Indigenous Knowledge Systems (IKS), Reconciliation and Research Synthesis Report

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Executive Summary

Our contribution is a synthesis of existing knowledge on the appropriate consideration of Indigenous knowledge systems in research and reconciliation, drawing on Great Lakes governance as a case study. Utilizing a knowledge sharing paradigm in partnership with the Chiefs of Ontario (COO), the project synthesized, shared, and reflected on existing knowledge at a Traditional Ecological Knowledfge (TEK) gathering in Thunder Bay, Ontario: the ensuing report identifies strengths and gaps in research; contributes evidence for policy-making; presents pathways forward regarding the appropriate consideration of Indigenous knowledge in the context of Great Lakes governance; and makes significant contributions to the growing body of knowledge around reconciliation research.

The driving question of the project was: How can the broader movement for reconciliation between Indigenous and non-Indigenous peoples prepare external institutions to engage with Indigenous knowledge systems (IKS) respectfully and in the manner required by First Nations? It is one project in a series of many which seek to build policies and frameworks designed by First Nations. The intent of this work has been to overcome ongoing processes of colonization which prevent First Nations from fully exercising inherent jurisdiction and sovereignty in their homelands. The lessons from this gathering build upon dynamic systems of Indigenous knowledge, governance, and law. Resilience and adaptability are inherent to IKS which are context-dependent in relation to the First Nations and geographies where knowledge originates and is held.

At the Thunder Bay gathering, emerging scholars and established academic leaders synthesized and presented findings from settings of applied learning and study. Community voices from First Nations were prioritized, consistent with recommendations made repeatedly over time. The perspectives of Elders and youth were specifically highlighted in the context of the 40+ years of advocacy by First Nations, which builds on timeless understandings from living in the Great Lakes region for thousands of years. The philosophical and practical aspects of the gathering were structured on core assumptions developed by First Nations, emanating from a large body of existing research, practice and past discussions related to the Great Lakes Water Quality Agreement, Canada-Ontario respecting the Great Lakes ecosystem agreement, State of the Lakes Ecosystem Conferences, and other efforts to align Traditional Ecological Knowledge (TEK) from First Nations with regional and national policies and practices.

The synthesis report reflects the current state of research knowledge, what has been heard and considered in First Nations Great Lakes governance and political advocacy, and what was shared at the Thunder Bay gathering. The content addresses the interrelated themes identified in the funding opportunity as well as the *TEK-Western science nexus*, a project-specific theme. It mobilizes existing partnerships and knowledge for fostering mutually beneficial relationships and Indigenous reconciliation. After establishing the context, rationale, and key assertions of this project, each thematic section in the paper contains key recommendations. The final section of the paper provides a set of eight recommendations, followed by Appendices that include a summary of the Great Lakes case study. Recommendations derive from individual and collective experiences and living knowledge, which are inseparable from the ethical imperatives inherent to diverse Indigenous ways of knowing. Key findings include the need to support Indigenous research sovereignty, meaningful support for Indigenous-led research agendas, and the removal of external jurisdictional and other barriers. Other ways by which Indigenous environmental governance, research, and reconciliation can move forward in respectful and sincere ways include the development of and adherence to Indigenous research protocols, and the fulfilment by external institutions of their role in building respectful relationships and advocating for fundamental changes to dominant systems. The report also contains teachable moments for those looking to work with First Nations people and IKS. It presents opportunities for meaningful insight to the experiences of diverse

First Nations people who participated in the design and events of the project: Indigenous knowledge holders, students, scientists, leadership, policy advocates, academics, community advocates, youth, and Elders, all of whom have significant roles in implementing a way forward that is mutually beneficial for Indigenous and non-Indigenous groups in an era of reconciliation that has yet to be fully realized in practice and execution.

Introduction

Utilizing a knowledge sharing paradigm, in partnership with the Chiefs of Ontario (COO) Secretariat, this project mobilizes existing knowledge with the preparation of Indigenous Knowledge Systems (IKS), reconciliation and research synthesis report that highlights the successes, failures, opportunities and limitations of past and current IKS initiatives involving First Nations in Ontario. This report has been generated based on the existing knowledge synthesized, shared, and reflected at the gathering for how IKS can be ethically considered in contexts where it is **not** generated or held (academy, governments, etc.). An IKS gathering was convened, bringing First Nations environmental practitioners/professionals, leaders, youth and Elders together for 2 days to discuss and identify the terms/conditions under which IKS can be shared with others. The overriding question of the project and gathering was: **How can the broader movement for reconciliation between Indigenous and non-Indigenous peoples prepare external institutions/agencies/peoples to engage with IKS respectfully and in the manner required/desired by First Nations?**

This project seeks to build on the body of work generated by First Nations over the past two decades relating to Great Lakes governance (see appendix 1 for the case study), which remains largely unacknowledged by the academy. It mobilizes existing knowledge and practices regarding how IKS - or, in this case example, TEK (traditional ecological knowledge), can be considered in broader initiatives, such as reconciliation. It does so through a collective assessment of the quality of current work in the field, and the identification of gaps as well as promising policies and practices. This has been achieved through a knowledge sharing approach involving Indigenous scholars, First Nations leadership, policy experts, traditional knowledge holders, Elders, youth, and community advocates as well as engagement with Western ecological scientists and government representatives.

