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# "To be involved in a meaningful way": Mobilizing Indigenous Knowledge in Environmental Monitoring Practices in Northern Ontario

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by

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**Abstract**

A steady shift in the environmental management literature encourages greater inclusion of traditional knowledge (TK) alongside Western science, much of it seeking to directly support Indigenous communities develop their own frameworks for environmental monitoring and stewardship. To date, little attention has been placed on research practices themselves as sites where interdisciplinary and intercultural work takes place to bridge between different knowledge systems and develop best practices for effective collaboration. Matawa Water Futures (MWF), the object of study for this thesis project, is a three-year water stewardship project involving Indigenous and non-Indigenous researchers, environmental managers, and community interns, working with the nine member communities of Matawa First Nations in northern Ontario to establish a framework for water monitoring and stewardship based in Indigenous TK. Using ethnographic methods, this research addresses the shifts in ways of thinking necessary to bridge knowledge systems for environmental monitoring, the discursive practices mobilized around TK in relation to science, and the practical implications of these shifts in perception and discourse for efforts to establish Indigenous-informed approaches to environmental management. This research argues that the MWF project reflects a shift away from a hierarchical dynamic of power/knowledge towards a more horizontal space of interaction between Indigenous and Western knowledge, and to also assert Indigenous governance in relation to the environment.

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**<u>Introduction</u>**

  Since time immemorial Indigenous Peoples have been stewards of the lands and waters on which they depend for their livelihoods and cultural practices (Grande, 1999; Toledo, 2001; Whyte, 2015). The Anishinaabe cultural family maintain values of humility and respect towards the environment (Simpson, 2004). As such, the Ojibway in northern Ontario have sought out opportunities to support their efforts in following these environment-based values. Matawa Water Futures (MWF) is a collaborative action research project between Indigenous and academic partners (Four Rivers, 2019). The project aims to support member communities of Matawa First Nations (MFN) with the development of water monitoring protocols that place Traditional Ecological Knowledge (TEK) in the foreground alongside Western science-based approaches. Overall, MWF aims to support capacity building within MFN communities that persists beyond the scope of the MWF project. The main goal of the proposed thesis research within the broader MWF project is to evaluate the ways in which MWF's team composition and relationships, research procedures and communication methods contributed to bridging knowledge systems.

  The development of the MWF project, as well as the work relationships and processes employed to carry it out, present a unique case study within the realm of the current collaborative research literature. It offers an opportunity to more closely examine the processes defining the relationships between knowledge systems within collaborative approaches to research practice. By extension, it points to learnings that are applicable to similar efforts within environmental management. This research provides insight into challenges and good practices by engaging the Indigenous and non-Indigenous team members as they carry out interdisciplinary and collaborative efforts to navigate different knowledge systems. Overall, this thesis addresses the

following question: what can the human experiences of this collaborative effort at intercultural knowledge co-production tell us about the opportunities and challenges involved in bringing TEK and Western Science onto equal footing in practices of environmental research, monitoring and management? To address this question, I conducted a case study of the MWF project team.

*Positionality*

This research is influenced by my own role within the project as a settler Canadian developing research engaging with TK and Indigenous partners. My own worldviews are rooted within a Western/settler Canadian background. Additionally, I am in a privileged position in having the ability to attend university for a graduate studies program. Thus, my research is subjective based on my own cultural values, knowledge and perspectives, which further influences how I understand and interpret information and knowledge throughout this thesis project. Arguably, similar work could be conducted by Indigenous researchers and would produce different insights, offering a beneficial counterpart to the work produced in this thesis. I chose to do this research because I found that the work being done by MWF was worth documenting in order to show the ways in which Indigenous voices and perspectives can be supported within environmental management.

In order to ensure continued self-reflection on my positionality, it was useful to consider approaches such as Two-Eyed Seeing, which encourage the researcher to think critically about the methodologies employed, their own positionality in the research, and what impact this has overall on the research process. Including autoethnography in this thesis has been crucial to continue reflecting on the different ways of knowing that I have engaged with throughout this research.

## **Research Background and Context**

**Anishinaabe & Ojibway people**

The Anishinaabe/Ojibway People are the second-largest Indigenous group in Canada, spanning from the region northwest of Lake Superior across the great lakes to the southernmost point of Ontario in the northeastern woodlands. Anishinaabe languages are part of the larger Algonquian language family. Within Anishinaabe knowledge systems, there are a guiding set of values that inform world views and ways of being (McGregor 2014b). This value system is directed towards fulfilling *mino bimaadiziwin*, a way of living or identity that aspires to 'the good life' (Simpson, 2011; Sioui & McLeman, 2014). For the Anishinaabe, this refers to teachings, values, and relationships, whereas the good life in Western society is generally associated with achieving material wealth.

The values of *mino bimaadiziwin* are enacted in traditional land use practices and embedded within Traditional Ecological Knowledge (TEK) (Whyte et al. 2016). The relationship to the land is premised on a responsibility of stewardship toward the environment (Whyte et al., 2016). Alongside this philosophy of *mino bimaadiziwin*, TEK serves to reinforce both values and practices in sustainable interactions with the land (Simpson, 2011; Davidson-Hunt, 2003; Houde, 2007)

**Matawa First Nations**

MFN is a tribal council of nine Indigenous communities in Northern Ontario. Eight of these communities are part of the James Bay Treaty No. 9, while the ninth community is within the Robinson-Huron Treaty (Matawa 2019). MFN communities are situated in the Hudson Bay lowlands and Ontario Shield Ecozones (MNR, 2009). The nine MFN communities are within Lake Nipigon and Big Trout Lake Ecoregions, as well as part of the James Bay Ecoregion. As part of the Hudson Bay and Great Lakes watersheds, MFN territory encompasses over 300, 000

square kilometres of watersheds in Northern Ontario (Four Rivers, 2019). Figure 1 illustrates the distribution of MFN communities and the major watersheds within their traditional territory.

These communities are experiencing a variety of environmental changes that threaten their traditional ways of life. To address concerns about these changes, the Four Rivers Environmental group was developed by MFN as a resource group to support member communities in environmental monitoring and assessment. Four Rivers provides expertise, training, scientific equipment and data management support, with a long-term focus on capacity building for community-based environmental monitoring. The region has a long history of resource extraction, such as forestry and mining, which has had a significant impact on MFN communities. More recently, communities have been engaged by industry and government in discussions regarding proposals to develop the Ring of Fire mineral deposit in the James Bay lowlands. Spanning approximately 2127 square kilometers, this is an area exceptionally rich in nickel and chromite deposits (Noront, 2019). Due to the economic promise of this region, the Ontario provincial government has actively supported moves by industry towards mine development. The proposed development of the region is one of the greatest potential drivers of environmental and social change for MFN communities.
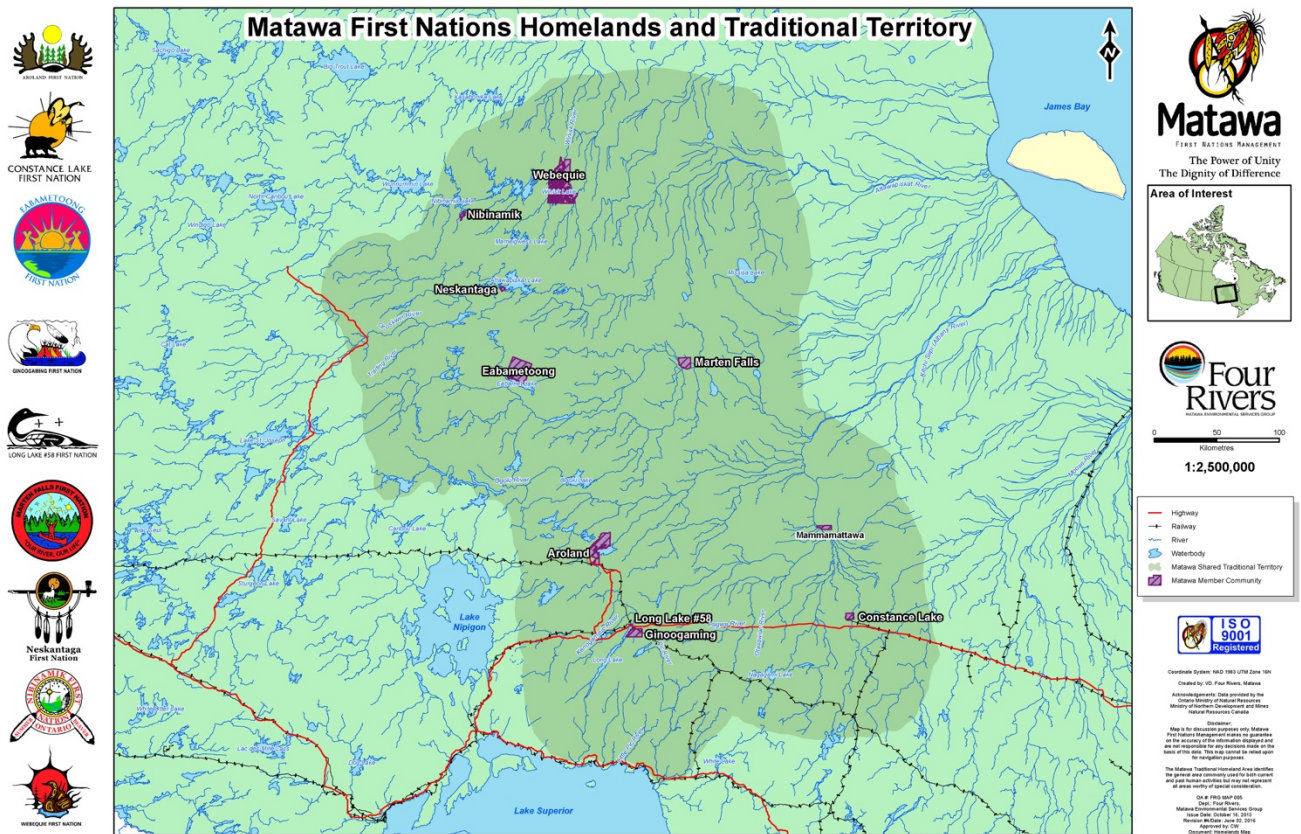
Figure 1: Map of the MFN communities and major watersheds in their traditional territory (Four Rivers, 2019).

**Matawa Water Futures**

The Matawa Water Futures project began in 2018 in response to a Matawa Chiefs' Resolution regarding watershed stewardship capacity building (Four Rivers 2019). This resolution addresses the intent for long-term sustainability of the watersheds throughout the traditional territories of MFN (Four Rivers 2019). With this in mind, MWF identified a need to build capacity for water monitoring practices that foreground Indigenous values and knowledge, as the basis for Matawa communities to play a leading role in water governance and stewardship in the region.

