

trackingchange

Tracking Change... Global Knowledge Symposium

*Mobilizing Local and Traditional Knowledge on Fishing Livelihoods:
Fishers' Knowledge about the Impacts of the Pak Mun River Hydro Dam*

20-25 February 2017



Photo Credit- International Rivers (2002)

Ubon Ratchathani University

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We are very grateful to our research partner and host, Dr. Kanokwan Manorom, lead coordinator for the meeting in Thailand along with her two Masters students. We are also thankful for the guidance and support of Dr. Ian Baird (University of Wisconsin, Madison) who also coordinated this event. Our thanks to Ubon Ratchathani University for welcoming us to gather on their campus and to meet and work with their faculty and students during the symposium.

Overview of the Symposium

The **Tracking Change...** research program developed to advance knowledge through community-university research activities in the Mackenzie River Basin, Canada with emerging projects in the lower Mekong River Basin (Mun River), Thailand and in the lower Amazon Basin (Tapajos River), Brazil.



A global knowledge symposium was held in Thailand from 20-25 February 2017 in the city of Ubon Ratchathani. Research team members, including graduate students, community/partner representatives and faculty/academics (36 participants from Canada, 4 from Brazil, and 6 from Thailand) were hosted at Ubon Ratchathani University and in the local fishing village of Baan Kanpuay.

The meeting created opportunities for presentations (oral/poster) by community members, students, academics, policy-makers and partners, placed-based learning about fishing livelihoods in the Ubon Ratchathani Province of Thailand (particularly related to the Pak Mun River Dam), critical discussion with the ultimate aim of mobilizing knowledge being created through **Tracking Change...** and strengthening the research network at a global scale.

Symposium participants had opportunities to visit tourist and cultural attractions in Bangkok and Ubon Ratchathani. This included aquariums, Temples (such as Wat Chaiwatthanaram Ayutthaya), restaurants, the Ubon Ratchathani University's campus, the Pak Mun Dam, Bangkok's Floating Market and more. Additionally, the Global Knowledge Symposium included a Homestay in the Village of Baan Kanpuay. Where participants enjoyed a night of traditional food prepared by local peoples of the community, as well as a Sai Sin Ceremony in the morning!

The aims of the gathering were to:

- Create opportunities for Indigenous community participants from the Mackenzie River Basin and the lower Mekong River basin to share their own local and traditional knowledge about social-ecological change and develop a better understanding of its significance at global scales;
- Develop a deeper understanding of the knowledge, practices and beliefs of Lao/Thai fishers through a place-based learning activities in Kho Tai;
- Identify and advance theories and conceptual frameworks that can help explain trends and patterns in the livelihoods of fishing communities in the Mackenzie-Mekong-Amazon including the changes associated with hydro power;
- Strengthen research collaboration between graduate students, junior and senior faculty and community knowledge holders (fishers) and partners from Canada, Thailand and Brazil;
- Build global academic-community-policy networks that can effect change in the governance of the Mackenzie-Mekong-Amazon;
- Catalyze critical thinking about the methodological best-practice for studying and communicating about fisher knowledges and practices;
- Advance community reporting and academic publication through a facilitated writing workshop.

Tracking Change... Global Knowledge Symposium 20 February 2017 Ubon Ratchathani; Opening Reception

INTRODUCTION TO TRACKING CHANGE...

Brenda Parlee

Tracking Change... is a research initiative funded by *the Social Sciences Humanities Research Council of Canada* and led by the University of Alberta, the Traditional Knowledge Steering Committee of the Mackenzie River Basin Board, the Government of the Northwest Territories and many other valued partner organizations. Over six years (2015-2022), the project is funding local and traditional knowledge research activities in the Mackenzie River basin and sister projects in the Lower Amazon and Lower Mekong River Basins, with the long term goal of strengthening the voices of subsistence fishers and Indigenous communities in the governance of major fresh water ecosystems. The 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.

WELCOME AND OPENING RECEPTION

Ubon Ratchathanni Cultural Center (Kab But Room)

Address: Nai Mueang, Ubon Ratchathani district, Ubon Ratchathani province 34000

Keynote Presentation

TRACKING CHANGE IN THE LOWER MEKONG

Kanokwan Manorom and Ian Baird

An introduction to the work in the Mekong Region and the Mun River Basin, in particular the Mun River, sub-basins of the Mekong River and the impacts of the large Pak Mun Dam on fish in this river basin. The presentation described smaller (irrigation) dams on the tributaries that affect the villages that depend of fish for their subsistence. The team is assisting the villagers collect and present their data, using traditional and local or intimate knowledge of the people from the past and compare it with the data set from the present so they can get a picture of change.

Tracking Change... Global Knowledge Symposium

21 February 2017: Day 1 of the Symposium

Faculty of Liberal Arts Building, Ubon Ratchathani University

Keynote Presentation

LINKING COMMUNITY-BASED & GLOBAL PERSPECTIVES

Fikret Berkes

Dr. Berkes provided an introduction to community-based research and how this can become a global three-way comparison with the three basins – the Mackenzie, the Lower Mekong, and the Lower Amazon asking the question “How do we track change?” “What do we look for?” The source of information are the local people, the way they see the environment, their worldview—their traditional knowledge. Community-based research is location-specific, and so the whole notion of scaling up is what we are after, and the approach is sub-basins to basins to global issues using a traditional or Indigenous knowledge as a knowledge-practice-belief complex.

