



Tracking Change...

Local and Traditional Knowledge in
Watershed Governance

Report of the 2016
Community-Based Research Projects in
the Mackenzie River Basin

trackingchange

Tracking Change...

Local and Traditional Knowledge in Watershed Governance

Report of the 2016 Community-Based Research Projects in the Mackenzie River Basin

Brenda Parlee and
Elaine Maloney (Editors)

Cover:
Clarence Kowana setting net, Aklavik, Northwest Territories
(Photo Credit: Fisheries Joint Management Committee)

Acknowledgments

This report was produced with support of a grant from the *Social Sciences and Humanities Research Council of Canada*, and contributions from the Government of the Northwest Territories, the University of Alberta, the Mackenzie River Basin Board, the Northern Scientific Training Program (Aboriginal and Northern Affairs, Canada), the Inuvialuit Fisheries Joint Management Committee, the Gwich'in Renewable Resources Board, the Sahtú Renewable Resources Board, Deh Cho First Nations, the Wek'èezhì Renewable Resources Board, the Akaitcho Territorial Government, Łutsël K'e Dene First Nation, Treaty 8 Tribal Association of British Columbia, Treaty 8 First Nations of Alberta, Mikisew Cree First Nation, Prince Albert Grand Council, and Nacho Nayak Dun First Nation.

Any opinions, findings, and conclusions or recommendations expressed in this review are those of the authors and do not necessarily reflect the views of these funders.

The review contributes to the project *Tracking Change...* which is a six year research program aimed at building capacity for communities in the Mackenzie River Basin to document and share local and traditional knowledge about aquatic ecosystem change.

The authors express their deep appreciation for the contribution of project leads, researchers and editors including Joella Hogan, Kristin Hynes, Janet Boxwell, Tsa Tsi Catholique, Trevor Lantz, Tracy Proverbs, Deborah Simmons, Michael Neyelle, Chelsea Martin, Christine Wenman, Robyn McCleod, Dahti Tsetso, Kristine Wray, Diane Giroux, Mike Tollis, Kevin Ahkimmachie, Freida Cardinal, Amy Amos, Bruce McClean, Art Napoleon, Karen Aird, and Diane Abel.

Please cite the full report as:

4

Table of Contents

Acknowledgments	3
Table of Contents	5
Executive Summary	7
<i>Community-Based Monitoring</i>	13
<i>Local and Traditional Knowledge (TK)</i>	13
<i>Capacity Building</i>	14
<i>Youth Knowledge Fair</i>	14
<i>Graduate Students involved in Tracking Change in the Mackenzie River Basin</i>	15
Inuvialuit Knowledge and Use of Fisheries in the Mackenzie Delta	18
<i>What we found out...</i>	19
Changes affecting Fishing Livelihoods in the Gwich'in Settlement Area	22
<i>What we found out ...</i>	24
Sahtú hé Dəocha hé Dene Naó weró Chets'elə – Great Bear Lake and Mackenzie River	
Dene Knowledge: Research Camps 2016	27
<i>What we found out...</i>	29
DehCho K'ehodi Youth Trip: Fort Simpson to Willow Lake River	31
<i>What we found out...</i>	32
Nacho Nayak Dun First Nation Traditional Knowledge Camp	41
<i>What we found out...</i>	42
Wek'eezhi Renewable Resources Board - Fish, Todzi, and Forest Fires	45
Lutsel K'e Dene First Nation Wildlife, Lands and Environment Committee	46
<i>What we found out...</i>	48
Akaiicho Water and Traditional Knowledge Workshops	53
<i>What we found out...</i>	54
Treaty 8 Tribal Association 2016 - Eagle Island Fish Camp	60
<i>What we found out...</i>	61
Prince Albert Grand Council Canoe Trip in the Lake Athabasca Watershed	67
Changing Water Depth in the Mikisew Cree Homelands	67
Place Names and Canoe Trip in Treaty 8 Territory	85
<i>What we found out...</i>	87



Executive Summary

Tracking Change: Local and Traditional Knowledge in Watershed Governance is a six year research program funded by the Social Sciences and Humanities Research Council, led by the University of Alberta, the Mackenzie River Basin Board, and the Government of the Northwest Territories in collaboration with many other valued Aboriginal organization partners and universities. The broad goal of the project is to create opportunities to collaboratively document and share local and traditional knowledge (LTK) about social-ecological change in the Mackenzie River Basin, Lower Mekong, and Lower Amazon basins and determine its' role in watershed governance. In 2016-17, the project aimed to address the following themes and priorities:¹