MWF is an action research project, with the objective of generating long-lasting outcomes that can be actively applied in ongoing and future monitoring efforts. These objectives are pursued primarily through (a) documentation of TEK and traditional forms of environmental stewardship, leading to the development of recognized TEK indicators of water health and environmental change; and (b) development of methodologies centred around Western science training, community-based monitoring and regional information sharing. The MWF project includes: one academic co-principal investigator, one community co-principal investigator, ten academic co-investigators (three Indigenous, seven non-Indigenous), partners from MFN, partners from Dehcho First Nations, and eight individual collaborators (seven from Four Rivers, one from Laurentian University). Ultimately, the aim of MWF research is to support the development of Indigenous-led water management programs and practices that will outlive the MWF project.

## Literature Review

### Western views about "nature" and Indigenous peoples

As this research addresses knowledge co-production and the importance of recognizing different ways of knowing, it is important to situate the analysis in relation to dominant Western ways of knowing and the treatment of Indigenous Peoples by Canadian settler society.

*Knowledge and Power*

Disciplinary knowledge tends to reflect the dominant views of society—"history is told from the perspectives of the colonizers" (Smith 1999, pg. 31). Foucault's work on the concept of power/knowledge serves as a useful framework in exploring colonizing practices of dominance over culture, policy and economy. Specifically, this research draws on Foucault's notion that

"power is established, maintained and presupposed by knowledge" (Zieleniec, 2008). While this can be true across diverse human societies, for the purpose of this literature review I will mainly be referring to Foucault's theory of power-knowledge in relation to the colonizing practices of Eurocentric settler societies.

The method in which power is used and exercised reflects the types of social roles and relations that exist in society (Zieleniec, 2008; Lynch, 2011; Hoffman, 2011). Disciplinary power, practicing power over the individual, reinforces what is deemed normal or abnormal (Hoffman, 2011). Social norms are reinforced through practices of "hierarchical observation and normalizing judgement" (Hoffman, 2011, p.32). Engaging with "abnormal" individuals challenges dominant norms (knowledge) and in turn governing bodies (power).

To better understand the context of colonization in environmental research, and relationships with Indigenous peoples, it is important to consider:

> "how space is produced, moulded, shaped, designed, regulated and policed by
> disciplinary discourses in which representations of space reflect the operation of power
> in, through and over space and the activities that occur there" (Zieleniec, 2008, 13)

Taking into consideration the impact of colonial frameworks in industrial development within a natural space reveal the dominant discourses that circulate within environmental monitoring and management practices. Overall, this includes addressing the way views on nature and how to engage with the environment take shape within the narratives imposed on a given space. Through colonialism and the implementation of dominant Eurocentric views towards the use of space, there is a shift in what knowledge of a place is accepted, and how this knowledge is enforced and practiced. The act of asserting power and dominance over a place in this case alters what is consider best practices for engaging with nature.

*Defining "nature" and "culture"*

Cronon (1996) argues that our conceptions of the environment are the result of Western cultural beliefs that are reaffirmed through power and politics. There are various meanings behind the words we use—e.g., nature, environment, wilderness—and these meanings change over time. Cronon's arguments highlight Western environmentalism's influence over how nature is experienced, as well as how this influence aligns with dominant socio-cultural-political interests. Overall, he calls for a "rethinking" of the way nature is cast as "wilderness", as the term often reflects dominant interests, power relations, and narratives of a given time. These definitions continue to perpetuate a "dualism" (Cronon, 1996) that maintains humans as separate from nature. While certain ideas surrounding the environment show a fondness for it— romanticism or self-identity—there are still concerns and lack of interest in engaging with nature (Dickens 2004). In essence, nature becomes objectified; governing bodies (e.g., colonial governments) can develop and regulate general understandings of nature through exercising control (power) over a space for social and economic interests.

Efforts to reinforce this notion of separating humans from nature are seen through Western European discourses on progress. In his book "Primitive Culture", anthropologist Edward B. Tylor (1871) argued that culture in societies goes through a process of evolution, from savages to barbarian to civilized state. Tylor states: "the continual interference of degeneration, the main tendency of culture from primæval [sic] up to modern times has been from savagery towards civilization" (Tylor, 1873 in Erikson & Murphy, 2013, p. 37). Similarly, Lewis Henry Morgan (1877) presented stages of cultural and civilized development of societies, and relates these stages back to living "present-day" (1877) societies. While these concepts of cultural evolution are contrary to anthropological theory today, they do shed light on the roots of

Western thought regarding "Other" cultures different to that of the European colonizer. Both anthropologists compare cultural advancement to the tools developed by a society, and the ways that the environment is controlled for the benefit of resource extraction and production (e.g., hunting, agriculture).

Grande (1999) discusses how these early Western representations of nature informed how Indigenous people were both represented and understood as the "noble ecological savage" (Grande 1999). The notion of the "noble savage" emerged as a way of positioning Indigenous people as ideal stewards of the environment, which simplifies and romanticizes their complex relationship to the land. Also, the "noble savage" concept reinforces colonial perceptions of civility, asserting that Indigenous land use practices reflect little progress or advancement of their society. This notion was complemented through colonial efforts in dispossession of land. Harris (2004) discusses the need for European settlers to develop as a society by detaching from nature. This perception of development was reinforced by socio-cultural views that nature (land) must be controlled (Harris, 2004).

*Indigenous People, Land and Resource Extraction*

Manuel and Derrickson (2015) describe the efforts European settlers made in claiming land as "terra nullius" (uninhabited land), despite the fact that settlers continuously encountered Indigenous peoples, and attempts were made to force Indigenous peoples off the land through claims supported by colonial government frameworks (Manuel & Derrickson, 2015). Thomas King characterizes this relationship between Indigenous Peoples and European expansion in his book, *The Inconvenient* Indian (2012), by describing European/Settler attempts to gain control over land emerging out of interests to commodify and "improve" (clear, till, develop) the land. According to the report "Land Back" by the Yellowhead Institute (2019), the alienation of land

and Indigenous Peoples takes shape in two ways: fast (direct force, i.e. dispossession, relocation) and slow (systemic force, i.e. legislation, policy). Ultimately, this process has sought to accomplish the same end result: "the replacement of independent, self-determining Indigenous nations with a populations of individuals who either assimilate into settler society or die away" (Yellowhead Institute, 2019, p.16). The inconvenience of Indigenous Peoples is that they continue to get in the way of resource extraction and economic wealth generation, necessitating the ongoing involvement of settler government in the development and application of policy designed to diffuse Indigenous resistance to extractive industrial development on their traditional lands.

*Towards Decolonizing Research*

While it is crucial to understand the wider social, cultural, and political power dynamics that provide the context for the MWF project, the practice of research itself has also tended to perpetuate problematic relationships between settler societies and Indigenous Peoples. There has been a strong push from Indigenous scholars to reconsider Western colonial frameworks for research, and to take up Indigenous knowledge frameworks as a way of moving beyond the colonial narrative (Smith 1999; Harris 2004; Whyte 2015). This requires confronting dominant knowledge systems and acknowledging other ways of knowing.

Decolonizing research frameworks means questioning Western standards of knowledge and practicing reflexivity to expand the forms of knowledge that are considered in research (McEwan 2009). This involves unsettling the dominant discourses and recognizing other forms of knowledge as legitimate (Muller 2014). This process of unsettling can also be seen through the Indigenous resurgence perspective. In her book *As We Have Always Done: Indigenous Freedom Through Radical Resistance*, Simpson (2017) writes:

"Our nationhood is based on the idea that the earth gives and sustains all life, that "natural resources" are not "natural resources" at all, but gifts from Aki, the land. Our nationhood is based on the foundational concept that we should give up what we can to support the integrity of our homelands for the coming generations…It is nationhood based on a series of radiating responsibilities." (Simpson, 2017, p. 8-9)

This quote from Simpson emphasizes the capacity for a resurgence, for a movement towards autonomy in spite of dominant structures. This resurgence movement considers how Indigenous people and communities can reclaim Indigenous identity in cultural and political contexts (Alfred & Corntassel, 2005). Moreover, this resurgence seeks to move out of the dominant Western nexus of power-knowledge; the active regeneration of indigeneity connects further with reconnecting to a place (Alfred & Corntassel, 2005; Coulthard & Simpson, 2016). Coulthard and Simpson (2016) state:

"Our relationship to the land itself generates the processes, practices, and knowledges that inform our political systems, and through which we practice solidarity (sic)" (254)

Building respectful relationships between Indigenous and non-Indigenous Peoples provides the opportunity to support this resurgence while sharing responsibilities and advancing common interests. To accomplish this, there needs to be a willingness to seek out practices that recognize those involved and their interests without impeding or regulating Indigenous people through ongoing colonial approaches to land management.

**Evolving frameworks for Environmental Management**

*Co-management*

Within the colonial context for human-nature relations and the supporting epistemological framework of Western science, resource management emerged in the twentieth century as a response to concerns over the environmental implications of resource extraction. Informed by Western Science approaches and experts, it was structured in a top-down approach, where governments exerted control through regulation of extractive processes and measures aimed at remediating harm (Mitchell, 2019). These management processes were often enacted through coercive structures and policies that neglected local knowledge and management practices, often leading to social conflict (Spaeder & Feit 2005).

Co-management emerged around the 1970's as a response to Indigenous resistance towards these top-down approaches, and through a recognition of different kinds of expertise, including local knowledge (Berkes, 2009). It is often described as evolving alongside adaptive management practices (Berkes, 2009), in order to abandon top-down structures in favour of a fluid, flexible process, shaped by key stakeholders (Carlsson & Berkes 2005). Co-management involves the negotiation of roles and responsibilities between two or more groups in defining resource management practices and responsibilities (Carlsson & Berkes 2005). Fundamentally, it is an approach aimed at managing the network of relationships involved within resource management (Denny & Fanning 2016; Carlsson & Berkes 2005). Scholars describe co-management as the use of collaborative and interdisciplinary methodologies in environmental monitoring practices (Sable et al. 2009; Spaeder and Feit, 2005). Co-management practices also serve as an approach towards governance (Carlsson & Berkes 2005). Recognizing the role of co-management within governance presents a possibility for local perspectives to gain traction and become the basis for degrees of self-determination (Carlsson & Berkes 2005).

*Indigenous Peoples in Co-Management*

A steady shift in adaptive co-management literature has encouraged greater inclusion of traditional knowledge (TK) and other forms of experiential knowledge (Berkes 2012; Armitage, Berkes & Doubleday 2008; Denny & Fanning 2016). This has occurred through evolving co-management programs, but it is also important to underline both the practice and outputs of collaborative research in supporting the emergence and deepening of co-management (Kovach 2009; Sioui & McLeman 2014; Wilson et al. 2018). The shift is particularly evident in new understandings regarding the role of social learning and culture in developing and defining knowledge (Plummer & FitzGibbon, 2008). Such understandings strengthen the case for greater inclusion of Indigenous People and Knowledge in environmental research and management practice (McGregor, Bayha & Simmons 2010).