MACKENZIE RIVER BASIN PRESENTATIONS

Nacho Nayak Dun First Nation Traditional Knowledge – Peel River Watershed

Traditional Knowledge Camp in the Headwaters of the Peel Watershed

Nacho Nayak Dun First Nation

Joella Hogan, Manager of Heritage and Culture and Sharon Peter

The community held an on-the-land camp with several youth and some elders in the Peel Watershed, monitoring water, working with elders as part of a bigger project on water quality, fish, and wildlife. The Peel Watershed is difficult to access, but people are still very passionate about it because they've heard the stories from elders and people about the importance of this area. There is a high impact from tourism, and development (mining, oil extraction). The aim is to educate young people about the importance of this area so that they can make better informed decisions, and continue baseline monitoring in advance of any development, and talking about why protecting the Peel and different rivers in our watershed area through our traditional territory is important. The “Protect the Peel” initiative is going to the Supreme court of Canada on March 22nd (2017). (Brochure/poster distributed)

Inuvialuit Knowledge and Use of Fisheries in the Mackenzie River Delta

Inuvialuit Fisheries Joint Management Committee (FJMC)

Kristin Hynes & Iria Heredia-Vasquez

There are a lot of pressures related to climate change, research development, and community concerns towards fish and fish habitat from activities upstream in the watershed. This project aimed at documenting observed changes regarding fish and fish habitat to improve co management of resources. The FJMC we worked with Hunters' and Trappers' Committees to coordinate fish camps. There were challenges related to the coordination of different agendas (university, communities, individuals). So it's important that there are strong partnerships and good communication, and also a respect for ownership of knowledge and stories.

Changes affecting Fishing Livelihoods in the Mackenzie Delta

Gwich'in Tribal Council (GTC)/Gwich'in Renewable Resources Board (GRRB)

Tsa Tsi Catholique & Tracy Proverbs

The GRRB organized four knowledge exchange fish camps near each Gwich'in community in the Northwest Territories (Inuvik, Aklavik, Fort McPherson, and Tsiigehtchic). At each 1/2-day camp, youth representatives from each community and project team members discussed changes in fishing livelihoods with traditional knowledge holders and camp owners. Interviews questions, such as: “What are the effects and the concerns you see with the fish?”, “What effects and concerns you see with the lakes and the rivers?”. Having youth interact with elders and land users on the land was equally if not more

important than the data collected. The project will continue with monitoring, will look at how these changes environmentally and socially affect community well being.

Great Bear Lake and Mackenzie River Dene Research Camp

Sahtu Renewable Resources Board (SRRB)

Leon Andrew & Chelsea Martin

The SRRB held a cross-cultural research camp in Deline where they undertook semi-structured interviews with a cross section of Deline elders and fishing experts. A youth caucus organized an on-the-land workshop on water and ice conditions around Great Bear Lake. The study is looking at climate change and fishing livelihoods, and how climate change affects how and what kinds of knowledge is being transferred to the youth. The hope that this work will help provide insight to sub-arctic communities and adopt a climactic changes as well as increase and strengthen the stewardship that dominate has already with greater league in this autumn.

Deh Cho K'ehodi Youth River Trip and Traditional Knowledge

Deh Cho First Nations

Robyn McLeod & Jennifer Fresque-Baxter

The Deh Cho organized a canoe trip for people from all the communities in the delta region. Youth representatives from all over the De Cho came to learn about the land and the water. It ass meant to be a five day program from Fort Simpson to Willow Lake River, but it was reduced to about eighty five kilometers because of bad weather. Youth and elders discussed changes to water, fish, and travel.

Guiding Water Protection Through Traditional Knowledge

Chief Ernest Betsina, Yellowknives Dene First Nation , Akaitcho Territorial Government

Kristine Wray, PhD Student , University of Alberta

The Akaitcho Aquatic Monitoring Program (AAMP) held an on the land workshop out of Fort Resolution to bring together elders, land users, youths, Chiefs, and technical staff to discuss issues around water, ranging from historic observations, to current concerns, to future water governance in Akaitcho. The project also involved conducting one-on-one interviews with elders in each of the Akaitcho communities for further explanations

Watershed Gathering for Monitoring and Stewardship

Chief Felix Lockhart and Brenda Parlee– Lutsel K'e Dene First Nation

The LKDFN held a gathering discuss the best approaches protecting the waters. Some outcomes include a stronger relationship between the cultural communities to partner in the monitoring of traditional lands and various economic changes, with the collective interest to advance the water stewardship agenda. The aim is for the First Nation to be a self governing entity. Water governance models will ensure a means to monitor, protect and use the traditional waters.

Eagle Island Fish Camp (Peace River, BC)

Art Napoleon and Karen Aird – Treaty 8 Tribal Association

Eagle Island Fish Camp was held in the BC portion of Treaty 8 territory downstream of the WAC Bennet and Peace Canyon dams. It focused on documenting fish species, the health, population and habitat required for healthy fish and traditional fishing methods and harvesting. It also aimed to promote good stewardship principals and the importance of maintaining healthy eco-systems and the spiritual ties the land and waters that sustain the community.

Water and Communities in the Peace-Athabasca Delta

Cleo Reece & Neal Spicer - Treaty 8 First Nations of Alberta

Several projects are being undertaken to study the impacts of climate and industrial development on the water sources on Treaty 8 traditional territory. A canoe trip was planned to gather youth and elders to discuss changes in land and waters for hunting and fishing traditions. Extensive interviews were used to explore the safety and security (perceived or real) of drinking water sources, both on the land and in communities. And several workshops in each of the four regions of treaty eight were organized to document place names.