Themes and Priorities for *Tracking Change*... Sub-Projects in 2016-2017

- ✓ historical and contemporary observations and perceptions of conditions and change in the health of the **aquatic environment** (e.g., water quality, quantity, flow, groundwater, permafrost conditions);
- ✓ historical and contemporary observations and perceptions of conditions and change in **fish species** (population, movements, diversity, invasive species) and other **aquatic species** (e.g., geese, beaver);
- ✓ sustainability of **fishing livelihoods** (e.g., harvesting levels and practices, diet, health, access issues, perceptions of change in the health of valued fish species);
- ✓ implications of change for **governance** (e.g., how maintain healthy relationships to the aquatic ecosystem, maintaining respectful and spiritual relationships, respecting treaty rights);

In 2016, twelve research projects were funded (through a request for proposals process) that involved similar kinds of research methods and activities including fish camps, canoe trips, youth-elder knowledge exchanges, semi-structured interviews, workshops and secondary literature reviews. An interview guide and a 'toolbox' of methods was provided to guide communities seeking to carry out their research projects in ways considered synergistic (linked) to other projects in the Basin.

¹ These priorities were recommended in a workshop with the NWT Water Stewardship Strategy Aboriginal Steering Committee and the Mackenzie River Basin Board Traditional Knowledge Steering Committee (Feb. 10, 2016). Additional input was solicited for the research priorities from Aboriginal organization partners and other members of the Project Team by email in October 2015.

Reports were shared in December 2016 from the following organizations:

- Nacho Nayak Dun First Nation
- Inuvialuit Fisheries Joint Management Committee
- Gwich'in Renewable Resources Board / Gwich'in Tribal Council
- Sahtú Renewable Resources Board
- Deh Cho First Nations
- Wek'èezhìi Renewable Resources Board
- Akaitcho Territorial Government
- Łutsël K'e Dene First Nation
- Treaty 8 First Nations of Alberta
- Mikisew Cree First Nation
- Treaty 8 Tribal Association (British Columbia)

Many oral histories, narratives and observations were documented about local issues of concern and of priority to local communities. The key themes and issues highlighted in these reports included the following:

- ✓ The Mackenzie River Basin is a network in which people are interconnected with the aquatic ecosystem in many different ways. A holistic understanding of the social, economic, cultural and ecological changes occurring in the Basin is necessary to ensure that aquatic ecosystems are managed in ways that ensure the continued health and well-being of the Basin's Indigenous communities;
- ✓ The Mackenzie River is a dynamic cultural landscape in which local economies and cultures have been shaped by the seasonality as well as year-to-year variability in the availability and condition of basin resources;
- ✓ Fishing is important to the culture and well-being of communities in the Mackenzie River Basin and is an inherent right protected both by the Canadian constitution as well as in Treaties and comprehensive land claim agreements.
- ✓ More than 20 species, and thousands of pounds of fish are harvested annually in the main river, the deltas and the numerous tributary rivers and lakes that comprise the Mackenzie River Basin. Fresh fish, dry fish and related dietary uses of fish have very high nutritional value, and are particularly important to food security in areas where other traditional/country food resources are variable or limited and where market foods are not an economically or nutritionally valuable alternative.
- ✓ Traditional practices for respecting (managing) fish and fish habitat are evident throughout the Basin. These practices have evolved based on generations of Traditional Knowledge. For example, 'take only what you need,' is the common principle for those fishing throughout the Basin.

- ✓ Indigenous communities play different roles in the governance of the Basin, depending on the jurisdiction. Although there are co-management boards and cooperative arrangements with territorial governments and the Department of Fisheries and Oceans that create opportunities for ongoing recognition of Traditional Knowledge in the management of fish stocks and key fishing areas in the Yukon and Northwest Territories, no such arrangements exist in British Columbia, Alberta, or Saskatchewan;
- ✓ In some jurisdictions, governments have created a clear role for traditional knowledge in decision-making about water resources. Where there is greater respect for traditional knowledge, resource conflicts are fewer. For example, in the Northwest Territories, respectful inclusion of traditional knowledge is embedded in the *NWT Water Stewardship Strategy*. In British Columbia, where resource conflicts and uncertainties about natural resources are more common, there is little to no recognition of traditional knowledge (see *British Columbia Water Sustainability Act* [2016]).
- ✓ Although practices have changed over the last century, contemporary harvesting and use of fish continues to contribute significantly to the diets and economies of Indigenous communities;
- ✓ The high cost of fuel, boats and equipment is a challenge for some community members highly dependent on fishing for food security;
- ✓ The nature of fishing livelihoods varies from community to community as a result of many environmental and socio-economic factors. For example, wage employment affects how much time is available for fishing with consequent implications for household food security (i.e., families who have less time to fish eat less traditional / country foods);
- ✓ In some communities where there is limited access to healthy water and fishing resources, there are concerns about the continuity of knowledge and skills beyond the current generation. For example, elders in northern British Columbia and northern Alberta have limited opportunities to teach their grandchildren about traditional fishing practices.
- ✓ Indigenous youth are seeking different kinds of opportunities to influence the governance of the Mackenzie River Basin to ensure that their rights and interests in fishing resources are respected for the future;

