

**Report from the Sahtú Environmental Research and Monitoring Forum's
Annual Meeting
March 24,25 and 26, 2015
Yellowknife, NT**

Prepared for the Sahtú Renewable Resource Board
By Christine Wenman
PlanIt North, B.Sc. M.Sc.
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Introduction

Background

The Sahtú Environmental Research and Monitoring Forum was initiated in 2013 to support environmental research and monitoring by providing a venue for discussing plans and accommodating the priorities and traditional knowledge of Sahtú communities. Through fostering communications between forum members, which include community, regional, territorial and federal government representatives as well as industry representation, forum members hope to ensure that “environmental monitoring and research programs and projects in the Sahtú are coordinated and conducted in ways that reflect regional and community priorities, engage communities, value both western science and traditional knowledge, and support wise decision-making.”¹

During March 24, 25 and 26th, Forum Members met in person for a three day meeting to discuss past, current and future research programs and priorities. Several guests were invited to present during the three day meeting in order to convey information about existing government and industry research programs that speak to, or partially speak to the research and monitoring priorities that have been identified by forum members to date. The meeting also included fulsome discussion about the forum’s future priorities and directions.

Report Structure

This report has been written to summarize the content of the meeting and to highlight specific themes and calls to action that emerged from the discussions. The report is therefore written in two parts. Part 1 includes brief summaries of guest presentations and includes a summary of the discussion, questions and answers that followed each presentation. Full presentations, where available, can be downloaded from the SERM portion of the SRRB website. Part 2 of the report highlights the principle themes that emerged from discussions during the meetings as well as specific calls to action and next steps for moving forward.

Meeting Agenda and Participation

Holding the meeting in Yellowknife presented the opportunity to hear from many guests who were able to update the forum on their activities. Although this left less time for discussion and planning than originally anticipated, it did help to inform

¹ Sahtú Environmental Research and Monitoring Forum Terms of Reference

Forum members about many relevant projects and programs that can help to inform the Forum's direction and that can better resource Forum members to identify research gaps and help to prevent duplication of efforts. The final meeting structure is roughly depicted here:

Tuesday, March 24, 2015

8:30am Coffee and mingling

9:00am Opening prayer (Frederick Andrew)

Welcome, introductions, review meeting purpose and agenda (D. Simmons)

9:30am Who we are, what we do. *Discussion led by Deb Simmons with all Forum members and other guest participants.*

- How we got started
- Terms of Reference review
- Key contributions over the past year

10:30am Looking back: Research and monitoring over the past year

- Shale oil play update
- Sahtú Readiness / Best of Both Worlds project
- Overview of other research and monitoring activities (talking circle)
- Cross-cultural research camp (review of draft report)
- Research results workshops 2013 and 2014 (review of draft reports)
- Overview of the research context (CIMP, ENR Wildlife, Canadian high Arctic Research Station / CHARS)
- Monitor / research training (land rangers, Drum Lake BEAHR training, ENRTP, Dechinta Bush University)
- Fiber optic line environmental monitoring

Noon: Catered lunch

1:00pm Visit to the ENR organized environmental monitoring training workshop

2:00pm Shúhtagot'ıne Nënë Ice Patch Study (Tom Andrews)

3:00pm Mercury Synthesis and Human Biomonitoring proposal (Shelagh Montgomery)

4:00pm Lessons learned and looking forward to 2015-2016

4:45pm Close for the day and overview of Wednesday agenda

5:00pm Conservation Coaches Network Workshop – introduction at the Ski Club

7pm Close

Wednesday, March 25, 2015

8:30am Coffee and mingling

9:00am Introductions, review agenda for the day

9:15am The Bluenose Caribou Management Plan and Research/Monitoring

- Overview of the Bluenose Caribou Management Plan, Community Engagement and Scientific Assessment – focus on knowledge for decisions
- ʔekwé research from a cumulative effects perspective (Karin Clark)

- The Bathurst caribou range planning experience (Karin Clark)
- Noon catered lunch
- 1:00pm Seismic and Petroleum Geosciences (Scott Cairns)
Sahtú Water Monitoring (Kathryn Fless)
- 2:00pm Ṯodzi Recovery Plan and Research / Monitoring (James Hodson)
- Overview of Ṯodzi Recovery Planning, Federal and Territorial
 - Research and monitoring for decisions
 - Range planning
- 4:00pm Lessons learned and looking forward to 2015-2016
- 4:45pm Close for the day and overview of Wednesday agenda

Thursday, March 26

- 8:30am Coffee and mingling
- 9:00am Introductions, review agenda for the day
- 9:15am Communication and Education about Research, Monitoring and Conservation (Stephanie Yuill and Judy McLinton)
- 11am Species at Risk Research Gaps (Michelle Ramsay and Claire Singer)
- noon catered lunch
- 1pm David Wells, Environmental Superintendent, Diavik Mine - update
- 2:00pm Water monitoring and other water initiatives update from Jennifer Fresque-Baxter with ENR
- 3:00pm Priorities, proposal and discussion
- 4:30 Closing, and prayer

In attendance or partial attendance

Facilitation / Note Taking

Deborah Simmons, ʔehdzo Got' ɪnɛ Gotsɛ́ Nákedɪ
Christine Wenman, PlanIt North

Sahtú ERM Participants to date

Listed alphabetically by first name

- Bruce Hanna, NWT Environment and Natural Resources
- Carla Tutcho, Collville Lake ʔehdzo Got' ɪnɛ
- Frederick Andrew, Tulít'a ʔehdzo Got' ɪnɛ
- James Caesar, Fort Good Hope ʔehdzo Got' ɪnɛ
- James Hodson, NWT Environment and Natural Resources
- Jimmy Dillon, Délɪnɛ ʔehdzo Got' ɪnɛ
- Julian Kanigan, NWT Cumulative Impact Monitoring Program
- Lesley Allen, ʔehdzo Got' ɪnɛ Gotsɛ́ Nákedɪ
- Loretta Ransom, Environment Canada
- Roger Odgaard, Norman Wells, ʔehdzo Got' ɪnɛ

Regrets

Sandra Marken sent her regrets that she is no longer working on Northern files.

Andrew Applejohn, Laurel McDonald, Marie Adams and Cindy Gilday had other commitments.

Invited Guests

- Claire Singer, Species At Risk Implementation Supervisor, NWT Environment and Natural resources
- Judy McLinton, Manager, Public Affairs and Communication, NWT Environment and Natural Resources
- Karin Clark, Wildlife Biologist, Cumulative Effects, NWT Environment and Natural Resources
- Kathryn Fiess, Manager, Petroleum Geosciences, Industry Tourism and Investment
- Michelle Ramsay, Species at Risk / Wildlife Programs Coordinator, Environment and Natural Resources
- Scott Cairns, Manager, Mineral Deposits and Bedrock Mapping, NWT Geoscience Office
- Shelagh Montgomery, Senes Consultants (Mercury Synthesis)
- Stephanie Yuill, Public Education Specialist, NWT Environment and Natural Resources
- Tom Andrews, Manager, NWT Cultural Places Program, Education, Culture and Employment

Part 1 Summary of Presentations

Shúhtagot'ı́nə Néné Ice Patch Study

Presented by Tom Andrews, Manager, NWT Cultural Places Program, Education, Culture and Employment

Tom presented about an archaeological project that has recovered artifacts left by Mountain Dene caribou hunters in melting ice patches. Ice patches are accumulations of snow that have historically remained frozen year-round but that are now melting with recent warming trends. Mountain Caribou seek out these north-facing patches to cool down and to escape warble flies in the summer, though they feed lower down in the valley. Evidence shows that hunters began exploiting these special environments six thousand years ago. This practice has been used by hunters across the circumpolar world; in Alaska, Yukon, Norway, Sweden and Switzerland and in Yellowstone National Park in Colorado and Montana, there is evidence to show that hunters hunted caribou, reindeer and bison in similar mountain environments. This project is a component of a larger, circumpolar initiative.

As NWT's ice patches melt, artifacts that are up to six thousand years old are being recovered. Many of the sites are along the Yukon border as the patches tend to be

located in the highest mountains though there is also a site at Stelfox Mountain above Caribou Flats.

The research team surveys the ice patches each summer for five days, trying to conduct the work when the rate of thaw is the highest, usually in August. Tom and his team have partnered with Tulít'a and the Tulít'a Land Corporation; Leon Andrew has been a partner from the very beginning and has worked with the team to speak with elders and to understand where the most likely places to hunt on the ice patches would have been.

As the ice melts, it reveals a thick band of caribou dung that is thousands of years old. The caribou dung can be analyzed to provide information about the genetic health of the caribou as well as information about the environment over time. Ground penetrating radar and carbon dating provides information about the age of the ice and the dung at varying depths. The dung dates back to 6,000 years. Scientists can look at changes to vegetation, insects and pollen over time and learn about changes in the environment. Analysis has revealed that the mountains have been very stable for five to six thousand years and that the current climate changes have happened in the last fifty years.

