



# Partnership Grants Midterm Report

<b>File number:</b>	895-2015-1024
<b>Host institution:</b>	University of Alberta
<b>Project director:</b>	PARLEE, Brenda
<b>Project title:</b>	Tracking Change: Local and Traditional Knowledge in Watershed Governance

The Midterm Report should provide an overall view of what the partnership has accomplished by the midpoint of the award, and provide sufficient information to allow the Midterm Review Committee to assess the progress of activities undertaken during this time. It is both a description of the activities and accomplishments to date, and a forward-looking document that confirms and updates the plan of activities designed to ensure the achievement of the stated goals and objectives of the partnership. It is expected that key members of the partnership will participate in the preparation of the report's contents and endorse it prior to submission.

**Instructions:** Provide information about your project for each of the seven evaluation criteria listed below. For each of the green text boxes below, provide the information requested while limiting your responses to **500 words**. If you choose to include any charts, tables, graphics, diagrams, images, etc., include these at the end of the document as an appendix. In total, keep the appendices to a maximum of twenty pages. Do not enter text in the blue text boxes. The midterm review committee will assess your progress (i.e., exceeds expectations; meets expectations; may not meet expectations, clarification required; does not meet expectations) and provide feedback in the blue text boxes.

## Progress Summary

Provide a plain-language summary of the results of your project to date.

### Project Response:

**Tracking Change** is a network of Indigenous/community organizations, governments and academics aimed at building capacity to document and share local and traditional knowledge (LTK) about social-ecological change in the Mackenzie River, Lower Mekong, and Lower Amazon basins; and determine its' role in watershed governance.

Community-Based Projects were funded (through a proposal-submission process) in each of 2016 and 2017. Twelve community-led projects involving more than 30 communities took place in 2016-2017; they involved similar research methods and activities including fish camps, canoe trips, youth-elder knowledge exchanges, semi-structured interviews, and workshops. A Community-Based Research Toolbox, developed collaboratively with communities in the Mackenzie River Basin and those working in the Mekong and Amazon (Tapojos) watershed, has been a key outcome of the project to date and is anticipated to become the basis of an edited book collection on "Community-Based Monitoring: Methods for Tracking Change in the Mackenzie River Basin" in the coming year.

Local and traditional knowledge (LTK) documented by local communities in the Mackenzie River Basin between 2016-2017 evidenced basin-wide changes in the sustainability of fishing livelihoods; a surprising outcome of the research to date is the number of similar observations and experiences of declining water quality, lower water levels, change in diversity and health of fish species harvested. There were also common concerns and experiences of food insecurity associated with decreasing access to healthy fishing resources, particularly in the southern half of the basin. A set of indicators and methods for tracking such changes on an ongoing basis (beyond

**Project Response:**

the life of the project) was developed based on these research outcomes.

Research in the Amazon and Mekong basins established baseline information in 2016 and 2017; more than 25 ethnic Lao/Thai communities in the lower Mekong basin (Mun River basin) and sixteen *Caboclos* communities in the Tapajos River watershed have become engaged in the Tracking Change research network through our partner universities. Although the three basins are socio-culturally and ecologically unique, there are common observations and experiences of change in fishing livelihoods; resource development has created significant stress on these freshwater ecosystems with resulting challenges for the sustainability of fishing livelihoods of Indigenous, ethnic Lao and Caboclos communities. The impacts of hydro-electric development are a common concern across all three basins.

**1) Research activities are proceeding and evolving as planned or, if not, the partnership has overcome challenges and adjusted plans appropriately and effectively to keep the project on track.**

With respect to the project’s research activities, explain your accomplishments to date and the extent to which your project is meeting the measures of success as outlined in your application and/or Milestone Report. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvement related to research activities, describe how this feedback has been addressed. If you have experienced challenges, describe them and how they have been addressed. If you have significantly adjusted your plans, explain and justify these changes. Finally, briefly outline your plans moving forward and describe how they will allow you to meet the goals and objectives of your project.

**Project Response:**

Our measures of success are based on our original research objectives:

- 1) We have been very successful in creating ***a multi- scale, multi-disciplinary, multi-cultural network for social science research that is meaningful locally and globally.*** We currently have more than 60 communities involved in the projects, 17 graduate students and more than 20 junior and senior research academics.
- 2) We have been very successful in building ***research capacity in the Mackenzie-Mekong-Amazon.*** In addition to training (17) graduate students to date, we have trained highly qualified personnel (community researchers) in the Mackenzie River Basin and contributed to the future engagement of Indigenous youth in social science research through the “Youth Knowledge Fair” which attracted more than 40 high school students in 2016, with similar numbers being anticipated in 2018.
- 3) We have also been successful in ***building a networks for mobilizing knowledge relevant to the governance of the Mackenzie River Basin.*** Research outcomes are mobilized at different scales from the community-global scale. In Canada, project outcomes have been consistently communicated back to community-regional partner organizations as well as to the provincial, territorial and federal governments through the Mackenzie River Basin Board with the hope of stimulating conversation and policy change. One example of a policy change which is partially attributable to the success and hard work of Alberta First Nations involved in our project (i.e, Mikisew Cree First Nation, Treaty 8 First Nations of Alberta) is in the provincial government of Alberta which decided to commit long term funding to Indigenous community-led monitoring programs in early 2018.

**For more detail on accomplishments to date, please see the Milestone Report – Appendix 1.**

**Midterm Review Committee Feedback:** Choose a descriptor.

Click here to enter text.

## 2) Knowledge mobilization activities are proceeding and evolving as planned or, if not, the partnership has overcome challenges and adjusted plans appropriately and effectively to keep the project on track.

### Provide links to the project's website and/or any social media:

Website: [www.trackingchange.ca](http://www.trackingchange.ca)

Facebook: @trackingchange.ca

Twitter: @mackenziebasin

Refer to SSHRC's [Guidelines for Effective Knowledge Mobilization](#) for examples of effective knowledge mobilization activities.

Describe the knowledge mobilization activities and events that have been accomplished to date and the extent to which your project is meeting the measures of success as outlined in your application and/or Milestone Report. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvement related to knowledge mobilization, describe how this feedback has been addressed. If you have experienced challenges, describe them and how they have been addressed. If you have adjusted your plans, explain and justify these changes. Finally, briefly outline your plans moving forward and describe how they will allow you to meet the goals and objectives of your project. You may wish to include, as an appendix, diagrams or charts that help to clarify your knowledge mobilization plans.

### Project Response:

We have met our measures of success for knowledge mobilization as per our research proposal.

**Plain Language Materials** – We are proceeding as planned with plain language materials useful for those outside the academy. We planned three plain language guidebooks (yr. 1, 3, 5); we produced one “Community-Based Research Toolbox” and are currently working on phase II of this toolbox. A series of seven **webinars** for academics audiences were developed in 2017 largely aimed at graduate students. In addition to these methods documents, we also created “community-based research” reporting templates and summary documents to enable community researchers to produce their own plain language research materials (i.e., be recognized as lead authors). This approach also served to affirm the power and voice (and hardwork) of community research leads and ensures protection of intellectual property. In addition to their local significance, these plain language materials have also been of strong interest to publics beyond the Mackenzie River Basin who also value non-academic writing. For example, the “Summary Report of Community-Based Research” from 2016 which was featured in the Globe and Mail in 2017 (See our website for a copy of the full report). **Indigenous language materials** were also developed including plain language summaries of the project to date and an Indigenous Terminology Guide with more than 300 Cree, Dene (Beaver) and Denesoline (Chipewyan) words related to fishing livelihoods and the health of aquatic ecosystems.

Although our data management plan currently in place is decentralized (i.e., communities control access to their own data as per the principles of OCAP) a **data management system** is under development and will create opportunities for greater knowledge sharing; it also includes an app-based platform for ongoing data collection. A video documentary about the Tracking Change network is under development under the leadership of Ron

**Project Response:**

Harpelle of Lakehead University.

**Academic Publications** – There are five publications in peer journals to date and 44 conference and symposium presentations. Project partners have participated in one major academic conference (Arctic Change, 2017 in Quebec City) and two more are planned in 2018. To ensure equity of voice and create capacity, an equal number of community researchers as well as graduate students, academics have been led presentations. As anticipated, the network will produce 15-20 theses from the project (likely more given we already have 16 students and are recruiting new students for the second half of the project). To date, publications are in progress around such themes as fishing livelihoods, harvesting, livelihoods, impacts of hydro-electric development (including watershed and indigenous governance) as well as methods for community-based monitoring. The first of three or our planned edited book collections featuring community and academic voices is in development with anticipated publication date of 2019.

**Policy Documents** – The project team is working to contribute to a variety of policy documents including the implementation of the bilateral watershed agreements between Alberta-Northwest Territories. In addition, the outcomes of the project will be features in the Mackenzie River Basin Board State of Aquatic Ecosystem Reporting.

**Has your project involved any of the following methods of knowledge mobilization? Select all that apply.**

- Academic dissemination (*essentially, a one-way flow to other scholars in or near your field(s) of research*)
- Knowledge transfer (*transferring knowledge to scholars in other fields of research*)
- Knowledge translation (*writing or presenting research findings in more readable or useable forms e.g., writing for a wider or more diverse public*)
- Knowledge exchange (*exchanging or sharing knowledge with other disciplines or across sectors (two-way flow) e.g., workshop or conference*)
- Knowledge brokering (*facilitating the flow of knowledge between others*)
- Knowledge synthesis (*pulling together existing research in a useful form for other researchers or organizations*)
- Co-production (*building research teams or alliances that generate new knowledge based on an ongoing exchange of knowledge*)
- Networking (*organizing ongoing networks of scholars and/or other experts to mobilize knowledge*)

**How many research products (including those under submission) have resulted from the grant?**

Products	Number Developed	Number Planned
Presentations (including webinars)	51	35 in 2018
Interviews (broadcast or text)		
Peer-reviewed journal articles (open access)		
Peer-reviewed journal articles (subscription based)	6	5+

Products	Number Developed	Number Planned
Edited journal issues		
Books (including edited books)		
Book chapters		
Entries (dictionary and encyclopaedia)		
Conference publications	1	2
Articles in popular media	3	1
Reports, briefs, and other forms of grey literature	29	30
Artistic performances		
Other (specify: videostreams, videos)	3	1

List the number of knowledge mobilization events that occurred as a result of the grant.

Event	Number Developed	Number Planned
Conference	1	2
Workshop	3	5
Summer institute		
Media events (such as television/radio presentations)		
Public debates		
Other (specify: Youth Knowledge Fairs)	2	2

**Midterm Review Committee Feedback:** Choose a descriptor.

Click here to enter text.

### 3) Training and mentoring commitments have been executed and projected as planned or, if not, the changes are well justified and appropriate.

Refer to SSHRC's [Guidelines for Effective Research Training](#) for examples of effective research training activities.

With respect to the project's training and mentoring activities, explain your accomplishments to date and the extent to which your project is meeting the measures of success as outlined in your application and/or Milestone Report. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvement related to training and mentoring, describe how this feedback has been addressed. Describe progress made to date in the training and/or development of research or support staff. Explain the expected degree of participation of the research staff (students, specialists, individuals from partner organizations and others) to be expected by the end of the project.

If you have experienced challenges, describe them and how they have been addressed. If you have adjusted your plans, explain and justify these changes. Briefly outline your plans moving forward and describe how they will allow you to meet the goals and objectives of your project.

**Project Response:**

**Training of Highly Qualified Personnel** – The training of HQP (graduate students) has been a key focus of the research activity to date. We have been very successful at recruiting graduate students into MA, MSc and PhD programs in Canadian universities and our partner universities associated with research in Thailand (University of Wisconsin at Madison, Ubon Ratchathani University). Due to administrative lags with setting up funding in Brazil, only one student has been recruited there to date however, this will change now that the grant has been transferred successfully. No undergraduate students were recruited for the project to date.