Unusual Observations and Patterns in Aquatic Ecosystems

- ✓ Across the Basin, there are widespread reports of decreased water levels and water flows, including dried up creeks. Such widespread observations may be the result of warming weather and lower levels of precipitation;
- ✓ Lower water levels are complicating access and use of places valued for fishing and related cultural uses;

- ✓ Water temperatures are reported to be warming with consequent effects on water quality, fish habitat, fish health, and fish abundance and distribution;
- ✓ There is more greening water or algal blooms in some areas which has been attributed to increased development activity (e.g., agricultural activity in northern Alberta), as well as warming temperatures;
- ✓ Warming temperatures are reportedly affecting the movements of some species, the timing and location of spawning areas and consequently the timing and location of harvesting activities. Warming water is also perceived as an influence over the condition of fish including the size, health (e.g., lesions) and palatability of fish valued as food (e.g., softer fish);
- ✓ Warming temperatures are affecting the stability of permafrost in the northern regions of the Basin. Melting of permafrost is increasing river bank erosion in northerly areas of the Basin, with consequent effects on fish habitat, fish movements, as well as access and use of the river for fishing and related practices;
- ✓ There is an increase in observation of fish considered new or invasive to the Mackenzie River. Most notably is the increase in incidence of salmon-catch;
- ✓ Warming winter temperatures have led to earlier break-up and later freeze-up in many areas. There are observations of extreme weather events, such as unseasonably warm winter days. As a result, there is more uncertainty in communities about ice safety and an increase in accidents associated with thinning ice;
- ✓ Extreme forest fire events such as those in Saskatchewan, the Northwest Territories and Alberta have created problems of ash in the water in some areas of the Basin;
- ✓ Fishers in some communities are observing different kinds of fish that are uncommonly found or never seen before in the Basin, such as salmon in many parts of the Northwest Territories, and other yet-to-be-identified species in Alberta;

Resource Development:

- ✓ Commercial fishing activities (including historic trade of fish resources to trading posts over the last 150 years), impacted fish stocks valued for food security in different regions, and particularly in the Peace Athabasca and Slave river regions.
- ✓ Numerous contaminated sites throughout the Basin, such as abandoned mines and exploration sites, have altered the relationship of communities to places that were traditionally valued for fishing and other cultural uses. Most notably, oil sands mining activity in northern Alberta, the Giant Mine near Yellowknife, and the Faro mine in Yukon, have fundamentally and adversely affected the value of local aquatic ecosystems, the cultural,

economic and spiritual value of these places to local communities, and the capacity of First Nations to exercise their rights to harvest and maintain traditional livelihoods;

- ✓ In the Peace-Athabasca-Slave River systems, where hydro-electric projects have been developed and are expanding, lower water levels, decreased water quality and unpredictable water flows are fundamentally and adversely affecting the relationship of First Nations and other communities to these river systems, the integrity of sacred and cultural sites (e.g., burial areas), access to traditional fishing areas, the health of fish valued for food security and many other related values and uses;
- ✓ Hydro-electric development in the Peace-Athabasca-Slave systems have changed water flows and the dynamics of the delta. As a result, there is more uncertainty in communities about ice safety and an increase in accidents associated with thinning ice.
- ✓ In the southern part of the Basin (Alberta, British Columbia, Saskatchewan and southern Northwest Territories), there is limited access to key fishing and cultural use areas as a result of forestry, mining, petroleum extraction and hydro-electric development;
- ✓ The loss of biodiversity, including fish valued for food security by First Nations communities in the southern part of the Basin, has been impacted over the last century by both agriculture, forestry and petroleum exploration and development. For example, Lake Trout were extirpated from Lesser Slave Lake in the 1930s.
- ✓ In the provincial jurisdictions (Alberta, British Columbia, Saskatchewan), there is limited access to key fishing and cultural use areas, and compromised rights to fish, as a result of provincial government regulation;
- ✓ There are many concerns throughout the Basin about contaminated water and fish species; these perceptions of fish being contaminated and not healthy to eat are greater in the southern part of the Basin (i.e., Alberta, Saskatchewan, and British Columbia) where resource development activity is significant.