Scholars have identified this need for including Indigenous peoples within knowledge practices in order to improve the ways in which environmental and sustainability issues are addressed (McGregor 2014a; Bartlett, Marshall & Marshall 2012). Moreover, co-management serves an important role in supporting the establishment of Indigenous governance in response to colonial/Western frameworks (Carlsson & Berkes 2005; Feit 2005).

*Including Traditional Ecological Knowledge*

Co-management aims to bring together groups to define management practices, and at the heart of this, it depends on community-based knowledge and environmental monitoring (Wilson et al. 2018). Building capacity to bring local knowledge forward allows for more effective recognition of TEK, as well as providing opportunities for collaborative research practices alongside co-management, and for results to return back to communities involved (Sable et al. 2009). It is important to note that there are different terms used within the literature to describe

Indigenous ways of knowing.  While sometimes used interchangeably, these differences also reflect a substantive debate about what exactly constitutes traditional knowledge (TK)/traditional ecological knowledge (TEK)/Indigenous Knowledge (IK)/Indigenous Science (IS) and how it relates to Western science in management contexts.

Proponents of "TEK" emphasize Indigenous relationships with the land that are premised on a sense of responsibility to assume the role of stewards or caretakers of the land (Denny & Fanning 2016; Prosper et al. 2011; Corntassel & Bryce, 2012). In other words, TEK is a 'lived knowledge' about human-environment relationships (Berkes 2012). TEK is understood as a continually evolving body of knowledge that combines environmental and socio-cultural knowledge of a particular Indigenous group based on experiences, passed on to future generations (Houde, 2007; Berkes, 2012; Sioui & McLeman, 2014; Whyte et al., 2016; Denny & Fanning 2016).

One way this way of knowing has been staged is by defining TEK as Indigenous Science (Cajete, 2000), a complete knowledge system of equivalent stature to be taken up alongside Western Science (Whyte 2013; Whyte et al. 2016; Kimmerer 2013). Another approach is referred to as Two-Eyed Seeing, a practice that seeks to bring together Western and Indigenous knowledge systems, while still respecting the autonomy and integrity of each. Two-Eyed Seeing recognizes the strengths of both knowledge systems to develop more effective methodologies in research practices, as well as co-management structures (Bartlett et al. 2012; Denny & Fanning 2016). Attempts to practice complementarity of knowledge systems within co-management is often initiated and supported by Indigenous people (Wilson et al., 2018). While efforts to bridge between different forms of knowledge seem to be promising, further research is needed to better

understand the prospects of Indigenous community-based involvement in driving co-management practices (Wilson et al., 2018).

*Critiques and Debates*

There are many challenges to effectively recognizing knowledge systems in research methods, and the shift in practice has been slow (Beckford et al., 2010; Watson 2013; McGregor 2014b). One way in which this is evident is through the misrepresentation of TEK in the literature as a result of misunderstanding or miscommunication. For example, Tegelberg's (2013) research on tourism representations of local and Indigenous culture shows how narratives within the literature tend to follow a Western tourist framework that fails to effectively include local and Indigenous perspectives. Furthermore, on the notion of misunderstanding, Latulippe and Klenk (2020) challenge the idea of knowledge co-production as the main objective in research. Latulippe and Klenk argue that knowledge which is treated as data removes Indigenous governance over TEK, and perpetuates extractive practices in environmental research and monitoring processes.

Such issues with bridging across knowledge systems also raise questions regarding involvement of Indigenous Peoples in decision making. One shortcoming comes from positioning Indigenous Peoples as stakeholders, who inform decisions within research and management practices, rather than as nations with the capacity to make decisions (von der Porten and de Loë, 2013). Some have observed that Indigenous people are often framed only as 'resource people' in co-management strategies (McGregor, Bayha & Simmons, 2010). In this role, Indigenous people are only consulted for their knowledge of the land, rather than as rights holders with a definitive role in co-management decision-making. This framing limits the contributions and participation from Indigenous people and prevents effective engagement with

TEK as an integrated cultural body of knowledge. Additionally, according to Young et al. (2020), this places undue pressure onto Indigenous people involved in co-management practices; in other words, they are being "consulted to death" (4). There is a need to reiterate the importance of Indigenous governance in relation to co-management, as it ultimately defines the types of interactions that emerge in the research process (von der Porten and de Loë, 2013).

The types of relationships that are developed and defined within co-management are crucial. Instead of treating TEK as embedded within cultural and governance traditions, it is often considered only in ways that are most compatible with Western science (Houde, 2007). Challenges such as this are identified within the literature, yet explorations of how this could be addressed or how collaboration can be effectively achieved are scarce (McGregor 2014a; Popp et al., 2020; Tengö et al., 2017; Yua et al., 2022). Perhaps the root of the problem is that co-management frameworks emerged out of Western notions of sustainability and resource management (Prosper et al., 2011). One approach to address this in research is to consider 'co-existence' in the development of collaborative environmental monitoring practices (Whyte 2013; Muller, 2014). Dialogue between knowledge systems also invites further interaction between groups to develop a comprehensive understanding of the similarities, differences, and potential complementarities (Sable et al. 2009). This sharing of knowledge reaffirms the intentions behind TEK, as well as reiterates the need for different pathways towards knowledge complementarity (McGregor, Bayha & Simmons, 2010; Kimmerer 2013).

**Indigenous Methodologies**

In response to the critiques addressed above, there has been a shift in research practices and methodologies that situates Indigenous Peoples seeking recognition, justice, and sovereignty in collaborative research (Louis, 2007; Smith 1999). However, the use of Indigenous

methodologies is not necessarily a complete alternative to Western academic methodologies; rather, they call attention to the general assumptions as well as the linear nature of Western methods and seek to offer new perspectives to better inform methodologies in practice (Kovach 2009; Louis, 2007; McGregor, Bayha & Simmons, 2010; Drawson, Toombs & Mushquash, 2017). Kovach (2009) suggests that the purpose is to challenge existing methodological frameworks and theories, and to seek out opportunities to include and refer to Indigenous theory and practice. The inclusion of Indigenous people and TEK can inform ongoing and future research in environmental monitoring practices, as well as the creation of more holistic and collaborative frameworks (McGregor, Bayha & Simmons, 2010).

Muller (2014) argues that engaging with Indigenous methodologies allows for opportunities aimed towards "ontologically equitable collaboration" (Muller 2014, 137). This means shifting away from linear dominant discourses towards partnerships that are "a series of processes and relationships based on mutual respect and trust, between groups and cultures" (Muller, 2014, 138). Overall, this is a shift towards recognizing the authority of Indigenous knowledge, addressing the inherent power relations that influence research practices. Building from key scholars' work on Indigenous methodologies, Louis (2007) offers a succinct overview of what Indigenous methodologies entail: the "aim is to ensure that research on Indigenous issues is accomplished in a more sympathetic, respectful, and ethically correct fashion from an Indigenous perspective" (Louis, 2007, p.133). Furthermore, Louis identifies four key principles—relational accountability, respectful representation, reciprocal appropriation, and rights and regulation—which reflect common ethical standards across Indigenous methodological practices. This includes recognizing the past injustices within research, seeking out opportunities for co-learning and collaboration, and developing responsible research

practices (Tobias, Richmond & Luginaah, 2013; Tipa, Panelli & the Moerake Stream Team, 2009; Ward et al., 2020; Lynch, 2017).

Implementing these principles into practice might include facilitating interviews about the land while on the land, or organizing a 'talking circle' for stories and perspectives to be shared equally (McGregor, Bayha & Simmons, 2010). Furthermore, it is necessary to recognize a space in which Indigenous methodologies can be used alongside Western research methodologies, such as participatory mapping, where Indigenous Peoples and researchers develop maps of a region while referring to TEK (Smith, 2003). Perhaps most importantly, this includes developing research through a relational space: building relationships of mutual trust and interdependence, as well as coming together in "a space of safety and respect" (Ward et al., 2020, p.5). Tipa, Panelli and the Moerake Stream Team (2009) outline their research as establishing "a relationship of respectful togetherness developed independent of, but complementary to, the specific tasks of the research" (p.100). One of the key points they discuss, regarding the collaborative nature of their research, draws on the necessity for continuous learning and knowledge exchange. Doing this not only enables the development of this relational space (Ward et al., 2020), but also encourages stronger research partnerships in affirming the legitimacy of different ways of knowing.

Overall, this literature reviews aims to situate the context of knowledge production in relation to socio-cultural, political, and economic domains, including impacts on power and authority. As discussed above, there has been a shift towards validating different ways of knowing, in this case recognizing the presence of Indigenous knowledge and TEK. There is an opportunity to document and address the methods and practices used in environmental research, which in turn produces potential applications for ongoing and future environmental monitoring

and management. This thesis research specifically addresses the collaborative research practices within the MWF project. This includes addressing the processes of relationship building, and follows the application of research methods by the project team to determine good practices and address challenges in the co-development of environmental monitoring and management protocols.

## Methods

### Introduction

Building on the methodological foundations of the existing MWF project, including my ongoing role as an RA for the project, the methodology for the thesis research was developed around the use of ethnographic methods, informed and adapted through consideration of Indigenous approaches to research methodology. The plan was for the research methods to build on existing planned interactions through fieldwork and community engagement with the MWF co-investigator team and partners. As with many other research projects conducted over the past two years, this research plan had to be adapted according to restrictions due to the COVID-19 pandemic. A consistent recommendation for research projects seeking to continue during the pandemic called for incorporating flexibility and adaptability in methods (Rahman et al 2021). Wilfrid Laurier University provided strict protocols for moving human-participant research to virtual platforms. My research therefore shifted towards virtual data collection methods and adjusted according to what was feasible in the context of this project. Due to these wholesale changes in approach, the following discussion of methods treats the original research plan in significant detail before explaining how the methods were adapted and exploring the implications of those adaptations for the research.

**Original Research Plan**

*Ethnographic Methods*

This research drew on ethnographic methods as the most appropriate approach to focus on the perceptions, experiences, and discursive practices of team members and some of our immediate community partners. This research was designed to consider a multi-sited approach, as the participants were located around southern and northern Ontario, with MWF community partners spread out across a significant geographical expanse of often remote territory. Furthermore, the notion of "multi-sited" is not limited here to specific locations or places, but also recognizes place as a subjective space that can be defined and understood in different ways (Larsen & Johnson 2012). In other words, although members of the MWF team and community partners have moved through many overlapping spaces, that does not mean that their subjective experiences of each place are the same.

A central ethnographic method that was to be used in the research is participant observation. As I was employed as a research assistant (RA) on the MWF project, it was possible to attend events and programs hosted by MWF and Four Rivers, such as training workshops, meetings, and research travel to communities. During my participation in these events, detailed notes would be kept, documenting the processes and interactions that took place as I worked alongside Indigenous and non-Indigenous team members in community-based engagement activities, data collection and knowledge mobilization.