Changing Wager Depth in the Mikisew Cree Homelands

Melody Lepine and Bruce McClean – Mikisew Cree First Nation

For eight years the Mikisew Cree First Nation (MCFN) have been operating a Community Based Monitoring (CBM) Program to understand the negative changes our Elders have observed in our traditional territories. In our search to protect Treaty and Aboriginal Rights the MCFN is further professionalizing the program with a formal database, and sharing data on key parameters with other partners in the watershed. They are also looking at fish health in the Peace Athabasca Delta.

Local and Traditional Knowledge related to the Athabasca Basin Region

Vice Chief Joe Tsannie and Johanne Johnson – Prince Albert Grand Council

Local and Traditional Knowledge in the Watershed Social Economy of Saskatchewan's Athabasca Basin Region The presentation discusses local and traditional knowledge (LTK) related to the Athabasca Basin watershed as well as the social economy of the region. Within the Athabasca Basin Region, as in many other Indigenous communities, the social economy encompasses the notion of environmental stewardship. The first objective was to investigate and document the meanings of the social economy from the perspective of LTK holders in the Athabasca Basin watershed. The second objective was to identify 'wise' Indigenous practices related to the successful development of the social economy of the Athabasca Basin watershed.

LOWER MEKONG PRESENTATIONS

Tracking Change in the Lower Mekong

Kanokwan Manolom and Ian Baird

Following on the overview presentation at the reception, what we will be presenting is a series of projects that are related to some work that's been done already, still to be done, or prepared for future research. They deal with intimate knowledge and fisheries science being used together to explore climate and development impacts in the Mekong Basin.

Gender and Indigenous Knowledge on Fisheries in the Mun River and Si Phan Don in Southern Laos

Wanapa Wongpinit, MA Candidate in Sociology, Ubon Ratchathani University

This project focuses on gender and fishery knowledge along the Mun River, wetland areas, and Si Phan Don (Four Thousand Islands) in southern Laos. Many scholars have addressed that fishing activities in the areas are very crucial for local livelihoods. Males and females have different knowledge on fishing, depending on their roles ecological systems, development activities and policies of water resource management.

Fishery Resources and Knowledge Management Through Empowerment of Local Wisdom in the Mun and Mekong Rivers

Phongthep Bukla, MA Candidate in Sociology, Ubon Ratchathani University

From the Mekong source to its delta, the river travels 4,909km. Along the Mekong, local communities utilize the river in different ways: it is a source of life, providing food, transportation, and security of life. There are over 60 million people who directly depend on its rich natural resources. The lower basin is the most productive fresh-water fishery in the world. Along the Thai-Lao-Cambodia border, complex ecosystems, including those centered on rapids, whirlpools, beaches, and tributaries, are the important fishing grounds for local communities. This research focuses on fishery resources and knowledge management, and how to empower local wisdom. Research sites cover the Pak Mun Dam in Thailand, Donsahong Dam in Southern Laos, and Tonlesap areas in Cambodia.

Fish Consumption in the Context of Community Change in the Tributaries of the Mun River

Sirasak Gaja-svasti (Toe). - MA Candidate in Sociology, Ubon Ratchathani University

This project is examining social change and fish consumption in the Mun River tributary, how climate and development have impacted the quality of fish and fishing (availability of species, quantity of species, accessibility of fishing areas)

Knowing the River: Utilizing Traditional Knowledge to Shape New Discourses in the Age of Dams

Akarath Soukhaphon, PhD Candidate in Geography, University of Wisconsin, Madison

The Mekong River and its tributaries has long been a source of vitality for those living along banks. It has also served as a conduit for material and intellectual exchange throughout history. Today, the river draws interest from both ecologists and developers due to its biodiversity and energy potential. As the Mekong Subregion undergoes greater transformation, there is a need to understand how such transformations impact local stakeholders. My research explores the pedagogical history of Lao communities in northeastern Thailand, southern Laos, and northeastern Cambodia in light of environmental change and major development projects. I am interested in how technology, international borders, and ideas of indigeneity, identity, and landscape have complicated or facilitated discourses of acceptance, acquiescence, and resistance in and among these communities.

The Impact of Hydroelectric Development on Rural Communities near The Peace River and the Mun River

Abby D'Souza, MSc in Risk and Community Resilience, University of Alberta

Rural communities bear the majority of the burden when it comes to the impacts of hydroelectric dams. For communities utilizing the land for their livelihood, this can be extremely detrimental. This research focuses on the socioeconomic impacts of hydroelectric dams on downstream communities of the Athabasca Watershed and rural communities in Thailand. It examines the influence of hydroelectric development in communities near The Peace River (British Columbia, Canada) and the Mun River (Thailand). The objectives are to develop a better understanding of the importance of place to fishing livelihoods in the lower Mekong and determine how places and the relationship of people to these places have been affected by hydro-electric development in the lower Mekong. Most of the knowledge shared may be socio-cultural and economic. It might also be ecological and include information about water flow, fish ecology etc. These socio-economic and ecological perspectives are interrelated as ecological impacts have a major effect on households and communities reliant on the river for harvesting food, water, jobs, and development

Local Fishers Knowledge, Cultural Values and Governance in the Lower Mekong (Thailand) and Lower Fraser River (Canada)

Carrie Oloriz, MA in Environmental Management, Royal Roads University

The goal of this proposed project to learn more about the role of Traditional Ecological Knowledge (TEK), cultural values and management practices in decision-making about the sustainability of fish and fishing livelihoods in the Lower Mekong River (Thailand) and Lower Fraser River (Canada). The two specific objectives are to determine: a) what and how TEK is being systematically generated about culturally valued fish species that are currently 'endangered' (e.g., Giant Catfish *Panasianodon gigas* 'pla buek' and the White Sturgeon *Acipenser transmontanus* 'Skwo:wech'), and b) how this knowledge is influencing governance of fish and fishing livelihoods at different scales. Oloriz hopes to learn from local fishers and decision-makers about different aspects of Traditional Knowledge, cultural values and their potential role in governance. Most importantly, she would like to contribute to the sustainability of local ecosystems, fishing practices and livelihoods.