The network has also aimed to contribute to other highly qualified personnel through graduate student-community researcher collaboration in community-based research projects; an equal number of community researchers were hired and trained through the community-based research projects when compared to the number of graduate students supported. With the aim of attracting more Indigenous youth to post-secondary education and creating opportunities for training in social science research methods, the network also held a Youth Knowledge Fair that brought more than 40 high school students from across the Mackenzie basin to the University of Alberta in 2016. A second Youth Knowledge Fair is planned for May 2018.

A series of **webinars** for academics audiences (7) were developed in 2017 largely aimed at graduate students created opportunities for greater knowledge sharing among students; a Tracking Change Graduate student network was created in 2017 which created additional peer-peer mentorship.

**How many students, postdoctoral researchers and/or non-students, respectively, have participated in your project?**

Student Level	Number supported by SSHRC grant		Number supported by host and/or partner contributions	
	Canadian	Foreign	Canadian	Foreign
Undergraduate students				
Master's students	7	5	4	
Doctoral students	1	2	1	
Postdoctoral researchers		1		
College students			1	
Other (e.g., technician, professional research associate)			1	
Total Number	8	8	7	

Indicate, if applicable, the kinds of activities in which students and/or postdoctoral researchers, supported by the SSHRC grant, have been engaged as part of this initiative. Select all that apply.

Activities	Undergraduate Students	Master's students	Doctoral students	Postdoctoral researchers	College Students
Data collection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Data entry	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data analysis and literature review	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communications (e.g., lecturing or presenting at conferences)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mentoring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Networking and collaborations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outreach activities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participation in publications	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Report writing/editing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Teaching (including pedagogy and/or educational training).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internships or other activities in the business, not-for profit or government sectors	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activities that provide international experience	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify: <a href="#">Click here to enter text.</a> )	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Midterm Review Committee Feedback:</b> Choose a descriptor.
<a href="#">Click here to enter text.</a>

#### 4) Governance and management structure is functional and appropriate

Start this section by identifying any changes (i.e., additions, withdrawals or removals) in the project team and/or partner organizations from the start of the project and offer a brief justification for these changes.

Briefly describe the management and governance approaches and structures of the partnership, including details about how the partnership is organized (e.g. working groups, clusters, teams, etc.). List the research and/or related activities or sub-projects associated with each grouping within the partnership, as appropriate. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvements related to governance, describe how this feedback has been addressed.

Assess the effectiveness of these structures and approaches employed by the partnership (e.g., approaches to communication, decision-making, conflict resolution, etc.). Highlight the successes that have been facilitated by the project's structure and identify challenges that have been encountered. If the structure has changed over the duration of the project, explain and justify these changes.

**Project Response:**

The governance of the project was detailed in the original SSHRC proposal. Two relatively minor changes were made to the governance structure since the proposal phase. Senior scholars Berkes, Nuttall and Huntington, have become more engaged in the project and no longer play a strictly advisory role; This shift in their roles meant the loss of the "Senior Advisory Committee" (as detailed in the original proposal). To address this gap, Dr. Rosemary Ommen was nominated and approved to act in an advisory capacity; she contributes to the project by periodically reviewing different aspects of our methodological as well as outcomes. A second change to the governance structure has been the limited role to date of the Technical Advisory Committee; the "technical" need for a basin-wide system of "data" archiving and sharing has been partially addressed by two other potential partners including the Mackenzie Data Stream (Gordon Foundation) and the Prairie Climate Atlas (UWinnipeg).

The Tracking Change project is a partnership led and administered at the University of Alberta in partnership with multiple community, government, university partners as well as academics and students living and working in the Mackenzie, Lower Mekong and Lower Amazon Basins. The Project Team includes all Partner Organizations, Academic Co-applicants, Collaborators, Students and Community Researchers. The **Project Management Committee** includes the members of the Mackenzie River Basin Board (MRRB) Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), a representative of the Government of the Northwest Territories, the Academic Leads for each of the Mackenzie (Parlee), Mekong (Baird) and Amazon (Silvano) and the Academic Leads for the Sub-Basins of the Mackenzie.

An **Executive Committee** includes an Aboriginal member of the Mackenzie River Basin Board (MRRB) Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), the Principal Investigator (Parlee), a sub-basin academic lead (co-applicant) from another Canadian University, and a representative from Water Resources Division of the Department of Environment and Natural Resources of the Government of the Northwest Territories. The proposed governance structure was reviewed and refined in the fall of 2016 after the SSHRC PG was awarded.

A key success of this governance structure is the key role played by Indigenous peoples as members of the Management Committee (i.e., Traditional Knowledge Steering Committee). The five Indigenous elders and leaders from each of the jurisdictions of the basin act as the central hub of decision-making about the allocation of funds, research activity and knowledge mobilization. The committee is one created by the Mackenzie River Basin Board. The governance of Tracking Change as well as other business associated with the board are addressed by this same steering committee; logistics and administration of committee's work, including the organization of meetings, record of decisions, etc. are all managed by the Exec. Director of the MRBB, thus limiting the administrative burden on our network budget.

**Midterm Review Committee Feedback:** Choose a descriptor.

[Click here to enter text.](#)

**5) Partner organizations are engaged in the project.**

Assess the extent to which the partnership structures have facilitated partner engagement and describe how partner organizations are contributing to project activities. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvements related to partner engagement, describe how this feedback has been addressed. If partner engagement could be improved, provide a strategy or plan to further engage partners moving forward. You may wish to include, as an appendix, diagrams or charts that help to clarify your governance and management structures.

**Project Response:**

The Tracking Change project has been very successful in attracting new partners including those willing to financially support the project. The original list of five Indigenous governments/organizations from the Mackenzie River Basin has been sustained and grown from eight to fourteen with more than 30 communities now being engaged in research activities. An additional five co-investigators have been added (or are in the process of being added) resulting in connections to four new universities (First Nations University, Carleton University, Memorial University, Yukon College). Additional financial support from a range of partners has enabled us to grow and meet the growing needs of the network (i.e., meet the need for funding for more community-based research projects). In addition to significant in kind contributions from the First Nations and Inuvialuit communities participating in the project, cash contributions from the Government of the Northwest Territories, and the Government of Alberta have added over to the project (**\$1 092 702**). We have also been able to leverage our success with Tracking Change into the development of new proposals for funding and new opportunities to grow the network. We have been successful in securing two small SSHRC Connections grants related to knowledge mobilization to support our Youth Knowledge Fair and the Global Symposium in Thailand. Recognizing the growing need, expense and interest in Indigenous youth training and engagement we have recently applied for an NCE in Knowledge Mobilization 2019), in the hopes of expanding the youth knowledge fair, developing more meaningful cultural content and learning opportunities and making the research outcomes more access in northern Canada (i.e.,mobile workshops and camps).

**Midterm Review Committee Feedback:** Choose a descriptor.

Click here to enter text.



## 6) The host institution and partner organizations are largely meeting their commitments, and the project is on track to secure the 35% cash and in-kind contribution requirement.

This criterion will primarily be assessed based on the partner contribution workbook that is submitted to SSHRC each year. As this workbook is quite detailed, only describe partner and host contributions in high-level, general terms.

Identify the extent to which the commitments made in the Formal application have been met by the host institution, partner organizations and supporting organizations. Highlight any anticipated shortfalls or additional support and their impacts on project plans. If contributions are not on track to meet SSHRC's 35% minimum requirement, describe any plans or actions being undertaken to obtain additional contributions. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvement related to contributions, describe how this feedback has been addressed.

### Project Response:

As above, we have sought other funds for the Tracking Change network to meet the growing need in three key areas: i) increasing requests for community-based research in the Mackenzie River Basin; ii) Indigenous youth training (i.e., youth knowledge fairs); iii) knowledge mobilization activities. To date this is the summary of the additional cash and inkind contributions we have been able to secure for the project.

#### Year 1 (2015-16)

- SSHRC Budget - \$301,044;
- Other Inkind and Cash Contributions = \$74 250;

#### Year 2 (2016-2017)

- SSHRC Budget - \$366 346;
- Other Inkind and Cash Contributions - \$484 325;

#### Year 3 (2017-2018)

- SSHRC Budget - \$373 530
- Other Inkind and Cash Contributions - \$534 127;

At year 3 are total cash and inkind contributions are **\$1 092 702**. As such, we more than exceed the requirement of 35% cash/inkind contribution (See Table "Annual Contribution Summary" for more details on cash and inkind amounts). There are four kinds of inkind contributions calculated here. (i) The Mackenzie River Basin Board provided us with a "Contribution Statement" for its' inkind contribution for 2016-17 as did the Government of the Northwest Territories (inkind and cash). These partners will provide a similar statement for 2017-18 in the coming year. (ii) Indigenous community partners in the Mackenzie River Basin provided a statement of their cash and inkind contributions to the community-based research projects as part of our reporting template. The amounts listed for 2016-17 are actual as reported. The amounts for 2017-18 listed above are as projected in the community-based research proposals submitted and will likely increase at the time of reporting.

Midterm Review Committee Feedback: Choose a descriptor.

**Midterm Review Committee Feedback:** Choose a descriptor.

[Click here to enter text.](#)

## 7) Budget allocations are projected as initially planned or, if not, the changes are well justified and appropriate.

Provide a detailed budget justification for the remaining period of the project, highlighting any significant changes from the initial application and/or Milestone Report. Amounts should correspond with the table below. If the expert panel and/or the adjudication committee at the Formal application stage raised concerns or made suggestions for improvements related to the budget, describe how this feedback has been addressed.

### Project Response:

The project is on track according to our budget original submitted with the SSHRC PG proposal.

The total amount spent to date is \$953 859. The total budget proposed to SSHRC for year 1-3 was \$1 061 852; (the actual amount received from SSHRC for year 1-3 was \$1 040 920). The project is therefore 11% underspent as of March 31, 2018. In terms of **student salaries**, the project is **under budget by 11%**; this is due to that no undergraduate students were recruited to date. In the **non-student salary** category, the team is **underspent by 43%** due to the fact a large number of non-student salaries in the Mackenzie River Basin (i.e., for community researchers) were paid through the cash contributions of partners (i.e., Government of the Northwest Territories) and others were contributed in kind. Travel and subsistence costs are lower than anticipated (**16% underspent**); are the expenses for technical services are the opposite (**16% opposite**); this over-expenditure reflects the costs of a community-based research planning workshop held in 2016 in which Indigenous community partners from the Mackenzie River Basin gathered to identify terms of references for the community-based research proposals. (In the "Other" category, the **Global Knowledge Symposium** cost more than anticipated (**10% overspent**). The **fish camp/fieldcamps** budgets are very similar to those predicted (**3% underspent**). Three new research activities/expenses not anticipated in our original budget were added including the Youth Knowledge Fair, database development and publication costs; the SSHRC funds spent on these activities total \$92245 (8% deviation from of our original budget). **See Attached Summary of Budget and Actual Expenses (Appendix 2).**

**Budget Justification for Year 4-6:** The budget for years 4, 5, 6 will follow the same structure as the previous three years with student salaries and community researcher salaries being an important foundation of research activity. We intend to carry forward the continued success of the community-based research projects (described in the budget as fish camps/fieldcamps). Networking of all research team members both in Canada and globally will continue to be critical to the knowledge mobilization of research outcomes; a Global Knowledge Symposium planned for Santarem, Brazil in 2019 and another final symposium in Yellowknife in 2021 will also be a way for Indigenous communities from Canada and those from the Amazon and Mekong to network and develop shared local-global outcomes. A budget item for publication costs has also been added in anticipation of the publication of three edited collections as well as peer reviewed journal (page costs) etc. and the publication of plain language resource materials. A larger budget for non-student salaries in year 5 of the project reflects added costs associated with the production of a video/film including editing and final production for distribution online. In addition to the dollars from SSHRC, we anticipate securing additional cash contributions from the both the Government of Alberta and the Government of the Northwest Territories for community-based research (i.e., community researcher salaries) and in kind contributions from Indigenous community partners.