Ethnographic interviews were also to be employed, allowing the research to probe in more detail and specificity how different members of the research team and community partners perceived the goals of MWF, the way they have been pursued in various areas of the project, and what challenges have emerged due to the intercultural context. Participants were to include

MWF team-members, as well as community partners working closely with Four Rivers and the MWF team.

*Indigenous Methodology*

The approach to ethnographic research was also informed by Indigenous methodologies. The inclusion of Indigenous people and TEK can inform ongoing and future research and practices, as well as the creation of more holistic and collaborative frameworks in environmental monitoring practices (McGregor, Bayha & Simmons, 2010).

Indigenous methodologies were incorporated into this research in a few ways. First, my involvement with the MWF project before developing this thesis project allowed for the relationship-building process to take place as soon as possible. Through these relationships, I was able to form my research questions, as well as my methods for interviews, based on the interests of participants involved. Additionally, interview questions were not designed in a linear manner, but rather encouraged broad responses from participants, based on what they deemed a suitable way to share their knowledge. Stories were encouraged but not necessary. Questions also incorporated a reflective approach, which indirectly asked participants to consider their own positionality in the context of the work they are doing, and consider what engagement with different ways of knowing entails with respect to environmental monitoring, management, and research practices.

*Autoethnography*

Autoethnography can be described as: "the interaction between the researcher's multiple identities as a researcher and as a member of a social world" (Hokkanen 2017, 26). Applying this methodological framework in research recognizes the impact of subjectivity and actively acknowledges the researcher's influence on research (Ellis et al. 2011). The focus of

autoethnography is to reflect on key moments during fieldwork that stood out to the researcher. These experiences are then analyzed in order to respond to a research question, but generally reflect the active processes in place that the researcher experiences during the course of fieldwork.

Emerging from both the goals of the research and the considerations arising from Indigenous methodologies, this thesis project engaged with discussions regarding worldview, perception, experience, relationships, and discourse. As such, it was important to reflect on how the research would be influenced by my own role within the project as a non-Indigenous person developing research engaging with TEK and Indigenous partners. As another measure to continue this self-reflection on positionality, the interview guide included questions on the Two-Eyed Seeing approach, which were meant to encourage the researcher and participants alike to think critically about the methodologies employed, their own positionality in the research, and what implications this had overall on the research process. Furthermore, autoethnography is a crucial asset in reflecting on the different ways of knowing that I engaged with throughout this research. This was to consist of keeping a log of my own reflections and experiences to continue active reflection on the process of collaboration across knowledge systems. Overall, this research takes on a self-referential approach in addressing the research questions, which included evaluating concepts, such as collaboration, from multiple perspectives.

**Adapting to COVID-19**

The most prominent and obvious change to this project's methodological approach was the move from in-person fieldwork to virtual methods of engagement. In the case of ethnographic methods this is particularly problematic in terms of establishing and building rapport with potential participants (Santana et al 2021; Rahman et al 2021). In my case, for instance,

opportunities for participant observation, which would have also served as relationship building, disappeared almost completely. An entire summer field season of MWF data collection through extended community visits and involvement in on-the-land activities had to be cancelled.

For research projects facing this dilemma, it is recommended that researchers fall back on pre-existing relationships and build further on collaborative approaches to continue engagement (Santana et al 2021). Fortunately, through my role as an RA with MWF, I was able be actively involved with co-investigators, Four Rivers, and community members prior to the pandemic, which meant that I had already begun building relationships with many of the potential participants in this thesis project. In June 2019, I was involved in a 3-day community research workshop that included MWF researchers, Four Rivers staff, and MFN community liaisons. Then, in August 2019, I attended the MFN AGM, a 3-day gathering in Constance Lake First Nation. While there, I was engaged in data collection and running a social media contest with community members. Between September and December 2019, I was involved in various meetings with the co-investigator team to discuss research plans for the anticipated 2020 fieldwork season. Additionally, in December 2019, I attended an MFN gathering in Thunder Bay to assist with data collection on environmental monitoring, as well as training for new federal Impact Assessment regulations. Lastly, I accompanied MFN community representatives on a week-long knowledge exchange trip to the NWT in March 2020, just before COVID-19 lockdowns began.

After travel restrictions and social distancing protocols were implemented, the MWF project moved to exclusively virtual methods of engagement, and I continued to be involved as a participant observer during that engagement. Similarly, I fell back on interviews as the principal

form of data collection in my existing methodological tool kit, since they could be conducted remotely.

Perhaps the only benefit of this shift to virtual engagement was that of reducing the barriers to scheduling and holding interviews, something noted by other qualitative interviewers adapting to COVID-19 (Roberts, Pavlakis & Richards 2021). Initially, I had intended to hold most interviews in-person, with only a small number that might take place over the phone or video conferencing software. Most of those interviews would have required extended air travel, along with related time and expenses. However, from the comfort (seclusion) of my apartment, I was able to arrange interviews with 17 individuals from the MWF co-investigator team and community partners. Needless to say, the trade-off for this ease of scheduling is that remote interviews remove the physical and social interactions that are normally experienced during in-person methods. This shift also impacts the types of information and ideas that are shared through interviews, given the kinds of engagement that are possible through online platforms (Rahman et al 2021). Finally, my ability to interview community members was significantly impacted by this shift in methods. While I had already developed relationships with some of the MWF community partners prior to the pandemic, with many others I had only had preliminary interactions and did not feel that it would be appropriate to approach them for a remote interview.

Another impact of the shift in methods was on the autoethnographic portion of the project. While I certainly had plenty of access to myself during the pandemic, the autoethnography had been conceived in close relationship to the participant observation portion of the fieldwork. Without the multiple stimuli of being present with research partners in distinct locations to do the work of the MWF research together, there was simply much less for me to reflect about. Instead,

I chose to focus on writing reflections on pre-COVID-19 experiences, and refer to autoethnographic methods when conducting and analyzing interviews. Specifically, this included reflections on the development of collaboration and relationship building in research projects, as well as specific themes that emerged regarding research practices with Indigenous communities and what possible implications arose with the pandemic. Given this reduction in scope, there are fewer findings to report. As such, rather than dedicating a specific section of the results to autoethnography, these observations and critical reflections will be included throughout the results and analysis.

*The MWF Students*

A central component of this project that influenced both this thesis as well as the larger MWF project is the role of the students. I have already mentioned my role as a research assistant for the MWF project, but as a student I am also working within the MWF project: my thesis research has developed around the practices within the MWF project, and my co-supervisors are co-investigators for MWF.

One of the objectives in the MWF project is to build community capacity in monitoring and management practices. To accomplish this, the project sought to support MFN members in pursuing post-secondary degrees within environmental science and geography fields. Erin Desjardins (Eabametoong FN) and Jasmine Baxter (Marten Falls FN) joined the MWF project over the summer of 2019 prior to beginning their graduate and undergraduate programs, respectively, in September of that year. They attended Lakehead University, with assistance from co-investigators from Lakehead and Laurier. In addition to completing course work, Erin and Jasmine were also employed by Four Rivers as Stewardship and Geomatics interns.

At the start of the academic year in September 2019, Terry Mitchell (Co-PI for MWF) recommended the students have regular meetings to create a space for exchange of knowledge and experiences. Meetings were irregular, as we found it difficult to coordinate a time that worked with all schedules. In total, there were eight meetings (approximately once a month), and meetings stopped mid-summer 2020. At that time, my role as a research assistant shifted to help support communication between Four Rivers and MWF researchers by attending weekly Four Rivers staff meetings. During those meetings I was able to connect with Erin and Jasmine on similar discussions to those that we would have had in our student meetings.

**Summary of data collection activities**

In total, there were 17 participants in interviews. Participants were organized based on their affiliation with the MWF project: university researchers, Four Rivers staff, and students. Although interview data was organized according to these groups, participants were not exclusively restricted to one of these categories. For example, Erin Desjardins and Jasmine Baxter are both MFN members, are students affiliated with the MWF project, and are employed as staff at Four Rivers. For the purpose of this thesis project, I have grouped them both in the students category, but they carry valuable information and insights into Four Rivers, as well as personal experiences as MFN community members.

Interviews ranged from 40-90 minutes. They were held over Microsoft Teams or by phone. All participants were asked the same set of questions around a set of common themes (see Appendix A). The MWF students were asked additional questions regarding their university programs in relation to the project (see Appendix A). The questions started with asking participants about their involvement in the MWF project and what their contributions were. Questions then shifted to defining collaboration in the context of the MWF project, and further

reflection on the role of relationship building in research. As some participants were not directly involved in some aspects of the MWF project, they were invited to also share examples from other research and projects they have been involved in to help inform their responses.

Interviews were transcribed for analysis. The analytical approach was thematic analysis, a broad and flexible method applied to draw out connections and patterns in qualitative interview data (Clarke & Braun 2017; 2021). This approach allows for flexibility, with the researcher searching for specific themes related to the questions asked, but also with sensitivity to additional themes that emerge from the data being analysed. In the case of this research, some of the data collected was organized into stories. The aim of this approach was to represent the reflections documented throughout the interview process in a cohesive manner, as well as to be attuned to Indigenous methodologies for representing results.

Adapting this story-telling approach also allowed for autoethnographic reflections to be connected to the other data and enrich the results discussion. Referring to methods of data analysis for autoethnography (Hokkanen, 2017), engaging in this story-telling approach allows for further reflection on the information shared, as well as draws on an anthropological lens that considers the ways in which these stories were told by the participants. This includes, but is not limited to, considering the following questions: what is the significance of this experience? How does this experience respond to the interview questions, and the overall research questions for this research? What overarching statements are made through the stories shared in the interview(s)?

**Results & Discussion**

As explained above in the discussion of methods, I take a story-telling approach to sharing and discussing results. Parts of the stories pertain to events that took place before my research actually started, but where I was nevertheless involved as a Research Assistant. I was not conducting participant observation research at the time, but include general descriptions of the events, partly as I understand them from my perspective at the time. However, all detailed discussion of those events takes place through the presentation and interpretation of quotes from the research interviews to address the main research question: *What can the human experiences of this collaborative effort at intercultural knowledge co-production tell us about the opportunities and challenges involved in bringing TEK and Western Science onto equal footing in practices of environmental research, monitoring and management?*

**Part 1: Collaborative Methodologies**

*The Co-training Workshop*

In June of 2019, MWF co-investigators, along with Four Rivers staff and Matawa community liaisons, met in Thunder Bay for a 3-day co-training workshop. This workshop was planned by Four Rivers and academic primary co-investigators after identifying an interest in understanding research protocols better from the university and MFN perspectives. I was hired onto the project shortly before this meeting and met the entire project team for the first time in Thunder Bay.

