

DEHCHO FIRST NATIONS



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Ka'a'gee Tu "A Return to Country Food - Kakisa" Meeting and Workshop Report

August 27 to August 29, 2013

Kakisa, NWT

Community Conference Room and the Great Outdoors

Background

The 2013 "Return to Country Food workshop" was an important meeting for the leadership, for AAROM and for our research partners. Dehcho AAROM with the wealth of traditional knowledge of the First Nations and Metis Nations have already found some lakes that are safe sources of fish and we also know what species are generally low in contaminants. We got together to discuss: how the Dehcho membership feels about the water and fish in their territory; preliminary results of the "Country Food Diet Survey", how to proceed with contaminant research and monitoring; which lakes and rivers are safe sources of fish; and why there are fluctuations in mercury levels in fish. We also explored ways to encourage Dehcho members to include healthy food such as fish in their diets.

Workshop Objectives

- Learn from the wealth of knowledge of the presenters and community delegates.
- Review where we are now in regards to available data on contaminants in water and fish;
- Review consumption advisories and their implications;
- Presentation and discussion of the Dehcho Country Food Diet Survey;
- Discuss the availability of low risk species and fisheries;
- Discuss where contaminants originate and how they get into our aquatic eco-systems;
- Explore educational tools to promote the understanding of mercury pathways and issues;

- Explore the questions: Where do we go from here? What information do the communities need? What research and monitoring is required to address community issues and concerns? Are we measuring the right things?
- Discuss the power of partnering;
- Promote a better understanding of the risks and benefits of including country food in the diet.

Executive Summary:

- The workshop was considered a huge success and everyone appreciated the wonderful hospitality provided by the Ka'a'gee Tu First Nation and the community.
- The AAROM program receives core and fisheries based project funding from DFO but it also works with other partners which include;
- AANDC, Northern Contaminants Program (NCP),
- AANDC, Cumulative Impact Monitoring Program (CIMP),
- Health Canada, Climate Change and Health Adaptation Program,
- GNWT-ENR, Lands and Water Division and
- GNWT, Transportation, Highways
- The workshop provided an excellent opportunity for Dehcho leadership, environmental coordinators, community members, university, and government researchers to meet and share ideas and opinions;
- To better understand community concerns arising from fish consumption guidelines and media reports on mercury issues, a survey was designed to collect information from Dene and Metis members regarding country food in their diet, the types and amounts of fish consumed, as well as questions on contaminant perception, including community water concerns. The survey was completed in Sambaa K'e, Ka'a'gee Tu, Jean Marie River, Liidlii Kue in 2012 and in Fort Providence and Pehdzeh Ki in 2013. Preliminary results were available; complete results will be summarized in a final report;
- The Dehcho membership gets most of their information regarding contaminants through the radio and newspapers (e.g. The Dehcho Drum). CBC Dene language programming and AAROM meetings and youth outreach camps were considered good ways too;
- Given the continued high use of country foods, including fish, it is clear that the type of research being carried out by AAROM, GNWT, and their university partners is of high value to the communities and the Dehcho as a whole;

- Dehcho research is extensive and is providing a wide range of data and information that can address current questions but can also be used in future for land, water, and resource management decisions;
- Mercury contamination in fish is a complex issue, with a range of variables, so communication to the public must be carefully crafted and not alarmist, so that people continue to feel confident about eating fish on a regular basis but also take reasonable and pragmatic precautions;
- Climate change has started to impact the Dehcho, and more research is need to better understand, predict, and manage the impacts of change on fish populations, country food in the diet and the environment generally;
- Research continues to benefit from collaboration and a strong working relationship with communities to ensure First Nation interest, direction, and engagement;
- In the past, food provided a physical and spiritual connection to the land. Traditional food is not just diet but a way of living. Since the shift to a wage economy and to store food, health issues such as heart disease, diabetes, and cancers have come to the North;
- Leadership feels that Science education outreach should be layered on top of “Traditional Knowledge” rather than the reverse. Researchers think it should also emphasize the link between land and water;
- Leadership acknowledged that the presenters have helped by providing supporting information but that the communities have to do their part by getting out on the land.

Recommendations:

- Continue to identify lakes and species of fish with low or moderate levels of mercury and advise the Dehcho membership as to where they can harvest low risk fish;
- Promote back to the land activities that include fishing but also encourage Dehcho Youth to stay in school and “Stay Strong Like Two People”;
- Continue to explore the trend of increasing levels of mercury in predatory fish in some Dehcho lakes, to better understand the processes that can drive mercury bioaccumulation in the food chain;
- Where necessary find ways to mitigate mercury levels in fish such as increasing harvest rates, fishing down stocks, or with aeration;
- The impact of permafrost melting is still not clear. More work is needed;

- Develop ways to communicate a more balanced understanding of NWT-Health and Social Services fish consumption advisories;
- Encourage Dehcho members, both young and old, to continue to eat fish and reassure them that by staying informed and by making healthy choices they can safely use regional fish stocks;
- Support initiatives such as the Deh Gah School “Healthy Snack” program and advance the idea in other communities in the Dehcho. Get youth involved with harvesting camps and have them bring back fresh and dry fish to the elders along with the message that fish is still safe to eat;
- In partnership with Health and Social Services design and deliver a program to test Dehcho membership for mercury levels and relate this to their level of fish consumption;
- Expand the AAROM and ENR-Land & Water Division monitoring partnership and deploy sondes and passive samplers in the Jean Marie, and South Nahanni Rivers as well as Trout Lake and the Mackenzie and Liard rivers. Could this be done a part of the winter planning process?
- Basic science initiatives such as biological surveys should be supported not just contaminant studies;
- Develop site-specific water quality guidelines for the North;
- Contact Dr. Gary Stern, University of Manitoba regarding the status sediment core and burbot analysis;
- Use the ENR calendar to profile the AAROM program;
- Design a food pyramid poster to promote eating fish that are lower on the food chain;
- Check on the status of the GNWT-HSS community visits to further explain advisories;
- The 2014 “Keepers of the Water” conference is considered a good forum to advance concerns but it was felt that an initiative of the magnitude should be handled at the DFN level.
- Run the Country Food workshop again next year.