Complete the budget table below for the remaining years of your project (i.e. for 5 year projects complete years 4-5, for 6 year projects complete years 4-6, and for 7 year projects complete years 5-7). The categories are based on the original application and should account for the use of SSHRC funds for the remaining years of the project.

Budget categories		Projected Expenses			
		Year 4 2018-2019	Year 5 2019-2020	Year 6 2020-2021	Year 7
Students salaries and benefits/stipends	Undergraduate	0	0	0	0
	Masters	80000	80000	20000	0
	Doctorate	40000	40000	20000	0
Non-student salaries and benefits/stipends	Postdoctoral	0	0	0	0
	Other	50000	100000	50000	0
Travel and subsistence costs	Participants – Canadian travel	20000	20000	20000	0
	Participants – Foreign travel	19587	26915	24676	
	Students – Canadian travel	25000	25000	15000	
	Students – Foreign travel	10000	10000	15000	
Other expenses	Professional/Technical services	20000	20000	50000	
	Supplies				
Non-disposable equipment	Computer hardware				
	Other				
Other expenses (specify)	Global Knowledge Symp.	80000		150000	
	Fish camps/Fieldcamps	40000	80000	60000	
	Youth Knowledge Fair	20000	20000	20000	
	Publication Costs	10000	20000	20000	
<b>Total</b>		\$414,587	\$441,915	\$474, 676	

**Midterm Review Committee Feedback:** Choose a descriptor.

[Click here to enter text.](#)



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# Appendices

## **TRACKING CHANGE: LOCAL AND TRADITIONAL KNOWLEDGE IN WATERSHED GOVERNANCE**

### **SSHRC MID-TERM REVIEW - NARRATIVE REPORT**

Tracking Change is a multi-year research network of Indigenous communities, universities, governments and other partners including the Mackenzie River Basin Board. The broad goal is to create opportunities to collaboratively document and share local and traditional knowledge (LTK) about social-ecological change in the Mackenzie River, Lower Mekong, and Lower Amazon basins and determine its' role in watershed governance. The project is focused on building capacity through community-based research projects, networking activities, symposiums, and multidisciplinary publications. Freshwater ecosystems globally are under significant stress from resource development and impacts of climate change. Graduate students and community partners are working to document observations and experience of disturbances to fish, fish habitat, water levels, and water quality. These changes are ecologically significant but also have reverberating effects on the economies, cultures, and well-being of fishing communities. By working globally, the project aims to build and mobilize knowledge that can contribute to better decision-making including improved recognition of the value of subsistence freshwater fisheries.

#### **PARTNERSHIP UPDATES**

Contributing partners that have joined the project since the time of the formal application.

<b>Contact Full Name</b>	<b>Organization (province or country)</b>	<b>Role or Activity (e.g. support, research, training, knowledge mobilization)</b>	<b>Total Contribution (cash or in kind value in \$CDN)</b>
Joella Hoga	Nacho Nyak Dun First Nation		
Jody Pellisey	Weekeshii Renewable Resources Board		
Diane Giroux	Akaiitcho Territory Government		
Diane McDonald	Fond du Lac First Nation		
Government of Alberta	Alberta	Support, research, knowledge mobilization	TBD

Participants (co-applicants and collaborators) who have joined the project since the time of the formal application.

<b>Full Name and Organization</b>	<b>Role (co-applicant or collaborator)</b>	<b>Description of activities or contributions</b>
Dr. Kanokwan Manoram	Co-applicant	Tracking Change in the Mekong Basin
Dr. Ellen Bielawski, University of Alberta	Co-applicant	Community-based research initiatives
Dr. Bryan Grimwood	Co-applicant	Community-based research initiatives
Dr. Arn Keeling	Co-applicant	Community-based research initiatives
Dr. Mark Poesch	Co-applicant	Community-based research initiatives
Dr. Herman Michell	Co-applicant	Community-based research initiatives
Tracey Howlett	Collaborator	Knowledge Mobilization, Government of Alberta
Corinne Porter	Collaborator	Aboriginal Representative for Yukon on TKSPC MRRB
Darren Calliou	Collaborator	Aboriginal Representative for Northern Alberta on TKSPC MRRB
Kyle Nault	Collaborator	Aboriginal Representative for Yukon on TKSPC MRRB

Other participants or organizations (who are not participating as co-applicants or collaborators, or who have not opted to become formal partners) who have joined the project since the time of the formal application.

<b>Full Name Organization</b>	<b>Role</b>	<b>Description of activities or contributions</b>
Telus World of Science, Edmonton	Collaborator	Contribute to Knowledge Mobilization activities
Ron Harpelle and Kelly Saxberg, Sheba Films, Thunder Bay, ON	Collaborators	Video production/streaming of the Global Knowledge Symposium, excursions, and activities

## **ORGANIZATION OF ACTIVITIES**

The Tracking Change project is a partnership led and administered at the University of Alberta in partnership with multiple community, government, university partners as well as academics and students living and working in the Mackenzie, Lower Mekong and Lower Amazon Basins.

The Project Team includes all Partner Organizations<sup>1</sup>, Academic Co-applicants, Collaborators, Students and Community Researchers. The Project Management Committee includes the Mackenzie River Basin Board (MRRB) Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), a representative of the Government of the Northwest Territories, the Academic Leads for each of the Mackenzie (Parlee), Mekong (Baird) and Amazon (Silvano) and the Academic Leads for the six Sub-Basins of the Mackenzie (Lantz, Natcher, Napoleon, Jobin, Parlee, Wesche). The Executive Committee includes an Aboriginal member of MRRB TKSPC, the Principal Investigator (Parlee), a sub-basin academic lead (co-applicant) from another Canadian University, and a representative from Water Resources Division of the Department of Environment and Natural Resources of the Government of the Northwest Territories.

The project is designed as a six year period to allow adequate time to build opportunities for research Partnership activities across the Basin, create opportunities for community/region specific projects, as well as to ensure time for the development, implementation and dissemination of the outcomes within Canada and internationally. Research activities are organized in four phases over the life of the project. Phase 1 (2015-2017) – Review and Planning to mobilize team members and develop a Training Plan and Knowledge Mobilization Plan (including terms for protecting intellectual property rights of LTK holders). Through 2016 we recruited and trained students and community researchers, and created terms of reference for funding research in each Sub-Basin Node. Phase 2 (2016-2018) – Community-based Research in Sub-Basins – where bottom-up thinking, place-based research activities, and community-based research methods are key to meaningful engagement in the Partnership and ensuring that socio-cultural diversity (values, beliefs, practices) are respected. Research at more than twenty sites in each of the Mackenzie, Mekong and Amazon Basins is being undertaken with the aim of situating work in locations of social and ecological significance. The intent is to encourage communities to utilize and share their own best practices for LTK research (e.g., use an integration of Aboriginal languages, interview approach etc.) such that other communities can learn from both the research. process and the outcomes. Funding of community-based projects is allocated on recommendation of the TKSPC according to proposals submitted, with an eye to equity in the number of projects funded in each sub-basin. Phase 3 (2018-2020)- Basin-Wide Research in the Mackenzie – A basin wide research initiative will allow greater understanding and synthesis of the linked nature of LTK. Drawing on the results of Phases 1 and 2, the research team will identify a suite of commonly valued LTK indicators of social-ecological change that might be used in a multi-community research activity. We anticipate this will include a digital storytelling process involving multiple communities in year 3 and/or 4 in which we will knit together narratives on common issues and themes (e.g., food security). A social-ecological survey will be carried out in year 5. This survey effort will be guided by previous multi-community studies in the Mekong and that which has taken place in marine ecosystems in Canada, Latin America and the circumpolar north. Where possible and meaningful, the team will build on previous research initiatives in each basin and cross-fertilize ideas between the Mackenzie-Mekong-Amazon. Phase 4 (2019-2021) - Global Connections – The project will

<sup>1</sup> *Aboriginal organization partners of the Tracking Change project are those Aboriginal governments, organizations and co-management boards who provided a letter of support for the funding application to the Social Sciences and Humanities Research Council (2014) including acknowledgement of the Principles of Partnership. Other Aboriginal organizations can be added as partners by i) by being nominated by an existing Partner or member of the MRRB Traditional Knowledge and Strengthening Partnerships Committee, and ii) becoming a signatory to the **Guiding Principles of Collaboration**.*

result in a more linked understanding of how fishing livelihoods in the Mackenzie-Mekong-Amazon basins are changing and what those changes mean for governance. A major focus will be in analyzing the implications of the research undertaken at many different scales of decision-making including globally. During three global meetings (Ubon, Santarem, Yellowknife), members of the research team gather (2017, 2019, 2021) to share insights about the research process and outcomes.

## **Milestones to date**

Phase 1 objectives have been met, and Phase 2 objectives will be completed by the end of 2018. Phase 3 is developing. Understandably, there is overlap in the planned phases through the life of the project, depending on results and circumstances that arise. The combination of SSHRC funds and the cash and in-kind contributions from the host organization and Partners has been sufficient to meet the objectives for this stage of the project. Additional funding is sought for the support of sub-project initiatives and outreach activities that are not fully supported by existing funding. Opportunities are arising from expansion of the partnership and network as the program develops and the relevance of project outcomes become known.

### **Meetings with Partner Organizations**

The project proposal took such a long time to develop that a priority since hearing about our success, was to check back in with our partners. The Project Director traveled to Deline for the *Waterheart Conference* in August 2015 and shared news about the project with the community. In that same month, she also attended meetings in Whitehorse (with the Inuvialuit Fisheries Joint Mgt Committee and Game Council), and a Livelihood Committee meeting of Treaty 8 First Nations of Alberta. A visit with members of Water Keepers and a colleague working for West Moberly First Nation in BC was also possible during the Treaty 8 gathering in August. Although a meeting in Saskatchewan was not possible, the Project Director traveled with Vice Chief Joseph Tsannie (of the Prince Albert Grand Council) and Jennifer Fresque Baxter to Ottawa in September to participate in a "SSHRC Partnership Grant" start-up meeting. The Project director also travelled to Yellowknife in October for a meeting of the Aboriginal Steering Committee of the NWT Water Stewardship Strategy. Through these meetings, much was learned about some of the specific issues and needs for research in different parts of the Mackenzie basin.

### **Establishment of Project Governance**

Terms of Reference for Project Governance were established and Terms of Reference were developed for committees and sub-committees of the project.

### **Administration at the University of Alberta**

Administrative coordination and management of the project was set up. *Ethics*: The project applied for a blanket ethics approval from the University of Alberta in anticipation of initial subprojects beginning in late spring/summer of 2016. *Funding Transfer Agreements*: most of the accounting for the project was set up by September, but determining how to set up the funding transfer agreements for all of the partners/universities took some time. The agreements were finalized in April 2016 and funds transferred. Finally, a mechanism for moving funds to community partners was also needed; the system was set up in June 2016, and administrative systems are now in place for all sub-grant transfers.

## **C;OMMUNICATIONS**

**Website**: A website for the project was established under [www.trackingchange.ca](http://www.trackingchange.ca) and is updated regularly. [www.trackingchange.ca](http://www.trackingchange.ca). The project has also established **Facebook** and **Twitter** accounts.