The purpose of the gathering was to facilitate dialogue and share knowledge and experiences of how IKS has been considered in Great Lakes governance and offer a path forward. The IKS synthesis report provides guidance for how IKS can be ethically and respectfully shared with others. Day one of the gathering consisted of sharing what is already known through presentations from community based Indigenous environmental practitioners, Elders, traditional teachers, youth and scholars; and facilitated dialogue sessions of shared experiences by all participants. Day two focused on case examples where IKS has been considered in the past and present through presentations from communities, scientists; Elders and youth; and women. The afternoon involved a facilitated discussion focused on the barriers that remain for the respectful inclusion of Indigenous knowledge in environmental governance and research.

An important aspect of this work was to **support Indigenous talent and research careers**. This project utilized a knowledge sharing framework in which Elders and youth can share their knowledge with each other, along with First Nation environmental experts, practitioners, professionals and scientists who participated at the gathering. The collaboration with community based researchers and scientists (R. Whitlow, S. Allen, C. Recollet) supports research capacity in First Nation communities. This project supported emerging Indigenous scholars just beginning their careers (L. McGregor, N. Latulippe, and M. Jeffries) and First Nation graduate students in developing their abilities and careers (S. Chiblow, J. Chiblow and L. Gansworth). This project offered an invaluable opportunity for emerging scholars and First Nation students to network and engage directly with Elders and IKS knowledge holders and contribute to the national dialogue on reconciliation research.

This synthesis report is intended to inform the national dialogue that is part of a commitment to co-develop "a strategic research plan that identifies new ways of doing research with Indigenous communities, including strategies to grow the capacity of Indigenous communities to conduct research and partner with the broader research community". This is part of the Truth and Reconciliation Commission's Calls to Action (TRC's CTA # 65) that recommends a national research program to advance understanding of reconciliation. The Government of Canada through various reconciliation initiatives also seeks to explore how Indigenous knowledge and western scientific knowledge can be used to inform public policy and decision-making. As such, this project will support Chiefs of Ontario's continued advocacy to advance IKS/TEK in environmental governance, regionally and nationally.

Informed by the experiences, insights and reflections shared at the workshop as well as the synthesis of existing knowledge that preceded the workshop, this paper addresses three themes outlined in the special call, with an emphasis on the perspectives of Elders and youth. We pay particular attention to the theme of Engaging Indigenous Knowledge and we have added a theme: the western science/TEK nexus. The IKS/TEK gathering, attended by 40 participants, provided a wealth of knowledge. Insights from the emerging faculty, students and community based researchers are also included under each theme. The report concludes with key recommendations that the Canada Research Coordinating Committee should consider if reconciliation research is to become a meaningful process. Appendix A provides a summary of the subject matter of the meeting regarding Great Lakes governance, IKS/TEK and First Nations. Appendix B provides a list of references cited.

We begin this synthesis report with a core set of assertions. These assertions are:

First, **Indigenous peoples have their own knowledge systems that have flourished on these lands for thousands of years**. Indigenous peoples have their own reasons for inquiry, modes of inquiry, ways of knowing, and ways of mobilizing or sharing knowledge. Indigenous peoples possess a complete knowledge system that is innovative and responds to changes (including dramatic environmental change) and supports healthy, sovereign, autonomous Indigenous societies. Upon contact with Europeans, Indigenous peoples and their knowledge supported other societies and continues to do so (RCAP 1996).

Second, at this point in time, **Western researchers/scientists/scholars lack appropriate paradigms for how to equitably share knowledge and research resources** (e.g. funding, careers, institutional support). The overriding research paradigm is still one of "extraction" of knowledge (or data) from Indigenous peoples as opposed to supporting Indigenous well-being and self-determination. Indigenous peoples, their lives and knowledge remain "researched" as opposed to a major paradigm shift in which Indigenous peoples become the "researchers" with support for research infrastructure that Universities take for granted. Emerging paradigms developed by Indigenous peoples offer alternatives to the extractive paradigm of knowledge production and generation, e.g. Two-Eyed Seeing (Bartlett, Marshall and Marshall 2012), Two Row Wampum principles (Ransom and Ettenger 2001); and treaty approaches (Luby et al 2018; Latulippe 2015).

Third, Self-determination and knowledge sovereignty: Research must support self-determination and Indigenous knowledge sovereignty, which is a two-pronged framework:1) practices that strengthen Indigenous knowledge systems (including use, transmission, governance, etc) by Indigenous peoples, and 2) the removal of external barriers (policy, jurisdictional, etc) to the expression of these practices on the land (Norgaard 2014a, 2014b; Whyte 2018). Without the removal of external barriers, we can expect ongoing conflict that characterizes contemporary relationships (Linden 2007; RCAP 1996) and thus undermining goals of reconciliation.

Each core theme will briefly described, followed by key insights shared by participants from the TEK workshop as well as key recommendations.