Artifacts from the traditional hunting sites have revealed detailed information about the hunting tools that were used over time. Three primary types of technology were identified.

The first is the dart-thrower, with examples that are up to 2,400 years old. The elders have a story of Yamoria, in which a dart-thrower is described with a shaft that is made from Saskatoon berry. The dart-thrower that was found from 2,400 years ago is made from Saskatoon Berry wood just as is described in the story. The dart-thrower is a very ancient technology that has been used by hunters for tens and tens of thousands of years.

Around 1200 years ago, the technology changed and bow and arrow were adopted. There was a willow bow found that is 340 years old and there are arrows made from birch and tipped with stone that date between 340 and 270 years ago. These have a large birch shaft with a hold for a barbed bone point, a design which is consistent across the Yukon and the NWT. There are also shorter spruce arrows, tipped with a barbed bone or antler point. Only parts of the spruce arrows have been found in the NWT but nearly complete specimens have been found in the Yukon. Some of these are so well preserved that the sinew tying the stone arrowhead to the arrow and the spruce gum used to cement it were still preserved in the ice patch.

The third technology is the ground squirrel snare; dating back 1,000 years. Twice, the researchers organized a science camp to overlap with their researchers. One year, as Tulít'a elder Maurice Mendo was showing youth how to snare ground

squirrels, the research team was able to return at the end of the day and show the youth a 1000-year-old snare.

The team is looking to establish new partnerships to learn more about the different caribou fences that have been found. Also, there is a botanist from Wilfrid Laurier University who is going to see if he can propagate plants from the dung.

Every summer the caribou bed down in the snow because the warble flies drive them crazy. Now they are bedding down in black dung, because they are habituated to going to these sites. However, with little to no ice left, the black dung absorbs the heat and attracts flies. So ultimately this is not good for the caribou. In addition, the ice thaw rate is increasing exponentially because the black bands of dung attract heat, causing further melt.

Discussion:

- Frederick Andrew commented that his father had talked about bows and arrows. Both kinds of bow and arrows existed one thousand years ago and therefore the archaeology is corresponding with what Frederick has learned from his Elders.
- There was a discussion about the sensitivity of these sites and whether they are being sufficiently protected. The sites are protected under the current draft of the Sahtú Land Use Plan. Tom Andrews has worked closely with Leon Andrew since the beginning of the project and they, in turn, have worked with the elders so the community has been a close partner throughout. The research team found a moose bone one year and have found wolverine bones and petrified birds but they predominately find caribou bones and they have only ever found caribou dung. They have never found any human remains but if that were to ever occur, they would work directly with the community to decide what to do. There was once a man found in British Columbia and genetic tests linked him to a particular First Nation so the body was repatriated and buried in an unknown place by the First Nation.
- There is a bound collection of published papers that have resulted from the work and two copies were left with Deb Simmons for the Sahtú Renewable Resources Board.
- Tom Andrews is now beginning work on a project on Tlicho lands. A Tlicho Elder told the story of Edzo's father on his deathbed and spoke about a gravesite. When it was examined, it was discovered that there were many layers of buried fireplaces – this was a stratified archaeological site. Tom now has a student who was raised in the south but whose father is from Wrigley. She is studying a masters in archaeology at the University of Toronto. She and Tom and the elders

can now start the project. Tom is also working with partners to see if they can learn about mercury through this project. Scientists believe that they can measure mercury in fish scales and that this would preserve in these sites as well. A preliminary project next year will provide more information to know whether the approach will work.

- Tom Andrews is also working on a ten-year strategic framework about how government should protect cultural heritage. This legislative assembly missed culture and heritage in its cabinet priorities. The group discussed that on-the-land programming needs to be a focus of the education system and that it is important that the forum advocates for this to government.

Mercury Synthesis

Presented by Shelagh Montgomery, Ph.D., Senior Environmental Scientist

Shelagh Montgomery from SENES Consultants (now Arcadis Canada Inc.), has been working with the Sahtú Renewable Resources Board with funding from the Northern Contaminants Program to summarize research on mercury that has been completed in the Sahtú region over the years.

Shelagh lived in Déline from 2000 to 2002 while working as part of the Déline Uranium Team on longstanding environmental and human health issues linked to Port Radium. Her Ph.D. research was related to mercury in hydroelectric reservoirs in northern Québec.

In her presentation, Shelagh provided a review of health advisories for consumption limits on fish due to mercury accumulation in specific Sahtú lakes. She noted that there is a process gap in that there is no mechanism by which to go back and check on mercury levels once a health advisory is issued. Therefore, we do not know if the advisory should still be there or if there have been changes to the levels of mercury in fish.

In 2010, there was a health advisory issued for Lac. St. Thérèse that recommends that no predatory fish be eaten. Ten years ago, there was an advisory at Kelly Lake recommending maximum consumption limits specifically for lake trout. In particular, the advisory recommended that young children and women who are breast-feeding eat less lake trout. There have been no advisories on Great Bear Lake. When Shelagh was working at Port Radium, within the vicinity, mercury concentrations were not of concern.

The mercury that has accumulated in fish in these lakes is there largely from atmospheric deposition from industrial sources around the world; for instance, coal fired heating plants emit exhaust that contains mercury and this travels in the

atmosphere. Mercury is also present in some chemicals such as paint additives. Due to the way that air currents circulate, some of this mercury is deposited in the north. With permafrost thaw, it seems that mercury that was immobilized in the permafrost is increasingly able to enter water and the food chain.

Gary Stern is a scientist who has done a lot of work looking at mercury in the Sahtú region, specifically around Fort Good Hope. In his studies he has found trends of increasing mercury in fish but the mercury levels are still within a safe threshold and can be consumed normally.

0.5 micrograms per gram is the threshold for human consumption. Though single events of exceedances can be seen from some studies in the Sahtú, this does not necessarily mean there is a health advisory. Health advisories are determined by the overall distribution of exceedances and whether, on average, there is reason for concern.

In her review, Shelagh identified that little work has been done in the Sahtú to understand how much mercury people are consuming and whether it is being consumed at unsafe levels. So, the next phase of the project is to conduct biomonitoring, in which mercury levels are measured in hair, blood and urine. A proposal for this work has been submitted to the Northern Contaminants Program but funding decisions have not yet been announced.

Discussion:

- The group discussed further where mercury comes from and whether you can see it in the rock. Shelagh clarified that there is no way to know if there is mercury in the rock from looking at it; it is necessary to do a chemical analysis of the soils. It can be tied to metal rich soils when it is naturally occurring but this does *not* mean that red or orange soils indicate mercury content. Analysis would be necessary to determine this.
- There was some discussion about mercury levels in Great Bear Lake as Roger recalled hearing about high levels there. However, Shelagh emphasized that in all her work she has never heard of an advisory there and the data that she has seen shows that mercury is generally not high in fish in Great Bear Lake. Another question was if the threshold for the concentration of mercury in food had changed recently but Shelagh clarified that there have not been any changes to the 0.5 microgram per gram threshold.
- The group clarified how sources are known. Shelagh explained that by taking core samples, there are ways to look for different indicators that show that the mercury comes from industrial sources rather than from natural sources.

- Forum members discussed the implications of high mercury in fish and that it appears to be something that is linked throughout the lake and river systems. These systems are all connected and many people do not feel safe eating fish anymore.
- James Caesar pointed out that fish health also seems to be related to local industrial activity. In 1982, people were noticing abnormalities in loche (burbot). Abnormal fish were sent to Winnipeg for analysis and the results were returned indicating that some fish were contaminated with heavy metals. At that time, there were rocks from a quarry that were being dumped into the river so he felt that this could have been part of the cause. Similarly, around 1990, another spike in abnormalities was observed and this was around the same time that Imperial Oil was doing some drilling and quite a bit of seismic exploration was occurring. **Research theme – does oil and gas activity impact mercury levels?**
- James asked how mercury affects the human body and Shelagh explained that at sufficient concentrations mercury affects the central nervous system.
- The group also discussed why there are different levels in different fish. Those fish that are predator fish - that feed on other fish - have higher levels. On the other hand, smaller fish such as white fish or grayling typically have low levels.

The Bluenose Caribou Management Plan and Research/Monitoring

Introduction led by Deborah Simmons, Executive Director, Sahtú Renewable Resource Board

Deb Simmons emphasized that the focus for the meeting is on planning and research. We should try to avoid speaking about the management issues because the Sahtú Secretariat is planning a meeting on management and that is the appropriate place to talk about those issues.

The process for Bluenose Caribou management has developed from a cooperative process that included all Co-management Boards. Many organizations collaborated to form the *Advisory Committee for the Cooperation on Wildlife Management*. This committee has an advisory role, which means that the committee itself is not able to make decisions but only advise, much like the role of the Sahtú Environmental Research and Monitoring Forum.