**Webinar Series**: featuring community leaders, professionals, and academics addressing thematic issues

**Bi-weekly updates**: online newsletter for team members and colleagues

**Media**: A short media release was sent out in July 2016 by the University of Alberta. A plain language summary was developed and then translated into the Indigenous languages, Thai/Lao and Portuguese for distribution to partners. In planning are a round of radio interviews on community and regional radio stations and perhaps on the Aboriginal Peoples Television Network.

**Logos**: The Project Team is considering several logo design ideas... and will be formalizing this in the next few months. In the interim, we have been using a working logo design featuring the project name, which may continue to be used for some applications.

**Data Management**: A Dropbox account has been established to house various documents for sharing. In the near future, the project will be developing an online 'reference centre' as part of the website, to provide a more permanent and formal collection of relevant documents.

**Newsletters:** Newsletters are being produced for the project generally and for each of the sub-projects.

### **Planning Meetings**

The inaugural meeting of the Project Team (Traditional Knowledge Steering Committee and the sub-basin leads from the Mackenzie and colleagues working in the Amazon and Mekong) was held in Whitehorse on 19-20 November 2015. This meeting helped get a number of things moving, including decisions about budgets and funding.

The Project Executive Committee with members of the project team and the Mackenzie River Basin Board Traditional Knowledge and Strengthening Partnerships Committee met with the Aboriginal Steering Committee of the NWT Water Stewardship Strategy in February 2016 for a one day planning session to provide direction for the implementation of the Tracking Change...project. The facilitated workshop provided input to the guidelines for community-based research projects for the 2016-17 fiscal year.

### **Community-Based Projects**

Representatives of the Partner Organizations and the academic leads for the sub-basins work together to develop projects that would meet the research needs of communities as well as deal in a focused way with the big picture research objectives of the project. Themes and priorities for sub-Projects in 2016-2017 were:

- ✓ 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 to maintain healthy relationships to the aquatic ecosystem, maintaining respectful and spiritual relationships, respecting treaty rights);

### **Youth Knowledge Fairs**

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. The objectives of the knowledge fair were to: 1) create opportunities for junior high and high school-aged youth to connect with each other in Edmonton for three days of educational activities, including knowledge sharing activities, educational workshops, keynote presentations from inspirational youth and Aboriginal leaders, tours of the University of Alberta; 2) support students to learn about their own histories, ecosystems, and communities from elders and their communities and through their schools through submissions of poster projects, and, 3) encourage the development of research and written/oral communication skills through a poster project related to the health of water, fish, fishing livelihoods, and well-being of communities in the Mackenzie River Basin. Youth Knowledge Fairs are open to applications from junior/high school groups and individual students from the five provincial and territorial jurisdictions of the Mackenzie River Basin.

### **Global Knowledge Symposia**

Three symposiums are planned... one in each of the major basins, that will feature a mix of community people, students and academics in addition to representatives from the government. The combination of SSHRC funds and the cash and in-kind contributions from the host organization and Partners has been sufficient to meet the objectives for this stage of the project. Additional funding is sought for the support of sub-project initiatives and outreach activities that are not fully supported by existing funding. Opportunities are arising from expansion of the partnership and network as the program develops and the relevance of project outcomes become known.

## **SUMMARY REPORT ON RESEARCH TO DATE**

*Tracking Change...* is based on recognition that many people in the Mackenzie River Basin, Amazon and Mekong, particularly Indigenous peoples, have valuable insights about the social-ecological change.

**Project Governance:** In 2015-16, a more refined governance plan structure and process was developed to ensure research activities reflect the core interests of the team, including the Traditional Knowledge and Strengthening Partnerships Steering Committee (TKSPC) of the Mackenzie River Basin Board (MRRB).

**Building Research Capacity** – There are currently 20 graduate students and once PDF working on various aspects of the project. A 'Youth Knowledge Fair' was held in Edmonton, Alberta (24-26 May 2016),

and the first Global Knowledge Symposium (20-25 Feb 2017) was held in Ubon Ratchathani, Thailand. **Research Activities: Secondary Literature Review** - A review of existing documented traditional knowledge was carried out by 5 students for all six sub-basins of the Mackenzie watershed to help communicate the current state of knowledge and guide decision-making about where future research is needed. **Community-Based Research Projects** - Based on partner input an RPF process was developed for community-based research in the Mackenzie River Basin. Collaborative proposals from community-university team members were solicited and 12 collaborative projects were funded in the Mackenzie and two others internationally in 2016-2017 and again in 2017-2018.

The *Tracking Change...* project developed in recognition that river systems are important social, economic, cultural and ecological places that contribute to the well-being of communities in diverse ways. River peoples, particularly Indigenous peoples who have well developed fishing livelihoods can offer extremely valuable insights about long term (historic and current) patterns of social and ecological change and the interconnections between the health and dynamics of these river systems and that of river communities. Although based on oral traditions, this system of observation or 'tracking change' is much like monitoring. Like those who live on Canada's east and west coasts, the ability of Indigenous communities in the Mackenzie River Basin to maintain fishing as a livelihood practice is of social, economic and cultural importance to all of Canada; if this river system is not healthy, how can we be?

Fishers have been tracking change in the same places, in the same ways, using the same signs & signals for many generations. Such traditional knowledge is key to our understanding of many kinds of issues resulting from resource development, climate change and other land uses. This tracking of change is not simply a technical process; people watch, listen, learn and communicate about change because they care about the health of the land and the health of their communities.

The vision of the *Tracking Change* Project Team, *Tracking Change* Management Committee and the *Tracking Change* Executive Committee is to work together to facilitate the creation, documentation and sharing of Local and Traditional Knowledge about social-ecological change in the Mackenzie, Lower Amazon, and Lower Mekong river basins in ways that can contribute to improved sustainability of these important fresh water ecosystems and the communities that depend on them for their current and future livelihood and well-being.

#### **Partnership Objectives:**

(i) Build a multi-scale, multi-disciplinary, multi-cultural network for social science research that is meaningful locally and globally; (ii) Build research capacity in the Mackenzie, Mekong and Amazon Basins; (iii) Build global partnerships for mobilizing knowledge relevant to the governance of the Mackenzie River Basin; and, (iv) Foster global collaboration and knowledge sharing on common issues of watershed governance.

#### **Thematic Objectives:**

Develop and facilitate knowledge sharing related to the Mackenzie River Basin, the Lower Amazon Basin and the Lower Mekong Basin on the following themes: (i) sustainability of River Fisheries and Fishing Livelihoods; (ii) Meaning and Well-being; (iii) Watershed Governance.

#### **Legacy Objectives**

The project will aim to create a legacy of materials and processes (knowledge and practices) for community involvement and Local and Traditional knowledge in the monitoring and management of social-ecological change in the Mackenzie, Amazon and Mekong rivers as well as other freshwater ecosystems globally.

#### **Research in the Mackenzie Basin**

Tracking Change projects in 2016-17 focused on a set of research priorities defined by the *Traditional Knowledge Steering Committee* of the *Mackenzie River Basin Board* and the *Aboriginal Steering Committee of the Northwest Territories Water Stewardship Strategy*. The request for proposals identified themes and priorities for sub-Projects in 2016-2017 as:

- ✓ 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 to maintain healthy relationships to the aquatic ecosystem, maintaining respectful and spiritual relationships, respecting treaty rights);

Twelve Community-based Research Projects were funded, 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. Full descriptions of the projects are available from the website at [www.trackingchange.ca](http://www.trackingchange.ca):

- Fisheries Joint Management Committee: *Inuvialuit knowledge and use of Fisheries in the Mackenzie River Delta*
- Gwich'in Renewable Resources Board: *Changes affecting Fishing Livelihoods in the Gwich'in Settlement Area*
- Sahtu Renewable Resources Board: *Sahtú hé Deocha hé Dene Náowerá Chets'elá - Great Bear Lake and Mackenzie River Dene Knowledge Research Camps*
- Deh Cho First Nations: *Deh Cho K'ehodi Youth River Trip: Fort Simpson to Willow Lake River*
- Tłı̨chǫ/Wek'eezhii Renewable Resources Board: *Fish, Todzi, and Forest Fire on the Land Research*
- Akaitcho Territorial Government: *Guiding Water Protection Through Traditional Knowledge*
- Lutsel K'e Dene First Nation: *Tracking Change in the Great Slave Basin*
- Mikisew Cree First Nation: *Community-Based Monitoring Program*
- Treaty 8 Tribal Association of British Columbia: *Eagle Island Fish Camp*
- Treaty 8 First Nations of Alberta: *Place names and Oral Histories of Change in the Peace River Sub-Basin*
- Nacho Nayak Dun First Nation, Yukon: *Traditional Knowledge Camp*

Summary reports from each of the projects were received in December 2016 and formed the basis of an annual report for the project for 2016-17. Many oral histories, narratives and observations were documented about local issues of concern and of priority to local communities. The key themes and issues that were highlighted in these reports included the following:

#### Overview:

- ✓ 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.
- ✓ 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;
- ✓ 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.
- ✓ Indigenous communities continue to practice traditional practices for respecting (managing) fish and fish habitat throughout the basin. These practices have developed based on generations of Traditional Knowledge. 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;

#### Climatic Change:

- ✓ There were numerous reports of decreased water levels and water flows, including dried up creeks, across the basin. 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 water quality, fish habitat, fish health and their abundance and distribution;
- ✓ 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 ups and later freeze-ups in many areas. Observations of extreme weather events including 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. For example, the deaths of three men in Fort Chipewyan in early 2017 is attributed to unpredictable ice conditions.

#### **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, particularly in the Peace Athabasca and Slave river regions.
- ✓ Numerous contaminated sites through the basin including 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 as well as 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, as well as 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 development projects have been developed and are expanding, decreased 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. For example, the deaths of three men in Fort Chipewyan in early 2017 is attributed to unpredictable ice conditions.
- ✓ 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 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;

#### **Research in Progress 2017-2018**

*Tracking Change...* will fund projects led by our partners on the same themes as year 1; however, based on feedback from partners and graduate students, more guidance will be provided on common methods and interview questions that will help us understand 'big picture' change in the whole of the Mackenzie Basin. By carrying out research in the same or similar ways and in different regions, community-based and collaborative research activities can be related to specific themes:<sup>2</sup>

- ✓ 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 to maintain healthy relationships to the aquatic ecosystem, maintaining respectful and spiritual relationships, respecting treaty rights).

In 2017-2018, the following 12 community-based projects were funded:

- Akaitcho Territorial Government, NT: *Past Knowledge for Future Protection*
- Dena Kaveh Institute, YT: *Tracking Change on the Liard River*
- Inuvialuit Fisheries Joint Management Committee, NT: *Inuvialuit Knowledge and Use of Fisheries in the Mackenzie River Delta*
- Gwich'in Renewable Resources Board, NT: *Gwich'in Fish Project and Knowledge Exchange Camp*
- Katl'odeeche First Nation, NT: *Upper Katl'odeh Traditional Knowledge Assessment*
- Lutsel K'e Dene First Nation, NT: *Lutsel K'e Dene First Nation (LKDFN) Tracking Change in the Great Slave Basin Project*
- Mikisew Cree First Nation, AB: *Mikisew Cree First Nation Community-Based Monitoring Plan*
- Prince Albert Grand Council, SK: *Denesuline Elders and Youth Gatherings on the Health of the Aquatic Environment*
  - Sahtu Renewable Resources Board, NT: *Tulit'a Got'ine Traditional Knowledge: The Impact of Climate Change on Fishing Livelihoods*
  - Treaty 8 First Nations of Alberta, AB: *Canoe Trip 2017: Protecting our Environment for Future Generations – Exercising our Treaty Rights.*
  - Wek'eezhii Renewable Resources Board, NT: *Guiding Respectful Behaviour While Experiencing the Aquatic Environment of Whatì: Implications of Change for Governance*
  - Ya Thi Nene Lands and Resource Office, SK: *Ya Thi Nene Lands and Resources Youth Science/Culture Camp and Canoe Quest*

Reports on 2017 research are due 31 March 2018. An annual report will be produced to consolidate the findings from a second field season.