The emphasis on "co-training" was important. The workshop aimed to have everyone together in one room to share knowledge and information of ongoing research and projects in the Matawa First Nations homelands, to provide support for those ongoing efforts, and develop next steps. Initially, joining this project was a bit overwhelming, as there are many moving parts that are held together by many people. It is not necessarily a linear set of activities; rather it's a living

project that is continuously growing and changing directions based on the different people involved and the ways they are able to collaborate. While this might seem confusing when viewed from the outside, it is a rather accurate representation of the way collaboration takes shape. Over the course of the three-days, it was clear from all of the presentations and discussions that through these interactions—which in turn set the foundation for further engagement and research—the workshop itself was aimed at fostering collaborative methodologies.

Terry Mitchell (non-Indigenous, university researcher) describes the rationale:

*"we called it co-training because…it's not like we have all the information and we're transferring it to you. You have a lot of experience, knowledge and training of your community, or what is required, what your protocols are, how you do research, how you engage communities, how you engage communities ethically, how you engage elders. So please train us about that."*

And so, the workshop consisted of presentations from different co-investigators and community members about all kinds of topics: university research ethics processes, photo-voice methods, fish monitoring in response to a community member's concerns about observations of methane bubbles in lake ice, a GIS story mapping project, and making plans for community engagement that summer. While there were more structured conversations throughout the day, there was also ample opportunity to dialogue more outside of the designated workshop time. Those conversations were both a chance to explore more behind the programs or administrative work, as well as to build trust.

*What is Collaboration?*

When asked to define or describe collaboration, it is interesting to note that mostly the researchers discuss methodologies, whereas Four Rivers staff and community members tended to reflect on kinds of relationships. In essence, one side describes the concepts, where the other describes the practice (or implementation), overall explaining the process of establishing collaboration in a project involving many people. This brings to light the fundamental intercultural differences with developing research projects, both inside and outside academia, and alongside Indigenous communities. It both emphasizes the sociocultural differences in how research is perceived and practiced, as well as brings forward the perspectives on relationship building and how that contributes to research practices.

From the researcher perspective, collaboration then "starts very much at the development stage of the project and continues through data collection and interpretation and communication" (Kelly Munkittrick, non-Indigenous, university researcher). This process goes beyond the sharing of ideas and objectives between co-investigators, and is centered around and developed through community relationships, specifically, through what was identified as "meaningful" relationships. Terry Mitchell (non-Indigenous, university researcher) describes this below:

"*we have people that are willing to get outside of their comfort zone and to have respectful relationships…People being conscious of and responsible [to] their location and their positioning around Indigenous or non-Indigenous identity, academic or non-academic.*"

For Four Rivers and Matawa community members, establishing the foundation of collaborative methods depended on the authenticity of relationships between Four Rivers and the communities, which was rooted not only in past interactions but also projected outputs of ongoing work and prospects for future research. In turn, this understanding on relationship building would provide the type of groundwork for community engagement with research done in and around Matawa communities.

> *"Obviously, it's going to involve people, because people have to make decisions, the right groups of people from different organizations, whether it be government or industry or first nation individuals, those things we have to involve as we move along. And we have to have sensible dialogue at the table. And we can do [this with] people that may become involved in this process, to get to a meaningful product of what is it that you're looking to achieve. Well, simply putting it, if you don't have the foundation, your house isn't going to stand up too well."* (Peter Moses, Indigenous, Four Rivers)

Where these different approaches to defining collaboration intersect is perhaps in the way that these relationships are built and maintained within the scope of the project and beyond. While they do not claim to be an authority on best practices, Four Rivers does have a knack for designing their projects in ways that establish and reinforce meaningful relationships. Part of this has to do with looking beyond the scope of a given project. The methodological approach that Four Rivers is taking in both their own projects as well as MWF reflects the relational aspect of Indigenous methodologies (Kovach 2009), carried out by a team that is part Indigenous and part non-Indigenous

Perhaps one of the characteristics of collaboration that was hinted at but not explicitly stated by participants was the need for adaptability to fluid situations. This is especially the case with Four Rivers, as they managed to move between strands of this web of relationships and research projects with ease, in order to ensure that the research relationships did not simply refer to the communities or their homelands as "subject matter" (Sarah Cockerton), but rather as equal contributors and knowledge holders. Four Rivers therefore serves as the link between building relationships in MWF, connecting with external researchers, serving as researchers, and supporting community-based researchers. To be effective with collaboration means having the skills to navigate between these relationships, while following various strands in this big web.

> *"we're always weaving a complex web to advance our programs, to advance our community priorities in stewardship and monitoring and lands and resources, so I think [Matawa] Water Futures was visioned by Sarah as being a piece of that web, but really kind of like a hub to help advance it with all these connections that it offered" (Kim Jorgenson, non-Indigenous, Four Rivers)*

When speaking with the MWF students, Erin Desjardins, shared her thoughts on how collaboration is dependent on the partnerships made as well as how individuals (or groups) work together.

> *"It could be somebody [has] boots on the ground and then it could be a combination of them with somebody who's just providing advice or a reviewer or that kind of thing. And then it could just be even collaboration between people within an organization, kind of*

*like what the three of us are doing right now, to get that knowledge and information put*

*together."* (Erin Desjardins, Indigenous, Four Rivers & MWF student)

Collaboration was difficult to define, given that it was understood as an overarching idea that is adapted to fit the needs of a specific project and group of people. Despite that difficulty, this sheds light on an important component of collaboration—the role of individual reflexivity in relation to defining roles in collaborative partnerships.

*"There's a real need to build more partnerships, to build more relationships, and bring*

*more awareness to the issue of communities needing to be in the driver's seat, relative to*

*their lands and resources…Especially in the context of northern Ontario, who in some*

*cases…they're the only ones using them and have been using them for thousands of*

*years. And so, the project itself is one that I co-developed with some really wonderful*

*people at Laurier who had that same kind of general viewing or mindset and really*

*embraced the idea of co-developing and embraced the idea of a project overall to try and*

*support that shift in thinking."* (Sarah Cockerton, non-Indigenous, Four Rivers, MWF

Co-PI)

Building the partnerships would allow for more collaborative opportunities in pursuing environmental research. For Four Rivers, it is a way of bringing together the researchers in the region to identify the research taking place, but to also provide new perspectives and support with developing community-led programming. This collaborative approach in the MWF project

also seeks to solidify these partnerships developing in a manner that acknowledges the location of collaborators and their capacity to contribute to the project.

**Part 2: Place-Based Research**

*MFN AGM 2019*

Shortly after the co-training workshop, I was invited to join the co-investigator team and Four Rivers to attend the MFN AGM in Constance Lake First Nation (July/August 2019). This was an opportunity for Four Rivers to share updates on their programs, as well as for the MWF project to conduct interviews with community members attending the meeting. One of the main methodological components of the MWF project is to gather water stories. In addition to these interviews, I was asked to help facilitate a water stories photo contest for community members attending the event. The contest was held on social media (Facebook), and we asked people to share a water photo and their response to the question "why is water important?". In total, we received 58 photos from 50 MFN community members in 3 days. While most of our engagement through the contest was online, there were also many people who came by the Four Rivers table to talk about the contest.

Throughout the AGM, I was able to speak with various community members about the contest and their water photos, with some participants sharing more pictures and stories from the experience they shared for the contest. These were moments of joy and celebration, moments of peace and connection to the water, or observations of change. The contest was a great opportunity to begin these conversations with community members; everyone I spoke with had their phone with them and were able to share photos in the moment. It was also a good opportunity to connect many community members with the Four Rivers social media accounts to

receive updates on their programs. Some people were willing to share more with the MWF team by participating in an interview, resulting in some of the first data collected for the MWF project.

There are two important learnings from the success of the water stories social media contest. First, this was an opportunity for the project team to be present to a much wider range of community members—putting faces to the names. A big part of this research project is building effective relationships with the people involved. This was an opportunity to continue building pre-existing relationships, and to build new ones for the project as things progressed. Second, from my own experiences being there, I gained an introduction to the larger team at Four Rivers and was able to build better relationships with them. While we did have meetings and conversations about the work we were trying to accomplish during the AGM, it was really the social experiences with other MWF team members that cultivated those relationships. These growing relationships helped set the stage for future research engagement during 2020.

*Winter Gathering 2019*

In December 2019 Four Rivers organized a 2-day gathering for community representatives in Thunder Bay, both to share knowledge and to receive information regarding new changes in federal Impact Assessment protocols (formerly Environmental Impact Assessment). This event built off of the co-training workshop held earlier that year, as it reiterated the importance of exchanging knowledge in order to co-develop an appropriate response to an issue or concern. Ultimately, this workshop served 2 purposes: collecting data on observations and monitoring by community members, and identifying what communities need from Four Rivers (and through MWF) to support ongoing monitoring.

My engagement at this event was more "back-seat", in that I was mainly providing support with notetaking and helping set up rooms and other tasks to keep things moving along. By this event,

I had already been involved with the project for about 6 months, which meant I was more familiar with the people involved in these events/meetings, and they began to recognize who I was and what I was doing there. My growing familiarity with the group, as well as the roles I was playing, gave me an opportunity to observe and reflect on the actual process of knowledge sharing and co-generation. In this light, one of the most interesting aspects of this event was simply the location of the gathering, and the way the space was used.

The gathering was held at a hotel conference centre on the outskirts of Thunder Bay. The space is one of the many used by MFN for community engagement when gathering in Thunder Bay. The meeting location can be seen as an in-between space, where all participants likely experienced degrees of familiarity and novelty.

The conference space was divided into one large room and 4 smaller breakout rooms. The larger room was used for bringing together everyone in attendance: MFN community liaisons from all nine communities, Four Rivers staff, and university researchers connected to MFN in some research capacity. A smaller room next to the large one had refreshments, and was more of a social space for informal conversations. After collective gatherings in the large room, attendees dispersed by community groups into the other meeting rooms. There, facilitated conversations took place, focussed on issues the communities had identified for further discussion and feedback.

Upon walking into the larger meeting room, many community members would sit together, either with members of the same community, or members they knew from other communities. The Four Rivers staff, being hosts, were dispersed throughout the room, and the academic researchers sat together at one table. During these larger meetings, despite having "icebreaker" games to bring everyone together, the atmosphere remained one of overall distance.

The idea of intercultural collaboration was present in that we were all sitting together in the one room, but the size and organization of the space limited the ability to engage in intercultural discussions. Rather this space provided a more formal context for conveying information back and forth between the communities, Four Rivers, and the researchers. Yet once we broke into the smaller meeting rooms, there was more fluidity in the intercultural exchange of knowledge. The opportunity for community members to move through these rooms with people they were familiar with meant that there was a wider array of participation from those present. Facilitation by Four Rivers staff, who were familiar to the community members, was also crucial for stimulating discussion. Finally, the fact that academic participants were divided up among the breakout rooms gave opportunities for meaningful engagement and discussion, building rapport between community members and researchers. The shared interests and intentions that brought everyone together in the gathering became much more apparent in these breakout spaces.