Theme 1: Engaging Indigenous Knowledge

It is essential that researchers understand and are open to learning from Indigenous peoples about history, treaties, worldview, philosophies as well as the ongoing policy and practice of colonialism and its continued impacts on Indigenous societies and communities. It is inappropriate, unreasonable and disrespectful to expect Indigenous peoples to share knowledge with researchers who remain ignorant of the historical and lived realities of Indigenous peoples.

Instead of asking, "What needs to be done to support research into Indigenous knowledge systems", a more appropriate question is, "What needs to be done to support Indigenous peoples to uphold, strengthen, revitalize Indigenous knowledge systems so they are able to share knowledge if they wish?"

TEK workshop reflections/insights and experiences shared by participants

- Researchers/scientists are generally ignorant of the history of Indigenous peoples or fail to see how the history, treaties, current struggles are related to IKS/TEK work;
- Non-Indigenous people can be ignorant of cultural protocols and what is required to create a safe space for dialogue. Government staff who demonstrate respectful listening and humility were received better than those who did not demonstrate these skills, knowledge or abilities;
- IKS/TEK is best shared and articulated and understood in Indigenous languages;
- First Nation people do not want their knowledge appropriated, misused or homogenized;
- Collectively, we are starting from a place of mistrust. Knowledge holders do not know what happens to their knowledge once it is shared. Who makes the decisions? Why? Western scientists do not value IKS/TEK;
- Western 'science-based' decisions have hurt First Nation communities in the past and continue to do so; and
- IKS research/work is still not funded equitably in science-based initiatives, if at all.

Key Recommendations

- Participants emphasized the requirement for researchers/scientists to know and respect the people (different nations, community priorities and protocols, distinct histories);
- Researchers/scientists should know the goals and priorities of a community, such as language revitalization, bringing youth on the land, caring for the land/waters and so on;
- Research questions must be generated from within the community and based on community concerns and priorities. The research questions posed need to be different; How can research support the goals of the Indigenous peoples?;
- Research should support intergenerational sharing of knowledge within the community (internally) before being shared externally, e.g. elder – youth dialogue; and
- Research/science needs to support environmental interests, values and priorities as determined by Indigenous communities.

Support Indigenous Sciences and Holistic Approaches

There is a lack of reciprocity between Indigenous communities and scientists. Scientists/researchers seek IKS from communities but Western science is often inaccessible, unusable, and not shared in a reciprocal manner. At the same time, Indigenous peoples have their own knowledge and science traditions and seek to engage Western science as a tool that will advance their holistic knowledge systems and research goals (Cajete 1995; Brascoupe 2001; Kimmerer 2012; Johnson et al 2016, Whyte et al. 2016).

TEK workshop reflections/insights and experiences shared by participants

- Elders emphasized the importance of being on the land and water: 'take the classroom outside'. Empirical knowledge is derived from the land. Indigenous science is based on cultural values, facts, truths, and realities of living off the land holistically from time immemorial;

- There is a lack of trust of Western science because it has harmed people and the environment;
- Indigenous science takes a lifetime to learn and practice;
- Western science is inaccessible to First Nation communities and decision makers – they, too, may wish to make use of science;
- There is a language and communication barrier, i.e. terminology in conveying science and when Indigenous language has to be translated into English
- Western scientists have to realize they are working within a "system of knowledge" that is totally different from their own. There is an explicit inclusion of spirit and spirituality in IKS/Indigenous science;
- Western science continues to dominate; Indigenous science is considered an add-on to a broader research agenda;
- Western scientists are in positions where they can assist communities; or rather there are some scientists who are willing to listen and work with communities on their priorities

Key Recommendations

- IKS is about *doing*; therefore, to support Indigenous science, knowledge keepers must have opportunities to share the knowledge 'in the language', by demonstrating and then giving younger generations the opportunity to learn by practicing;
- This absolutely necessitates advocating for Indigenous lands rights (access and benefit) and legal responsibilities (inherent jurisdiction), so people can actually practice and then pass on knowledge to future generations;
- TEK and Indigenous science is part of a way of life – a way of living in relationship with the land. Knowledge is inseparable from and interconnected with practices and beliefs (Reo and Whyte 2011) – this includes observation, classification, comparisons, harvesting, ecological management, respecting naturalized laws, ethics, and so on. Holistic includes legal rights and responsibilities according to Indigenous legal systems and western legal systems. Thus, community-based science research led by First Nations should be supported and the First Nations will decide how TEK will used; and
- Indigenous paradigms exist that can serve as models for equitable sharing of knowledge (science and IKS). Indigenous peoples need access to western sciences for multi-disciplinary informed decision-making that will serve their needs and priorities.

Enhance Understanding of Reconciliation

There needs to be an explicit effort to support Indigenous concepts and practices of reconciliation. Reconciliation operates at different scales and it appears that only Indigenous peoples are expected to do the reconciling. State ideas of reconciliation have not had a significant (or any) impact on the lived experience of First Nations. It appears that the commitment to reconciliation (which calls for societal transformation) is lacking at every level within government agencies. Some federal government staff 'engaging" with Indigenous peoples at the TEL workshop did not demonstrate a commitment or understanding of the scope and spectrum of their obligations in relation to Indigenous peoples or the Government of Canada l goals of reconciliation.