In 2007, there was a big summit in Inuvik about the Bluenose Caribou herd. At that time, there was a signal that the populations were going down. There is a standard

way that these types of issues are handled; data is collected, it is analyzed and a plan is written. This is what happened with the Bluenose Caribou the first time. The advisory committee hired a consultant to write the plan but the co-management boards hadn't participated in the process and there was no community engagement so the plan didn't work because it hadn't been made collaboratively.

The next time, Environment and Natural Resources learned from this and took the lead, hiring Janet Winborne who spent many weeks speaking with communities. It took a long time to develop consensus but the process was groundbreaking. There were very different cultures having this conversation across various regions, which included the Inuvialuit, the Dene and non-Aboriginals. They had to overcome areas of differences but an agreement was signed in October, 2014.

Discussion

- Jeff Walker, ENR Regional Superintendent for the Sahtú, pointed out that the committee may not have decision-making authority but all of the members, so for instance the various boards, are the decision-makers. He also explained that some communities did voluntary tagging but that some did not want to. ENR monitored the numbers and found that the total harvest was below the allowable limits so they felt there was no need for enforcement.
- The co-management committee signed a letter recommending that the government adopt a number of management recommendations. Some of these were put into law through regulations on January 28, 2015 that gave the government and the boards authority to enforce those recommendations if needed. The intent is that the boards take their direction from the renewable resource councils at the community level, so it was the intent that the regulations were putting into play what had been heard at the community level.
- Frederick Andrew and Jimmy Dillon emphasized how difficult it has been for them in their communities since the government suddenly introduced the tags. Frederick Andrew emphasized: "the Elders lived and died there." It is not clear to him what the role of the management committee was, what it means to him, nor what role community members had in the process. Jimmy Dillon said, "I am in trouble. We are all in trouble because the elders are upset. And we don't know what is happening." In the old days, he explained, that if caribou numbers were to go down, then the Elders would get together and would move to a different area. In two years, the numbers would be up again. "Now the Elders are really angry at us and

we need to sit and talk with the Elders again.”

- Roger emphasized that another challenge is that those who are representing people on committees and boards can't keep up with the demands. They are able to go to the meetings but sometimes it is challenging to report back about everything and make sure that everyone in the community knows what is happening. There was a brief discussion exploring how members could be supported in reporting back. The suggestion of one-page summaries were raised. It was pointed out that to some extent the SRRB staff have a role in this and do support the members to some extent in reporting back to their Renewable Resource Councils.
- Members of the group discussed in detail the trade-offs between fast and decisive action and slower, more collaborative approaches. Members expressed concern that if they moved too slowly on the bluenose herd, it might be too late to change the trends before the herd is in crisis. “If we need to protect 60% of the herd's land, is it going to be too late? Will oil and gas companies have rights to access all of the land before that happens?” Deborah felt that the Bathurst Caribou herd is in crisis but the Bluenose isn't. Therefore, there is time for the process to be done well and to ensure that Elders and land users are involved in the conversation and in making management decisions. Using a good process will help to reduce conflict. There are a lot of hot topics including using collaring for research and harvesting bulls and female caribou.
- Frederick Andrew agreed that people like to take the bulls for trophy hunting but that we have to be very careful because the herd will decline if we only take the bulls. He feels there has to be a balance in what is taken so that caribou can continue to reproduce. Deb mentioned that the SRRB is still trying to plan a meeting with Ross River in Tulít'a to discuss the herd. Members agreed that it would be good to invite the outfitters to present their data. Jeff Walker reminded the group that ENR collects exact numbers from outfitters for caribou hunted each year and that the outfitters are represented by a collective group and are usually happy to present to people interested. ENR can say precisely which animals have been taken by outfitters since the 80s.
- The concept of herding caribou to support their recovery was briefly discussed but Deb pointed out that the Elders talk a lot about not controlling them; we are not even supposed to be

talking about them. Also, there is an additional goal in protecting caribou herds about preserving culture and heritage.

- A final theme of conversation was the need to understand the population of other animals as well in case that more moose, for instance, are harvested to substitute subsistence diets as caribou numbers decline. Jeff Walker agreed that there is no data about moose numbers at this point. It was raised that this might be an appropriate recommendation to make to the board to pursue further research investigating population trends of moose.

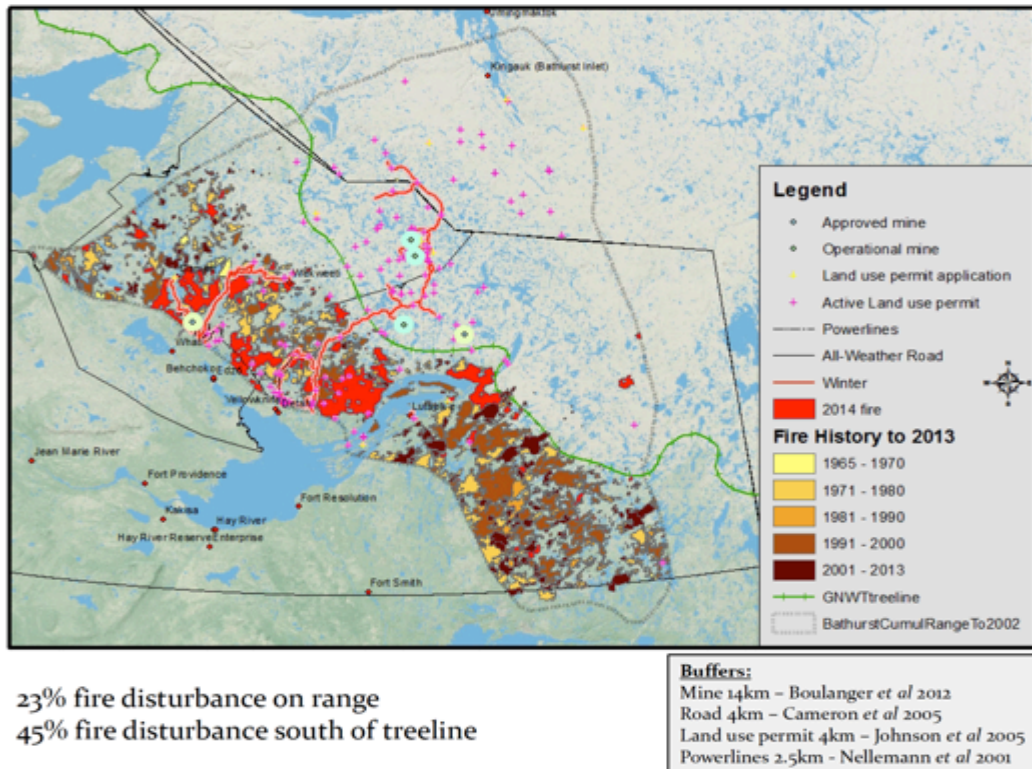
ᑭᑦᑲᑦᑲᑦ research from a cumulative effects perspective

Presented by Karin Clark, Wildlife Biologist, Cumulative Effects, Environment and Natural Resources, Government of Northwest Territories

As there are many factors that influence the number and distribution of caribou, including but not limited to mining and other land uses, fire, predation, disease, food quality, and hunting, Karin's work focuses on the cumulative effects of all influences. How do these things interact and how do they affect caribou?

Karin's presentation explained some of the tools and initiatives that GNWT has developed with its partners to address cumulative effects on caribou. These are:

1. Wildlife and wildlife habitat protection plans
2. Wildlife environmental management plans
3. Partnerships including those with or between industry and/or academia
4. Range Plans



Map showing cumulative footprint within Bathurst Caribou range. Source: K. Clark SERM presentation

In their wildlife and wildlife habitat protection plans, industry proponents are asked to consider wildlife that use the area and develop a plan for ensuring the protection of wildlife within the project site. They are asked to consider, for instance, what response plans they will have in place if wildlife shows up on site. However, GNWT and the co-management board expect industry to monitor wildlife within a regional area larger than the site itself. A wildlife effects monitoring program covers a larger area than just the specific site and is designed to monitor wildlife responses to the project.

GNWT – Environment and Natural Resources has written guidelines for wildlife and wildlife habitat protection plans as well as for wildlife effects monitoring programs and has sent them to partners for review, including to the co-management boards. They now have the comment back and will be incorporating comments over the next few months. The next step will be to develop regulations to implement the guidelines. In the meantime, Environment and Natural Resources has been encouraging industry to develop these plans.

Collaborative initiatives are also encouraged. There are examples of companies working together to monitor because the animals have large ranges and individual, uncoordinated monitoring sites yield results with limited utility. For example, there is a collaborative project between DeBeers, Rio Tinto, and BHP to monitor grizzly bears.

Range Plans are developed to examine how specific influences to caribou can be considered between partners. Given that there are so many factors that can cumulatively affect caribou herd health, a “Range Plan” was considered a first step in starting on a complex problem.

We do know from elders that caribou populations go up and down. For instance, the community of Wekweètì once evacuated to Behchokò because there were no caribou around.