### **Plans for 2018-2019**

In 2018-19, Tracking Change aims to fund 12 community-based and collaborative research activities in the Mackenzie River Basin related to some specific research themes and priorities:

- ✓ 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 to maintain healthy relationships to the aquatic ecosystem, maintaining respectful and spiritual relationships, respecting treaty rights);

Applications will be accepted from Aboriginal organizations that are partners of Tracking Change and that are working in collaboration with one or more academics from a partner university. The RFP was released in March 2018; applications are due 31 May and competition results will be announced by 30 June 2018.

### **Research in the Mekong River Basin**

<sup>2</sup> These priorities were recommended in a workshop with the NWT Water Stewardship Strategy Aboriginal Steering Committee and the Mackenzie River Basin Board (MRRB) Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), Feb. 10, 2016. Additional input was asked of the partners and other members of the Project Team by email in October 2015.

In January 2017 Ian Baird and Kanokwan Manorom conducted fieldwork in northeastern Thailand, southern Laos and northeastern Cambodia regarding knowledge mobility related to fish migrations in the Mekong and tributaries. In February 2017 Ubon Ratchathani University hosted the workshop organized by Tracking Changes. From April 2017 to June 2017, the Tracking Changes Project supported field research in six villages in the Mun River Basin in northeastern Thailand, Thalat, Nong Yang, Dum Yai, Sanamchai, Bung, and Lalai Villages. This has mainly working with local fishers to analyze fisheries data, integrate and contextualize with local knowledge, and document the importance of this knowledge for management decisions. This research added to research conducted with other project funding from the Margaret A. Cargill Foundation.

## **PARTNERSHIPS**

The Partnership began with the intention of building bridges between those most sensitive to social-ecological change in the Mackenzie-Mekong-Amazon and those involved in its' governance. Working together with academics from multiple universities and in multiple disciplines, the Partnership aims to increase the capacity of LTK holders (and Partner Organizations) to bring forward knowledge they consider relevant to decision-making

The Partnership facilitates capacity-building through community-academic collaborations in each of the sub-basins of the Mackenzie, the Lower Mekong and Lower Amazon (Tapajos Sub-Basin). Specifically, we are training and mentoring students and community researchers to build knowledge for and with communities, providing opportunities for communities to network with other knowledge holders, and identifying mechanisms and processes by which communities can continue to generate LTK. By doing so, we are building a legacy that will extend beyond 2021.

The Partnership is unique and significant in terms of the number and scope of Partner Organizations that have been engaged from across the Mackenzie River Basin. A critical base of the network is the Mackenzie River Basin Board; this institution is poised to be at the forefront of multi-scale thinking and decision-making on many emerging issues in the Basin. The board's Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), along with other partner organizations, guide the design, implementation and outcomes of the Partnership. By connecting the Board with international partners we are create a more global lens on local issues, and opportunities to share knowledge from Canada on a global stage.

The global partnerships being developed in the Mackenzie-Mekong-Amazon will facilitate the co-production of knowledge on key issues of common concern (e.g., effects of hydro-electric development on subsistence). Advances in knowledge made about the sustainability of freshwater fisheries, fishing livelihoods and wellbeing, and watershed governance will be of global significance.

The partnership is led and administered at the University of Alberta in partnership with multiple community, government, university partners as well as academics and students living and working in the Mackenzie, Lower Mekong and Lower Amazon Basins.

- The Project Team includes all Partner Organizations<sup>3</sup>, Academic Co-applicants, Collaborators, Students and Community Researchers;
- The Project Management Committee includes the members of the Mackenzie River Basin Board (MRRB) Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), a representative of the Government of the Northwest Territories, the Academic Leads for each of the Mackenzie, Mekong, and Amazon and the Academic Leads for the Sub-Basins of the Mackenzie;
- The Executive Committee includes an Aboriginal member of the Mackenzie River Basin Board (MRRB) Traditional Knowledge and Strengthening Partnerships Committee (TKSPC), the Principal Investigator, a sub-basin academic lead (co-applicant) from another Canadian University, and a representative from Water Resources Division of the Department of Environment and Natural Resources of the Government of the Northwest Territories.

The Tracking Change Management Committee (TCMC) and the Executive Committee will seek input in its decisions from other members of the Project Team including:

- Partner Organizations (e.g., Aboriginal organizations)
- Senior Advisory Committee
- Senior Aboriginal Advisory Committee

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<sup>3</sup> *Aboriginal organization partners of the Tracking Change project are those Aboriginal governments, organizations and co-management boards who provided a letter of support for the funding application to the Social Sciences and Humanities Research Council (2014) including acknowledgement of the Principles of Partnership. Other Aboriginal organizations can be added as partners by i) by being nominated by an existing Partner or member of the MRRB Traditional Knowledge and Strengthening Partnerships Committee, and ii) becoming a signatory to the **Guiding Principles of Collaboration**.*

- Technical Advisory Committee

The Tracking Change Management Committee shall make best efforts to ensure equitable involvement of all members of the Project Team;

Decision making in meetings will be guided by a consensus process. If consensus cannot be reached, the TCMC members will have voting privileges, with a two-thirds majority needed for agreement.

A project framework and research protocols are being developed (nearly completed) that describe the management and governance of the formal partnership. Terms of Reference for the various committees (Project Management Committee, executive committee, senior advisory group), have been developed and approved and are included in the Project Framework document. The framework document also includes Guiding Principles, Conflict Resolution Mechanisms, Research Protocols, Data Sharing protocols, etc.

The major challenges in the partnership to date have related to administrative procedures for sub-grants to partner organizations and/or individuals, and determining funding priorities for the inaugural field season. Further challenges have been in coordinating research, administration, and communications effectively. Now that the project framework has been developed, the first full year of research is complete, and the mechanisms for moving funds to partner and community-based programs, the team will be in a better position to mobilize resources quickly to address priorities and needs of the network.

### **Participation and Training of Research and / or Support Staff**

The aim of the project is to carry out collaborative research with LTK holders in the Mackenzie-Mekong-Amazon in ways that will ensure the continued tracking of social-ecological change during and after the grant is completed in 2021. Collaborative research is a general framework for describing the many and varied participatory, and community-based research methods valued and used by Indigenous and rural communities. Guided by principles of 'bottom-up thinking and doing' and a commitment to decolonizing science, collaborative research provides theoretical grounding, methods and tools for the research enterprise that is affirming of local best-practice for research, builds (rather than diffuses) research capacity and meets the needs of communities both in process and in outcome. However, collaboration does not mean open-access in knowledge sharing; OCAP principles (ownership, control access and possession by communities) apply. We also use collaborative research to frame the kinds of multidisciplinary and interdisciplinary research relationships that exist and will emerge through this Partnership.

Collaboration in all aspects of the research process (including knowledge mobilization) are structured as follows:

- Collaboration through Sub-Basin Nodes: Research activities are organized around sub-basin nodes that comprise partner organizations and regional academic leads. Regional academic leads with previous experience and capacity for working with these organizations and communities provide capacity (students, expertise, training opportunities) as needed. These collaborations create opportunities for the development of sub-basin projects, basin-wide research activities, and local-global knowledge mobilization.
- Theoretical and Thematic Collaboration (Advisory Circles): The project is supported by senior and junior academics and collaborators with expertise relevant to fisheries ecology, fishing livelihoods, well-being, governance, and digital knowledge mobilization. These groups lead, collaborate and/or advise in all aspects of the research process, providing thematic, theoretical and how-to insights.

The project has introduced a series of free research webinars that offer the opportunity to come together to learn about critical issues related to our research program and are designed to be useful to academics, community organizations and policy makers and other research partners. The webinar format includes a presentation by a leading academic or community leader followed by question/answer, debate and discussion. Focused on research project themes, such as traditional knowledge, sustainable livelihoods, food security, climate change, hydro development, indigenous governance and community-based monitoring, participants are invited to listen and learn and apply insights from the discussions to their own research, teaching, practice and policy. Three academic related webinars were held in 2016-17. Five more are planned for 2017-18.

- 27 January 2017: **Kristine Wray**, PhD Candidate, University of Alberta: *Graduate Students and the Tracking Change Project: Preparing for the Global Knowledge Symposium and forming a Student Council*
- 10 December 2016: **Dr. Fikret Berkes**, Distinguished Professor, University of Manitoba: *Livelihoods and Small Scale Fisheries*.

- 30 September 2016: **Dr. Brenda Parlee**, Project Director, and **Vice-Chief Joseph Tsannie**, TKSC: *Community-based Research and Tracking Change*

The project is also designing a series of videos with the provisional working title 'Mackenzie Watershed 101' that feature 5-7 minute vignettes on various aspects of the project. Raw video footage has been obtained for 3 of the vignettes to date.

## GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS' PARTICIPATION

	Supported by SSHRC grant		Not supported by SSHRC grant	
	Number of Canadian and permanent residents	Number of foreign	Number of Canadian and permanent residents	Number of foreign
Undergraduate students				
Master's students	7	5	4	
Doctoral students	1	2	1	
Postdoctoral researchers		1		
College students			1	
Other (e.g., technician, professional research associate)			1	
<b>Total Number</b>	<b>8</b>	<b>8</b>	<b>7</b>	

### Graduate Students working in the Mackenzie River Basin, Canada (2 Doctoral, 10 Masters)

Gaitan, Laura – MA Candidate in Geography, Memorial University. Collaboration with: Fond du Lac First Nation; Arn Keeling – Supervisor. *Traditional Knowledge in the Athabasca Land Use Plan*

Heredia-Vasquez, Iria - MA in Geography, University of Ottawa. Collaboration with: Inuvialuit Fisheries Joint Management Committee; Sonia Wesche – Supervisor. *Local and Traditional Knowledge Indicators for Tracking Socio-Ecological Changes in Inuvialuit Fishing Livelihoods*

Johnson, Johanne - MA in Native Studies, University of Alberta. Collaboration with: Prince Albert Grand Council; Brenda Parlee – Supervisor. *Local and Traditional Knowledge in the Social Economy of Saskatchewan's Athabasca Basin Region*

Lowe, Lana – PhD Candidate, Faculty of Law, University of Victoria. Collaboration with Fort Nelson First Nation; Val Napoleon – Supervisor. *Indigenous Oral Histories of Water*

Martin, Chelsea - MSc in Risk and Community Resilience, University of Alberta. Collaboration with: Sahtu Renewable Resources Board; Brenda Parlee – Supervisor. *Sahtu Goti'ine Traditional Knowledge: The Impact of Climate Change on Fishing Livelihoods.*

Proverbs, Tracy - MA Environmental Studies, Royal Roads University. Collaboration with: Gwich'in Renewable Resources Board; Trevor Lantz– Supervisor. *Impacts of Environmental and Socioeconomic Changes on Gwich'in Fishing Livelihoods and Cultural Resources*

Rice, Abigael – MA Candidate, University of Saskatchewan. Collaboration with: West Moberly First Nation; David Natcher – Supervisor. *Peaceful Enjoyment of Treaty 8 Lands*

