



**9<sup>TH</sup> BIENNIAL DEHCHO REGIONAL  
WILDLIFE WORKSHOP  
OCTOBER 16-17, 2018**



*Some comments from workshop participants.*

*“I love coming to these meetings, they are so interesting, I always learn something.”*

*Mary-Jane Cazon*

*“Thrilled to be here.”*

*Wilbert Antoine*

*“It was a really interesting meeting, learned lots”*

*Ross Duntra*

*“Good thing that these workshops happen.”*

*Gabe Hardisty*

*“I am thankful to be here.”*

*Jonas Antoine*

**DEHCHO REGIONAL WILDLIFE WORKSHOP**  
**16-17 OCTOBER, 2018**  
**FORT SIMPSON RECREATION CENTRE**

**2018 Wildlife Workshop Delegates**

Gabe Hardisty – Pehdzeh Ki First Nation  
Allen Moses – Pehdzeh Ki First Nation  
Dieter Cazon – Łíídlíı Kųę First Nation  
Edward Cholo – Łíídlíı Kųę First Nation  
Florence Cayen – West Point First Nation  
James Cayen – West Point First Nation  
Myles Sibbeston – Fort Simpson Métis Local  
David Jumbo – Sambaa K’e Dene Band  
Ron Kotchea – Sambaa K’e Dene Band  
Nathan Betsaka – Nahanni Butte Dene Band  
David Konisenta – Nahanni Butte Dene Band  
Stanley Sanguéz – Jean Marie River First Nation  
Ernest Hardisty – Jean Marie River First Nation  
Ross Duntra – Acho Dene Koe Band  
Jolan Kotchea – Acho Dene Koe Band  
John McLeod – Fort Providence Métis Local  
James Christie – Fort Providence Métis Local  
Peter Sabourin – Katlodeeche First Nation  
Patrick Riley – Katlodeeche First Nation

**Environment & Natural Resources (ENR) Representatives**

Nic Larter – Manager, Wildlife Research and Monitoring (Dehcho)  
Carl Lafferty – Superintendent (Dehcho)  
Joanna Wilson – Wildlife Biologist – Species at Risk (Yellowknife)  
James Hodson – Wildlife Biologist, Environmental Assessment/Habitat (Yellowknife)  
Terry Armstrong – Wildlife Biologist, Bison (Fort Smith)

## **Environment and Climate Change Representative**

Rhiannon Pankratz – Habitat Biologist, Yellowknife

## **Participants**

Bob Norwegian – Rabbitskin River  
Jim Antoine – Łíídlíı Kųę First Nation  
Gerald Antoine – Łíídlíı Kųę First Nation  
Jonas Antoine – Łíídlíı Kųę First Nation  
Wilbert Antoine – Łíídlíı Kųę First Nation  
Roy Mouse – Łíídlíı Kųę First Nation  
Derek Erasmus – Fort Simpson Métis Local  
Marti Lys – ENR Fort Simpson  
Sarah Arnold – Parks Canada, Fort Simpson  
Tas-Tsi Catholique – Parks Canada, Fort Simpson  
Danielle Thompson – Parks Canada, Fort Simpson  
Tina Vander Wielen – Parks Canada, Fort Simpson  
Nick Lai – Parks Canada, Fort Simpson  
Father Joe Daly – Fort Simpson  
Heather Sayine-Crawford – ENR, Yellowknife  
Heather Fenton – ENR Yellowknife

Sound provided by MJC Audio (Ronnie Yee)  
Translation provided by K'iyeli Translation, Interpreting & Transcribing  
Services (Mary-Jane Cazon)  
Catering provided by Thomas Simpson Secondary School



As with previous workshops posters of work were put up all over the walls of the hall including around the refreshment stand. During coffee and lunch breaks, conversations were often fueled by posters about the room. There was a reference table which was stocked with copies of many pamphlets, field guides, and reports that had been produced since the last workshop. Delegates and participants took most of the provided literature.



## A TRIBUTE TO DANNY ALLAIRE

One noticeable absence from this workshop was the presence Danny Allaire (ENR Fort Simpson). Danny was an integral part of all eight previous wildlife workshops, and played an integral role in the wildlife research programs



conducted by ENR Fort Simpson. The consummate professional, Danny had prepared a presentation on his trail camera project for this workshop well in advance, but was too ill to participate in the workshop. Unfortunately, his condition deteriorated and Danny passed away before the final report could be completed.

Danny will be forever remembered for his love of field work and being out on the land, regardless of the weather

conditions, his enjoyment of working with Dehcho communities, in particular with the youth, his thrill of attending and presenting his work accomplishments at wildlife workshops all over Canada, his meticulous work with survey data, harvest data, and mapping, his jovial laughter, and mostly for his love of life and family. Danny and I had a wonderful 16-year run with ENR Fort Simpson, which was unfortunately cut short too soon. I will miss my friend and colleague. His presentation is included in the appendices of this final report as a lasting tribute.