As the numbers decline, the range seems to be narrowing so we can see changes in the caribou’s behavior and their use of the landscape. Moving forward, will need to think about how behavior is changing. In planning for habitat, we want to allow for those uses to occur, because they are partly natural changes.

Discussion

- There was a lengthy discussion about all weather road construction planned in the short to medium term within the Wek’eezhii region and in Nunavut and how this may impact caribou populations in the future.
- There was a discussion about caribou health and Karin mentioned that ENR has a wildlife veterinarian on staff so will be able to help in understanding the condition of animals.
- James Ceaser asked if there is a correlation between land-use permits, disturbance and caribou populations numbers. Karin explained that the Cumulative Impacts Monitoring Program is currently developing a database that will map land disturbance information from the land and water board registries so that cumulative disturbance can be more easily assessed. This will help to assess the impact of cumulative footprint but fire is always a confounding factor. In the Bathurst range, for example, there is 5% human disturbance but 23% fire disturbance.

Update on Diavik environmental monitoring initiatives

Presented by David Wells, Environmental Superintendent at Diavik

David provided an overview of Diavik programs that relate to caribou. The mine has had a wildlife and wildlife habitat protection plan as well as a wildlife environmental management plan in place since the year 2000. The mine reports on this plan annually.

Specific initiatives included aerial surveys at one point, which were completed in the spring and the fall. However, caribou were increasingly staying close to their calving

grounds so the aerial surveys were not generating useful data and so were recently dropped.

The mine also partnered with Ekati to monitor caribou abundance around the two mine sites and to better understand caribou travel or avoidance through the mine site. It was through this research that it was determined that the mines have a 14km buffer of influence on caribou.

Another initiative is a behavioral survey that is conducted through a fall scan. Community members observe what caribou are doing during an eight minute scan. This scan has occurred for nine years now and provides information about how caribou react in specific circumstances such as if a wolf is nearby or if a truck passes nearby.

The mines also have plans that dictate what actions are taken if caribou enter the site. Diavik is on an island so on-site sightings are relatively rare with the majority of their data coming from off-site monitoring. Ekati, however, does have some more caribou crossings occur at site. If there are more than one hundred caribou then the mine would issue a traffic advisory and the road can be shut down. In the fall, when the ice is forming, the mine is particularly careful to avoid spooking the caribou as this could put them on dangerous ice. In the summer, there are daily updates given to the work force with information about wildlife locations and how to avoid them.

Diavik has also been working with GNWT on the development of the caribou range plan and on a lichen survey. They are looking at a 40 km buffer around the site in order to determine if there is evidence of dust deposition and how this may be impacting lichen and thus caribou. Work was done in 2010 and 2013 and a risk assessment is currently being completed based on the data collected. The objective was to determine how much dust would have to be eaten by caribou in order for there to be a negative impact. However, it was determined that based on the dust levels that were found, there is no effect on caribou.

Community members are involved in much of the wildlife monitoring and research that the mine pursues, including behavior scans for grizzly and caribou as well as wolverine track surveys.

Work that the mine has done in monitoring grizzly bears resulted 3 bears per one thousand square kilometers in the 1990s, however more recent estimates are of 11 bears per 1000 square kilometres.

Discussion

- Jeff Walker noted that similar work is being conducted in the Sahtú region in order to understand grizzly populations and to have better data about how they interact with caribou and influence caribou numbers.

- Roger pointed out that his Grandmother taught him about three types of grizzly bears – mountain grizzly, barren-land grizzly and cinnamon bears.

Central Mackenzie Valley Seismic Monitoring Network

Presented by Scott Cairns, Manager, Mineral Deposits and Bedrock Mapping
NWT Geological Survey, Industry, Tourism and Investment

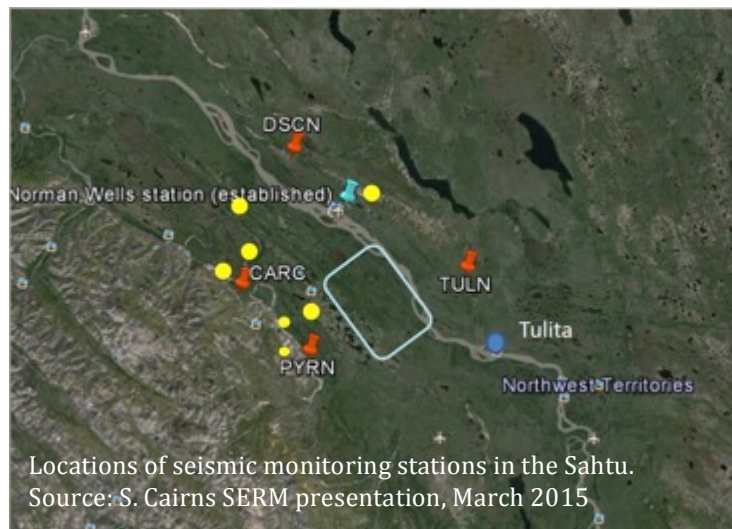


Scott explained that in 2012 it was becoming evident that the tight oil play might start up in the Sahtú region and his office realized that earthquakes were one of the concerns raised by community members.

The Sahtú is as seismically active region; the Mackenzie Mountains are jagged and beautiful because they are new mountains, that is they are still being pushed up.

Because of this, we know there will be earthquakes in the region. Animals can detect very low level earthquakes, lower than humans, but we have equipment to detect earthquakes at even lower levels. By timing the first arrival of shaking from the earthquake at several stations, we can estimate quite accurately where the epicenter of the earthquake is.

There have been monitoring stations at Norman Wells and Colville Lake as part of the national seismic since the 1990s. The Colville Lake station is at the old airstrip where there are a dozen solar panels set up to power the station. In Yellowknife there is a huge array. We look at frequency and magnitude of earthquakes. Low magnitude energy events happen more frequently. The NWT Geological Survey added sites in late 2013 and is now monitoring them.



These sites were already active when Conoco Phillips conducted its exploratory fracturing events so there will be data available through that time period. The data is recorded on flashcards so there is a substantial delay between the time the data is recorded and to when it is collected and then analyzed. Unfortunately, the data that coincides with the Conoco Phillips fracturing events have not yet been processed.

Elsewhere, an increase in seismic activity has been attributed to both hydraulic fracturing events and also to down hole injection of waste fluids. Events associated with hydraulic fracturing, such as in the Horn River Basin, have been below a magnitude at which a human being could feel them. Those associated with fluid injection have sometimes been higher; for instance in Alberta, there was a magnitude 5.7 earthquake that caused the regulators to shut down the operation. Engineers decide on appropriate volumes and rates at which waste fluids can be injected and in cases where higher magnitude earthquakes have occurred, guidelines for rate and volume were being exceeded.

Discussion

- The group discussed how important it is that baseline data be collected prior to further development in the area.
- The implications of seismic activity (whether natural or induced) in the area was questioned. If earthquakes in the Mackenzie Valley are at a 10 km depth, what impact could these earthquakes have on oil and gas development in terms of impact on well integrity and the movement of fluids, for instance? (research theme)

Mountain stream sediment water and geochemical sampling

Presented by Scott Cairns, Manager, Mineral Deposits and Bedrock Mapping
NWT Geological Survey, Industry, Tourism and Investment

Scott presented on a second project being led by the NWT Geological Survey looking at stream sediments and water in the Mackenzie Mountains, a project that has been on-going for almost a decade to analyze sand and silt for their geochemical characteristics. The initiative is part of a nonrenewable resource assessment; much of the work was completed to inform the Protected Areas Strategy process.

Sand is obtained from high-energy location in the stream where heavy mineral grains would settle out from finer silts. Samples are taken from areas down stream of boulders for instance, where mineral grains would settle out. Silt and water samples are collected nearby. Data has been published on open files available on the Geoscience website.

Another project of interest is one through which watersheds have been delineated from digital elevation models. Fourth and fifth order drainages have been delineated

so we can identify the area that influences the water in the drainage. This will be available as GIS layers at an extraordinary resolution within about a month.