TEK workshop reflections/insights and experiences shared by participants

- Many First Nation representatives at the meeting described being in crises on multiple scales: individual, family, community, nation. Often responding to those crises limits the capacity of individuals and leaders to participate in bureaucratic processes - this does not mean that environmental work is being ignored, but there many competing priorities; and
- Indigenous peoples continue to participate in "engagement" activities with government agencies and others in good faith, often encountering people who interrupt, are disrespectful, are impatient, and lack knowledge of cultural and respectful practices.

Key Recommendations

- Reconciliation should focus on re-connecting and reconciling with land and waters with the space and time for ceremonies and prayers for the return of healthy lands and waters;
- Simultaneously, Indigenous people require support for reconciliation in our families, our clans, communities and in our nations;
- Outside agencies need to continue to work with Indigenous communities to advance TRC Calls to Action and principles that relate to IKS and reconciliation research; and
- Meaningfully support for Indigenous-led research and community-based youth organizations is needed.

Build Knowledge of Indigenous Languages and Take into Consideration Intersectionality

Again, this point about language is framed in a biased way. The question should be, "How can research support the revitalization and practice of Indigenous languages?" Much research to date is the *study of* language, yet Indigenous languages continue to be threatened. Clearly the paradigm has to change so that it serves communities; in other words, Elders want their own community members, children, youth and adults to speak in the language (not just study it).

TEK workshop reflections/insights and experiences shared by participants

- People should be able to share and teach language to youth and future generations in any gathering that involves IKS;
- People should be able to speak in their languages when they participate in research and at research events and meetings;
- Being forced to interact and speak in English reinforces colonialism;
- Elders, knowledge holders and ambassadors who are women and youth continue to struggle to have their voices heard;
- Some public servants demonstrated a need for enhanced cultural competency training to respect protocols for engaging Elders. The TRC Calls to Action includes a number of recommendations on this front, e.g. use of tobacco, listen to body language of elders, and so on;
- There are different types of Elders/knowledge holders. Some Elders are fluent language speakers who think in the language and some grew up on the land, witnessing changes and degradation through decades. Others are not language speakers; some have survived residential schools, while some are practicing Christians. Some Elders consider themselves to be "in training" and continually learning; and
- It needs to be understood that IKS may be specific to genders, families, personal affinity (gifts), clans, geography/landscapes - it should not be generalized to make it applicable to any situation. IKS research should be inclusive and garner many different perspectives when appropriate. A balance of perspectives is needed whereby one voice is not privileged over other voices.

Key Recommendations

- In research, supporting Indigenous languages means that translation services needs to be included as a valid research budget line item and that translators are compensated at a fair, market rate;
- Indigenous language revitalization efforts must be led by communities, there needs to be more opportunities internally within First Nation circles for youth and elder learning;
- IKS cannot be considered without considering state and environmental violence against Indigenous lands and Indigenous peoples, especially women;
- Support council approaches to strategic analyses via Elders councils, youth councils and women's councils, recognizing that all group share something distinct to offer; and
- Women and youth group gatherings may need to be held separately to ensure learning and sharing on their own terms.

Theme 2: Mobilize knowledge and Partnerships for Reconciliation

It is important to contextualize this question in terms of what Indigenous peoples consider and understand reconciliation to mean based on Indigenous law, governance, knowledges and values. What are Indigenous forms of reconciliation? How can research results and outcomes support Indigenous well-being and self-determination? At the moment, it seems research has failed to translate into Indigenous self-determination and well being. Supporting Indigenous peoples first and foremost is a necessary pre-requisite before external researchers and governments request TEK/IKS. First Nations need to attend to their own needs and priorities first and have expressed a strong desire to support each other.

TEK workshop reflections/insights and experiences shared by participants

- The evidence is clear that many industrial processes are harming the environment, yet government continues to allow this to happen. There is no point in having protection and remediation plans, which utilize IKS, if we continue to knowingly contaminate the lands, waters, and ultimately ourselves and all other living things, e.g. use of herbicides. Thus, do we really need to create more knowledge for what is already known? There is a need to act on existing knowledge;
- Consultative processes need to be determined by First Nations and not for them. First Nations are acutely aware of the paternalistic history of policy-making and are in constant pursuit of methods to exercise self-determination and assert their inherent jurisdiction and responsibilities;
- Government and public policy are often met with skepticism at multiple levels due to their political agendas and economic interests;
- First Nation communities need to define the problems and priorities for their respective watersheds, treaty lands and homelands;
- First Nations require their own space to discuss/dialogue and share internally in their own communities before devoting time and energy to those who are requesting their knowledge;
- First Nations have stated that they are largely uncompensated for their many contributions and sacrifices through treaty and other processes to welcome non-Indigenous peoples onto their homelands; and
- Delegates emphasized the importance of clean water for plants and animals, not just humans.