Spicer, Neal – MSc, Resource Economics and Environmental Sociology, University of Alberta. Collaboration with: Katlodeche First Nation; Brenda Parlee, Supervisor. *Risk Perceptions of Drinking Water in Northern Communities in the Mackenzie Basin.*

Stenekes, Sydney, MSc candidate in Risk and Community Resilience. Collaboration with: Katlodeche First Nation; Brenda Parlee, Supervisor. *The Role of Traditional Knowledge in Understanding and Addressing Cumulative Impacts on Freshwater Systems in the Decho Region*

Wray, Kristine – PhD Candidate in Environmental Sociology, University of Alberta. Collaboration with: Akaitcho Territorial Government / Deh Cho First Nations; Brenda Parlee – Supervisor. *Linking Fishers Knowledge and Science to Understand Ecological Change in the Mackenzie River Basin*

### Graduate Students Projects in the Amazon River Basin, Brazil (1 PostDoc; 1 Masters)

Tavares de Freitas, Carolina – MSc in Biological Sciences, Universidade Federal do Rio Grande do Norte; Priscila Fabiana Macedo Lopes – Supervisor. *Arapaima Fisheries Co-Management: An Alternative to Conciliate Biodiversity Conservation with Human Well-Being in the Amazon Region?*

### **Graduate Students Projects in the Mekong River Basin, Thailand (1 Doctoral, 5 Masters)**

D'Souza, Amabel, MSc in Risk and Community Resilience, University of Alberta. Collaboration with: Treaty 8 Tribal Association/Ubon Ratchathani University; Brenda Parlee – Supervisor. *Impact of Hydroelectric Development on Rural Communities near The Peace River and the Mun River*

Bukla, Phongthep - MA Candidate in Sociology. Ubon Ratchathani University; Kanokwan Manorom – Supervisor. *Fishery Resources and Knowledge Management Through Empowerment of Local Wisdom in the Mun and Mekong Rivers*

Gaja-Svastic, Sirassak (Toe) – MA Candidate in Sociology. Ubon Ratchathani University; Kanokwan Manorom – Supervisor. *Fish Consumption in the Context of Community Change in the Tributaries of the Mun River*

Oloriz, Carrie - MA in Environmental Management, Royal Roads University. Collaboration with: Stó:lō Nation / Ubon Ratchathani University ; Brenda Parlee – Supervisor. *Local Fishers Knowledge, Cultural Values and Governance in the Lower Mekong (Thailand) and Lower Fraser River (Canada)*.

Soukhaphon, Akarath – PhD Candidate in Geography, University of Wisconsin, Madison. Collaboration with: Ubon Ratchathani University; Ian Baird – Supervisor. *Knowing the River: Utilizing Traditional Knowledge to Shape New Discourses in the Age of Dams*

Wongpinit, Wanapa - MA Candidate in Sociology, Ubon Ratchathani University; Kanokwan Manorom – Supervisor, *Gender and Indigenous Knowledge on Fisheries in the Mun River and Si Phan Don in Southern Laos*

### **KNOWLEDGE MOBILIZATION**

Knowledge is created and shared within each Basin and between Basins through yearly workshops, River Gatherings in yrs. 1, 3 and 5 and global meetings in yrs. 2, 4, 6 and other site-specific activities (e.g., in the Mackenzie River Basin, Fish Camps are held in each of the sub-basins). Upstream-Downstream sharing of knowledge is planned for neighboring communities. In addition to this neighbour-neighbour (adjacent) knowledge translation process, a snowballed (additive and cumulative) understanding of the kinds of downstream changes is occurring.

Knowledge mobilization also occurs along theoretical and thematic paths; regardless of their location in each basin (Mackenzie, Mekong and Amazon), team members and partner organizations gravitate to those with similar theoretical interests, concerns and issues. In addition to theoretical/thematic networking, there is significant interest in common questions of climate change, resource development, the role of youth and gender.

A final mode is Global Knowledge Networks whereby key collaborators and co-applicants network with others who have an interest in the project and its outcomes but may not be in a position to directly participate. Individuals participate in distributing research reports and academic papers. The knowledge translation of the Partnership is expected to grow year to year with an increasing number of knowledge users benefiting over time.

These knowledge networks enable the research team to contribute to watershed governance at different institutional scales. Individuals and communities make daily livelihood decisions (e.g., can I eat the fish?) within a local-level institutional framework of social norms (indigenous law, rules-in-use). Regional governments and co-management boards whose decisions are informed by regulations as well as LTK must also make decisions about many aspects of Basin sustainability through their own mandates (e.g., fisheries management, land use planning, watershed planning). A third institutional scale is that of basin-wide governance; of obvious relevance is the Mackenzie River Board, the Mekong River Commission, the Amazon Cooperation Treaty Organization and their constituent governments. Other regional organizations including NGO networks also operate at this scale.

Individuals and organizations also interact across institutional scales with the opportunity of informing global governance including softer principles and processes of law and decision-making (e.g., United Nations Intergovernmental Panel on Climate Change). The Partnership aims to mobilize knowledge within and among these institutions to increase individual/household and community capacity to understand and respond to variability and change in valued fish species and fishing livelihoods.

Through knowledge mobilization, we also seek to ensure LTK is closer to the forefront of watershed governance at larger scales.

## Outcomes of Knowledge Mobilization

**I. Oral Traditions and Experiential Learning:** LTK is a way of life with strong traditions of orality and experiential learning. In all aspects of the project, the Partnership aims to affirm these traditional practices of knowledge sharing. Specifically, we aim to: i) ensure that LTK documented (audio-video recorded) through the project, are also shared in settings that honour oral structure, meaning and transmission (e.g., youth involvement in interviews; sharing in a family or peer gathering), and sharing through open access networks. ii) Experiential learning opportunities will be offered at fish places (e.g., setting nets, navigating river channels), including mentorship of community researchers.

**II. Plain Language and Cultural Materials** –Plain language reports (suitable for use in K-12) integrate teachings from LTK holders. We have been developing three plain language guidebooks that speak to the – ‘how-to’ of tracking change. In 2016-17, the focus was on traditional and contemporary land practices and the generation of LTK; in yr. 3, a guidebook on community-based monitoring is being prepared (identifying and using LTK indicators for tracking change) and in yr. 5, we plan to develop a guide for organizing, interpreting and mobilizing knowledge in watershed governance (such as a guide on Indigenous Legal Traditions in Watershed Governance). Through this focus on methods, we aim to facilitate continued generation and sharing of LTK beyond 2021.

**III. Policy Documents** - The project will also focus on the development of policy related materials that will help inform decision-making at various institutional scales; ongoing feedback (quarterly newsletters) for partner organizations will facilitate knowledge sharing, including in regional government decisions, on an ongoing basis. Contributions to the *State of the Aquatic Ecosystem Report* of the Mackenzie River Basin Board will also be an important activity. Policy briefs for the MRBB as well as the Mekong River Commission and the Amazon Cooperation Treaty Organization are also planned on key issues identified as important by Partner Organizations. Through research partners we will also aim report to the Arctic Council, and the Permanent Forum on Indigenous Issues (UNPFII).

**IV. Academic Publications** – The team includes academic experts on themes of: LTK, community-based monitoring, livelihoods and governance (including watershed and indigenous governance); as such we will collaboratively contribute to academic forums (conference/peer reviewed journals), post-secondary teaching, practice (methods); these will include 15-20 theses and academic publications (3 per year related to each basin, and 3 co-edited volumes. By so doing, we anticipate positioning the research team as global leaders in Tracking Change.

The project has involved the following methods of knowledge mobilization:

- Academic dissemination (*Essentially, a one-way flow to other scholars in or near your field(s) of research*)
  - Knowledge transfer (*Transferring knowledge to scholars in other fields of research*)
  - Knowledge translation (*Writing or presenting research findings in more readable or useable forms e.g., writing for a wider or more diverse public*)
  - Knowledge exchange (*Exchanging or sharing knowledge with other disciplines or across sectors (two-way flow) e.g., workshop or conference*)
- Knowledge brokering (*Facilitating the flow of knowledge between others*)
- Knowledge synthesis (*Pulling together existing research in a useful form for other researchers or organizations*)
- Co-production (*Building research teams or alliances that generate new knowledge based on an ongoing exchange of knowledge*)
- Networking (*Organizing ongoing networks of scholars and/or other experts to mobilize knowledge*)

Other (Specify): **Video Documentary:** Production of a **short video documentary** about the **Tracking Change...Global Knowledge Symposium** is under way. The meeting was among the first of its kind where participants from Canada's Mackenzie Basin and the lower Mekong River Basin, and Amazon Basin sharing their ideas, research and perspectives on the sustainability of freshwater ecosystems and their importance to local communities and villages. The project **streamed video footage** of the discussions and presentations over the internet.

Additional research contributions include: Presentations (e.g., seminars, conference presentations), Interviews (e.g., tv, radio), academic publications (books, journals), conference presentations, articles in popular media, and plain language reports. Webinars were also included.

## **Youth Knowledge Fair I, University of Alberta, Edmonton, Alberta 20-24 May 2016**

A 'Youth Knowledge Fair' was held (24-26 May 2016) as a means of building research capacity among northern and Indigenous youth (where graduate student enrolment is low). Thirty student (and 12 teachers) presented poster-projects on the Mackenzie River Basin; training activities were offered as well as opportunities to network with other students from other areas of the Basin. The event was held over 3 days at the Lister Centre for the University of Alberta Campus, the TELUS World of Science, and the Art Gallery of Alberta. The quality of the students' work was impressive. A panel of judges reviewed the posters and evaluated the students' oral presentations. Awards were presented to students on the last day of the event. The posters were reproduced in a report booklet (proceedings) of the event and added to the website.

### **Youth Knowledge Fair II, University of Alberta, Edmonton, Alberta 15-18 May 2018**

A second 'Youth Knowledge Fair' is being planned for the 15<sup>th</sup> to 18<sup>th</sup> of May 2018 at the University of Alberta.

### **Global Knowledge Symposium I – Mekong – Ubon Ratchathani, Thailand (20-25 February 2017) - 50 participants**

– a great mix of community people, students and academics - there were also key resource people attending in addition to representatives from the federal government (DFO), Gov. of the Northwest Territories, and the Government of Alberta. Representatives from the Mackenzie region made presentations based on their community reports; graduate students presented summaries of their work, and we had the opportunity to learn more about issues of change in the Mekong river basin.

### **Global Knowledge Symposium II – Amazon - Santarem, Brazil (18-23 February 2019)**

– expect 50 participants– In Development: Once again, a mix of community people, students and academics is planned. Representatives from all regions will make presentations on community projects; graduate students will on their thesis work. The focus will be on research in the Amazon river basins.

### **Global Knowledge Symposium III – Mackenzie – Edmonton, Alberta 2021- expect 100 - 150 participants**

– Planned for 2021, this conference will represent the culmination 5 years of research in the Mackenzie, Mekong, and Amazon basins. Representatives will present the results of community-based research, as well as synthesis work of graduate students presented related to the basins, and global issues. It is anticipated that the results from this symposium will inform policy and influence governance of each of the basin, and contribute to understanding of the impacts of climate and development on the livelihoods of the people living in these regions.