Good Quotes
(Link to Pictures?)

Capacity building initiatives provide community monitors safety and on-the-job training. “They’re project ready – summer or winter”.

Youth training and the monitor/mentor programs will create the “Leaders of the Future!”

People armed with knowledge, both traditional and scientific, have the power to affect regional, national and international policy. “Are we ready?”

Dehcho members are the eyes and the ears in the region. “Please report anything unusual you notice about fish”.

“It is important to compare the risks associated with eating fish that have relatively high mercury levels to other food source options”.

“We better understand what is happening so that we can better predict things”.

If the message is unclear people get alarmed and then the signs don’t help. “Watch the Message”!

“It’s important that we keep a close eye on fracking”

“It takes a long time to analyze the samples and work up the data”!

“I learned a lot, never too old to learn about fish, climate, etc. I will report back to the community”.

“If the government supports exploration why not “Country Food” programming?”

Participant List

Angus Sanguéz	JMRFN/AAROM Monitor
Henry Tambour	KFN/Delegate
Joe Lacorne	DGGDB/DWEAC Member/Fort Providence
Chief Joachim Bonnetrouge	DGGDB/Fort Providence
Joseph Haleschuk	LKFN/Delegate/ Fort Simpson
Ted Cayen	WPFN/Delegate/West Point FN
James Cayen	WPFN/Delegate/West Point FN
Chief Stanley Sanguéz	JMRFN/
Charlie Tale	PKFN/AAROM Monitor/Wrigley
Victor Jumbo	SKDB/AAROM Monitor/Delegate/Sambaa K’e
Margaret Jumbo	SKDB/Delegate/ Sambaa K’e
Danny Peterson	Fort Simpson Metis/DWEAC Member
Chief Mike Matou	Nahanni Butte Dene Band
Romeo Betsako	Nahanni Butte/Observer
Chief Lloyd Chicot	KTFN/ Ka’a’gee Tu First Nation

Michele Lafleur	KFN/Observer
Allen Bouvier	LKFN/Environmental Director/Liidlii Kue FN
Ernest Hardisty	JMRFN/AAROM Monitor/Jean Marie
Carl Elleze	DGGDB/AROM Monitor/Fort Providence
Albert Nedli	DGGDB/AAROM Monitor/Fort Providence
Priscilla Canadien	DGGD/Resource Manager
John Farcy	Fort Providence/Observer
George Constant	Fort Providence/Observer

Presenter List

Peter Redvers	Moderator
George Low	Dehcho AAROM Coordinator
Mike Low	Dehcho AAROM/Technical Advisor
Deanna Leonard	DFO Fisheries Management Biologist
Katarina Carthew	GNWT-ENR Lands & Water Division
Marlene Evans	Environment Canada/Scientist
Heidi Swanson	University of Waterloo/Scientist
Bob Hanley	GNWT-Health and Social Services
Mike Wilkie	Sir Wilfred Laurie University/Scientist
Elsie DeRoose	GNWT-Health and Social Services
Bruce Townsend	Recorder/BEAT Environmental
Mike Palmer	AANDC-CIMP

Visitors

Blair Carter	U of Waterloo/Observer
Ryan Baumann	U of Waterloo/Observer
Pete Cote	Yellowknife/Observer

Day 1

1. Prayer

2. Chief Lloyd Chicot welcomes delegates.

3. Around the table introductions.

4. Facilitator Peter Redvers reviews the agenda and instructs the presenters.

Peter reviewed the agenda and also last year's report. He asked for inputs on how/if last year's issues were resolved. He instructed the presenters to tell their story and then he will open the floor for comments/questions.

5. George Low

Presentation Summary:

- The AAROM program started off in the capacity building phase, with various community based monitoring projects that included resident angler surveys, Great Slave Lake fishery studies and the first round of fish collections for mercury analysis.
- Expanded to include water sampling and stock assessments and summer monitors were hired in most communities
- As government and university partners and funding was established, and the program has expanded to include a broader range of water monitoring activities, contaminant studies, and a variety of coordinated and inter-connected ecosystem-based research initiatives that involve strong community participation.