Key Recommendations

- Dominant institutions need to turn the critical gaze towards themselves (Kuokannen 2007), and need to attend to Indigenous peoples as an order of government who make policy - not just input into policy;
- First Nation need to develop their own TEK guidelines and governance processes; some have done so, but there remains a substantial gap in this area (McGregor 2013);
- The leadership and involvement of communities who are already engaging IKS work might be a useful inroad to facilitate policy work that is inclusive and demonstrative of community values. This should occur by/within First Nations and on their terms;
- Applied research shows that the following 6 factors supports Indigenous involvement in multi-actor environmental stewardship: respect for Indigenous knowledges; control of knowledge mobilization; intergenerational involvement; self-determination; continuous cross-cultural education; and early involvement (Reo et al. 2017);
- Financial equity would mean making the necessary transition to holistic resource benefit sharing as opposed to program-based funding, so that Indigenous peoples can set the IKS research agenda (Lickers in McGregor 2000);
- There should be space devoted to FNs sharing amongst themselves first, possibly utilizing resources offered by academics and others who are able to assist with those processes and operate in a consent-based, mutually beneficial arrangement with Indigenous leaders and communities.

Theme 3: Foster Mutually Beneficial Relationships

The contemporary Indigenous research landscape reveals that academic imperialism persists despite inroads made over the past decades. The academy is still deeply entrenched in colonial structures, thus the broader research environment is not always welcoming or accommodating to Indigenous peoples, their goals, aspirations as may be expressed in their research interests. Relationships are hard work and take time, energy and resources, particularly for Indigenous communities, organizations and peoples.

TEK workshop reflections/insights and experiences shared by participants

- First Nations have been stating that good working relationships (at various levels) is important before research begins;
- First Nations have been advocating for decades to be appropriately included in any initiatives involving their lands, waters and knowledge ('nothing about us without us');
- Government and academics should take the lead from Indigenous peoples;
- Support Indigenous led initiatives, e.g. having own environmental TEK research units;
- First Nation wish to control what is going in their territories;
- Environmental training and career opportunities for FN youth are needed; and
- There are too many researchers/scientists who are culturally incompetent and require basic training thus undermining research relationships.

Key Recommendations

- To foster mutually beneficial relationships, First Nations must have the power to direct the agenda, not merely contribute to it. Support communities if they wish to develop their own research ethics guidelines and evaluation processes so that they can ensure that research is ethical and based on their own values and principles;
- Have a separate and generously-funded source for community-led research so that it is not competing with randomized control trials and that it is peer reviewed by Indigenous people.
- Funding models that support communities who lack capacity to carry out research should come from sources that are in partnership with them including appropriate timelines to maintain ongoing relationships;
- Indigenous communities need the resources and capacity to govern/manage data which means computer infrastructure (hardware, software, memory) and the skills to store, retrieve and manipulate data.
- Organizations/First Nations need funding for a research officer who would be able to monitor research activities and hold researchers accountable
- IKS cannot be separated from the people, the land, practices on the land, ethics/law. Western science is missing the ethics – while IKS is by its very nature ethical (Kimmerer 2013). So, if external agencies want to use IKS, they have to do something beneficial with the knowledge and be accountable to Indigenous peoples.
- Understanding the difference between inherent and government-granted rights, sovereignty as defined in spiritual terms, and territorial jurisdiction through treaties- all required baseline knowledge for working relationships;
- Western-based best intentions are often counter intuitive to Indigenous rights-based (inherent, treaty, human, Aboriginal title, Supreme Court decisions ie. Guerin decision re: 'sui generis'; and contexts, e.g. the settler governments issue licenses to pollute;
- Advocate for full adoption and implementation of the United Nation Declaration on the Rights of Indigenous Peoples.

Theme 4: Science/TEK Nexus

The SSHRC call focuses primarily on the role of Indigenous knowledge systems in achieving reconciliation research. Seeking IKS/TEK in research is one strand of research that has occupied many

researchers for decades (Inglis 1993, LaDuke 1994, Menzies 2006, Whyte 2018). This theme emerged as a critical area by workshop participants and requires specific attention. There is considerable interest in how IKS/TEK can work with science to address some the most pressing environmental challenges of our times. This section seeks to contribute to this ongoing dialogue by reflecting on the experience, insights and reflections from previous discussion of this nature with First Nations regarding the health of the Great Lakes ecosystem that can be applied more broadly. For example, different conceptions of time for spiritual and value-based traditions are not considered by scientists and factored into project timelines. Discussion regarding spirituality (e.g. prophecies and ceremony) are not recognized as relevant and contemporary knowledge that inform approaches to describing environmental change, yet "spirit" forms the foremost foundational aspect of TEK. First Nations have called for paradigm shift that respects the knowledge brought forth by Elders, TK holders/practitioners on their own terms. First Nations offer a different form of "knowing" the land, waters and ecological processes.

Great Lakes governance reveals that has relegated TEK secondary to western science as supplementary or simply to be "considered". First Nations have stated over the decades that IKS/TEK can direct a science based research agenda as evidenced in the EAGLE project - Effects on Aboriginal of the Great Lakes Ecosystem (COO 2001).