## **Completed and Planned Knowledge Mobilization Products of the Network**

### **Presentations (44):**

- Andrew, L. and C. Martin. 2017. *Great Bear Lake and Mackenzie River Dene Research Camp*. Presentation on behalf of the Sahtu Renewable Resources Board at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Baird, Ian G. 2017. *Mobile Fish and Mobile Knowledge: Fish Migrations and Fishers Knowledge and Networks in the Lower Mekong River Basin in Thailand, Laos and Cambodia*. ICPP3 conference on public policy, Singapore.
- Berkes, F. 2017. *Signs and signals of environmental change*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.
- Berkes, F. 2017. *Linking community to global: scaling up our thinking*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 24 February 2017.
- Betsina, Chief E. and K. Wray. 2017. *Linking Fishers Knowledge and Science to Understand Ecological Change in the Mackenzie River Basin*. Presentation on behalf of the Akaitcho Territorial Government at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Bukla, P. 2017. *Fishery Resources and Knowledge Management Through Empowerment of Local Wisdom in the Mun and Mekong Rivers*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Catholique, T.T. and T. Proverbs. 2017. *Changes Affecting Fishing Livelihoods in the Mackenzie Delta*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.

- D'Souza, A. 2017. *The Impact of Hydroelectric Development on Rural Communities near the Peace River, Mckenzie Basin, Canada and the Mun River, Thailand*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Freitas, C.T. 2017. *Arapaima Co-Management: Reconciling Biodiversity Conservation and Human Well-Being in the Amazon Region?* Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Fresque-Baxter, J., T. Howlett and Yamin Muhammad. 2017. *Policy Contexts*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 22 February 2017.
- Heredia, I. 2017. *Local and Traditional Knowledge Indicators for Tracking Socio-Ecological Changes in Inuvialuit Fishing Livelihoods*. Poster and Oral Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Heredia, I. 2017. *Understanding socio-ecological changes in Inuvialuit fishing livelihoods and implications for food security: The role of local and traditional knowledge*. ArcticNet: International Global Change Conference, 11-15 December 2017, Quebec City, QC.
- Hogan, J. and S. Peters. 2017. *Traditional Knowledge: Peel River Watershed*. Presentation on behalf of the Nacho Nayak Dunn First Nation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.
- Hogan, J. 2017. *Building capacity for stewardship of the Pell River watershed: Tracking change of fish stocks by Nacho Nyak Dun First Nation*. ArcticNet: International Global Change Conference, 11-15 December 2017, Quebec City, QC.
- Hynes, K. and I. Heredia-Vasquez. 2017. *Inuvialuit Knowledge and Use of Fisheries in the Mackenzie River Delta*. Presentation on behalf of the Inuvialuit Fisheries Joint Management Committee at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Johnson, J. 2017. *Local and Traditional Knowledge in the Watershed Social Economy of Saskatchewan's Athabasca Basin Region*. Poster and oral presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.
- Lepine, M. and B. McLean. 2017. *Community-Based Monitoring in the Athabasca River and Delta*. Presentation on behalf of the Mikisew Cree First Nation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Lockhart, Chief F. and B. Parlee. 2017. *Tracking Change in the Great Slave Basin*. Presentation on behalf of the Lutsel K'e Dene First Nation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Lopes, P. 2017. *Tracking Change in the Lower Amazon Basin*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Manorom, K. and I.G. Baird. 2017. *Tracking Change in the Lower Mekong*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Martin, C. 2017. *Sahtu Goti'ine Traditional Knowledge: The Impact of Climate Change on Fishing Livelihoods*. Poster presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Martin, C. 2017. *The importance of traditional knowledge for maintaining fishing livelihoods during times of change in the Sahtu region*. ArcticNet: International Global Change Conference, 11-15 December 2017, Quebec City, QC.
- McLeod, R. and J. Fresque-Baxter. 2017. *Deh Cho K'ehodi Youth River Trip and Traditional Knowledge*. Presentation on behalf of the Deh Cho First Nations at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Napoleon, A. and K. Aird. 2017. *Eagle Island Fish Camp*. Presentation on behalf of the Treaty 8 Tribal Association of British Columbia at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Oloriz, C. 2017. *Local Fishers' Knowledge in Governance in the Lower Mekong*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Parlee, B. 2016. *The Tracking Change Project*, Northern Research Workshop Series, 20 May 2016
- Parlee, B., C. Fraser and A. Amos. 2016. *Approaches to Working with Northern Indigenous Communities*, Northern Research Workshop Series, 20 October 2016
- Parlee, B. 2017. *Introduction to Tracking Change*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Parlee, B., I. Baird and R. Silvano. 2017. *Trends and Patterns of Change in the Mackenzie, Mekong, and Amazon*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 22 February 2017.
- Parlee, B., I. Baird, and R. Silvano. 2017. *What do we know about Local and Traditional Knowledge in Watershed Governance?* Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 22 February 2017

- Parlee, B. *Tracking Change: Fishing Livelihoods in the Mackenzie River Basin*. ArcticNet: International Global Change Conference, 11-15 December 2017, Quebec City, QC.
- Proverbs, T. 2017. Impacts of Environmental and Socioeconomic Changes on Gwich'in Fishing Livelihoods and Cultural Resources. Poster and oral presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.
- Proverbs, T. 2017. *Socioecological changes, access to fish, and individual well-being in Gwich'in communities*. ArcticNet: International Global Change Conference, 11-15 December 2017, Quebec City, QC.
- Reece, C. and N. Spicer. 2017. *Water Quality in the Athabasca Watershed*. Presentation on behalf of the Treaty 8 First Nations of Alberta at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Silvano, R. 2017. *Tracking Change in the Tapajos River in the Lower Amazon*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Sirasak Gaja-Svasti, T. 2017. *Fish consumption in the Context of Community Change in the Tributaries of the Mun River*. Poster and oral presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017
- Soukhaphon, A. 2017. *Knowing the River: Utilizing Traditional Knowledge to Shape New Discourses in the Age of Dams*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.
- Spicer, Neal. 2017. "Nothing is Safe anymore" – Risk perceptions of drinking water. ArcticNet: International Global Change Conference, 11-15 December 2017, Quebec City, QC.
- Tsannie, Chief J. and J. Johnson. 2017. *Local and Traditional Knowledge in the Watershed Social Economy of Saskatchewan's Athabasca Basin Region*. Presentation on behalf of the Prince Albert Grant Council at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.
- Wongpinit, W. 2017. *Gender and Indigenous Knowledge of Fisheries in the Mun River and Si Phan Don in Southern Laos*. Presentation at the Tracking Change Global Knowledge Symposium, Ubon, Thailand, 21 February 2017.

#### Webinars (7):

- a) Parlee, B. 2017. Progress in Tracking Change in the Mackenzie River Basin
- b) Parlee, B. Open Discussion on Best Practices in Tracking Change.
- c) Natcher, D. 2017. Variability in Fishing Livelihoods and Fishing Knowledge among Peace River First Nations
- d) Huntington, H. 2017. How do we Document and Demonstrate the Value of Community-Based Research?
- e) Ommer, R. 2017. Canadian Collaborative Research for Sustainability.
- f) Napoleon, V. 2017. Indigenous Law as Foundation.
- g) Berkes, F. 2017. Local and Traditional Knowledge in Fishing Livelihoods.

#### Interviews (1):

Hogan, Joella. November, 2017. "CBC Morning Yukon – "A New Day Morning Show"

#### Journal Articles (5):

- Manoram, Kanokwan and Ian G. Baird. (in preparation). *What about the Tributaries of the Tributaries? Fish Migrations, Fisheries, Dams and Local Knowledge along the Sebok River in Northeastern Thailand*.
- Michell, H., J. Tsannie and A. Adam. 2018. Tu ?ëhena – "Water is Life": Tracking Changes on Land, Lake, and River Systems in the Northern Saskatchewan Athabasca Region from the Perspectives of Denesuline Peoples. *Green Theory and Praxis Journal*, Vol 11, Issue 1, March 2018, 17 pp.
- Baird, Ian G., Kanokwan Manoram, Aurore Phenow and Sirisak Gaja-Svasti 2017 (In Preparation). *Mobile Fish and Mobile Knowledge: Fish Migrations and Fishers Knowledge and Networks in the Lower Mekong River Basin in Thailand, Laos and Cambodia* (first draft written, April 12, 2017; revised June 6, 2017 and sent for review at *International Journal of Water Resources Development* for review).
- Baird, Ian G. and Kanokwan Manoram 2017 (In Preparation). *Mobile Fish and Mobile Knowledge: Fish Migrations and Fishers Knowledge and Networks in the Lower Mekong River Basin in Thailand, Laos and Cambodia* (preparing to submit to journal).
- Baird, Ian G. and Kanokwan Manoram 2017 (In Preparation). *Fishers Knowledge and Irrigation and Hydropower Dam Development: Lessons from The Khayung Stream tributary of the Mun River in northeastern Thailand*.

**Planned Publications (5):**

- Parlee, B. and J. Fresque-Baxter et al. (prep). *Creating a Toolbox for Community-Based Research in the Mackenzie River Basin*
- Natcher, D., et al. (in prep). *Methods for assessing Subsistence Harvests of Fishing Resources*
- Berkes, F., R. Silvano, I.G. Baird, J. Fresque-Baxter, B. Parlee and J. Tsannit (in prep). *Indicators and the Governance of Freshwater Ecosystems*
- Lantz, T. et al. (in prep). *Stressors and Disturbances in the Mackenzie River Basin.*
- Wray, K., et al (in prep). *Community-based research.*

**Planned Books (1):**

- Parlee, B., I. Baird, R. Silvano, and K. Manoram. *The Role of Local and Traditional Knowledge in Watershed Governance: A State of Knowledge*

**Conference Proceedings (2):**

- Parlee, B., V. Zeppa, F. Lopez, and E. Maloney. 2016. *Proceedings of the Youth Knowledge Forum 2016.*
- Parlee, B. and E. Maloney, eds. (in preparation). *Tracking Change: Proceedings of the Global Knowledge Symposium*

**Articles in Popular Media (3):**

- Mosleh, Ompar. 2017. Indigenous insights on climate change: UofA turns to elders to help with the Mackenzie River Basin. *Edmonton Metro News* Wednesday, October 11, 2017.
- Parlee, B. 2017. *Tracking Change*: Featured project on the Department of Resource Economics and Environmental Sociology (REES), University of Alberta, website
- Semeniuk, Ivan. 2017. Riverworld: A sweeping survey of traditional knowledge from the Mackenzie Basin reveals Canada's largest watershed is in the midst of a rapid and uncertain transformation. *The Global and Mail*, Tuesday, October 10, 2017 News, Folio: Environment pp A8-A9.

**Newsletter Articles: (2)**

- Schuman, Wally. 2016. *Importance of Partnerships*. Tracking Change, Mackenzie River SSHRC PG project - [www.trackingchange.ca](http://www.trackingchange.ca) highlighted in the legislative assembly of the Government of the Northwest Territories as a valued partnership <http://www.gov.nt.ca/newsroom/news/wally-schumann-importance-partnerships>, 2 March 2016
- Silvano, R. 2016. *Amazon Inspiration For The Mekong Basin* <http://fishbio.com/field-notes/the-fish-report/amazon-inspiration-mekong-river> *FishBio*, 17 October 2016

**Literature Reviews (8):**

- Literature reviews have been developed for the *Tracking Change...* with the aim of synthesizing the existing and documenting local and traditional knowledge about social and ecological change in the Mackenzie River Basin.
- D'Souza, A. and B. Parlee (2016). Literature Review: Local and Traditional Knowledge in the Peace River Sub-Basin
- Heredia Vasquez, I. and S. Wesche (2016). Literature Review: Local and Traditional Knowledge in the Great Slave Lake Area
- Parlee, B. (2016). Literature Review: Local and Traditional Knowledge in the Great Bear Lake Watershed
- Parlee, B. (2016). Literature Review: Local and Traditional Knowledge in the Lower Mackenzie
- Parlee, B. (2016). Literature Review: Local and Traditional Knowledge in the Liard River Watershed
- Parlee, B., and A. D'Souza (2016). Literature Review: Local and Traditional Knowledge in the Athabasca River Watershed
- Parlee, B., and C. Martin (2016). Literature Review: Local and Traditional Knowledge in the Peel River Watershed
- Wray, K. (2016). Literature Review: Local and Traditional Knowledge in the Hay River Watershed

**Methodological Papers/Toolkits (5):**

The project is working toward the enhancement or creation of the following tools to collect or analyze data (e.g., survey, database)?