One of the main goals of this gathering was to create spaces for stories and knowledge sharing. At this point in the MWF project, there was a growing sense of familiarity with many people in attendance. Even across the researcher-community divide, it was beginning to be possible to sit down and ask questions, or have conversations that were not necessarily facilitated in a formal interview manner, but could evolve more organically and build up trust and familiarity. These conversations took place not only in the breakout rooms, but also in the hotel hallways between the meeting rooms. Where these conversations started to dig deeper into community members' reflections on water, and for those who were comfortable sharing stories on the record, one meeting room was set up with camera equipment to capture water stories in English or Oji-Cree. Despite the fact that these stories were recorded, an effort was made to

retain the informal character of conversations, so that community members could take the lead in sharing their own knowledge.

*Reflections on Time, Space, and Place*

Prior to the pandemic, one of the larger challenges that co-investigators faced was the distance between themselves and the MFN communities. Researchers are based throughout northern and southern Ontario, as well as out of province. Generally, for research events or gatherings, co-investigators and MFN community members would meet "in the middle" in Thunder Bay. However, this is not unusual with research engagement with First Nations; often it is necessary to meet somewhere that is considered central for all involved. This creates the expectation for everyone to have the capacity to travel to this central place. However, this can be problematic as this assumes there is financial capacity, time, transportation, and accommodation availability to support travel to this central place, which is not always the case. It also limits the type of engagement in a program; if a program is meant to address a specific environmental concern or recognize the land-based knowledge held by Indigenous community members, the amount of engagement is impacted by a lack of connection to the places where that knowledge truly resides.

With a research project as large as MWF, it was inevitable that researchers would only be able to enter the field for brief periods of time. In some cases, it could be months before returning to the field and interacting with the same group of people in person. Moreover, every researcher involved in this project is a part of numerous other projects in other locations. This commitment to multiple simultaneous projects, each with its own timeline, context, and relationships, reflects a larger issue within the sociocultural context of academia.

*"part of working with First Nations is getting to know people personally…And it takes years…you can only scratch the surface in three years even without going."* (David Pearson, non-Indigenous, university researcher)

This structural feature of academic research essentially carries the expectation for researchers to commit to numerous projects within the academic setting, but also beyond—community-level, provincial, national, or international. Having the capacity to strike a balance between everything is a challenge, and certainly has had an impact on the researchers and research relationships involved in the MWF project.

Four Rivers also faced similar time demands, as they too were in the midst of various projects and programs in communities in addition to participating in MWF. The connection between building trust and long-term commitment depended on having the capacity to dedicate time towards conducting research. One of the primary factors that Four Rivers considers is their relationship with community members and how they engage with community during their programs and fieldwork:

*From the relationships that I've built here, and the relationships with the [MWF] individuals […] they are about a longer-term commitment in the sense of everybody's busy, right, so that goes with our community contacts and everybody. It's like you need to have a consistent face over a long enough period of time to know that they're there. But then it's also very much rooted in trust. Do you trust that this individual is going to be there for you? Do you trust their motivations? Certainly working with our communities, obviously, there is such a such a history of trust being mislaid. Do you follow through with what you*

*say? Do you say that you're going to help to build capacity, but then you're gone in six months or something like that. It's having the passion [to build these relationships], but also the ability to follow through"* (Kim Jorgenson, non-Indigenous, Four Rivers)

With MWF, Four Rivers saw an opportunity to draw in more researchers in order to support their goals and programs, as well as allow for components of the research process to be divided amongst the MWF team (i.e. interviews, water monitoring, presentations, etc.). However, with managing partnerships between researchers and all nine MFN communities, and the various research programs they work on, it is a challenge to find the capacity to dedicate time to new projects that require long-term commitment. The MWF project aligned many events and research interactions with events that were part of the regular workflow between Four Rivers and the communities to ease the strain on commitments.

In all interviews with the researchers, the challenge of not being in the region where the project is taking place impacted the capacity to maintain relationships. Darren Thomas describes this challenge of distance alongside the historical legacy of research with Indigenous peoples:

"*having to build trust, certainly in doing research, then having to build trust as researchers, not from the area, there's just such fear that we have to carry and reassurance that we have to provide, that we're there with integrity, that we're there valuing and supporting their research intentions.*" (Darren Thomas, Indigenous, university researcher)

The ability to establish trust in research relationships is incredibly difficult, and requires long-term commitment to build and maintain that trust. Once again, the lead researchers from Laurier had already worked with MFN for some years before the project began. Regardless, building trust remains an ongoing effort for researchers. All researchers recognized that distance both slows down the progress of the project and counters trust-building efforts.

There is also the colonial legacy surrounding the role and presence of the researcher in Indigenous communities, which is reinforced by the geographic distance between researchers and MFN communities. There still is some unease in community researcher relationships:

> "*there's a stigma too of researchers gathering the knowledge and using it for their benefits and their qualifications and whatnot and selling that information out to the world, where the original author lies within the community*" (Wayne Neegan, Indigenous, Constance Lake First Nation Community Liaison)

Knowledge is not only from the people, but also from a place. To remove knowledge from that place is complicated and potentially problematic; it really comes down to how that knowledge is communicated. Furthermore, the way this knowledge is communicated reflects the type of relationships established between researcher and participant/contributor. Part of the relationship building in collaboration is also bringing back the findings and information in a way that can be accessed and understood in community. Building on the reciprocal piece of the collaborative relationship for the researcher also means acknowledging and recognizing the community contributions in the academic spaces—what they are willing to share on the basis of trust, but navigating that trust-building from several hundred kilometers away. It is also worth

noting that I was not able to ask interviewees about the outcomes of MWF in this regard, as there were not any outputs from the research when interviews were conducted.

**Part 3: Bridging Practices**

In March 2020 I was invited by Four Rivers to travel with some staff and community liaisons to Yellowknife for a week of meetings with both Indigenous and territory governments and departments to learn more about their processes for environmental assessment. By this time, the MWF project was in full swing, and preparing for a full season of fieldwork that would bring together everyone involved in the project. Yet when the news of the pandemic lockdowns began to circulate and everything began to shut down in response, all momentum stopped. Any conversations about those upcoming plans with MWF project stopped, and everything focused on simply getting back to Ontario, and waiting. With the inability to move forward on the fieldwork that was planned, it did not seem that the MWF project would be able to carry on. It took several weeks before pieces of the project began to start back up again. It was gradual, and there was still a lot of uncertainty as to whether things could change again. The intentions to find a way forward were there, yet there was no longer the same momentum pushing forward and actively drawing everyone into meetings and discussions.

In April 2020, the MWF students and I began creating a poster for the annual GWF conference in June 2020. We met bi-weekly to piece together our abstract and poster. At that point, we were used to remote communication; since I was based in southern Ontario while they were in Thunder Bay, we would often meet over the phone or on Microsoft Teams. But as the conference was no longer taking place in person, and the posters were only to be published online without a verbal presentation, it was strange trying to draw out our observations and

experiences on learning across knowledge systems into a poster that would only be seen online. There was no feedback or engagement from it once published, so it is difficult to determine what the response was to the poster, and what sort of contribution our work made to this conference and to the MWF project overall. Even at the time of writing this thesis, there remains a lot of uncertainty with the work we are doing, and whether or not we will still learn what we set out to learn from each other as well as from the different knowledge systems that we have been engaging with since joining the project. The feelings of disconnect were overly apparent; the removal of social engagement and interaction that was not facilitated by the parameters of a Teams call impacted our capacity to learn from each other without the need for guiding discussion questions or a formal interview.

*The MWF Students*

One of the key connections within this project lies with the students—Erin, Jasmine and me. Apart from the two co-leads, we were the members of the teams who "saw" the most of each other during the two years of my involvement in the project.  While I had one in-depth interview with both Erin and Jasmine, we also met often and were able to share with each other our own reflections on our school programs and the work we were doing linked to MWF. We also talked more in depth while reflecting on our experiences as students: navigating course selection, keeping up with papers and assignments, developing research projects, and making sense of the anxieties of being in a university program (e.g., imposter syndrome). Here, I'd like to highlight in particular the kinds of links across spheres and knowledge systems that Erin and Jasmine embodied through their activities. Aside from their contributions to the project through their own research and education, as well as through the work they were doing with Four Rivers, with them

it is possible to see the active practices of knowledge and information being shared between communities and the university.

When asked about classes and to share reflections on being a student connected to the MWF project, both Jasmine and Erin felt they had a chance to share and expand their knowledge through classroom discussions and lab meetings. Both expressed feeling as though they were able to both reconnect with and validate their own Indigenous knowledge, while simultaneously learning new ways to approach their knowledge in Western academic settings. Jasmine shared:

> "*There were some times when they discuss things in lectures and they have a question period, and I'm able to bring forward the traditional knowledge and mend it with the Western science that they're talking about. And they seem very interested in what I have to say also. So that's interesting to have their full attention, that people want to hear what I have to say when I say something.*" (Jasmine Baxter)

For her, there was a space where she was invited to share her knowledge and that knowledge was valued. Both the classroom and the Four Rivers office provide the space to learn and share both Western and Indigenous knowledge. These spaces enabled a step towards bridging knowledge, inviting the active exchange of knowledge in spaces where different knowledge systems are recognized and validated. Yet both spaces also represent different depths of engagement in different ways of knowing. The classroom discussions focused predominantly on Western systems in an academic setting, entrenched in Western thought. Meanwhile, located in an office building in Thunder Bay, Four Rivers group actively creates a hybrid space that is engaged in both Indigenous and Western knowledge in order to develop programs. For Jasmine

and Erin, being a student and intern at Four Rivers allowed them to engage with familiar and new knowledge in different spaces, and learn new ways to apply what they learn:

> "*And in terms of my internship, it's been a really great learning experience because a lot of the work that I'm doing [at Four Rivers] is based in aquatics, and that's what my thesis is around. So, I'm able to take what I'm learning from my thesis and apply it to a lot of the work that I'm doing regarding water quality, monitoring methods, sampling techniques and all that kind of stuff. And I'm also able to take what I'm learning from my internship, from having conversations with the community, being out in the field, working with them, having that knowledge transfer and skill transfer between myself and the community members, and applying that to the work that I'm doing for my [thesis] project*" (Erin Desjardins)

Jasmine and Erin both shared that they felt similar about how they experienced this knowledge exchange in their classes and with Four Rivers. Erin's experience however is a bit different from Jasmine's; because she is enrolled in a graduate program, she is exposed to wider horizons through the academic supervisors involved in her thesis program:

> "*So we got to know each other really well and we've got a great resource through everything, both in terms of providing guidance and advice on monitoring programs and reports that we do in the community and also providing insight on any changes or issues that the community members in their communities and out on the land, as well as helping to provide some guidance and additional support and mentorship with my thesis and my*

*project. He [Kelly Munkittrick] actually invited me to be part of his lab also, even though I'm not technically one of the students, but on a weekly basis, I get to participate in his lab discussions. And so I get to meet people from southern Ontario and from Calgary, where he's working now, and just hear about their projects and what they're doing. And Kelly is so involved with different first nation communities on different projects, most of them being academic and research projects, but a lot of that ties back into the whole premise around Matawa Water Futures.*" (Erin Desjardins)

In a way Erin and Jasmine were both embodying this pursuit to collaborate "between two worlds of knowledge" (Muller 2014, 132). One the one hand, their experiences in the university speak to the university's efforts to "indigenize" and reflects the learning process of both Indigenous and (primarily) non-Indigenous administrators, instructors and researchers. Meanwhile, Four Rivers is a hybrid space, where they try to work across knowledge systems on an ongoing basis. This presents a type of continuum of interactions; these experiences described by Jasmine and Erin shed light on the gradations of Western-Indigenous influence within the knowledge systems that hold influence.