Central Mackenzie Valley Subsurface Ground Water Baseline Study AMEC July 2014

Presented by Kathryn Fiess, Manager, Petroleum Geosciences, NWT Geological Survey, Government of Northwest Territories

Kathryn presented about a study that GNWT commissioned AMEC to write that combined available hydrogeological data from oil and gas companies drilling in the Sahtú region in order to provide a combined, state of the knowledge report. From 2010-2013 there was a call for bids in the Central Mackenzie Valley. The Sahtú Land and Water Board required ground water monitoring programs prior to drilling and hydraulic fracturing activity. As a result, there were a number of 2013 industry monitoring programs:

Table 1: Investigation Location Details¹

License Holder	Lease	Well ID	Type	UTM Coordinates		Borehole Depth (mbgs)	Ground Elev. (masl)
				Easting	Northing		
Husky	EL463	MW-01A	Monitoring Well	371664.23	7222196.40	11.1	53.38
		MW-09A	Monitoring/ Test Well	382776.1	7209123.5	145	243.93
		MW-09B	Monitoring/ Test Well	382794.5	7209103.9	94.8	244.95
		MW-01T	Thermistor Borehole	371664.88	7222194.71	11.2	53.38
		MW-04T	Thermistor Borehole	374519.12	7216583.53	21.6	98.11
		MW-06A	Borehole	379065.4	7211978.4	144.9	160.00
		MW-09T	Thermistor Borehole	382779.40	7209119.25	4.6	243.86
		MW-11T	Thermistor Borehole	384061.50	7207139.39	6.1	257.95
		MW-12T	Thermistor Borehole	382424.10	7206708.00	29.8	265.04
		MW-13	Borehole	380444	7203547	6.1	254.00
		MW-16T	Thermistor Borehole	373417.27	7200184.20	7.6	190.64
	MW-17T	Thermistor Borehole	370824.40	7197827.20	29.7	207.13	
	EL462	MW-19B	Monitoring Well	367176.46	7199032.09	9.8	180.60
MW-19A		Borehole	367176.96	7199029.20	144.9	180.60	
MW-19T		Thermistor Borehole	367176.96	7199029.20	10.7	180.47	
MGM	EL466B	GW001	Monitoring Well	370676.35	7188462.2	121.9	154.3
		GW002	Monitoring Well	370642.28	7188469.3	81.4	153.54
		GW003	Monitoring /Test Well	370690.94	7188413.6	85.3	155.15
		I-78	Exploration Well	370615.72	7188403.9	405	155.1
Conoco-Phillips	EL470	WW02-A	Monitoring Well	396367.5	7210298.8	214.5	286.17
		WW02-B	Monitoring Well	396367.5	7210301	97.5	286.28
		WW04-A	Monitoring Well	406403.1	7220304.1	473	275.37
		WW05-A	Monitoring Well	407484.9	7215784	373	313.12

Notes: mbgs indicates metres below ground surface; UTM Coordinates based on NAD 83, Zone 9;

¹Table 1 from "Central Mackenzie Valley Subsurface Groundwater Baseline Study" completed by amec in July 2014.

From industry, there are four separate reports presenting groundwater information with no uniform interpretation; therefore the Geological Survey hired AMEC to integrate the results. AMEC studied the results from all programs and wrote a groundwater baseline study, published in July, 2014 and available on the NWT Geological Survey website. This is not typically the domain of the Northwest Territories Geological Survey; a hydrogeologist is being hired within Environment and Natural Resources so ultimately, the expertise will lie there.

The industry data that was examined included: lithology descriptions, downhole geophysical well logs, aquifer test data and interpretations, surface and ground water quality, and soil and permafrost characteristics and extent. For the lithology descriptions, geologists collect samples that come off of the drill bit and provide descriptions of these at varying depths. The chemistry from water samples collected was compared to Canadian Council for Ministers of the Environment Water Quality Guidelines for Protection of Aquatic Life (CCME 2012). Moving forward, Conoco Phillips plans to suspend its wells and it is not clear if there will be any further activity from the other companies.

Discussion

- Forum members discussed the importance of establishing baseline water quality data prior to further development. Kathryn noted that this degree of water monitoring at the beginning of exploration drilling is unprecedented in other places where hydraulic fracturing has occurred. Looking at future opportunities to collect baseline data, she notes that with Conoco Phillips planning to suspend their horizontal well and the water wells, there will be fewer wells to monitor over time, which is unfortunate. Husky and MGM will continue to monitor their wells and report in their annual report unless they choose to close their wells.
- There was a further discussion about the potential opportunity for GNWT to take over the wells in order to continue monitoring them to establish a baseline over time. Kathryn explained that although the government is looking at possibilities, this would mean taking over a substantial liability and a very expensive abandonment.
- There was further discussion about forum members' desire to comprehensively understand the geology of the area but Kathryn pointed out that you can't make generalities across the whole area but need to look at very specific locations to describe geology at that degree of resolution.
- It was asked to what degree the bounds of the Canol shale play are known and Kathryn agreed that the exact extent is not really known and cannot be prior to further exploration.

Tǫdzı (Boreal Caribou) Recovery Plan and Research / Monitoring

Presented by James Hodson, Wildlife Biologist, Environmental Assessment / Habitat, Environment and Natural Resources, Government of Northwest Territories

Tǫdzı are listed as *threatened* under Federal and Territorial Species at Risk Acts, which means that they are likely to become *endangered* (to face imminent extirpation or extinction) if nothing is done. Boreal caribou need large areas of intact habitat so they can spread out to avoid predators. Declines are more likely in landscapes with more habitat disturbance (from human footprint and fire). Disturbance is often associated with increased predation. The main threats are habitat loss and fragmentation (e.g., from seismic lines, roads and forest fires). Habitat fragmentation is expected to increase.

The Tǫdzı NWT population size is small (~6,500); there have been declines in some parts of the southern NWT where the majority of NWT's boreal caribou occur. In the Dehcho study areas we see decreasing trends from 2006 to 2010. In the South Slave study areas there are decreasing or stable trends from 2004 to 2010.

To respond to these threats, a federal recovery strategy for Tǫdzı was finalized in 2012. Among the objectives identified to date with the plan is the objective to protect 65% of critical boreal caribou habitat, leaving it undisturbed. As this will be regulated within the Species at Risk Act, the 65% habitat protection will be a legal requirement. It is estimated that if 65% of critical habitat is protected, there will be a 60% chance population will remain self-sustaining. The GNWT and partners are also working to develop a territorial recovery strategy, expected to be complete by February, 2016.

In order to achieve the objective of protecting critical habitat for Tǫdzı, a range planning exercise has been initiated which describes how to maintain a minimum of 65% undisturbed habitat in perpetuity. This range plan is really about managing cumulative effects. Now that there is a goal of *how much* to protect, there also needs to be work done to identify *which* lands to protect. Though the long-term goal is 65% protection, short-term goals will identify key lands to protect in the next five years. Since the disturbances include fire, the land protected necessarily needs to be adaptive and mobile so that key areas to protect will be reviewed every five years. Key areas will be identified by overlaying various layers including biophysical attributes and traditional knowledge. Range plans will be developed for each land claim or administrative region, and then combined to demonstrate how 65% undisturbed habitat will be maintained within the entire range of Tǫdzı. Plans will be developed in regions with the highest levels of habitat disturbance first.

Environment and Natural Resources has therefore been working with Dehcho community land users and Elders to understand which areas of land are of low, medium or high importance to Boreal Caribou. They are asked questions such as:

- Where don't you see caribou?
- Where did you see or hunt boreal caribou in the past?
- Where do you find caribou now?
- Where do you see caribou during calving?
- Where do you see caribou during winter?
- Where do you see caribou during summer?
- Where do you see caribou during fall?
- Do caribou use certain movement corridors?
- Where do caribou feel protected?
- What areas are good for feeding?



Source: J. Hodson's SERM presentation
Photo credit: J. Nagy

The regional plans are intended to be updated every five years in an adaptive management approach that takes into account any new fires, new human disturbance, land reclaimed from previous disturbance and updated information about caribou distribution, habitat selection and population trends.

Discussion

- In NWT, the Boreal Caribou are considered one continuous population but in Alberta and BC there are distinct populations. It is probably because the habitat in the landscape has been naturally disjointed or has been fragmented by human activity, but more study is required for an understanding of whether there are distinct groups in the NWT.
- In NWT there have been programs monitoring population trends for more than a decade. There has been research that has shown that there are decreases in caribou survival that occur with increased habitat disturbance.
- Frederick Andrew brought up the importance of understanding how climate change will influence future landscapes and therefore the caribou. Bruce Hannah mentioned that Bill Quinton from Wilfrid Laurier University is doing research at Scotty Creek in the Dehcho looking at landscape change due to permafrost melting with climate change, which could also influence the amount of critical habitat available. Julian Kanigan mentioned that the Cumulative Impacts Monitoring Program has developed a blueprint for caribou research that identified priority study areas. One

research question that has the potential for community led monitoring is to better understand what caribou are eating. James also mentioned that there is a study that will be starting in a year's time in the South Slave looking at wolf abundance and distribution.

- Another outstanding area of research is trying to better understand how caribou use burned areas after a fire. For instance, are they eating the mushrooms? Research would also look at classifying burn severity but this research will probably occur a couple of years down the road.

Update on Environment and Natural Resources Initiatives as Part of Water Stewardship Strategy Implementation

Verbal update provided by Jennifer Fresque-Baxter, Watershed Management Advisor, Environment and Natural Resources, about initiatives ENR is working on under *Northern Voices, Northern Waters: NWT Water Stewardship Strategy*. This Strategy brings together a variety of water partners to work toward a vision and goals for water stewardship.

