrates TEK and Western science in land-based education (Michell, 2018; Pomeroy, 1994; Smith, 1982). More and more scientists and researchers depend on local knowledge from Indigenous communities. Involving and developing relationships with community members and Elders is key to access, interpretation, analysis, and usage. Indigenous knowledge cannot be separated from the people that hold it. The protection of TEK revolves around strengthening self-determination efforts and the protection of First Nations people and their ways of life.

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Mr Robin McLeod is a member of the Lac Laronge Indian band and was raised up on the Churchill River in northern Saskatchewan. He is a fluent Woodlands Cree speaker from the community of Stanley Mission. Both of Robin's parents were traditional land users. He has a Bachelor of Arts Degree and has been a consultant for eight years and is presently with the Prince Albert Grand Council. Robin is the author of a book entitled *Kinship wheel-Wahkotowin: Cree language "TH" dialect* (McLeod, 2008), which is a comprehensive and complex description of how the Cree extended kinship system is structured.

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