When I asked Erin and Jasmine about Two-eyed seeing and to reflect on how they came to be in this role that moves between different ways of knowing, both shared their thoughts on how they view this movement of knowledge into different spaces. Jasmine, shared her own reasons for joining the MWF project, describing the translation between knowledge systems and modes of representation, potentially with feedbacks into how communities conceive of their TEK.

"*I grew up in Marten Falls and we were very heavy in[to] land use and traveling, and I thought it would be really interesting to actually, with my geometrics internship, do mapping to visually see from above all the routes that me and my family have traveled. And I'd be able to learn to make maps and have a better visual for other community members who want to see their travel routes and to see what the area looks like around their traditional areas or their travel plans.*" (Jasmine Baxter)

For Erin, she is wrestling with some of the challenges of doing this bridging work between knowledge systems:

"*And it's something that I have to constantly remind myself of, that not everything is about the Western way of learning and that I can use it to help inform our members what they're seeing and to confirm their observations in a way that is still in line with what they're saying, and not discrediting what they're saying. They experienced first-hand; they fear sometimes they might not understand why things are happening. So being able to have those conversations with them, but also learning from them that "this is happening", or "this is what we used to see, and we just don't know why it's going on". It's definitely something that I struggle with. And I really have to be mindful of how I approach things, and really be mindful to keep reminding myself to look at it from those perspectives and to just ask those questions to our members to provide that knowledge for me so that I can learn from them, as well as trying to learn from an academic standpoint.*" (Erin Desjardins)

In connecting with the MWF project, Erin and Jasmine have had the chance to engage with communities in new ways to share their knowledge and perspectives. They really are the ones with their boots on the ground carrying out the work and striving to achieve those objectives set out at the start of the MWF project.

*Researchers: Impacts of COVID-19*

Up to March 2020, the MWF project had pursued its research objectives through in-person events and engagement. These events allowed for connections to be built between the researchers, the Four Rivers staff, and MFN communities, linking everyone in a way that allowed for further interaction and engagement in various places and spaces as the project progressed. With the changes following the declaration of the COVID-19 pandemic and the subsequent restrictions that were put in place, in-person research was put on hold indefinitely. In response to these changes from the lockdown, there was a massive shift to work from home, using virtual platforms such as Zoom or Microsoft Teams. While many projects and workplaces were able to adapt to virtual spaces easily, it presented a new set of challenges to overcome and adapt to in different aspects of the MWF project. It interrupted all the momentum that MWF and Four Rivers had with their research and related programs, and forced a change in how to approach objectives within their work. The uncertainty that remained throughout 2020 and into 2021 meant that MWF stayed 'in limbo', not quite moving forward until it was clear what research practices were possible.

As a result, there were quite a few implications to the overall MWF project. For the researchers based in southern Ontario, the majority of their involvement depended on in-person engagement for ethnographic interviews that were planned to take place at the community level. Once in-person research practices ceased, the meetings and communications slowed down, and

even stopped for longer periods of time. As a result, the relationships between northern and southern Ontario researchers, and between southern researchers and community members, remained frozen in the early stages of being established. For the researchers, the pandemic made working on this project a significant challenge, and while there was the possibility of pursuing remote collaboration, there was a lack of overall capacity between the researchers to make this happen. Despite this, some researchers pointed out the opportunity to learn from this and to find ways to work differently moving forward:

> "*I think that definitely we should find a way to strategize as a team to again develop these strategies to engage with the communities whether its during or after COVID, just being more systematic, more regular with our communication with them, and just touching base. That's possibly an area that we might seek to improve in the future, or even after this project if we continue to do work with the Matawa First Nations, I think we have to think about that, whoever's involved with the team at that point.*" (Miguel Sioui, Indigenous, university researcher)

To keep momentum with the MWF project after cancelling in-person fieldwork, I was asked to participate in weekly Four Rivers staff meetings. During these meetings, I was encouraged to help keep the communication lines open between researchers and Four Rivers and provide updates where possible. At first, this was helpful with MWF, as this provided a way to stay connected and to exchange information regularly. However, by December 2020, my RA contract was wrapping up with MWF, which meant that I was no longer attending regular meetings with Four Rivers. Although it could have been possible to work on building remote

methods of engagement, there was once again a lack of capacity to maintain communication between the group. It was here that the MWF project struggled to adapt to move research engagement to virtual platforms in order to complete research objectives within the grant timeline.

In spite of the obvious challenges to research, a blanket extension to the GWF funding due to COVID-19 delays was not obtained until summer 2022. In the meantime, researchers and Four Rivers discussed how to hold a water gathering on a virtual platform. Meetings were held about this gathering since early 2021, to determine what options were available to host the event, however to date nothing has been planned.[1] In a way, this is where the researchers and Four Rivers branch out on different pathways moving forward with the MWF objectives.

 *Four Rivers: Rebuilding Bridges*

As the pandemic carried on, there were numerous improvements to online methods of engagement and communication. There were still many challenges and issues, such as connectivity in northern communities. Kim Jorgenson describes some of these challenges:

> *"Hopefully…we can actually physically get back out on the land because in person, nothing, nothing replaces in-person interaction. And especially when you're talking about slow download speeds and all those barriers that you know of, like in our communities and even just technology, right? You know, we can have our camera on, but if somebody's bandwidth is low, and it's basically no better than a teleconference, which is not anywhere near going to get to replace being there in person. And it is hard,*

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[1] As of summer 2022, funding has been extended for another year for MWF project. A water gathering is still in discussion, however it is unclear when this will take place and if it will be virtual or in person.

*especially when you're talking to individuals that are accustomed to being on the land,*

*like if they can't tangibly touch what you're talking about, especially if you're talking*

*about sampling a fish like it's just this like, we're at work, we're trying, but I know we*

*can't really overcome that barrier until we can see people again."* (Kim Jorgenson, non-

Indigenous, Four Rivers)

Despite having to pause many of their programs, Four Rivers was able to take the

interruption as an opportunity improve their strategies and map out their programs moving

forward. In fact, COVID-19 became a stimulus for a major reorganization and reprioritization

within their work, leading to new training, new implementation of remote sensing and mapping

technology, and new monitoring practices that are now producing and supporting community-

based knowledge in new ways.

At the centre of these new strategies, Four Rivers has been working to find new ways of

connecting with communities and addressing issues of bandwidth in order to ensure that

community members have the capacity to stay connected with the shift to virtual platforms. This

is through using technology that is already accessible, such as cell phones, to collect information

via surveys, and providing technology for community monitoring. They also have been working

to use cellular transmission capacity in place of wired internet connections to run community

engagements via wireless service.

*"When we're having conversations virtually and things are cutting out or whatnot,*

*we don't want to miss any word because every word that the community members are*

*sharing with us is important and has value. So we need to find a solution. And we're*

*doing our research to find those solutions and testing different methods out. I know Sarah is testing some cellular data and seeing if those options are valuable. And we're also deploying some tablets in the communities, to see if the user-friendliness of tablets, if that can help people kind of access the platforms easier and keep our conversations going smoothly. So that would be some progress."* (Laura Prior, non-Indigenous, Four Rivers)

Through addressing this connectivity and bandwidth barrier, Four Rivers aims to coordinate data collection throughout the communities and build a GIS platform that will allow environmental information to be available for community members.

As vaccinations and testing services became more regulated and managed, there was a gradual return to in-person work and research. Four Rivers was able to push forward with their data collection efforts, perhaps most significantly through their drone program for remote sensing. Its success was at least partly rooted in the fact that it does not require in-person contact while in communities. Four Rivers was able to assemble a team that could travel into communities following the Matawa COVID-19 protocols and conduct drone surveys of the communities and surrounding area to contribute to their GIS hub. By fall 2021, the Four Rivers drone team was able to map all nine MFN communities. Through this program, they have been able to include the MWF students, community members, and staff at Four Rivers. In fact, Jasmine became one of the lead pilots on the drone team. Through the drone program, Jasmine was able to achieve her goal to create maps for community members to see and engage with community-based knowledge and the land, while actively connecting knowledge systems.

**Conclusion**

While recognizing the risks of generalizing on the basis of a specific case study, I will conclude by drawing out a few key points of learning in response to the initial question: what can the human experiences of this collaborative effort at intercultural knowledge co-production tell us about the opportunities and challenges involved in bringing TEK and Western Science onto equal footing in practices of environmental research, monitoring and management?

As a way of concluding my interviews, I asked participants to share why they were interested in doing the work that they are doing, and how they chose to engage with the work that they are involved in. My intention with this question was to draw together these discussions of collaboration and relationship building to connect back to the individual experiences that brought everyone together in this project. Despite their differences, participants expressed a common reason for becoming involved: to support Indigenous communities in northern Ontario within the field of environmental knowledge. This common purpose was clearly a foundation for the MWF project, and provided a basis for the evolution of the collaborative methodologies explored here.

Through hosting gatherings, attending conference presentations, and developing monitoring programs with researchers and community members, the MWF project appears to have leaned into the complementarity of different knowledge brought to the table. In her book *Braiding Sweetgrass: Indigenous wisdom, scientific knowledge, and the teachings of plants* (2013), Robin Wall Kimmerer shares through her own experiences and research the importance of listening and learning outside of our own way of knowing. Kimmerer states:

> "Science and traditional knowledge may ask different questions and speak different languages, but they may converge when both truly listen to the plants". (165)

A collaborative approach towards recognizing Indigenous knowledge and co-learning from each other establishes a responsible research framework that supports more effective relationships between co-investigators and community members. When reflecting on the MWF project overall, Wayne Neegan (Indigenous, Constance Lake First Nation community liaison) shared:

"*It's good to have strong allies and especially people who have that side of wanting to help First Nations people too.*"

The MWF project, while significant in its own right, also serves a purpose in the larger movement of trying to change the governing mindset of environmental monitoring approaches, and to also assert Indigenous governance in relation to the environment. While describing the different elements for pursuing the work that she does, Peggy Smith (Indigenous, university researcher) shared:

"*I'm doing my bit to try and restore Indigenous Peoples to their rightful place in terms of that connection with the land. I see this kind of work [as] being an avenue for better land stewardship.*"

Having an awareness of what the impacts of these project relationships have beyond the scope of a project are also a driving force in motivating individuals to become involved in this field of work. In her response, Amada Diochon (non-Indigenous, university researcher) shared the following reflection:

*"I think just seeing how the value systems, the indigenous ways of knowing, I think align with how I want to live my life, and how I live my life has really led me to this project and becoming involved in projects like this that support the evolution of these communities into realizing their full potential."*

These collaborative research projects take time and depend on developing and maintaining respectful research relationships. With the MWF project, it is an ongoing and evolving process that perhaps cannot be confined to a limited number of years. For Michael Rennie (non-Indigenous, university researcher), he described his keen interest to continue learning as a researcher in order to continue having respectful engagement with communities. For him, and many other participants, myself included, there is a continuous interest to learn more, and to seek out opportunities for growth in order to improve these working relationships. These reflections further relate back to arguments regarding the need to recognize different ways of knowing in a productive way that supports research going forward. Muller's (2014) concept of co-motion reflects what MWF seeks to do moving forward; Muller states that co-motion "embraces the idea of simultaneity and specificity, of co-existing and moving together" (138). This emphasizes the importance of creating spaces for engagement that allow for knowledge to be shared in a positive and reciprocal way.