LOWER AMAZON PRESENTATIONS

Renato Silvano and Priscila Lopes

Then a brief overview of the Brazilian Amazon and of the Tapajos River where we will be working and then I will briefly present some new and preliminary research data, and then plans and ideas for the next activities related to our project in the Amazon. The work in the Amazon is taking a more quantitative approach, as they have to provide data to deal with government control of the fisheries and biodiversity of the Amazon. This project is currently focused on the Tapajos River - a large clear water tributary of the lower Amazon. This area has been less studied than other rivers in the Brazilian Amazon. It has many communities and different kinds of management systems. And the fish is important, for food locally and it has been threatened by some large-scale development projects, especially dams.

Arapaima co-management: reconciling biodiversity conservation and human well-being in the Amazon region?

Carolina Tavares de Freitas, MSc in Biological Sciences, Universidade Federal do Rio Grande do Norte
Arapaima (*Arapaima* spp.) is the largest freshwater scale fish in the world and an iconic element of the Amazon region. This fish has high ecological, economic and cultural value to Amazonian ecosystems and people. Since the 2000s, arapaima fishery has been banned in Brazil except under a collaborative management plan approved by the government. Arapaima co-management initiatives are proliferating throughout the Amazon and seem to be an important tool for biodiversity conservation, poverty alleviation, and gender equality in fisheries. On the other hand illegal arapaima fisheries are still quite common, and we know very little about arapaima stocks and conservation status. In my PhD I intend to evaluate the historical trends of arapaima stocks in the Brazilian Amazon, and to assess the ecological and socioeconomic impacts of arapaima co-management. Data collection will be based on interviews with local people from three important tributaries of the Amazon river (Juruá river, Purus river and Negro river), and on records from the Brazilian Environmental Agency (~15 years data).

Tracking Change... Global Knowledge Symposium

22 February 2017: Day 2 of the Symposium

Faculty of Liberal Arts Building, Ubon Ratchathani University

SYNTHESIS AND DISCUSSION

Trends and Patterns of Change in the Mackenzie, Mekong and Amazon

Brenda Parlee, Ian Baird, Renato Silvano

Although the river systems and cultures, communities, economies are seemingly very different in the three basins, there were some key similarities, some over-arching issues. There are different methods being used. The overarching goal or why we're here is to determine or demonstrate the importance of local and traditional knowledge to our understanding of social-ecological change in the Mackenzie River Basin, as well as the Mekong and Amazon, and to determine how that knowledge might be better integrated in decision-making. So we talk about social and ecological change. We talk about people and environments. That work is very grounded in place, very grounded at the local level, and on community-based research. But this is also an opportunity for us to build a stronger networks of seeing how that work at the local level is connected together.

We heard a lot about the strong connections between the sustainability of communities and freshwater ecosystems, very rooted in beliefs are cultures, experiences that people are connected to each other and to the river systems in very different ways. There are strong social relationships, cultural norms, identities, but a strong focus, particularly in the Mekong and the Amazon, on the economy—the economic value of fish for local communities. And, of course, that's also true across the Mackenzie. We know that it's particularly in areas where caribou populations have declined. If you are a fisher, you are tremendously important source of food for communities. That's a starting point in terms of why this research matters and what we might be able to say from the work that we're doing. What is the significance of freshwater ecosystems and fisheries to people?

Second, people are very connected to place. But those relationships are not static. We're not talking about historical kinds of relationships; we're talking about very dynamic kinds of relationships that people have to each other and to the freshwater ecosystems, including the fishery. So flexibility in terms of seasonality—you know from season to season people are harvesting different things, doing different things relating to their environment, and in different ways. There are also different kinds of variability that happen over many years. And, of course, the big concern being the changes that are happening now—stresses from climate change and resource development.

A common thread is the common concern about hydroelectric development in all three basins. A lot of development has already happened in the Mekong and in the Mackenzie, and that's well-established in the Amazon as well. So that that seems to be an overarching similarity in terms of a stress or disturbance. Mining and petroleum extraction in the Mackenzie; it is becoming a concern in the Amazon.

A very common story across the Mackenzie presentations are climate-related observations: warmer water, thinner ice slumping in erosion events, very common right across the basin.

There are many implications of loss or changes for biodiversity. Changes in accessibility to resources, but also political boundaries, political or regulatory reasons. There are losses also in terms of culture and heritage resources, which has implications for cultural practices as well—loss of traditional knowledge and language being a critical concern. Then there are also changes in social relationships and social networks—e.g., in the Mekong, hearing more about world urban migration changes and the way that families and communities work together.

The themes are a little bleak. But there are a lot of ways that we can change the conversation and think about, e.g., what are the governance opportunities?, what are the ways in which the store ship of these lands and resources that we can work together maybe to influence some of the policy or management practices that are happening in terms of government?