For more information, visit: www.trackingchange.ca



Fish Camp on the Peace River
July, 2016. Photo Credit – Art Napoleon

- ✓ There are ongoing and emergent resource-user conflicts between recreational anglers and First Nations and other communities who depend on fishing for food security, particularly where anglers use (disrespectfully) areas valued for food security and cultural use by First Nations communities;
- ✓ Community-based monitoring and collaborative research initiatives are becoming more common throughout the Basin; communities are producing their own data about the impacts of resource development, climate change as well as other kinds of knowledge considered important for stewardship.

Community-Based Monitoring

Community-based monitoring is an activity that is growing in recognition globally, and a concept well used among communities and organizations in Canada, including Aboriginal communities. It is among a variety of tools and processes that have come to be associated with community-based resource management. Like other kinds of programs, community-based monitoring is based on the recognition that ecosystems and the natural resources valued by Aboriginal peoples, are complex and dynamic. Predictive tools, like environmental assessments, can result in rigid management approaches, and have limitations in dynamic ecosystems. Adaptive management, which includes monitoring, is a more appropriate approach because it is more flexible and responsive to ecosystem uncertainties.

Local and Traditional Knowledge (TK)

Traditional Knowledge refers to the cumulative body of knowledge, practices and beliefs that have developed over many generations by local communities about ecosystems and their relationship to it (Berkes 1998). It is referred to in different ways by different cultural groups. Fishers' knowledge can refer to both local knowledge (knowledge of an observed area) of both Indigenous and non-Indigenous fishers. Traditional Knowledge is unique from local knowledge in that it is longitudinal or based on many years, if not generations, of observing, experiencing and interpreting ecosystems; whereas local knowledge is more short-term in scope. It is because of this longitudinal scope, that Traditional Knowledge is increasingly recognized as useful in monitoring by many wildlife biologists and some other scientists, resource managers and governments who see opportunities to understand long-term ecosystem change. In this context Traditional Knowledge may be able to help answer the following kinds of questions:

- What kinds of patterns of ecological variability are characteristic of different areas of the Mackenzie River Basin?
- What kinds of unusual events or patterns are visible and to what extent are these associated with the impacts of climate change and resource development?
- What is the meaning and significance of observed trends and patterns of ecosystem change?
- What are useful indicators for tracking aquatic ecosystem change in the Mackenzie River Basin?
- How should we respectfully and meaningfully track these changes over time?

Capacity Building

The *Tracking Change...* program is focused on building capacity for partner communities in the Mackenzie River Basin to document and share local and traditional knowledge they consider relevant to the governance of the Basin. Capacity-building refers to advancing skills and knowledge needed for research and monitoring through training and mentorship. The program also aims to ensure experiential learning opportunities in which elders, youth and other members of the community are engaged in knowledge-building and multi-generational knowledge sharing. The kinds of capacity-building initiatives vary significantly from project to project and region to region, depending on a range of factors. Communities in settled land claim areas tend to have more capacity to carry out their work than communities in unsettled land claim areas. Those close to urban centers in the southern areas may be more or less advantaged than those living further north in the Mackenzie River Basin.

Youth Knowledge Fair

Partners and collaborators involved in *Tracking Change...* identified the importance of engaging youth in all aspects of our research project, including the definition of research priorities and key issues for study. Some of the youth/young adults involved in the project will be graduate students from different universities. But given that post-secondary enrollment in the north is low, finding ways to engage with students at the junior and high school level is also a key priority.



Tracking Change Youth Knowledge Fair, University of Alberta
East Three Secondary School (Inuvik) Participant and
Jennifer Fresque Baxter, GNWT
May, 2016. Photo Credit – Brenda Parlee

Tracking Change Youth Knowledge Fair, held in May 2016, brought together more than 40 students from across the Mackenzie River Basin. The initiative was created to support students with an interest in learning about their own histories, ecosystems and communities from elders, their communities, and their schools through submissions of poster projects; as well as to create networking opportunities for students to learn from one another.