<u>TEK workshop reflections/insights and experiences shared by participants</u>

- Government and industry often do not value Indigenous knowledge; it is viewed as an "add on" or "supplementary" knowledge/data to western science; and only believe it when it is validated by western science; however, IKS is valuable on its own terms without validation by Western science;
- Science is biased, changes over time and cannot be trusted or relied upon.
- Scientists are also being carefully watched and judged to see what they will do; are they accountable? respectful? listening?
- Scientists need to know that they are not getting the full TEK/IKS, only what people are willing to *risk* sharing with them;
- Elders have stated, if you do not practice IKS, you cannot *know* it; and
- Western science is based on theories and is always seeking "proof". Science changes over time. Indigenous/traditional knowledge has been reliable since time immemorial.
- Science and technology does not appear to be "saving" the planet, IKS/TEK is needed and Elders are willing to help.
- First Nation communities are utilizing science to address environmental challenges they face, along with TEK. Look to these examples to lead the way.
- Young people continue excel in science that can assist communities. There needs to be more First Nations youth who know TK and science. First Nations can then engage in their own scientific research.

<u>Key Recommendations</u>

- Those wishing to work with IKS need to clearly state their intent; what and for whom are they working, how and under which assumptions and biases, and what they are not able to do;
- Western researchers need to embody humility and the limits to what they know;
- IKS/TEK must be valued by decision makers and thus, planning and budgeting allocated for TEK research is a must along with compensating TK holders;
- Culturally competent, interdisciplinary scientists are needed to interact with First Nation communities and knowledge holders;
- First Nations have science questions as well. First Nation wish to direct their own scientific studies.

- Those wishing to work with Indigenous knowledges need to advocate for the removal of barriers facing First Nations, such as capacity issues, development on their lands without consent, "consultation" when the decision is already made, and so on; and
- Highlighting efforts to mitigate/adapt/restore habitats and environmental factors is a way to share best practices regarding TEK. There are multiple examples (Walpole, Saugeen, Batchewana, etc) of TEK being used to enhance science. Building on the strength of those examples can be powerful, especially sharing in language and format that everyone understands (e.g. through multimedia)

Synthesis Report Recommendations

1. **Respect IKS/TEK** as part of a knowledge system that stands on its own and does not need to fit into western science paradigms to be valid or useful. Indigenous peoples have relied on these knowledge systems since time immemorial and will continue to rely on them with or without government and academia. IKS/TK should be supported in research, including supporting traditional ways of life and learning languages, on Indigenous people's terms.
2. **Support Indigenous peoples and their research goals:** Resources are required to support the research agendas of Indigenous peoples and communities. Being chronically underfunded and unsupported for numerous initiatives while other groups are well supported and funded creates further mistrust and frustration. Indigenous peoples should be able to access research funding on their own terms and not be required to partner with academic institutions if they do not want to, or because it is too much work for them and takes away from their own priorities.
3. **Indigenous knowledge mobilization/ transmission**: Research should prioritize intergenerational sharing of knowledge within the community before it is shared externally. If communities decide to share their knowledge it needs to be on their terms with recognition of ownership, with the resources to store information, to determine how information will be protected, to determine how information will be shared and to determine who has access to the information.
4. **Indigenous knowledge systems, science and gender**. There is an increasing number of First Nation who are seeking careers in science and they should be supported to do so. However, there is an explicit need for women and girls to engage in science careers, as they bring unique knowledge and perspectives. Women/girls in science and engineering require peer and Elder support in light of the competing demands placed on women in other spheres of life.
5. **Indigenous research protocols:** Indigenous peoples require support to develop their own research protocols and the resources to govern their knowledge and to monitor researchers. The current structure of the Tri-council is ill-equipped to support Indigenous governance of knowledge (ie. Indigenous communities are not funded for research infrastructure).
6. **Role of external institutions**: When Indigenous peoples seek to regain and/or assert their inherent responsibilities and rights - which is for and by Indigenous peoples - external institutions should provide meaningful and material support for this work (without stealing, taking credit, expecting something, acting unilaterally, hindering, misrepresenting etc.). Instead of pulling expertise from communities to fit into externally-defined research agendas, institutions should invest in building long-term relationships and meaningfully supporting the Indigenous communities on whose traditional and treaty territories these institutions are located. This will take time, money, and commitment from multiple levels.
7. **Research relationships**: It is unreasonable to expect Indigenous peoples to share their knowledge to support a society that continues to threaten their very being and those of their descendants every day in every conceivable way (WEA and NYSHN 2016). Outside institutions need to do the work to build the respectful, reciprocal relationships that are needed for (possible) cooperation or partnerships to take place. Innovation and creativity are required here to develop paradigms of knowledge sharing, rather than extraction or domination.

8. **Reconciliation and fundamental change**: The dominant concept and practice of Canadian sovereignty and reconciliation needs to change - that is, the onus of reconciliation should not be on Indigenous peoples: instead of reconciling pre-existing Indigenous sovereignty with the punative sovereignty of the Crown, Canada needs to reconcile itself to First Nations, via Indigenous reconciliation. The *United Nations Declaration on the Rights of Indigenous peoples* can provide guidance for supporting -determination in research and respecting Indigenous Knowledge systems.