What elders and youth were so fundamentally involved in, all of them can see projects and have an important voice. So engagement of youth is very important.

What are the oral histories and cultural narratives tell us about ways to manage these regions in a sustainable way? And how do those fit or not with what the provincial or territorial governments in Canada, or the federal government are doing? How do we reconcile some that lack of what I call lack a fit between what's going on at the local level or what's going on at higher level scales? And certainly that's a theme, I think, in the Amazon and Mekong as well that we could explore. How do we move forward to make change to ensure that future generations can live and maintain that relationship to the Mackenzie, Mekong, or Amazon river basins?

In the Mekong, climate change may be affecting things somewhat, but communities don't talk a lot about that. If they do talk about climate, it's a relatively minor issue compared to the massive impacts of hydropower dams, which is really the big issue if you compare the impacts of hydro to climate change, at least for what we work. So situations are quite different, in different places, and it's important to understand the politics associate with each basin.

We've talked a lot about the problems. It seems that we have already a lot of information about the main problems in all three places, but how to think about possible solutions. In the Amazon, the government has to be involved; the community cannot enforce themselves.

We have some common issues. So we should focus on those and prepare a stronger message from one or two basins to influence to decision-makers from all three basin

Leon Andrew closed the session with a few words spoken on behalf of the Mackenzie River Basin Board Traditional Knowledge and Strengthening Partnerships Committee. There has been a lot of information exchanged, and it is up to this project to make this knowledge known so that there can be benefit to the communities and the basins.

THEMATIC CONNECTIONS – SMALL GROUPS

Fishing Livelihood Small Group Activity 1

Climate Change –Chelsea Martin and Jennifer Fresque Baxter

Three main questions were discussed: what are the changes, how are they impacting you, what are we going to do about it Some changes: inconsistent weather, more storms, not much snow, wind, temperatures. Very Mackenzie specific group. Mackenzie group has a lot of climate groups: hunting is affected, travel is affected. Also impacts Mekong and Brazil, e.g., monsoon season. People often talk about changes in weather, most often attributed to e.g., local deforestation or other forms of land change, rather than talking generally about climate change. It is difficult to separate the two.

Food Security – Ian Baird, Akarath Soukhaphon and Abby D'Souza

Discussions focused on the similarities and differences re. what food security means: empowerment, options available, confidence in traditional food sources, health concerns, perceptions of what is healthy for foods. How people can make adjustments in life to find what is missing; adjustments to country foods as well (100 mile diet). One of the themes that came up in groups was generally about meaning of terms. Grounding the terms in local meanings and practices will be important.

Resource Development Impacts – Art Napoleon, Melody Lepine, and Neal Spicer

A major part of the discussion focused on systems in dealing with regulatory projects are designed to allow for resource projects to limit community participation in the process, so often communities are in a reactive mode, responding to impacts after the project goes ahead. They are not included in decision-making roles. Solutions: collect information (community-based monitoring, so you are ready to share info when the time comes); mitigation strategies, etc. (example of non-functioning fish ladders... could have been involved in planning). The EIA process in Mekong region is focussed on transboundary assessment; initiating that local people involved in the impact assessment process as key actors in the assessment; they come armed with knowledge. The burden of proof is placed on communities... so communities need to be prepared.

Fishing Livelihood Small Group Activity 2

Culture and Well-being –Joella Hogan, Cleo Reece

His discussion focus on: what are the indicators of health and well-being and what adaptations can be used; what can we control; what can be done. How do you preserve a culture (you have to live it in order to pass it on, e.g., language has to be taught and learned at home to be transferred fully and in context). Emphasized was the importance of communities and people to make decisions on development. Not only physical places that are important, but also knowledge and stories about places.

Signs and Signals of Environmental Change – Fikret Berkes, Renato Silvano and Carrie Oloriz, Carolina Freitas

In this session, participants built tables of indicators based on studies of local knowledge. Some indicators needs to be more specific to certain groups. There is a need for both general indicators across basins, and more specific ones for each basin and sub-basin or cultural group, etc. Information generated out of the workshop will be provided to all, and ask for input – e.g., are these indicators specific or general, and whether there are also scientific indicators that are as important as the community indicators. Indicators.. signs and symbols community members are seeing to track change. More interested in community member's perspectives rather than scientistsbut they are not mutually exclusive.

Governance – Kristine Wray, Tracy Howlett and Shalene Jobin

Participants focused on the governance of good relationships: the importance of personal governance, and the governance of good relationships then translates that good governance collectively... from individual to communities, inter-nation governance, etc. Indigenous peoples need to go through their own dialogue process before they can negotiate with others. Importance of control (self-funded) and grassroots movements. The role of runners (sharing information between communities); kitchen table governance. What are the governance principles from the ground up that are similar in other basins?

POLICY CONTEXTS

Jennifer Fresque Baxter, Tracy Howlett, Yamin Muhammad

Vera Nicholson: Mackenzie River Basin Board (MRBB)

In Canada, water management is managed by the federal government, the provincial and territorial governments, municipal government and indigenous governments under land claim agreements.

Jennifer Fesque-Baxter: NWT Water Stewardship Strategy

Aboriginal Steering Committee had input into all of the strategy. Water is the heart of the aboriginal people. Two-eyed seeing approach to the 'State of the Health of the Mackenzie River Basin.'

Tracy Howlett: Participatory Monitoring in the Government of Alberta

New initiatives. Indigenous Wisdom Panel is backed up with legislation is a major change and commitment in Alberta.