The Department of Environment and Natural Resources (ENR), Dehcho Region held a Regional Wildlife Workshop at the recreation centre in Fort Simpson on 16-17 October, 2018. This was the ninth regional wildlife workshop; the first was held September 2002 with the others occurring in Octobers 2004, 2006, 2008, 2010, 2012, 2014 and 2016. During the first workshop a decision was made to hold future workshops in October because a later date would not conflict with the fall harvest and would permit increased opportunities for harvesters to participate in the workshop. The key results of the 2016 workshop were direction for the various wildlife research programs, the communicating of results, and a list of 15 action items. The goals of the 2018 workshop were to:

- 1) provide an update on the status and results of ongoing wildlife research programs that ENR had been conducting since the 2016 workshop,
- 2) provide an assessment of how well ENR had addressed the 15 action items that had been identified from the 2016 workshop,
- 3) provide a forum for other agencies, organizations, and ENR research programs to present their findings,
- 4) provide an open forum for the discussion of any and all regional wildlife issues, and
- 5) ensure a continued open dialogue about wildlife research, monitoring programs, and wildlife issues between all Dehcho First Nations (DFN) and ENR.

As with the past two workshops Mother Nature served notice she would play an important role. For the first time, low water levels on the Liard River had put an end to ferry service for the travel day to the workshop. Wrigley delegates were the only ones who could drive in to Fort Simpson. For all the other delegates who had planned to drive they drove to Jean Marie River and were flown to Fort Simpson on chartered aircraft. Even though this forced change in travel had only been realized on the Friday before, we had a strong turnout of delegates; just two Dehcho First Nations were unable to send delegates to the workshop. Having to charter so many delegates to and from Jean Marie River made for more concise Wednesday afternoon discussions as some delegates still were faced with long drives after getting to Jean Marie River. And for the Nahanni Butte delegates, inclement weather Wednesday delayed their return home until Thursday when weather improved. We thank all out of town delegates for their patience and adaptability to the situation and to Savana Norwegian for arranging the huge change in travel itinerary for the delegates.

During day 1 ENR made a presentation detailing and critiquing how they had addressed each of 15 action items arising from the 2016 workshop. This was followed by a local elders' perspective on climate change. A presentation on bats and bat research in the Dehcho was made (by ENR, Yellowknife) followed by a presentation on the Dehcho boreal caribou program (by ENR, Fort Simpson). After the lunch break were presentations on boreal caribou range management planning in the Southern NT (by ENR, Yellowknife), the Dehcho moose program (by ENR Fort Simpson), bird monitoring in the Dehcho and the Edézhzhíe in particular (by Environment & Climate Change, Yellowknife),

amphibians in the Dehcho (by ENR, Yellowknife), the Dehcho wood bison program (by ENR Fort Simpson), and wood bison management plans, with particular reference to the Nahanni population (by ENR Fort Smith). The last presentation stimulated discussions which were channelled into the day 2 session. A wide assortment of study updates, preliminary and briefing results, reports, scientific papers, and plain language results from wildlife work done in the Dehcho over the past couple of years was made available for delegates with most of the literature gone by the end of day 1.

Day 2 featured four round table discussion sessions; two in the morning and two in the afternoon. The first session dealt mainly with bison issues especially related to accessing tags to harvest a Nahanni bison, and bison on roads and in communities. The second session dealt with a harvest sampling program for boreal caribou, continuation of the Dehcho boreal caribou monitoring program and whether there was support to collar additional caribou along the Mackenzie Valley Road north from Wrigley. After lunch, we discussed how harvesting this past year compared with harvesting just before the last workshop (2 years ago), moose surveys and contaminant studies. After a brief coffee break the last session dealt with action items for ENR including a discussion about future workshops and direction for ongoing and new initiatives.

Over the course of day 2 delegates and audience participants had a lot to say about current wildlife programs/issues and provided feedback on a wide variety of wildlife related topics. ENR would like to take this opportunity to thank all First Nations who sent delegates to participate in this workshop.

Once again there was outstanding attendance and participation. It was encouraging to see the participation of an increasing number of youth delegates. This shows how their exposure to and participation in such workshops is valued by local communities. Our programs can only benefit from the comments and suggestions raised. ENR would also like to thank all guest presenters for participating in this workshop.

What follows is the final workshop agenda, the key discussion items and comments from each of the presentations and round table discussions during the 2-day workshop and the list of action items generated from the workshop for ENR to pursue. At the request of delegates we have also included a listing of the action items that were tabled at all previous workshops.

I would like to thank Patricia Lacroix, Brett Elkin, Terry Armstrong, Carl Lafferty and Heather Sayine-Crawford for reviewing earlier drafts of this final report.