George's Opening Address:

- Thanks to all of you for joining us here in Kakisa. It's good to see so many leaders and environmental managers here to represent the communities that are a part of the Dehcho AAROM program. I'm sure you will all bring a wealth of traditional and leadership knowledge to this forum.
- This workshop is the second in a series dealing with the topic of contaminants in the aquatic environment. The first was in Jean Marie River a year ago and it involved the six First Nations and two Metis organizations most affected by GNWT-HSS fish consumption advisories. This year West Point, Katlodeeche, and Nahanni Butte First Nations have been included and we have expanded the scope to include other contaminant issues.
- Some of the delegates at the JMR workshop thought that people were eating less fish due to life style changes but also due to concerns arising from fish consumption guidelines and the way the media reported mercury issues. In an attempt to increase communication and with the help of the Dehcho membership, Dehcho AAROM designed a survey to collect information on these issues.
- Health Canada funded "Country Food Diet Survey"; since the Jean Marie River Workshop last August, six First Nations participated in the community country food survey, funded by Health Canada Climate Adaptation program. The surveys were completed in Sambaa K'e, Ka'a'gee Tu, Jean Marie River and Fort Simpson and more recently in Fort Providence and Pehdzeh Ki. Dene and Metis members were asked questions on country food in their diet, types and amounts of fish consumed as well as questions on contaminant perception. We also asked about community water concerns.
- Mike will be presenting the results that he was able to summarize in time for this workshop. A final report will be produced at a later date.
- These workshops are always an education process for me and I hope for everybody attending. The forum provides government and university researchers the opportunity to learn more about current issues, community concerns and the traditional knowledge perspective. It also provides the opportunity to network with other researchers working in the Dehcho. The researchers in turn provide knowledge and information that promotes a better understanding of the ecosystem in which we live. I hope you find their presentations interesting and I look forward to the resulting discussions.

- So here's some background information. In the early 2000's Marlene Evans and other researchers started to see further increases in mercury levels in some fish in some of the previously studied lakes. Why? Climate change? Increased pollution? Changes in the mercury methylation process? Changes in harvesting practices? Researchers are working on answers.
- Chief Stanley Sanguetz recently told me that: "There is a concern in my community as to how climate change is affecting everything, the food chain and the country food that we love so much. I was hoping that we would talk about contaminants in a way that would not stop people from eating fish."
- Researchers are tackling these questions. A sediment core was taken in Trout Lake by a DFO scientist a couple of winters ago. Unfortunately the contaminants section at DFO, Freshwater Institute was cut. The researchers have now moved to the University of Manitoba but this has delayed the results.
- Heidi Sanderson, a professor at the University of Waterloo and her student, Ryan just started a three-year study to assess bioaccumulation and bio-magnification of mercury in the aquatic food chain of nine Dehcho Lakes.
- I feel that people need to be warned if there is a risk but also need to be reassured if the benefits outweigh the risks. I hope that is one of the messages we will continue to advance as a result of these workshops. Reassuring people when the risks are low. But, I'm no expert on human health issues so Robert Hanley with GNWT Health will be speaking about contaminants, especially mercury in fish a bit later. His colleague, Elsie De Roose who is a nutritionist will talk about the health benefits of including country food in the diet and help us make sense of the risks and benefits of including healthy fish in our diet.
- I was unsure if our AAROM program should get involved in a study that might further turn people off fish- such a good healthy food. But whenever I talked to the leadership or community harvesters there was always a deep concern about contaminants. Not only mercury but contaminants from mining, contaminants from upstream of the NWT; forestry, pulp and paper, agriculture, dams, and particularly the Tar Sands mega projects.
- Deanna Leonard is here on behalf of DFO along with Mike Palmer of AANDC, CIMP. They are collaborating with the Ka'a'gee Tu First Nation on fishery and contaminant monitoring studies in the Kakisa River watershed. Mike and Melaine Simba are on their way back from Tathlina on another data gathering sortie and we will hear about their work later in the workshop.
- Michael Wilkie is here to update us on permafrost studies going on in the Dehcho and other parts of the NWT.
- AAROM is an aquatic resource management program and we have been building capacity in the Dehcho communities with increasingly good results. The program deals with a variety of resource management concerns such as the Great Slave Lake fisheries management, expanding sports fisheries such as in Fort Providence and other communities and resource use in other areas.
- A couple of years ago, based on community concerns, we decided at AAROM that we should be monitoring basic water quality as a part of our community-based monitoring program. This is a long-term monitoring project which will allow us to see trends in temperature, dissolved oxygen, pH, and

other parameters along the Mackenzie River from Fort Providence through Jean Marie River, Liidlii Kue and now on to Wrigley. We also monitor Trout Lake and Kakisa and the Liard and are hoping to include the South Nahanni River.

- We have invested in some expensive equipment but more importantly we have invested in a partnership with the GNWT-ENR, Land and Water Division. This partnership involves our AAROM Technician Mike Low and Aurora College student Jason Horesay and they work with the Dehcho AAROM community monitors to deploy, maintain and retrieve water quality instruments and contaminant measuring instruments which record measurements on a continuous basis throughout the summer. Katrina Carthew is here to update us on the program.
- There is strength in partnerships and successful partners must each contribute and benefit from these relationships if these relationships are to endure. AAROM, I hope, is good at working with our Dehcho community partners. Capacity building initiatives have provided training in boat safety, environmental monitoring, stream assessment and on-the-job training of community monitors. The communities have been equipped with boats and safety and monitoring gear. They are project ready – summer or winter. More recently they are assisting with collection of water quality data.
- So AAROM and Dehcho communities have become good at collecting data for the most part. They are directly involved in our studies. Partners such as Environment Canada, Fisheries and Oceans and ENR, Lands and Water have the expertise to process samples, summarize and interpret data, produce reports and bring back the stories back to the communities.
- Bruce Townsend continues to develop and deliver youth education on aquatic ecology at our annual Youth Ecology Camp and other forums. He also instructs at Aurora College.
- DFO provides the AAROM program with core funding and fisheries based project funding. AAROM has become fairly proficient at finding funding partners such as AANDC, Northern Contaminants Program (NCP) and the Cumulative Impact Monitoring Program (CIMP), Health Canada, GNWT ENR and Transportation to name a few. That's the power of partnerships and hopefully that is what this workshop is all about. How can we work together? How can we pool our talents to make a difference; locally; nationally; internationally? Many of the problems in the Dehcho territory are caused by distant sources: up river contaminants; atmospheric fallout, climate change. Affected people armed with knowledge, both traditional and scientific have the power to affect national and international policy. Are we ready for that and are we doing some of it already?
- I just think we have reached the point in the AAROM program where the results of collaborative studies will provide First Nation and Metis decision makers with useful information for aquatic resource management. Some examples; results of the sports fishery harvest study helped the Deh Gah Gotie Dene Band to convince DFO to lower catch and possession for sports fish in the Mackenzie River Management area. KFN and West Point will be at the table when DFO develops an integrated Fishery Management Plan for Great Slave Lake. AAROM assisted in an Environmental Assessment of five lakes near JMR for a Protected Area Strategy.
- Welcome leaders, resource managers, hard-working government representatives, university researchers, youth and harvesters. I hope this is a productive workshop.