Yamin Janjua: DFO's Integrated Aboriginal Policy Framework

Recognizes Aboriginal Traditional Knowledge in e.g., Aboriginal Fisheries Strategy and Aboriginal Aquatic Resource and Oceans Management Program, and Aquatic Species at Risk Program. Aboriginal Fund for Species at Risk. Canadian Science Advisory Secretariat Regional Advisory Process also recognizes TEK in its work.

SYNTHESIS

What do we know about Local and Traditional Knowledge in Watershed Governance?

WORKING SESSION: PLANNING for 2017

IDEAS FOR MOVING FORWARD FROM THIS MEETING

- add qualitative knowledge to the data
- water strategy for the Mackenzie River Basin
- continue to learn from each other about ecosystems and research methods
- ongoing dialogue and engagement across the basin; an annual dialogue
- continue to learn about watersheds in other parts of the world
- workshop on governance issues
- opportunities for learning from each other for best practices; youth
- community of Practice;
- encourage adaptation; hold youth and elder camp
- work with the communities to make a difference
- worldwide water ceremony that will encompass all the people
- integration of this information into core social science
- create a story book to document history for youth
- recognition of livelihoods as a means of resilience
- place names research
- bring experiences south of 60o
- introduce government to TEK and inspire them to work
- turn work doing into real changes in the communities so they can realize positive results
- more sharing and communication on research methods and actions
- find ways to empower communities and see how this work can help them affect change
- more funding to continue work and make sure TK is always recognized
- local guardianship and increasing capacity to answer own questions
- continue to push for role of TEK in decision-making, education government scientists on this work
- share what happen, relating that 'brothers' in the world experience the same issues...
- revisit water strategy to make sure it's grounded in traditional values
- more youth involvement

We must think of this as a learning community – bringing different kinds of knowledge and focus on positive outcomes of our meetings. Communicate this knowledge in different ways to different communities.

Tracking Change... Global Knowledge Symposium
23 February 2017: Day 3 of the Symposium and Kan Puay Village Visit
Faculty of Liberal Arts Building, Ubon Ratchathani University

WRITING WORKSHOP

The research team is working on a number of outcomes: Community reports; special issue of a journal, academic papers, methods documents, databases, video projects, webinars, etc.

Principles:

- Co-author with community members (giving some backup for e.g., EIA hearings, etc.).
- Respect and honor the IP of ourselves and others (OCAP)
- Community reports –respect the voice of community members
- Intellectual property rights are critical to the discussion

PUBLISHING AREAS OF FOCUS:

- Working with communities (Wray)
- Community-Based Methods for Better Outcomes (Parlee)
- Food Security and Livelihoods (Berkes)
- Scale for Food Security Policy (Fresque-Baxter)
- Resilience to climate change (Poesch)
- Culture and Well-Being (Parlee)
- Best Practices in Community-based Research (Wray)

OVERALL MESSAGES:

- Environmental Indicators
- Impacts of Hydro on Fisheries
- Discourse on Green Energy
- Downstream Impacts of Hydro Electric Dams
- Role of Indigenous Policies and Laws in Shaping the Development Discourse (or in shaping ecological integrity) (McLean)
- Assess the Importance of Migratory and Sedentary Fish in the Basins (Silvano)

Kho Tai Village Knowledge Gathering and Visit to the Pak Mun River Dam and Tour with EGAT: Electricity Generating Authority of Thailand

Kan Puay village of Sirinthorn District, Ubon Ratchathani Province, Thailand is located on the left bank of the Mun river. The village has been severely affected by the Pak Mun dam, one of the most controversial dam in Thailand's development history. The village is about 7 kilometers far from the confluence with the Mekong mainstream. The village has modest facilities, including electricity, tap water, toilet, (mostly latrine), bucket showers, cement jars, paved road. Temple and school are inside the village. Head of the village, senior leaders, leaders of ceremonies like mediator (*Chum*) between humans and spirits, local wisdom leaders and general villagers were greatly cooperative in my field based learning I had been running for the master students from International Water Center of University of Queensland, Australia. Villagers did not hesitate to give student's information and perspectives about water related livelihoods even it was in an early morning or late evening despite villagers had been so busy on their household's farming activities such as harvesting cassava, fishing and hiring labors. The abbot, teachers, children, local health officers and community health volunteers also were very supportive of this learning opportunity.

VILLAGE VISIT

Pak Mun dam museum: exhibit

Meeting with 7 fishers who have been protesting the dam

NGO spoke about changes in their lives and livelihoods.

Visit Pak Mun dam on the way to the village

Water Ceremony at the Pak Mun Dam by Cleo Reese.

Sunset at the Village

Dinner at the temple

Overnight in the temple

Morning 5 -6 am: Tour on fishing boats

Breakfast

"Calling of the soul" ritual performed by villagers

Lunch at EGAD office: hear talks about the Pak Mun Dam

Return to Ubon Ratchathani

Tracking Change... Global Knowledge Symposium

STUDENT POSTERS

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

From the Mekong source to its delta, the river travels 4,909km. Along the Mekong, local communities utilize the river in different ways; it is a source of life, providing food, transportation, and security of life. There are over 60 million people who directly depend on its rich natural resources. The lower basin is the most productive fresh-water fishery in the world. Along the Thai-Lao-Cambodia border, complex ecosystems, including those centered on rapids, whirlpools, beaches, and tributaries, are the important fishing grounds for local communities. This research focuses on fishery resources and knowledge management, and how to empower local wisdom. Research sites cover the Pak Mun Dam in Thailand, Donsahong Dam in Southern Laos, and Tonlesap areas in Cambodia.