Concluding Remarks

There is a willingness and even desire to share knowledge to address current and future challenges. Indigenous worldviews have a place for non-Indigenous peoples and their knowledge, whereas non-Indigenous peoples have yet to fully understand, respect or apply that lens to IKS.

Indigenous people have been generous with sharing their knowledge yet as reported here there remains many significant challenges to fully realize the potential for Indigenous led or collaborative/partnership based research. Reconciliation offers an opportunity for external agencies (government, research institutions and others) to begin to take responsibility for transforming their institutions and practices. They must 'remove the barriers' and demonstrate that they are ready and worthy of the attention, energy and time of Indigenous communities. They must take on the work of reconciling and accommodating to ensure that Indigenous knowledge holders are held in the same high esteem as western scientists (and compensated as such) and that Indigenous knowledge/science can flourish alongside western science.

Indigenous peoples, communities, and organizations have "shared" much in terms of knowledge, time and energy to researchers and others, yet Indigenous peoples continue to exploited and marginalized in research.. Reconciliation research offers an opportunity for settler institutions to "reconcile" with Indigenous peoples, knowledges and goals and make the necessary changes to ensure Indigenous peoples and their knowledge continues to flourish. Simply put, the conditions for the flourishment of Indigenous peoples and their knowledge are not yet in place.

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Please note, this project does not constitute consultation with the First Nation in Ontario and Chiefs of Ontario. This report represents a synthesis and mobilization of existing knowledge in an effort to contribute to the emerging development of new research paradigms involving reconciliation.

Appendix 1: Great Lakes First Nations and Traditional Ecological Knowledge

For thousands of years, Indigenous nations have related to the Great Lakes in a sustainable manner, employing their own legal, political, governance and knowledge systems to do so. Over the past few centuries, Indigenous political, legal and governance relationships with the Great Lakes has been seriously undermined, and, until recently (last few years), Indigenous peoples have been excluded from Great Lakes governance.

Currently, Great Lakes Governance is complex. This complexity is compounded by the numerous jurisdictions involved; including Canada and United States, provinces, states, and municipalities; and numerous Tribes, First Nations and Metis peoples. Great Lakes governance is further confounded by the involvement of numerous non-government actors such as ENGOs, industries and industrial associations, citizen groups, academics, scientists, and so on. Not only are there numerous jurisdictions at play (and sometimes at odds with each other), a multitude of non-state actors also have a role in governance. Furthermore, Great Lakes governance is evolving. Effective governance systems evolve over time, as different challenges are faced. Great Lakes governance is no exception.

Water and water rights issues have been ongoing between Canada and the United States for over a century. To help resolves disputes between the two countries, the *Boundary Waters Treaty* (BWT) was signed in 1909 to prevent and resolve disputes over the use of the shared waters and to settle other transboundary issues. To assist the two countries in their work, the *International Joint Commission* (IJC) was established to carry out the provisions of the treaty. The BWT serves as the legal and institutional foundation for contemporary Great Lakes governance.
In response to serious water quality concerns in the Great Lakes coupled with the recognition of the legitimacy of the emerging environmental movement, both Canada and United States adopted environmental policies and plans to address environmental issues for many regions including the Great Lakes. Canada and the United States agreed that action was needed to address Great Lakes environmental issues. First signed in 1972, the current (2012) *Great Lakes Water Quality Agreement* (GLWQA) reflects the long standing history of cooperation between Canada and the United States to protect the Great Lakes.

Various iterations of the GLWQA over the past four decades have "established a shared vision and common objectives and commitments to science, governance and action that will help to restore and protect Great Lakes water quality and ecosystem health" (ECCC 2013). While Canada is responsible for participating in international negotiations regarding the Great Lakes, it cannot unilaterally implement provisions that fall under provincial authority and jurisdiction. Cooperation is therefore required with the provinces to deliver on the GLWQA. Thus, the first Canada-Ontario agreement respecting the Great Lakes Basin Ecosystem (COA) was signed in 1971. The first COA represented a joint effort between Canada and the province of Ontario to protect the Great Lakes. Over the past four decades, 8 COAs have been negotiated and signed, with the current *Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health* being signed in 2014.

COA is the federal provincial agreement that "supports the restoration and protection of the Great Lakes basin ecosystem. The Agreement outlines how the governments of Canada and

Ontario will cooperate and coordinate their efforts to restore, protect and conserve the Great Lakes basin ecosystem" (ECCC 2015).

First Nations engagement and input into COA negotiations formally began in 2001, at which time, a distinct First Nations annex was called for. Over a decade later, in 2014 COA finally includes *Annex 13: Engaging First Nations*. Further advocacy by Chiefs of Ontario and First Nations over the past few decades for the inclusion of TEK in Great Lakes governance/decision making has resulted in some policy and legislative inroads in addition to COA (e.g. GLWQA and Great Lakes Protection Act). The gathering convened through this project provided the opportunity to take stock of these advancements, including the current state of TEK in Great Lakes governance.