Comments/Questions from Participants:

Chief Stan Sanguiez thinks the work is very important but feels people are still scared and are worried about eating fish. He asked if Erin Kelly's passive samplers were deployed in the Jean Marie River and George answered that the initiative fell through the cracks. Katarina stated that she would make sure that Erin contacts Stan.

6. Mike Low:

Presentation Summary:

- AAROM coordinated the "Country Food Diet Survey" in six Dehcho communities. Not all the surveys have been processed yet but the Kakisa and Ft. Simpson returns were analyzed in order to have some preliminary data for this meeting

The Kakisa survey indicates that a high % of households harvest and use country foods, including fish, on a regular basis, and that country foods are a regular part of the local diet

- Ft. Simpson shows that country food use is less per household than Kakisa and they are more likely to be purchased fish from commercial fishers than harvest fish for themselves. However the majority of Dene/Metis families still harvest and use country foods.

Mike noted that Dehcho Dene/Metis get most of their info re: fish contaminants through radio and newspaper, especially the Dehcho Drum.

Comments/Questions from Participants:

- Priscilla Canadien asked why the survey was different for each community and Mike responded that the surveys were all the same.
- Stan Sanguiez commented on Burbot survey and the Mayo conference
- Peter Redvers asked if the survey distinguished between net or angling and Mike responded that it didn't. All methods were considered harvesting.
- George commented that they wanted to keep it simple. The focus was on fish consumption and risk perception and that participant's comments will be included in final report.
- Joachim Bonnetrouge commented that trends are changing and that the new generation is moving towards a wage economy. Harvesting costs are going up so the issue is more than cultural; economics now plays a big part. He gave the example of snaring rabbits and also commented that bacon is vicious stuff!!
- Peter Redvers stated that local people are selling fish and used the Kakisa processing plant as an example of this evolving trend. He asked for clarification of Mike's last slide as to how to get the message out. What about health centers?
- It was generally decided that radio and newspapers like the Dehcho Drum were a good option but unfortunately bad press has occurred too (News North headline stated, "Fish are Poison"!)

- Peter Redvers suggested that radio with Dene language programming would be a good idea too.
- George Low suggested that the Youth Outreach program would be a good way too.
- Stan Sanguiez expressed concern about the big fish and suggested getting rid of the bad ones with more fishing. But how do you get rid of the fish? Put them back on the land? It was generally agreed that increased fishing pressure affects growth rates and that advisories could affect fishing pressure – pressure down mercury levels up. However the bottom line would be to follow the guidelines and continue to eat the fish.

7. Deanna Leonard

Presentation Summary:

- Provided information on the fluctuation of walleye stocks in Tathlina Lake. It is a commercial harvest lake and this has led to DFO studies on this issue
- Provided an overview of the range of ecological factors that have to be considered in assessing the overall health of the Tathlina Lake walleye stocks, as well as other populations
- Noted the shift over time from simple stock assessments to ecosystem-based assessments, which is the type of assessment occurring at Tathlina at this time
- Also provided overview of mercury build up in fish (bio-accumulation) – noted that the real issue is not whether mercury is in fish or not, but the level or ‘dose’ of mercury in specific fish populations relative to human health concerns.

Comments/Questions from Participants:

- Joachim Bonnetrouge asked if forest fires affect mercury levels. Heidi answered that they can initially but as nutrient levels increase so does growth and it causes a dilution affect.
- Deanna reminded the participants that they are the eyes and the ears on the ground and asks for help reporting anything unusual with fish.

8. Katrina Carthew

Presentation Summary:

- Provided a brief overview of the development of the NWT Water Strategy and recent implementation of this strategy
- Main goals are community involvement in monitoring and water stewardship, responding to community questions and concerns, and generation of water quality data to better understand aquatic environment
- Reviewed monitoring activities currently taking place in Dehcho
- Provided information on the specific types of monitoring devices being used and the types of data that is being collected

- Results are preliminary but Dehcho waters appear to have very low contaminant levels.

Comments/Questions from Participants:

- Stan noted that the last slide showed high metal levels in the Peel River and asked about the cause. Peter stated that trans-boundary issues are important and asked if the Hay River will be included in upcoming surveys. Katrina indicated that it would be.
- George asked if a passive sampler survey was possible for Jean Marie River and Nahanni Butte sites. Katrina stated that she would pass the request onto Erin Kelly
- Katrina informed George that there was space in the ENR calendar to profile the AAROM program
- Romeo asked if too much dissolved oxygen could be a problem and was informed that too little was more of a concern.