The Alberta transboundary bilateral management agreement was signed last week, which is a big achievement in the implementation of the Water Stewardship Strategy.

ENR is also working on community-based monitoring initiatives, collaborating with community members to conduct water sampling. ENR has heard from communities that researchers or scientists often come to do research and then communities don't hear from them again and don't know the results. So ENR worked with communities to develop a community-based monitoring program where community members receive training and undertake the sampling. The sites are picked based on community concerns or questions. There are over 40 sites in Northwest Territories and we are continually working on getting the information back to communities. It takes time to get results back to the communities, particularly because we want the results to be meaningful and accessible.

At the sites, ENR works with community members to decide what should be monitored. Typically we are looking at metals, oil and gas chemicals, temperature, and how much dirt is in the water. We added passive samplers because we heard from community members that grab samples weren't addressing all of the concerns because sometimes there could be sporadic events that would cause changes but would not always be present in the water when taking grab samples. The passive samplers that sample for oil and gas chemicals are placed in the river for one month so that they capture everything that passes by during that time. The community-based monitoring program is a popular program, so there is a waiting list to add communities and sites to the program.

The other community-based monitoring priority that ENR is addressing is the importance of training for those who are doing the monitoring. ENR is looking at more opportunities for on-going training and employment, recognizing that skills gained through the community-based monitoring can be transferable for work with the mines or with other government departments.

Recently, GNWT partnered with Brenda Parlee from the University of Alberta to do a large, basin-wide, six-year study that would focus on how traditional knowledge information can better support decision-making and be more meaningfully included at all levels of transboundary, local, and regional decision-making and research. This research area was identified by the Mackenzie River Basin Board. Every five years, the Board publishes a *State of the Aquatic Ecosystem Report* and a recurring message from the Board's Traditional Knowledge and Strengthening Partnerships Steering Committee has been that there is a lot of information in previous reports from the natural sciences but more limited inclusion of traditional knowledge. The Traditional Knowledge and Strengthening Partnerships Committee wants to improve this, and this project will support that. ENR will know in one month's time whether the project team has been successful in obtaining funding for that project to move forward.

Discussion

- Frederick Andrew emphasized how important it is that traditional knowledge be better respected and used for decision making.
- The group discussed the work that the *ENR* had done in Fort Good Hope. Jennifer noted that there was a lot of data that was put into that report that extended well beyond the borders of the community of Fort Good Hope but that the report is still being finalized in collaboration with the community. The overall goal is to develop a state of the knowledge report – what do we know about water in that region? A related report includes a vulnerability assessment and a prioritization exercise to identify priority research and monitoring areas. The top sites were Jack Fish Lake, Rabbit skin River, and the Mackenzie River for water quality monitoring.
- For future priorities, it is acknowledged that we need to better understand what changes to the environment mean for people, water, health and well-being.
- Jimmy Dillon explained that the land has a meaning and value for Dene that is unique. The Elders teach us why the water is so important - plant, animal, water, humans, they are all connected. Water takes care of everything on the land. We don't have jobs like you people do. The three of us here today do not have jobs. Those people back home they do not have jobs. Our land, it is like money to

us. Others are back there. They want to know what is being said here and they want us to bring that information back to them, otherwise we get into trouble with them.

- Jimmy Caesar explained that 25 to 30 years ago, nobody worried about the water. But then people started to notice abnormalities in loche. There is cancer that people think is because of the water in the Mackenzie River. There are places in the world where water is so contaminated that it cannot be used so we need to do research to understand what the impact might be here.
- The forum members also had a constructive discussion about the importance of training community members in monitoring. Jennifer mentioned that ENR is interested in building training opportunities for community-based monitoring for water and wildlife and there needs to be more planning done for that in collaboration with communities. Deb Simmons explained that forum members have been noticing a lot that the technical training isn't very useful without leadership training because people gain skills but they don't have the confidence to apply the technical skills. So there is an emerging consensus that what we really need is *environmental leadership training*, including training for the Renewable Resource Councils so that there is knowledge and confidence that will empower people to oversee the monitors in their work.
- Jimmy Caesar also noted that the requirement for training can go too far. Training is expensive. We had an experience with the fiber optic line recently that they were looking for a slashing certification to work with falling the trees but that specific certification wasn't available in NWT so instead they were bringing people up from Alberta, which was ridiculous – it wasn't necessary to have a special certification for cutting trees just to slash our little willows. On the other hand, Roger noted, in the past, people weren't trained so they were brought in just for show and if anything ever actually happened, industry would just shuffle them away so in a way, more training is good, it just as to be done right.
- There was further discussion about the appropriate use of traditional knowledge. Roger shared a story about an environmental monitor that was hired by industry and then the workers were trying to get him to give permission to take some short-cuts in the field because the land was more difficult and full of muskegs than they anticipated. But that wasn't his role and he wasn't an engineer so he wasn't resourced to make decisions like that.

- The group also discussed the desire to better understand water monitoring results and the need for a lengthy, detailed meeting just looking specifically at water results. Jennifer agreed that this might be a possibility; water monitoring results were presented in Fort Good Hope in 2012 but, if there was interest, ENR could look at presenting results again. Results are also available through a series of calendars, booklets and posters which can be found on nwtwaterstewardship.ca.

Update on GNWT environmental communications

Discussion with Stephanie Yuill, Public Education Specialist, and Judy McLinton, Manager, Public Affairs and Communication, Environment and Natural Resources, Government of Northwest Territories

Judy gave a brief overview of some of the initiatives that ENR is doing to communicate about traditional values. They are creating short videos about respecting the land. They are also trying to do more in sharing traditional knowledge about plants including medicinal and other traditional uses.

Deb Simmons emphasized that forum members have been talking a lot during this meeting about people's feelings that they haven't been properly communicated with regarding caribou. A lengthy discussion ensued.

Discussion

- Judy explained that ENR would like to do more communications regarding the science agenda and what research projects are going on. For instance, for the Porcupine Caribou, they would like to meet regularly with communications representatives from all partners. That way we could divide what needs to be done and who is going to do which part so that a communications plan is developed and implemented collaboratively. She also explained that she works with regional offices as much as she can, which is another mechanism for communications as they are better able to identify what information community members would like. ENR also tries to work with media outlets; for example Leon Andrew was talking about issues in his language. Unfortunately, with CKLB no longer offering this programming, a great forum for communications is missing. Frederick Andrew agreed that Dene language programming on CKLB was very important and that it was the best communication in the region and should be supported by government. Dene Nation should be supporting this

on behalf of all regions and defending CKLB.

- Bruce Hannah mentioned that in earlier conversations forum members have noted that neither community members nor Renewable Resource Councils hear updates directly from inspectors. Would it be a possibility for inspectors to be doing this? Judy responded that she would need to speak with her counterpart in *Lands* about this, but that it sounds like a good idea.
- There was also a discussion that emphasized the need for GNWT to be focusing not on *communications*, which is more of a one-directional way of sharing information, but on *education*.
- Forum members and SRRB Board members explained that the Sahtú people really do not understand what is going-on with the decision that are being made regarding caribou, particularly the decision to begin tagging, which is a huge decision and has gone on without any communications plan. The issue of the tags needs to be dealt with now. The Board has worked hard to build relationships with the Renewable Resource Councils and with this decision the rug has been pulled out from under everyone's feet. The regional superintendent is telling us to communicate about decisions that we had no role in making based on a communications tool that was prepared in 2007. The decision has been very stressful for the RRCs – people are at each others throats. This really does affect leaders and their communities and their relationships with their people. There is a huge amount of mistrust for the government and all agencies and this kind of action cripples relationships. This is a major initiative and a major shift in policy direction - from 2007 to 2015 nothing happened and then all of a sudden there are tags introduced in a letter with absolutely no oral communication. It was added that these are decisions that are being made at really high levels. There is a huge disconnect between those decisions and their implementation - it is top-down decision-making but people have no idea how to make it happen on the ground. The perception from the outside is that there is a giant disconnect in GNWT internally. Judy responded that she agrees that communications was not involved in a timely enough manner and that in the longer term, an implementation plan for the caribou management plan will help. In the meantime, she cannot promise for something to be in the paper tomorrow as some members of the forum had asked as the deadline has already passed but she will take these sentiments back and she will speak with people internally this afternoon.

Stephanie Yuill provided an overview of various ENR education initiatives.

Caribou and People DVD is an initiative in caribou education for youth. All NWT teachers from grades two and three have been given training in the lesson materials during the last seven years. The resources include a DVD with lessons about caribou skinning and also hard copy resources that include 17 activities. The lessons are comprehensive in that they look at ecosystem parts and their relationships.

ENR also has *Project Caribou*, *Project Wet*, *Project Wild* and *Project Below Zero* resources that it makes available to NWT teachers through a train-the-trainer initiatives. Stephanie Yuill has been trained as the NWT trainer and works with teachers to familiarize them with those resources and how to deliver the hands-on activities.