D'SOUZA, Amabel, MSc in Risk and Community Resilience, University of Alberta

Collaboration with: Treaty 8 Tribal Association / Ubon Ratchathani University; Brenda Parlee – Supervisor

The Impact of Hydroelectric Development on Rural Communities near The Peace River and the Mun River

Rural communities bear the majority of the burden when it comes to the impacts of hydroelectric dams. For communities utilizing the land for their livelihood, this can be extremely detrimental. This research focuses on the socioeconomic impacts of hydroelectric dams on downstream communities of the Athabasca Watershed and rural communities in Thailand. It examines the influence of hydroelectric development in communities near The Peace River (British Columbia, Canada) and the Mun River (Thailand). The objectives are to develop a better understanding of the importance of place to fishing livelihoods in the lower Mekong and determine how places and the relationship of people to these places have been affected by hydro-electric development in the lower Mekong. Most of the knowledge shared may be socio-cultural and economic. It might also be ecological and include information about water flow, fish ecology etc. These socio-economic and ecological perspectives are interrelated as ecological impacts have a major effect on households and communities reliant on the river for harvesting food, water, jobs, and development

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

Given the vulnerability of northern ecosystems and communities, socio-ecological changes in the Mackenzie Delta region of the Western Arctic have a significant impact on Inuvialuit fishing livelihoods. Local and traditional knowledge from the Inuvialuit Settlement Region offers an opportunity to learn about change in this part of the Basin which is the furthest down-stream jurisdiction. Drawing on an analysis of peer-reviewed and grey literature, and qualitative interviews conducted with 10 fishers from the communities of Aklavik and Inuvik, we examine how Inuvialuit fishers track and understand change in the Delta. Themes covered relate to a) determining importance of Mackenzie Delta fisheries for Inuvialuit subsistence and livelihoods, b) documenting Inuvialuit knowledge about change regarding fish habitat and fishing conditions, and c) identifying how fishers track and monitor changes in the Delta. We identify a range of temporally-and seasonally-sensitive indicators used by local fishers. Changes are observed in water temperature, water levels, slumps, fish quality and delta-reliant wildlife populations.

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

The presentation discusses local and traditional knowledge (LTK) related to the Athabasca Basin watershed as well as the social economy of the region. Within the Athabasca Basin Region, as in many other Indigenous communities, the social economy encompasses the notion of environmental stewardship. The first objective was to investigate and document the meanings of the social economy from the perspective of LTK holders in the Athabasca Basin watershed. The second objective was to identify 'wise' Indigenous practices related to the successful development of the social economy of the Athabasca Basin watershed.

**KOUKOUZIKIS, Kostas; MA in Human Geography, University of Alberta
Brenda Parlee / Robert Summers – Supervisor(s)**

Everything flows in Baan Don Samran? From lower Mekong river to human mobilities

Development induced displacement affects many people around the world including fishing villagers in Thailand in the lower Mekong. Many families and communities were affected by the Pak Mun dam. A key area of concern is how such displacement has affected their ability to sustain their livelihoods in the region including fishing livelihoods. The aim of this research is to explore how human mobilities interact with livelihoods and development in communities such as Baan Don Samran, Khong Chiam, Ubon Ratchathani. The thesis would focus on different theories of human mobility and displacement. To inform this theory, the key objectives for this fieldwork are to: a) Determine the impact of the Pak Mun River Dam on fishing households/villages by investigating the dynamics of social mobility before and after the construction of Pak Mun dam; b) Determine the ways in which environmental changes associated with the Pak Mun River Dam influenced livelihood options and choices; and c) Determine the ways in which development of hydro-electric development projects in South East Asia can better account for the costs of displacement of marginalized populations. Most of the knowledge shared may be socio-cultural and economic. It might also be ecological and include information about water flow, fish ecology etc. These socio-economic and ecological perspectives are interrelated as ecological impacts have a major effect on human mobilities.

**MARTIN, Chelsea, MSc in Risk and Community Resilience, University of Alberta
Collaboration with: Sahtu Renewable Resources Board; Brenda Parlee – Supervisor**

Sahtu Got'ine Traditional Knowledge: The Impact of Climate Change on Fishing Livelihoods

This presentation discusses a project developed with the Sahtu Got'ine of Deline. The Sahtu Got'ine of Deline have, over many generations, developed valuable knowledge, practices and institutions that are deeply integrated with their spiritual worldview; Great Bear Lake for example, is conceptualized as the source or 'heart' of the community and their livelihood. Traditional knowledge about local ecosystems including ecosystem dynamics is important to the continued sustainability of fishing livelihoods in this region and in many other northern communities. As the stresses of climate change and resource development grow, this knowledge will become even more important to the community and others concerned with the sustainability of the arctic environment.

**OLORIZ, Carrie, MA in Environmental Management , Royal Roads University
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)

The goal of this proposed project to learn more about the role of Traditional Ecological Knowledge (TEK), cultural values and management practices in decision-making about the sustainability of fish and fishing livelihoods in the Lower Mekong River (Thailand) and Lower Fraser River (Canada). The two specific objectives are to determine: a) what and how TEK is being systematically generated about culturally valued fish species that are currently 'endangered' (e.g., Giant Catfish *Panasianodon gigas* 'pla buek' and the White Sturgeon *Acipenser transmontanus* 'Skwo:wech'), and b) how this knowledge is influencing governance of fish and fishing livelihoods at different scales. Oloriz hopes to learn from local fishers and decision-makers about different aspects of Traditional Knowledge, cultural values and their potential role

in governance. Most importantly, she would like to contribute to the sustainability of local ecosystems, fishing practices and livelihoods.