LUNCH

9. Marlene Evans

Presentation Summary:

- Provided an overview of the origins of mercury and its presence in the environment
- Identified two main sources of mercury: industrial waste and natural conversion of inorganic mercury to organic mercury, which is then taken up by plants, aquatic organisms, then by fish
- Previous studies show that the highest mercury levels are in older and larger fish, particularly the higher level predators such as jackfish, trout, and pickerel
- concentrations tend to be higher in small and shallow lakes
- Recent mercury research in the Dehcho indicates that average mercury levels are highest in Little Doctor and Gargan Lakes, with low to moderate levels in Mustard, Trout, and Tathlina Lakes
- Mercury level to fish age/length generally follows a positive trend (longer/older fish have higher mercury) but there are inconsistencies in this pattern that require further research to understand.

Comments/Questions from Participants:

- Michael Wilkie commented that increased water temperatures can affect fish physiology resulting in lower growth rates
- Marlene recommends that basic science initiatives such as biological surveys be supported not just contaminant studies
- Peter asked if there were any surprises and Marlene answer no. She stated that there was a strong relationship between fish length and mercury levels in Little Doctor Lake but elsewhere not so clear.

- George asked if local geology was a factor with Lakes like Cli and Little Doctor being close to the mountains and Mustard and Willow on the Horne Plateau that has more limestone. Marlene stated that Little Doctor has a huge watershed and she recommended that basic environmental parameters should be monitored whenever possible.
- Stan asked if the pattern was related to climate change. Gary Stern's work shows that there seems to be a relationship between the two but it is unclear if they are directly related.
- Peter asked if Marlene's stable mercury isotope analysis was able to help sort out the source and she responded that the study is ongoing
- Heidi stated that the impact of permafrost melting is still not clear. Sometimes slumping can increase mercury levels but other times mercury binds to clay so levels go down. More work is needed.

10. Heidi Swanson

Presentation Summary:

- Research is being designed to answer the questions: why do some lakes have high mercury and others low mercury levels? Why are levels in some lakes increasing while others are decreasing?
- She is looking at all the factors that might affect mercury levels in order to determine which are the most important indicators / predictors of high mercury levels
- She is also looking at possible ways to mitigate high mercury levels in fish populations, such as increased fishing to reduce number of larger fish and speed up growth patterns
- Her research is intended to be multi-disciplinary, in that it includes assessing, through collaboration, the impacts of reducing fish consumption, given the risks associated with alternate food sources (i.e.. store bought foods).
- The research on mercury is showing that mercury levels in fish are not a simple matter to assess or address. There are many factors that affect mercury level in lakes, the increase/decrease of mercury bioaccumulation in fish.
- It is important to compare the risks associated with eating fish that have relatively high mercury levels to other food source options.

Comments/Questions from Participants:

- Angus stated that they would catch Whitefish and Cisco for Heidi during the fall run. Heidi replied that she wants to monitor the entire food chain so these samples are important.
- Stan stated that he really appreciates Heidi's efforts and that he is getting a better idea where climate change and permafrost melting fits in. He realizes that it is critical that we better understand what is happening so that we can better predict things
- Elsie asked about amelioration strategies. Heidi indicated that flooded reservoirs could be used as a starting point because the mercury level always goes up at first although it can come down later. She listed the following ways that mercury levels can be decreased: intensive fishing, cap the bottom

with clay in industrial areas, add lime to raise the pH, increase dissolve oxygen levels through aeration particularly in winter. All of these have been tested in Scandinavia that is at the same latitude as the Dehcho area but they are much more polluted.

- George asked if Scandinavia examples could be used in more pristine lakes and Heidi gave the example of finding a deep hole with Sanguex Lake that has low oxygen. She feels that aeration would be possible in a lake of this size.
- Heidi indicated that she is most concerned about what's happening in Ekali and Sanguex because fish have the highest mercury here and the levels are going up. Fish mercury levels in Deep and McGill are stable so they are not so much of a worry.
- Ernest commented that since the community quit using dogs fishing pressure has gone down
- Heidi commented on her Alaska, Yukon, and Northern Ontario work where she is exploring the possible effects of climate change. She hopes that by studying many different regions and lakes she will develop a bigger picture of the factors in play and tease out some patterns and the pieces of the puzzle.
- Peter commented on Heidi's holistic approach and asked about possible consequences of people not eating fish. Heidi answered that she is working with a Dr. Larda at the U of Waterloo on this issue. There has already been a lot of work done on this issue in Nunavut and they would like to do something similar on a smaller scale in the Dehcho. It would be survey based. However she also stated that she knows of only two cases in the Dehcho where values have been recorded above human guidelines
- Stan asked about the Burbot study and George indicated that Gary Stern's program has been shifted away from DFO to the University of Manitoba. He plans to collect fish from the Mackenzie River this fall and he is confident that core sample analysis will be finished sometime soon.
- Peter asked about the possibility of a hair analysis survey and George thought that this maybe a project to take forward with Health Canada. Bob Hanley indicated that Health and Social Services would be interested in promoting the idea. Peter commented that it would be a good way to see if the communities are being affected. George indicated that a similar study was done in the Sahtu and that things were fine but that there was some concern as to the time of year that it was done because the people who ate the most fish were missed because they were out on the land. George feels that a survey would be very useful to define risk. Compare known fish eaters with those who eat less. Work it into climate adaptation studies.
- Stan asked if mercury disappears if fish is dried. Heidi answered no because it really binds hard to muscle. She also said there was preliminary data that suggested that tannins found in tea may reduce exposure to mercury and could be a good combination when eating fish!
- Angus asked when a report would be available for this year's work and Heidi stated that a preliminary report for Ekali, Sanguex and Trout would be ready March/April 2014 but the whole report would take about five years.