Other initiatives that ENR is looking at include the trees of NWT. This includes lifecycle of a forest and a First Nations medicine cabinet that was developed with an elder.

ENR has also been involved in supporting good relationships between communities and researchers. For instance, in Fort Resolution which there is a project called the Slave Watershed Environmental Effects Program - *SWEET*, which involves the University of Saskatoon doing fish research. There is involvement both through the community governments and with the youth through the school.

Discussion

- Much of the discussion focused on the importance of on the land learning opportunities for youth and the need for government support for these programs. Stephanie described several programs that ENR already supports such as a program in the Dehcho in which scientists are invited to do water ecology, sampling and safety while elders lead the on-the-land education. It is hosted in a different Dehcho community each year and has happened for thirteen years in a row now. The group also discussed the Tundra Science Camp, another annual initiative that brings together archaeologists, ornithologists, geologists and other scientists. YK1 School District has a duck camp. ENR works with the scientists and the elders to conduct a hunt and dissection. The camp includes art and education. East Three Elementary School in Inuvik also has an on-the-land camp to which ENR has contributed funding.
- Other initiatives that ENR has supported include signs to support Species-At-Risk work. ENR has also supported the development of the book *"Remember the Promise,"* an initiative

of the SRRB with the Renewable Resource Councils.

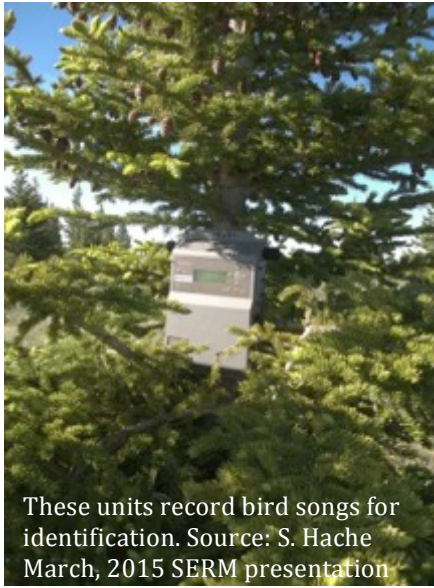
- Jimmy Dylan emphasized how important on the land education is. He would like to see that in schools, youth are educated to have the strength of two people in one person. In the past, he said, we listened to white people and we left our kids' education to you. We made a mistake. They do not know who they are or their way of life. If they receive both educations, when they are older, they can make decisions about who they want to work for and how. He also explained that on-the-land education is healing for people who have lost their families and need more support from other adults. In the future, youth will know about the land and will be able to work with tourism.
- Stephanie also mentioned that ENR has a distribution list that goes to every school in NWT so if the forum has an education tool then ENR can help disseminate that information. ENR also works closely with community recreation coordinators, libraries and librarians.
- Forum members discussed that there was an opportunity to do opportunity work around the shale oil claim that was lost, so now, with the pause in oil and gas activity, we should be thinking proactively about how to do work with the school and with education generally. The group also discussed that education is very different than consultation and that people independent from industry need to be working with communities.

Community-based landbird monitoring program in the Sahtú region

Presented by Samuel Hache, Landbird Biologist, Environment Canada

Samuel presented about a project that Environment Canada is trying to implement in the Sahtú that seeks to monitor trends in landbird populations through the placement of autonomous recording units (ARUs) that record birdsongs for subsequent identification. The project seeks to answer the research questions:

- How many bird species are breeding in the Sahtú?
- How abundant are the breeding birds in the Sahtú?
- What is the status of breeding birds in the Sahtú (in response to climate change and threats on migration)?



Traditional point counts can be challenging because of remote access and the need for highly trained field assistants to conduct the count and identify the landbirds. Using ARUs would allow a huge amount of data to be collected and favor collaboration with the communities.

Environment Canada is working with the five Sahtú communities to develop the program and to identify opportunities for community involvement, which may include: deploying the units in the field, entering data, interpreting recordings and engaging schools. Though the program is developed to study landbirds, the units register sounds from every animal (excluding bats) and so the data may be used for many other purposes in the future.

Discussion

- Roger and Frederick told stories of declines in songbirds recently. There are fewer coming back each spring. In the 80s, they talked about depleting stocks at 50% per year. In particular, they also spoke about declines in duck numbers and the timing of duck migrations, explaining that they are much more difficult to hunt now and that they need to be hunted before the ice thaws or it is too late. They emphasized that scientists need to understand that declines have been happening for a long time, so the current number is *not* the baseline. They have witnessed late storms occurring in the spring after the songbirds start to migrate back and then, the morning after the storm there are many songbirds found dead. Now there are many magpies, even in Norman Wells, where there were never magpies before.
- Julian pointed out that many of these birds can spend a vast majority of their time in the south, only coming north for short periods. Given this context, what kind of management response is appropriate? Samuel responded that in developing management responses, the birds are grouped into resident, long-range and short-range migrants. For management of short and long-range migrants there are partnerships established through the federal Species-At-Risk listing and management responses are conducted jointly between Canada, US, Mexico and others as part of a global initiative.

- Samuel explained that this project is now in the proposal stage so they are seeking feedback from community members, and from forum members in particular. Michelle Knaggs' (MSc student) component of the project will be looking at traditional knowledge and training monitors to do the monitoring so that environment Canada can take a step back later. We are applying to the aboriginal funding for species at risk and we are looking for advice on how to proceed. We are already working on a research license. Forms have gone out to communities for requests for recommendations. We are hoping to know who is interested, and what level of involvement community members would like to see.
- A discussion followed about different types of birds, their habits and their Dene names. It was agreed that it would be interesting to do work on elaborating Dene names of birds. There is a project that the SRRB is working on with Morris that is looking at caribou terminology including understanding different parts of words and their history so it would be interesting to add bird names to that project. (action)

NWT Species At Risk

Presented by Michelle Ramsay, Species at Risk/Wildlife Programs Coordinator, Species at Risk Secretariat

Michelle explained the species at risk process to forum members describing that a committee of independent experts comes together to decide if species are at risk and if so, at what level. She shared a list of species that the Species at Risk Committee (SARC) plans to assess over the coming years. SARC asks a contractor to build a species status report using the best available information from traditional knowledge, community knowledge, and scientific knowledge. SARC can only consider the biological status of the species; it cannot consider any socioeconomic factors in its assessments. Before doing this, SARC advises the Conference of Management Authorities (CMA) of the type/extent of information they understand is available and also identifies known knowledge gaps. This summary of the state of knowledge and information gaps can be used by the CMA to set research priorities in anticipation of species assessments.

SARC does not have the resources nor the mandate to conduct the primary research, they simply take into account whatever research is already available. However, the Sahtú, for example, could use this summary to select research priorities and submit new information to SARC prior to a species being assessed. This can help ensure that traditional knowledge that has not otherwise been recorded is available for inclusion in the status report and assessment.

Leon Andrews is the Sahtú representative on the Species at Risk Committee.

Discussion

- It was noted that mountain caribou were scheduled to be assessed in 2018. Michelle explained that SARC makes comparative prioritizations to determine the assessment schedule, and there are other species that are of higher priority that need to be assessed before mountain caribou. It also takes about 2 ½ years for a status report to be written and for SARC to review the information and assess the species.
- Michelle described the relationship between the federal and the territorial species at risk processes. The federal process looks at trends and species status across Canada whereas the *Species at Risk (NWT) Act* considers trends and status only within the NWT.
- There was a discussion about the importance of traditional knowledge in the species at risk assessments. It was suggested that this should probably inform SRRB applications to CIMP for primary TK research. Julian Kanigan explained that although CIMP would like to focus more resources towards TK priorities they haven't come to any agreement on priorities or strategies; they are trying to be less prescriptive so that communities can identify their priorities.

Part 2 Points of discussion

Themes

Throughout the three day meeting, several issues were raised as recurrent themes of discussion. Some of these issues were raised as specific responses to presentations, while others were raised more informally or during closing dialogues to the meeting. These discussions are summarized through the themes identified here.

Regional Study

Given the current lull in oil and gas activity in the Sahtú, now is the time for more, not less action. A regional study is needed to take a comprehensive approach to

planning for oil and gas activity in the region and should examine topics including, but not limited to:

- What needs to be done to get ready for the next boom?
- What needs to be done to prepare for the next bust?
We have learned that we are part of a global economy. Current experiences should inform the future. We need to focus not only on the next boom but also beyond that to plan for how to prepare for the inevitable time when oil prices drop.
- What are the differences between shale oil and shale gas production?
- What can we learn from neighbours in BC and US and what experiences will be unique to the Sahtú?
- What resources can we draw from to ensure that our studies and education are rooted in knowledge, and not in propaganda?
- How can communities influence the pace and scale of development so that communities aren't struggling to respond to many applications and many companies all at the same time?
- How can communities engage with companies to have more fruitful dialogue over time instead of rushed responses as soon as the next boom begins?
- How can communities understand what cumulative impacts will look like with full build-out of oil exploration and development? How can a *strategic environmental assessment* be used to examine the implications of multiple projects happening concurrently?
- What community infrastructure is needed to support future oil development?
As examples, forum members mentioned that there are too few industrial yards so waste and supplies are stored right beside the river; there is no road bypassing Norman Wells for truck hauling so trucks pass right through the communities on inadequate roads and jackknife
- How can we ensure communities are socially prepared for further oil development?
The point was raised multiple times that addiction centres and programming were being shut down at the same time that half of the world's biggest oil companies were showing up on the Sahtu's doorstep. "If we give half enough attention to our children as our land, we will be better off."
- Where are the decision mechanisms and the funding mechanisms for ensuring that an effective and comprehensive regional planning initiative

takes place?