- Parlee, B. and J. Fresque-Baxter. 2016. *How to: Some Ideas on Methods for Community-Based Research on Social-Ecological Change in the Mackenzie River Basin*, Volume 1
- Parlee, B. and J. Fresque-Baxter. 2016. *Guiding Interview Questions: Tracking Change in the Mackenzie River Basin*

Parlee, B. and J. Fresque-Baxter (in prep.). Guidebook/best practices for traditional knowledge research and documentation, including research protocols that recognize and honour OCAP Principles.

Parlee, B. 2017. *Oral Histories, Perception, and Knowledge of Change*, Volume 2.

Parlee, B. 2017. *Fishing Livelihoods: Harvest and Perceptions of Change in Fish Health*. Volume 2

### **Tracking Change Terminology (1):**

In an effort to standardize the language and develop a common ground for discussions, a comprehensive list of terms is being developed in the various languages of the Mackenzie River Basin.

Ahkimnachie, K. 2017. *Ecological Monitoring Terminology* (English, Dene – Beaver or xe'ghont'e; Dene – Slavey or Kaguntu)

**Navigational Hazard App:** The Mikisew Cree First Nation Community-Based Monitoring Program is developing a tool for community-based monitoring staff and community members to continuously update a database of navigational hazards.

**Data Management System:** the project is working with communities and partners to develop a system for collecting, organizing, preserving, sharing, and archiving the data (including scientific data and cultural data) resulting from this project, in consideration of collaborative approaches while respecting OCAP principles.

### **Research Reports 2016 (12):**

Abel, Diane, Art Napoleon and Karen Aird and the Treaty 8 Tribal Association of British Columbia. 2016. *Eagle Island Fish Camp*

Boucher, Annie, Diane Giroux, Mike Tollis, Lauren King and Cochise Paulette, Akaitcho Territorial Government. 2016. *Guiding Water Protection Through Traditional Knowledge*

Boxwell, Janet, Trevor Lantz, Tracey Proverbs, Tsatsi Catholique, Sharon Snowshoe and Ingrid Kritsch, Gwich'in Tribal Council, Gwich'in Renewable Resources Board. 2016. *Changes affecting Fishing Livelihoods in the Gwich'in Settlement Area*

Hynes, Kristin, Sonia Wesche, and the Aklavik Hunters and Trappers Committee, Fisheries Joint Management Committee. 2016. *Inuvialuit knowledge and use of Fisheries in the Mackenzie River Delta*

King, Lauren, Andreina Cambronerio, Joseph Catholique, and Ron Fatt, Lutsel K'e Dene First Nation, Lutsel K'e Dene First Nation. 2016. *Tracking Change in the Great Slave Basin*

Mikisew Cree First Nation. 2016. *Community-Based Monitoring Program*

Pellisey, Jody, Alice Legat and Imbe Program, Tłı̨chǫ/Wek'eezhii Renewable Resources Board. 2016. *Fish, Todzi, and Forest Fire on the Land Research*

Sabo, Ray, Joella Hogan, Sharon Peter, Ellen Bielawski, and Kristine Wray, Nacho Nayak Dun First Nation, Yukon. 2016. *Traditional Knowledge Camp*

Simmons, Deb, Leon Andrew, Michael Neyelle, Edward Reeves, Roger Odgaard, Jennie Vandermeer, Mandy Bayha, \*Cheslea Martin, Sahtu Renewable Resources Board. 2016. *Sahtú hé Deocha hé Dene Náowerá Chets'elá - Great Bear Lake and Mackenzie River Dene Knowledge Research Camps*

Tsetso, Dahti, Dean Holman, Alison De Pelham, George Low, and Kristine Wray, Deh Cho First Nations. 2016. *Deh Cho K'ehodi Youth River Trip: Fort Simpson to Willow Lake River*

Treaty 8 First Nations of Alberta. 2016. *Place names and Oral Histories of Change in the Peace River Sub-Basin*

Parlee, B. and E. Maloney, eds. 2017. *Tracking Change.. Local and Traditional Knowledge in Watershed Governance: Report of the 2016 Community-Based Research Projects in the Mackenzie River Basin*, 92p.

### **Newsletters (6):**

Parlee, B. 2015. *Tracking Change: Local and Traditional Knowledge in Watershed Governance*, 6pp.

Heredia, I. 2017. *Understanding Socio-Ecological Change in Inuvialuit Fishing Livelihoods and Implications for Food Security: The Role of Local and Traditional Knowledge*, 4pp.

Hogan, J. 2017. *Building Capacity for Stewardship of the Peel River Watershed: Tracking Change of Fishstocks, First Nation of the Nacho Nayak Dun*, 4p.

Martin, C. 2017. *The Importance of Traditional Knowledge for Maintaining Fishing Livelihoods in Times of Change in the Sahtu Region*, 4pp.

Proverbs, T. 2017. *Socioecological Change Affecting Gwich'in Fishing Livelihoods in the Gwich'in Settlement Region*, 4pp.

**Other products:****Posters from the Youth Knowledge Forum 2016 (21):**

- "Tazi twe Hydroelectric Project," by Marie Rosalie Bruno from Black Lake School, Father Porte Memorial Dene
- "Trout" by Randon John Cook from Black Lake School, Father Porte Memorial Dene
- "The Mackenzie River Watershed: Our Water is the Boss," by Kennedy Marten and Mahaila Frank-Powder from Athabasca Delta Community School, Fort Chipewyan, AB
- "Lakes and Rivers in the Athabasca River," by Michael Boudreau and Raymond Cardinal from Athabasca Delta Community School, Fort Chipewyan, AB
- "Why is there oil in the Water?" by Jaiden Cypien and Tyson Cardinal from Athabasca Delta Community School, Fort Chipewyan, AB
- "Water Pollution: Canada's Toxic Tar Sands," by Shauntay Antoine and Alissa Castor from Athabasca Delta Community School, Fort Chipewyan, AB
- "Which Fish are Best to Eat?" by Sam Bunning from Chief Tallcree High School, Fort Vermillion, AB
- "How Nutrient Rich is Our Water," by Dana Auger from Chief Tallcree High School, Fort Vermillion, AB
- "Sustainable Water and Unsustainable Water," by Tyrell Fern and Josh Piche from Fond du Lac, SK
- "The Mackenzie River Basin: Sub-basins before and after," by Emma Tom Tom from Robert Service School, Dawson City, YT
- "Fish in the Mackenzie River," by Mataya Mantla from Chief Albert Wright School, Tulita, NWT
- "Changes in the Water Level in the Mackenzie River," by Rylan Campbell from Chief Albert Wright School, Tulita, NWT
- "Quietus of Adam's Ale: Current and Future State of the Mackenzie River Basin," by Shaznay Waugh from Thomas Simpson School, Fort Simpson, NWT
- "Fish Species and Migration Routes in the Mackenzie River," by SaNaeah Allen from Thomas Simpson School, Fort Simpson, NWT
- "Mackenzie River Basin," by Lane Voudrach from East Three Secondary School, Inuvik, NWT
- "Testing the Water," by Trya Cockney-Goose from East Three Secondary School, Inuvik, NWT
- "Deh Cho," by Cassidy Villeneuve and Paul William from Paul W. Kaeser Secondary School, Fort Smith, NWT
- "The Mackenzie River," by Faith Gaudet from Paul W. Kaeser Secondary School, Fort Smith, NWT
- "Fishing Without a Hook," by Cheyenne Hoagak from Mackenzie Mountain School, Norman Wells, NWT
- "Water Heart-Tudze," by Emily Bayha from Mackenzie Mountain School, Norman Wells, NWT
- "A Fishy Situation: The Mackenzie River Basin – Theme: Historical and contemporary observations and perception of conditions and change in the health of the aquatic environment," by Branda Le and Taylor Lake, from Ecole Sir John Franklin High School, Yellowknife, NWT

**Canadian Museum of Nature Exhibit.** 2017. The *Tracking Change* project is featured in the new permanent gallery on the Canadian Arctic, to mark the 150th anniversary of Canada that focuses on the sustainable use of Arctic resources. The Mackenzie Basin's Tracking Change project strengthens cooperation between fishers, indigenous communities and renewable resource managers. Participants share data, observations and insights to maintain healthy ecosystems that sustain fishing as an activity of social, cultural and economic importance.

**Video Documentary (in preparation)**

We are working towards the development of a **short video documentary** about the **Tracking Change...Global Knowledge Symposium**. The meeting was the first of its kind where we have participants from Canada's Mackenzie Basin and the lower Mekong River Basin sharing their ideas, research and perspectives on the sustainability of freshwater ecosystems and their importance to local communities and villages.

**Video streaming** of discussions, presentations, excursions and activities related to the Global Knowledge Symposium in Ubon Ratchathani, Thailand.

**Tracking Change (895-2015-1024)**  
**Budget and Expenses to March 31, 2018 (Year 1,2 3)**

		SSHRC Proposal	Actuals
<b>Student Salaries</b>			
Undergraduate		78249.00	0.00
Masters		122015.00	168,154.00
Doctorate		26460.00	32,650.00
<b>Total Student Salaries</b>		<b>226724.00</b>	<b>200,804.00</b>
<b>Variance</b>	<b>11% Underbudget</b>		
<b>Non-Student Salaries</b>			
<b>Post Doc</b>		0	0.00
<b>Other</b>			
honouraria (for elders etc.)			105,304.00
community researchers			120,465.00
translation / interpretation			16,500.00
<b>Total Non Student Salaries</b>		<b>425588</b>	<b>242,269.00</b>
<b>Variance</b>	<b>43% Underbudget</b>		
<b>Travel and Subsistence</b>			
<b>Applicant/Team Travel</b>			
<i>Canadian</i>	12% underbudget	100000	87,354.62
<i>Foreign</i>	84% underbudget	18000	2,800.00
<b>Student Travel</b>			
<i>Canadian</i>	2% underbudget	27000	26,466.00
<i>Foreign</i>	17% overspent	15000	17,698.00
<b>Total Travel/Subsistence</b>		<b>160000</b>	<b>134,318.62</b>
<b>Variance</b>	<b>16% Underbudget</b>		
<b>Technical Services</b>			
Professional and Technial Services	37%% overspent	30000	41,220.00
Supplies	88% underbudget	6000	723.00
<b>Total Technial Services/Supplies</b>		<b>36000</b>	<b>41,943.00</b>
<b>Variance</b>	<b>16% Overspent</b>		
<b>Non Disposable Equipment</b>			
NA			
<b>Other Expenses</b>			
Global Research Meetings	10% overspent	70000	77,690.00
Fieldcamps, River Gatherings	3% underspent	170000	164,590.00
Youth Knowledg Fair - Training of HQP	new budget item		40,345.00
Database - Knowledge App	new budget item	0	39,900.00
Publications and Seminars	new budget item		12,000.00
<b>Total Other</b>		<b>240000</b>	<b>334,525.00</b>
<b>Variance</b>	<b>39% overspent</b>		
<b>Total Budget/Actuals - Mar 31/18</b>		<b>1,088,312.00</b>	<b>953,859.62</b>
<b>Total Variance</b>		<b>11% underspent</b>	

The data populating the table is based on best available financial data from the University of Alberta as of April 30, 2018. It includes data from sub grant reports from five other post-secondary institutions.