The purpose of COA was reiterated "to reflect the interests and important role of First Nations as participants in the restoration, protection and conservation of the Great Lakes" and "will provide a framework for Canada and Ontario to engage First Nation during the implementation of the Agreement and to **consider their traditional knowledge** to assist in restoring, protecting and conserving Great Lakes water quality and ecosystem health".

These goals are expressed in *Annex 13: Engaging First Nations* as

1. Collaborate and Build Relationships with First Nations to Assist in Restoring, Protecting and Conserving Great Lakes Water Quality and Ecosystem Health; and
2. Enhance Understanding and Appreciation for the Great Lakes by Considering Traditional Knowledge.

More specifically, goal 2 requires Canada and Ontario to enhance understanding and appreciation for the Great Lakes by considering Traditional Knowledge via two initiatives:

a) Identify and support a pilot project to demonstrate the use of traditional knowledge in contributing to understanding and addressing Great Lakes issues; and
b) Promote a symposium on TK and how it can be used to effectively support decision making on Great Lakes Issues

The Purpose of *Annex 10: Science* is to enhance the effectiveness and efficiency of Great Lakes science through planning, cooperation and communication including "opportunities will be explored to enhance integration of different types of knowledge, **including traditional knowledge** contributed by First Nations and Metis (p 66).

First Nations have commented on the lack of consideration of TEK in science based decisions in previous Annex meetings. Despite the explicit commitments, TEK has been ignored in a multitude of initiatives occurring throughout the Great Lakes Basin. Furthermore, TEK has been ignored in Great Lakes work that *does involve* First Nations. First Nation representatives stated, First Nations have **inherent jurisdiction and responsibilities** in relation to the Great Lakes and this is the foremost consideration. There are treaties among Indigenous nations (e.g. Dish with One Spoon) and treaties with settlers that outline their responsibilities for being on Indigenous lands, waters and territories (Borrows 1997). It was noted at the workshop that treaties with settlers have been violated and have not been honored, contributing the marginalization of First Nations in Great Lakes governance. Participants emphasized that for thousands of years, First Nations exercised inherent responsibilities and jurisdiction, developed laws and treaties to care

for and pass on knowledge resulting in sustainable relationships with the Great Lakes. The obligations, rights, responsibilities and duties are expressed in the 2008 *Water Declaration of the Anishinaabek, Mushkegowuk and Onkwehonwe*. The Declaration forms the basis of the ongoing work to protect the waters, including the Great Lakes.

There are **two main challenges** identified by First Nations that stand in the way of respecting inherent jurisdiction and responsibilities and fulfilling the obligations set out in the *Water Declaration of the Anishinaabek, Mushkegowuk and Onkwehonwe*. First, First Nation are regarded as stakeholders in Great Lakes governance, there is a reluctance to recognize the legal, treaty and constitutional rights of First Nations. Second, TEK remains secondary to science and is not regarded or recognized as equal to western science.

There have been inroads over the past decade through First Nation advocacy - for instance, TEK has been recognized; however, TEK remains as an "add on" or, "supplemental" to science in the GLWQA, COA (2014), Great Lakes Protection Act (2015), and Great Lakes Strategy (2015), while implementation remains a significant challenge. There remains a persistent lack of recognition of First Nation inherent jurisdiction, authority, laws and governance in current Great Lakes agreements, legislation and strategies. There is a willingness to acknowledge the cultural and spiritual relations, yet ignore First Nation authority and jurisdiction. Furthermore, Canada and Ontario ignore their own legal and treaty obligations to First Nations. It is important to make this point, as TEK should not be removed or extracted from communities; therefore, to utilize TEK requires First Nations to be involved in decision making, not excluded or marginalized in the process.

TEK continues to be relegated as an "add on" to western science and is not seen as valid in its own right; for example, in the GLWQA. Annex 10 (Science) is meant to enhance "the coordination, integration, synthesis, and assessment of science activities. Science, including monitoring, surveillance, observation, research, and modeling, may be ***supplemented*** by other bodies of knowledge, such as traditional ecological knowledge when available". In other words, TEK is "supplemental" knowledge. It further states, "Opportunities will be explored to enhance integration of different types of knowledge including traditional knowledge contributed by First Nations and Metis " (66). TEK is not given respect nor is seen as equal to science.

However, First Nation communities are using western science along with their own knowledge in community based initiatives. Elders said the foundation of decision making/governance should be TEK which has a proven track record of thousands of years of effectiveness and ensuring sustainability. This does not constitute a rejection of western science or its worth in solving environmental challenges. First Nations determine when western science is appropriate and engage with scientists as required, as the First Nation case examples demonstrate. It was noted that western science does not stand the text of time, as principles, norms and findings changing over the years; for example, chemicals in the Great Lakes were deemed safe by decades ago and now these same chemicals are found to be dangerous. TEK stands the test of time. There is value in science to support decision making at the community level, but should never replace, marginalize or dominate TEK.

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