11. Bob Hanley

Presentation Summary:

- Bob reviewed how mercury enters and moves through the environment.
- Reviewed the possible effects of high levels of mercury in human populations.
- Provided an overview of the health guidelines for fish consumption
- Showed examples of health advisories for fish.
- Demonstrated use of the GNWT Mercury Predictors in Lakes web map.
- Asked for suggestions on improving messaging regarding mercury levels and how information could be better distributed to general population.

Comments/Questions from Participants:

- Priscilla thinks more outreach is needed.
- Peter stated that he doesn't like blanket statements because he feels that they promote fear. He feels that detailed information is needed to make good choices but that the message must be carefully thought out and better linked to the advisories.
- Katrina asked if the advisories were based on annual consumption values. Bob indicated that they were.
- George feels that communications should include positive messages and stated that recent signage was in South Slavey, English and French.
- Bob indicated that the issue involved a big package of education and was unsure if everyone could read the signs.
- Peter emphasized if the message is unclear people get alarmed and that the signs don't help. His key point was "Watch the Message"!

12. Michael Wilkie

Presentation Summary:

- Noted that the permafrost thaw is moving north.
- Scotty Creek, just off the Liard Highway, is a research site for assessing permafrost shift in Dehcho.
- Permafrost distribution in Scotty Creek area has dropped from 70% to 43% since 1940s.
- Illustrated how permafrost thaw leads to the generation of new bogs and fens.
- Research is showing that fens result in increased mercury levels, but it's uncertain whether and how that mercury may enter other water bodies.
- Provided overview of CIMP project at Tathlina Lake, which is multi-disciplinary.

- Michael's own research is focused on assessing the degree to which fish are indicators of ecosystem stress in Tathlina Lake – with Kakisa as a reference lake.
- Research looks at reproductive health, stress indicators, and metal burdens within the context of northern waters.
- Research may generate new info re toxicity thresholds for northern fish.

Comments/Questions from Participants:

- Stan asked about the seismic surveys that were done on the Mackenzie River and stated that he is still concerned about the impact of this work.
- Peter stated that there was lots of very positive work being done in the Dehcho and suggested that it was time to focus on other things. He feels that the baseline surveys being done to determine the extent of the Cameron Hills damage is one example. He feels that by establishing patterns now we will be better able to keep track of things in the future.
- Ernest expressed concern about the rusty colored water that is coming into the Jean Marie Creek and the landslides too. What is the impact on the spawning beds? Mike acknowledged the seriousness of the concern. He stated that silt could be a two edged sword: organic material can bind metals but it can also increase microbial activity.
- Priscilla asked if there are ways to manipulate the system and decrease mercury levels. Liming was given as an example because it neutralizes the acid thereby decreasing metal toxicity. Heidi stated that lime would have to be continually added to be effective. Peter indicated that there is a huge debate as to how water quality standards should be established and he expressed concern that Southern criteria may not work for Northern waters.
- Joachim expressed concern about how the permafrost melt is affecting the Fort Providence area. He indicated that there is a huge area around the community that is like a giant sponge and that you need rubber boots to go anywhere. The situation is affecting the harvesters because avoiding the area increases fuel costs. Mike indicated that he would pass the info on to Bill Quinton. Peter wondered if logging would make things worse.

13. Elsie De Roose

Presentation Summary:

- In the past food provided a physical and spiritual connection to the land. Traditional food is not just diet but a way of living.
- Since the shift to store food, health issues such as heart disease, diabetes, and cancers have come to the North.
- Praised the Fort Providence dry fish school snack initiative.

- Compared country and store bought foods and showed that fish sticks had 10 times the daily fat allotment than fresh fillets.
- Showed examples of how simple graphics/posters can be used to promote a healthy diet

Comments/Questions from Participants:

- It was suggested that the newspaper and radio maybe the most effective way to get the message into the community
- George stated that he would connect Elsie to Roxanne of the Dehcho Drum
- Peter felt that a more coordinated effort was required for messaging across the region. He suggested that George’s poster could be used as an example and departure point. Priscilla suggested that the pop can should be removed because it doesn’t match the message that we are trying to advance.
- Stan stated that the message that he wants to advance is a return to a more traditional way of life. He considers that the JMR and Trout lake communities are similar in their outlook so perhaps they could lead the way.

Elsie felt that it is important to design a poster that will get the message out and that there should be no fear of eating fish.

14. Bruce Townsend

Presentation Summary:

- Introduced the community based science education programming presented during the 2013 Youth Ecology Camps.
- This year’s programming focused on “Clean Water, Healthy Food, and Good Choices” and was designed to show Dehcho youth how to safely return to country food and use regional fish stocks.
- The material combines traditional and science ways of knowing, explores relationships in the natural environment and shows the kids how lakes work.
- The modules are fast, fun, with lots of hands on exercises and experiments.
- Content has been harmonized with the GNWT Experiential Science curriculum in an attempt to increase science literacy within the Dehcho region
- CST credit will be awarded in support of high school diplomas.
- The program also promotes environmental science and management as a career option

Comments/Questions from Participants:

- Chief Sanguetz stated that youth outreach should blend both the traditional and science ways of knowing but felt that the science content should be layered on TK rather than the opposite.