- What are specific environmental risks associated with hydraulic fracturing and other steps of oil production and what are the best regulations that can ensure those risks are mitigated? To what extent are best practices sacrificed in light of cost savings?
- How can a regional study contribute to the collection of baseline information? What baseline information is needed to assess, plan for and regulate environmental, social and economic impact?
- What kind of regional studies have been conducted elsewhere and what can be learned from a critical analysis of those, learning both from their successes and their shortfalls? Examples to be studies might include, but would not be limited to the Beaufort Delta Regional Environmental Assessment as well as examples in Saskatchewan and Ireland.
- What kind of training needs to occur now to prepare for further oil development?
- How can health and wellness be properly handled within a regional study framework?
- How can both the territorial and federal governments be engaged in supporting an effective regional study?

Research licenses

Forum members examined a list of research licenses issued by the Aurora Research Institute for the Sahtú region since 1991 and discussed the challenges from both community and researchers' perspectives of the research license review system. The Sahtú has one of the worst rates in NWT for responding to research license referrals. More often than not, researchers are forced to simply wait the three month period and then are issued the research license with little to no response from referral organizations. If researchers do receive feedback then channels of communication are opened and the Aurora Research Institute will try to facilitate agreement between the researchers and the referral organization.

The group discussed how important an effective system is. For instance, James Caesar described the example of research involving viruses, bacteria or genome studies. In a region that was previously involved in uranium mining for nuclear weapons without knowing, there is a lot of distrust. Community members do not want to be involved in research that could ultimately hurt other people or that could have military applications.

A number of challenges were identified by forum members:

- Researchers go to the field without community members realizing they are out there. Many community members worry for their safety and a better communication system is necessary to ensure that community members are aware about researchers' plans.
- There is a perception among some forum members that even if referral organizations do not like the proposed research, the researcher will go ahead and do it anyway. There are ways to get around the licensing system such as conducting the research through institutional partners.
- There are resource challenges for the Renewable Resource Councils to go through all of the applications that are received. They try to have meetings once a month but this can be challenging. Applicants do not contribute resources for organizations to develop responses but the Renewable Resource Councils have to pay for meeting space, honouraria, staff time and so forth. These fiscal challenges are real.
- Although many forum members do not like the default in the system that no response within three months means that researchers can receive licensing for their research, it was also pointed out that any longer timeline would be very challenging. Three months is already a difficult constraint for researchers who rely on short funding cycles and often have short field seasons in the north.
- There are no mechanisms for collaboration in responses among referral bodies. There are likely opportunities for resources to be shared.
- The current model appears to be tokenistic in the way it is working and a bureaucratic exercise rather than an effective model of community engagement.
- Sometimes additional expertise is needed to review applications that the renewable resource councils do not have. The Sahtú Renewable Resource Board has a staff person who helps screen applications and sometimes the Board uses outsourced expertise through a competitive process but Renewable Resource Councils have not typically been able to access resources such as this directly.
- There needs to be a system to initially screen for interest so that time and resources are being spent on the most relevant applications.
- There is likely a role for the forum in terms of supporting the Renewable Resource Councils in reviewing applications and providing opportunity for meaningful discussion. This role needs to be explored in more detail but

forum members agreed that there should be some role for the forum as a resource to the Renewable Resource Councils.

- The process is described under the *Science Act* so there needs to be work done to understand what can be improved without changing the Act versus which improvements might require changes to the Act itself.
- There could potentially be a bigger role of Aurora Research Institute itself in reviewing applications and flagging potentially significant issues.
- A number of examples were discussed in which community members did have concerns with projects and so projects were either substantially altered or did not proceed. Community members do have substantial power under the Act but the process needs to be improved.

Socio-economic research, education and social programming

Throughout the three days, forum members emphasized the need to keep people and community as the primary focus of the forum. Roger Odgaard's words summarized the concern: ".We are putting our children on the back burner while putting the concerns of caribou and moose ahead of them."

Ultimately there is a role for the forum in shaping a research agenda around social and economic concerns while also advocating for strong programming in on-the-land education, leadership training and hands-on skill building.

Jimmy Dillon characterized why both skill sets are so important explaining that in his life he has worked as a heavy equipment operator. When oil and gas worked slowed, however, and there was no work for him, then he would spend more time on the land and survive through his Dene traditions as a harvester. However, he fears that the younger generation has lost those skills and therefore is less resilient. There is a strong need to educate youth about how to be Dene, how to work for the future, raise families, respect women and elders and be a strong person.

Many youth do not have active parents and are missing the opportunity to learn these skills. Forum members emphasized that the most important priority is educating youth and bringing them up with confidence through opportunities for productive and meaningful participation.

One area that was discussed is the need for more internship opportunities for youth. Sustained and effective treatment centres were also frequently raised as a community priority.

Baseline water studies and results

There was a desire from forum members to review in detail and understand those water monitoring results that are available. These included individual industry results (surface water and groundwater) from Conoco Phillips, MGM and Husky as well as the combined report written by AMEC for the NWT Geological Survey. In addition, forum members would like to have ENR community-based water monitoring results presented in detail.

Industry legacies and long-term monitoring

Some discussion centred around industry legacies and the need for community involvement in long-term monitoring of abandoned sites. For instance, it was brought up that wells have been left from exploratory drilling in the 60s, 70s and 80s and are no longer serviced. With the possibility of future fracking there is increased risk that these abandoned wells could fail because of communication events between wells. Land users encounter wellhead when out hunting, for instance around Stuart Lake. It is not clear if these are every inspected. Community members would like to hear from inspectors and would like these sites documented and monitored.

Forum as advocate

The role of the forum as an advocate for Sahtú concerns was frequently raised. The forum will need to consider how issues are identified and how specific positions are advocated and to whom. Though issues are often identified within the forum as being important, fully developed stances are difficult to achieve within available meeting times and little discussion focuses on which decision makers need to be informed and/or influenced nor how that communication should proceed. It was noted that the forum should be meeting with decision-makers at ENR and in other departments in order to communicate priority issues and recommended approaches.

Issues that were raised include but were not limited to:

- Presenting Sahtú research priorities to funding programs
- Advocating for more on-the-land education and cultural heritage preservation

Renewable Resource Council operations and resources

Challenges associated with effective operations of the Renewable Resource Councils were raised and need to be explored in more detail. The role of the forum, if any, in addressing these issues should be explored. Challenges that need to be addressed include:

- Ensuring sufficient funding and resources to address responsibilities
- Clarifying the relationship between the Renewable Resource Councils and the Community Development Corporations
- Providing guidelines for resolving points of conflict between the Renewable Resource Councils and the Community Development Corporations
- Reviewing the Renewable Resource Councils articles of incorporation including the constitution and bylaws
- Plan for how resources can be available to the Renewable Resource Councils proportionate to responsibilities so that more resources are available in the event that responsibilities increase.
- Ensure that budgets respect the particular conditions of the Sahtú, which includes the full role of the RRCs as well as the isolated geography of Sahtú communities.
- Investigate how RRC representatives can be supported in communicating with the community more broadly.

Specific short-term actions

The following specific actions emerged from discussions throughout the three day meetings and should be tracked to ensure follow-up.

- Ensure that results from Susan Kutz, who was doing work looking at wildlife parasites, is shared with the RRCs as her work is very important to them.
- Identify an industry representative to advise the forum given that Sandra Marken with Conoco Philips is no longer able to work on northern files.
- Invite outfitter collective representative to speak to the forum
- Request that annual outfitter reports developed by ENR be circulated to the forum and posted on-line.
- Investigate the possibility of adding bird names to the caribou terminology project.
- Discuss with the Lands department the possibility of having inspectors verbally report to the forum.

Next steps

The forum plans to:

- Meet monthly via teleconference
- Identify priority research issues in time for CIMP Letter of Intent
- Identify funding for a summer field camp
- Draft a report summarizing the work to date and proposing new directions (C. Wenman hired to do this based on existing SERM forum documents)
- Further explore identified research priorities to better understand which ones are being partially or fully addressed by current, planned or on-going research programs. This work will for a gaps analysis.
- More fully develop recommendations for a regional study.