The impacts of the COVID-19 pandemic on the MWF project and the challenges with carrying out research reiterates the importance of a willingness to seek out different ways of moving forward together. At this moment[2], the MWF project has been extended to 2023.

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[2] Summer 2022

Although the MWF project has had some challenges in keeping up with remote engagement, there are still opportunities for the co-investigators to be involved in the final year of the project. As seen through the programming that Four Rivers has worked on in the last two years, for example, the use of remote conferencing technology to host community information sessions and collect data through online questionnaires[3],it is possible to find a way to continue collaboration using remote methodologies for engagement.

As I started compiling my data for analysis and writing, it was unclear where MWF stood. The pandemic carried on, in-person research was still not an option with the university, and as discussed in Part 3, the co-investigators faced many challenges with maintaining collaboration. Once restrictions began to lift, some components of the MWF project were able to carry on and adapt well to the new requirements for fieldwork and community engagement. Discussions about the water gathering began to happen more regularly, and the co-investigators were able to begin conceptualizing the logistics of this event. Additionally, with the GWF grant extension, there is the possibility that some of the community-based research work that was originally planned for the project might be able to happen. However, this depends on the researchers and Four Rivers having the capacity to re-establish the earlier momentum of the project. At the time of writing this thesis, the future of the project remains uncertain. Although the project embodied some strong practices of collaboration, it did not entirely survive the challenges of the COVID-19 pandemic. Much can be learned from both the strengths of the initial project phases, but also from the weaknesses that became visible later.

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[3] Four Rivers arranged with community members to host meetings on the reserve regarding ongoing programs. The room used for the meetings had the capacity to host a small number of community members while respecting social distancing protocols, and could support the technology needed to allow Four Rivers staff to host the meeting virtually.

If we look for legacies of the MWF project, one of the most significant ones is probably in the area of student training. The success found by the MWF students, Erin and Jasmine, marked a shift in power relations within the project. Through their experiences and contributions, academic and community knowledge were joined up in new ways. Notably, their learning and work experience was supported not only through relationships with the researchers, but even more importantly through their roles with Four Rivers. Those roles and relationships became fundamental to how their collaborative knowledge generation capacity was built over time. This realignment of authority within knowledge systems should lead us to interrogate dominant power structures surrounding knowledge. On both an individual and community level, their pursuit of knowledge at university and with Four Rivers appears to redirect the top-down Western power-knowledge framework into more of a two-way intercultural knowledge exchange that reflects power held within both systems.

In a related turn of events, although COVID-19 interrupted the MWF project, it would seem that this disruption enabled a resurgence of knowledge generation and mobilization leadership by Four Rivers. The collaborative work that took place within the MWF project between co-investigators prior to the pandemic restrictions seems to have sparked a new kind of confidence in Four Rivers' capacity to carry out monitoring and research programs with their communities. The inability of university researchers to travel to communities meant that Four Rivers had to step forward as an independent authority for environmental monitoring and management to achieve the objectives set out in the MWF project. Of course, collaboration with university researchers did not cease completely, and there are still several opportunities to collaborate on projects, training, and knowledge sharing as the project goes into its final year.

Both by design and by accident, the MWF project does reflect a shift away from a hierarchical dynamic of power/knowledge towards a more horizontal space of interaction between Indigenous and Western knowledge. This shift aligns with the common purpose and commitment that was crucial in bringing people together on this project: the shared desire to support Northern Ontario Indigenous communities in building their capacity for leadership in environmental stewardship that responds to their own concerns and priorities. There was also something more that contributed to the dynamic of mutual respect and the openness to collaboration that animates MWF, and this is a shared recognition for the multi-dimensional value and importance of water. It is this shared conception of water that has driven repeated conversations about realizing a water gathering to conclude the MWF project. Near the end of her interview, Sarah Cockerton made a statement that continues to resonate with me throughout this research project: "*Everything we work on and do, […] the water is representing the beating force that connects all things*". Despite all of the uncertainty and change over the last two years, this sense of connection still seems to underlie the tangled web of relationships that constitute the MWF project, providing a space of reverence where different worldviews and knowledge systems can encounter each other and become intertwined.

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## Appendix A

Interview Guide:

| To use during interview (organized into thematic segments) | Potential follow-up questions to aid discussion (as reference points for interviewer) |
|---|---|
| Let's start by talking about how you became involved with the MWF project, and what sort of experiences you might have related to this project. | • Any previous experiences that were similar to this project? (similar in structure, methodologies…). With who? What kinds of partnerships & relationships?<br>• For researchers: Have you worked with Matawa communities or Four Rivers prior to this project?<br>For community members: Have you worked with Four Rivers or academic researchers prior to this project? |
| What are your thoughts and ideas about being a part of a larger research team/project such as MWF? Could you describe the MWF project for me? Are there any aspects that stand out to you?<br><br>Because this project focuses a lot on collaboration, could you share your thoughts about what this means to you? | • For those with specific knowledge of the background to the research project: How did the research team come together? Who/what brought this group together?<br>• How would you describe the MWF project?<br>• Which of the following terms do you feel best label what the MWF project is about: co-management, stewardships, environmental monitoring, caring for the land? Or is there another term that describes it better for you? Can you explain why this/these terms are the most meaningful for you?<br>• What does collaboration mean to you? What does it look like? How does it work?<br>• In what ways do you think this project engages or employs collaborative methods? |
| For this next part of the interview, I'd like to address the role of relationship-building with MWF & MFN, and in this field of work in general. This can include building and maintaining relationships, any benefits or challenges experienced, or steps to address those challenges. This can be your own experiences, or overall observations. | • To the best of your knowledge, what are the ways that MWF has tried to build and maintain relationships, both within the project team and with Matawa communities?<br>• What are the challenges of building these relationships?<br> o Gaps or shortcomings?<br> o What progress has been made in response?<br>• What do you think is a priority for MWF in terms of further developing effective working relationships within the project team and with communities? |

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|---|---|
| As part of my research, I'm interested in understanding the different values and worldviews that people bring to this kind of work from their various backgrounds. Would you mind me asking a bit about what makes you interested in this kind of work? This could lead us to a discussion about your upbringing, your relationships with the land and your sense for what is important in life.<br><br>This part of the interview also seeks to discuss the notions outlined in the MWF project (Two Row Wampum or Two-Eyed Seeing) in relation to intercultural or collaborative knowledge generation. Were you already familiar with these terms? What do you think about them? | • How do your values and worldviews inform the way you think about the project and your work within it?<br>• What knowledge do you refer to when engaging with questions about the environment?<br>   o How do you interact with Indigenous and Western knowledge together? Do you have an example?<br>• Do you see these relationships (discussed earlier) and knowledge working together in the project? How does this affect the way you approach your own work?<br>• Are there any difficulties in translating knowledge and practices?<br>How would you describe the relationship between different ways of knowing in this project? Is there a gap? (if so: How is this addressed?) |

Interview Guide for Focus Group

| To use during interview (organized into thematic segments) | Potential follow-up questions to aid discussion (as reference points for interviewer) |
|---|---|
| Let's start by talking about how you became involved with the MWF project, and what sort of experiences you might have related to this project.<br><br>Having been involved in this project for one year now, I'm wondering if you could describe your experiences up to this point during this focus group. In particular, this discussion can refer to your experiences as students and interns under the MWF project. | • Any previous experiences that were similar to this project? (structure, methodologies…). With who? What kinds of partnerships & relationships?<br>• How does the MWF project intersect with role as students? |
| This next part of the interview, I'd like to address the role of relationship-building with MWF & MFN, and in this field of work in general. This can include building and maintaining relationships, any benefits or challenges experienced, or steps to address those challenges. This can be your own experiences, or overall observations as students and interns through the MWF project. | • To the best of your knowledge, what are the ways that MWF has tried to build and maintain relationships?<br>• How do these relationships relate to your role as a student?<br>• What are the challenges of building these relationships?<br>  ○ Gaps or shortcomings?<br>  ○ What progress has been made in response?<br>• What do you think is a priority for MWF in terms of further developing effective working relationships within the project team and with communities? |
| What are your thoughts and ideas about being a part of a larger research team/project such as MWF?<br><br>Because this project focuses a lot on collaboration, could you share your thoughts about what this means to you? | • What does collaboration mean to you? What does it look like? How does it work?<br>• In what ways do you think this project engages or employs collaborative methods? |
| As part of my research, I'm interested in understanding the different values and worldviews that people bring to this kind of work from their various backgrounds. Would you mind me asking a bit about what makes you interested in this kind of work? This could lead us to a discussion about your upbringing, your relationships with the land and your sense for what is important in life.<br><br>This part of the interview also seeks to discuss the notions outlined in the MWF project (Two Row Wampum or Two-Eyed Seeing) in relation to | • What knowledge do you refer to when engaging with questions about the environment?<br>  ○ How do you interact with Indigenous and Western knowledge together? Do you have an example?<br>• (Follow-up question if applicable): Do they inform the way you think about the project and your work within it?<br>• Do you see these relationships (discussed earlier) and knowledge working together in |

| | |
|---|---|
| intercultural or collaborative knowledge generation. Were you already familiar with these terms?<br><br>As students, what sort of questions and discussions do you have around bringing together distinct knowledge systems and intercultural collaboration? | the project? How does this affect the way you approach your own work?<br>• Are there any difficulties in translating knowledge and practices?<br>• How would you describe the relationship between different ways of knowing in this project? Is there a gap? (if so: How is this addressed?) |
| To bring all of this together, let's look ahead at the next steps within your programs: based on your experiences this year, what do you anticipate for the upcoming year (as student or intern or both)? | • Noted that there are and will be many changes due to the global pandemic.<br>• What goals have you set for yourselves with the upcoming year?<br>Are there any changes you would like to make? |