- Dr. Swanson felt that the science material should emphasize the link between the water and the land.
- Chief Bonnetrouge expressed concern that traditional pursuits have fallen off in the last 10 years. He feels that it is critical that the communities and in particular the youth remain in touch with the natural environment and stated that everyone has to pull together to make this happen. Acknowledged that the presenters have helped by providing supporting information but that the communities have to do their part by getting out on the land. He agreed with Chief Sanguetz that TK should be the base for science.

15. Mike Palmer

Presentation Summary:

- The study involves a multi-agency partnership jointly coordinated by Ka'a'gee Tu and CIMP
- The community ensures research questions are focused on their concerns but also provides local support and knowledge
- CIMP provides a liaison role and bridges gaps using language that everyone can understand
- The study area encompasses Tathlina Lake, Kakisa lake and the Cameron Hills, a location that has been hunted and fished for thousands of years, is geographically diverse, supports commercial fisheries and the first medium scale oil and gas production site in the NWT.
- The research will be used as a benchmark for development at other sites in the NWT and it needs to address the following questions: "Is the water safe to drink and are the animals safe to eat"?
- Although it is essential that we understand both the impact of activities such as commercial fishing, industrial development and environmental change, we also need to know how the system works on its own. We need to tell the story on how the system operates.
- The research has two parts: to catalogue the environmental change and determine possible causes. Mike reminded everyone that it takes a long time to analyze the samples and work up the data.
- The sediment cores that have been collected will be used to measure things like mercury loading and the possible impact of oil and gas development.
- A paired lake study is being used to compare locations that are close to development to those that are not.
- Water quality is being monitored, passive samplers have been deployed to measure hydrocarbons levels and benthic animals have been collected for CABiN analysis and contaminants.

Comments/Questions from Participants:

- Peter Redvers asked when the results would be available. Mike stated that the preliminary water quality data is ready and that the benthic data should be ready mid-December.

- Marlene asked what water parameters were being measure and Mike answered the standard suite. She also asked if the lower components of the food change was being looked at and Mike answered that they had the sediment and the fish covered and that Heidi would address the gap between the two next year.
- Priscila asked if Paramount Resources will have access to the data and Mike answered yes but after the community sees it. Chief Sanguuez stated that it is important to keep a close eye on this development.
- Chief Chicot stated that he feels that the project has come a long way and although progress is good there is still a lot more work to be done but that funding is always an issue. He thanked everyone for working together and assisting the community. He expressed concern that he has been trying to encourage harvesting but feels the pursuit of food and traditional food is missing.

16. George gives a brief overview of program initiatives as identified under the “Suggested Next Step” section of the 2012 “Return to Country Food Workshop” report.

- Water quality monitoring continues, and emphasize is on the Mackenzie River.
- The AAROM program is continuing the fish work for mercury and the major lakes used by the communities are the priority.
- DFO is planning a subsistence harvest survey with communities providing input to identify important sites. The Trout Lake harvest study begins September 2013.
- Environmental monitoring programs are continuing and the Slave River Delta Partnership is well underway. ENR will do their best to ensure all communities are included and Katrina suggested things like passive sampler deployment in the Jean Marie River could be considered as part of the winter planning process.
- Communities such as Fort Providence and Trout Lake are drafting state of the knowledge reports that will include a list of research questions and what to monitor.
- The partnership with Dr. Heidi Swanson from the University of Waterloo is now underway and Ekali, Sanguuez and Trout Lake have been sampled.
- There is an on-going commitment to prepare plain language summaries of the information available for each watershed so that community members remain informed. A summary report is required and it should include a list of all available reports & SOK reviews, and clear graphics of all results. An effort is required to bring the different agencies together to accomplish this;
- The AAROM program hired an Aurora College student this summer and continues to engage Dehcho youth by running ecology camps and the monitoring mentorship programs;
- The “Back to Country Food Workshop” series is an important step towards improving communications between partners and communities. Communication occurs mainly through e-mail.
- There is an on-going effort to improve the advisory reporting mechanism to ensure that community members do not stop eating fish. GNWT Health and Social Services have updated signage so they

are now in Slavey, English and French. Elsie will check with Dr. Kami Kandola regarding the status of GNWT-HSS community visits to further explain the advisories.

- Chief Bonnetrouge spoke on the need to get youth back onto the land and to involve them as much as possible with ongoing environmental surveys and research.
- George feels that a dietary profile and a hair/blood study in the Dehcho would be a good project to reassure people regarding country food issues. Is funding available from the Health Canada, Climate Adaptation Program? Dr. Kandola gave this some support during the last workshop and Elsie DeRoose will enquire if any consideration has been given.
- The GNWT-HSS communication strategy to raise mercury awareness across the NWT is ongoing.
- No one was sure if Fort Providence will be able to host the 2014 “Keepers of the Water” conference but it is considered a good forum to advance concerns but it was felt that an initiative of the magnitude should be handled at the DFN level. A letter was drafted for Sam Gargan but its status is not known.
- DFO and the communities around Great Slave Lake are involved with developing an integrated fisheries management plan. The first meeting is scheduled for this fall and Peter Sabourin is the DFN rep on the Great Slave Lake Advisory Committee (GSLAC).
- In the past AAROM community monitors have been trained through an Aurora College 5 week course and this course was repeated in preparation for the Prairie Creek Mine project. Ideally efforts should be continued to be made to get youth interested in College and University accredited levels of training because this will increase likelihood of employment.
- Letters have been sent out on the GNWT-ENR Water Strategy Website.
- Efforts have been made to standardize sampling methodologies within the Mackenzie River watershed, including British Columbia, Alberta and Saskatchewan.
- Status of sediment core and burbot sample analysis is uncertain and George will check on progress.