**PROVERBS, Tracy; MA Collaboration with: in 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***

Arctic communities are experiencing rapid climatic and social change. In the Gwich'in Settlement Area, environmental change is affecting regional ecology, altering hydrological and terrestrial systems through changes like permafrost thaw and shifts in vegetation. These changes are coupled with social shifts stemming from development pressures, and the arrival of European settlers, traders and missionaries in the mid-19th century. In partnership with the Gwich'in Tribal Council (GTC), Gwich'in Renewable Resources Board and the GTC Department of Cultural Heritage, we are exploring the following research questions: 1) How are environmental and socioeconomic changes affecting Gwich'in fishing livelihoods in the Gwich'in Settlement Area? And, 2) What is the current overlap between environmental disturbances and cultural resources in the Gwich'in Settlement Area? The first question will utilize land-based observations and interviews to elicit land users' observations of changes to fishing livelihoods, and assess how these changes are, or have the potential to, affect community well-being. To address the second question we are utilizing spatial overlay analysis to examine overlap between areas of cultural significance and environmental disturbance in Gwich'in territories. The findings from this research will increase our understanding of regional socioecological change, inform cultural and resource management decision making, and foster adaptive capacity.

**SIRASSAK GAJA, Svasti (Toe)
MA Candidate in Sociology, Ubon Ratchathani University
Ian Baird – Supervisor**

Fish Consumption in the Context of Community Change in the Tributaries of the Mun River

This research examines the consumption of fish by communities living along the tributaries of the Mun River. The objective of this research is to analyze why and how fish consumption has changed in the area. For this research, Ban Dum Yai in Lam Se Bok Tributary and Ban Bung in Huay Khayung were selected as study areas. The study found that communities that experienced changes as a result of various development schemes had to adapt aspects of their food production that worked within a capitalist society. These aspects are, for example, the development of new water resources, agricultural production for markets and other activities beyond agricultural domains. Nevertheless, fish consumption continues to be an important part of the livelihood strategies of these communities and continues to make up half of their protein consumption. More than 70% of the fish consumed are found in the natural water resources near these communities. This helps save a significant amount of money spent on food for local households. Moreover, fish remain an important source of income. Fishing also plays a significant role in shaping kinship relations between people in the tributaries.

**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

The Mekong River and its tributaries has long been a source of vitality for those living along banks. It has also served as a conduit for material and intellectual exchange throughout history. Today, the river draws interest from both ecologists and developers due to its biodiversity and energy potential. As the Mekong Subregion undergoes greater transformation, there is a need to understand how such transformations impact local stakeholders. My research explores the pedagogical history of Lao communities in northeastern Thailand, southern Laos, and northeastern Cambodia in light of environmental change and major development projects. I am interested in how technology, international borders, and ideas of indigeneity, identity, and landscape have complicated or facilitated discourses of acceptance, acquiescence, and resistance in and among these communities.

TAVARES DE FREITAS, Carolina, MSc in Biological Sciences, Universidade Federal do Rio Grande do Norte

Priscila Fabiana Macedo Lopes – Supervisor

Arapaima co-management: reconciling biodiversity conservation and human well-being in the Amazon region?

Arapaima (*Arapaima* spp.) is the largest freshwater scale fish in the world and an iconic element of the Amazon region. This fish has high ecological, economic and cultural value to Amazonian ecosystems and people. Since the 2000s, arapaima fishery has been banned in Brazil except under a collaborative management plan approved by the government. Arapaima co-management initiatives are proliferating throughout the Amazon and seem to be an important tool for biodiversity conservation, poverty alleviation, and gender equality in fisheries. On the other hand illegal arapaima fisheries are still quite common, and we know very little about arapaima stocks and conservation status. In my PhD I intend to evaluate the historical trends of arapaima stocks in the Brazilian Amazon, and to assess the ecological and socioeconomic impacts of arapaima co-management. Data collection will be based on interviews with local people from three important tributaries of the Amazon river (Juruá river, Purus river and Negro river), and on records from the Brazilian Environmental Agency (~15 years data).

WONGPINIT, Wannapa

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

The study focuses on gender and fishery knowledge along the Mun River, wetland areas, and Si Phan Don (Four Thousand Islands) in southern Laos. Many scholars have addressed that fishing activities in the areas are very crucial for local livelihoods. Males and females have different knowledge on fishing, depending on their roles ecological systems, development activities and policies of water resource management.

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

Efforts to link traditional knowledge and science to address issues of environmental change are increasingly common across the circumpolar north. This is particularly true in respect of building and interpreting evidence about historic ecological variability. While much of this kind of knowledge integration and co-production has developed in respect of wildlife species (e.g., barren ground caribou), little work in northern Canada has been done in relation to freshwater ecosystems and valued fish species such as lake trout and loche. Guided by social science research methodologies developed in marine ecosystem (e.g., east coast cod fishing communities) and techniques for otolith analysis, I am working collaboratively with the Akaitcho and Deh Cho communities to develop oral histories about fish population dynamics and health in different areas of Great Slave Lake and link the stories about the health of fish in their region to scientific data.