17. Participants Final Statements.

Angus Sanguetz. Learned a lot, never too old to learn about fish, climate, etc. I will report back to the community.

Priscilla Canadien. Good workshop. Is it time to shift our emphasis away from the sport fishing program? How much more data do we need? George answered that he also thinks it’s time to go in a new direction but DFO would like a few more years to see the impact of the bridge. We are using AFS funding so any on land programming must be clearly towards subsistence fishing. Perhaps a program that encourages the youth to get out to the lakes and get back into fishing – both in summer and winter. Harvesters are having a hard time with ammunition, FAC application, and they also need a new rifle. Can we get help with this? Go through the Rangers, RCMP or ENR?

Joe Lacorne. Good visit! Health is an on-going issue. Elders need fish/meat and we plan to have the harvesters help the community. A Mariah survey on the North side of GSL near Moose Point is planned and more water monitoring too.

Chief Joachim Bonnetrouge. Fishing is dear to our hearts – we have been doing it for years. We need to recognize and honor the harvesters and find a way to subsidize traditional foods to promote good healthy people and traditional activities. We need to keep using fish and water but the cost of living is going up so we need to push government to subsidize traditional foods. They support exploration why not food?!

Henry Tambour. Lots of learning occurred. Interested in mercury testing in Buffalo Lake. When he was out at Buffalo Lake last winter he caught a fish with growth on neck. Would like to know what it was.

Ted Cayen. He learned a lot at the workshop – this is the second time he has attended. He is the water-monitoring assistant and he expressed concern about the sewage lagoon and would like to see the 5 creeks adjacent to the West Channel monitored. The community is concerned about what is happening down South and its affect on water and fish quality. He recently met with Marlene and is always happy when she and George come to West Point to help.

James Cayen. Stated that he was born at Tathlina Lake, grew up in the bush, and attended residential school. He stated that 65 years ago you could drink right out of the river. He wanted to know about bottled water and how the source water for the community was processed.

Ernest Hardisty. Expressed concern about contaminated water, human activity, drilling in the South, and how the Goose Lake diamond mine site maybe affecting the JMR watershed and creek. He would like to see more study on the water entering Deep Lake.

Chief Stanley Sanguetz. Committed to keeping JMR youth involved. Wants to know more about the effects that permafrost melting has on the mercury cycle. Wants to see a better link between wildlife and water management issues. Stan expressed concern about trans-boundary issues, industrial development and feels that we have to keep the pressure on Canada. He thinks that the Mayo conference and the Idle No More initiative are good forums to do this. He feels that the AAROM Program has helped fill gaps and he appreciates Heidi's work and the youth outreach program.

Charlie Tale. Grew up in the bush around the Wrigley fish lakes. Thanked George for the good works happening with monitoring on the river. Store food is expensive and we rely heavily on bush food. Elders are afraid of the mercury in fish and we need to tell them that it is ok.

Michelle LaFleur. Learned something and will take it home to Peter Savorine.

Victor Jumbo. Stated that he learned a lot and is very happy about it. The information opened his eyes and he will go back to Trout Lake better able to answer questions. He identified two areas of concern: gravel hauling on the South East arm and fish suffering as a result of the Catch & release program. (Torn mouths and hooks in their guts)

Margaret Jumbo. Stated that she found the workshop interesting and a good learning experience. She feels that the animals, birds, land, fish, moose and plants are very important. She is worried about the land especially fracking and the Dene way and feels that it must be taken care of. Glad she came.

Chief Mike Matou. Found the workshop very informative and will tell his community about it. Wants to be included in other workshops and monitoring programs.

18. Closing Comments

- Chief Sanguéz stated that he has a better understanding of the mercury issue and feels that the CBC can be used to get the message out to the elders.
- Dr. Evans suggested using graphics such as a food pyramid could be used to promote eating the fish that are lower on the food chain.
- Peter Redvers suggested getting youth involved in a traditional harvesting camp like Lois Philips just did at Fort Providence. They could bring back dry fish to the elders along with the message that fish is safe to eat. George feels that this would be an excellent way to move the Fort Providence AAROM program away from the sports fishery project.
- George Low wants to encourage the use of traditional foods in particular fish and the involvement of youth and elders in these initiatives.
- He recognizes the importance of partnerships with issues like the mercury project and how important it is to make sure that the message is getting out in a positive way. He stated that HSS participation would be a critical element of this effort.
- He will to apply for Health Canada and Climate Adaptation funding and will also fine tune the ENR water quality partnership to add more stations such as on the JMR, the Liard and Nahanni Rivers.
- George Low feels that AAROM is doing quite well working with the communities and that he has a good sense as to what needs to be done but welcomes feedback as to how to improve communication.
- George really likes “The Back to Country Food” forum because it brings the leadership and environmental people together with the universities and government. He will try to do it again next year.

The final day of the workshop was a youth day;



Elder Sarah Chicot teaches our Youth how to prepare fish for cooking, smoking and dryfish.



A lesson well learned