## **Day 1 – 16 October, 2018**

- 0915 Opening Prayer – Stanley Sanguez
- 0920 Welcoming Comments - Carl Lafferty, Regional Superintendent, ENR
- 0925 Welcoming Comments – Gerald Antoine, Chief LKFN
- 0930 Review of 2016 workshop action items - Nic Larter, ENR
- 0955 Climate Change Viewpoint – Jonas Antoine, LKFN
- 1005 Bats in the Dehcho Region – Joanna Wilson, ENR
- 1050 Coffee Break
- 1110 Dehcho Caribou Program - Nic Larter, ENR
- 1205 Lunch catered by Thomas Simpson Secondary School
- 1305 Update on boreal caribou range planning – James Hodson, ENR
- 1350 Dehcho Moose Program – Nic Larter, ENR
- 1430 Mini-Break for translator
- 1440 Boreal Bird Monitoring in the Dehcho – Rhiannon Pankratz, CWS
- 1540 Coffee Break
- 1555 Amphibians in the Dehcho – Joanna Wilson, ENR
- 1625 Dehcho Bison Program – Nic Larter, ENR
- 1645 Bison Management Plans - Terry Armstrong, ENR
- 1705 Closing comments



## **Day 2 – 17 October, 2018**

0910 Opening Prayer – Florence Cayen

0910 Round table discussions on bison issues (results of recent surveys, presence in communities, equitable access to tags, management plans, collaring, highway signs).

1035 Coffee Break

1045 Round table discussions about boreal caribou program (collaring males for more rut information, collaring additional females along MVH route, wildlife health and harvest sampling [samples/reimbursement], highway signs).

1130 Preliminary delegate return travel information, disbursement of reimbursements.

1200 Lunch catered by Thomas Simpson Secondary School

1310 Round table discussions on ducks and geese, moose research findings (results of contaminant study, methodology and results of last large-scale survey, future surveys and timing), regional wildlife issues, change in wildlife harvest since last workshop (abundance, condition).

1410 Coffee Break

1425 Round table discussion to determine action items/current and future workshop formats, final discussions, delegate comments closing comments and finalized delegate travel arrangements.

1535 Final Prayer – Florence Cayen.

1540 Workshop adjourned.

## **Day 1**

### **Presentation on 2016 Action Items**

There was limited discussion on this presentation of 15 action items that had resulted from the previous workshop. Most items had been addressed by the Department of Environment and Natural Resources (ENR) over the past two years. Delegates appreciated that ENR had successfully completed large-scale aerial surveys for both wood bison and moose in addition to the annual surveys for boreal caribou and that many local observers had participated in the surveys. Delegates were pleased with the results from the moose samples analyses and with its reporting. There was some discussion around the unexpected technical issues experienced when trying to get location data from two different projects and agencies into a usable format to create a single map; changes in personnel increased the challenge. Delegates felt it was useful to collect and to continue to collect general information on the current abundance of wildlife at regional workshops. They also appreciated the effort that ENR had made to increase the highway warning signage of bison and supported efforts to increase highway warning and educational signs for other wildlife. Delegates were surprised at the number of collaborative projects that ENR Fort Simpson was involved in and with the number of project conducted and reported on since the last workshop.

After the action items presentation and before the presentation of bats, Jonas Antoine (an elder from Łíídlı̨ Kųę First Nation) provided his perspective on climate change which he indicated was upon us right now and which Dehcho people and elders had been talking about for the last 25 years. We have seen what

has been happening in our travels out on the land. There are slumps all over. Waterloo and Wilfrid Laurier have been doing studies on the permafrost and putting out warning signs. Unfortunately, we have been too complacent over that time. There is a need to make people everywhere more aware of this phenomenon and to actively start doing something about it. He'd recently had a short conversation with Minister McKenna on the subject and had been invited to speak about the concerns people in the Dehcho have about climate change Waterloo and Wilfrid Laurier Universities. It is up to the Dehcho to protect our land for future generations.

## **Presentation on Bats in the Dehcho**

There are more than 1300 species of bats worldwide with 19 occurring in Canada, eight in the Northwest Territories, and seven in the Dehcho. The little brown myotis (LBM) and northern myotis (NM) are the two most common species in the NT. The big brown bat (BBB), long-legged myotis (LLM), long-eared myotis (LEM), hoary bat (HB), red bat (RB), and silver-haired bat (SHB) are also found in the NT. Only the SHB has not been reported for the Dehcho. Five species of bats hibernate (LBM, NM, LLM, LEM, BBB) while the other three (SHB, HB, RB) migrate south for the winter. Both the LBM and NM are listed as endangered species by SARA and as Special Concern in NT because of a disease called White-nose Syndrome (WNS) which has devastated bat populations in eastern North America. WNS is an introduced fungus which is making its way further north and east across the continent.

Bats are the only truly flying mammal and are nocturnal (night active). Their scientific name (Chiroptera) means hand wing. Bats eat insects and can

consume their own body weight in a single night; one LBM can eat as many as 600 mosquito-sized insects in one hour. Bats fly and hunt in the dark using echolocation, by producing ultrasound waves which bounce off objects. Bat detectors (ultrasound microphones) were deployed recently at Sambaa Deh, Lady Evelyn Falls, Sambaa K'e, Liard River, Petitot River and Edézhíe to detect bats. ENR and other agencies have used bat detectors at different sites in NT over the past 12 years. ENR is planning a contract to analyze and summarize the information collected by bat detectors in a report.

Hibernation sites are very important. Bats use deep caves where there are stable non-freezing temperatures. We know of three hibernaculum sites in NT: two in South Slave and a recently found one in Nahanni National Park Reserve. There are likely others in the karst formations found in and around Wood Buffalo Park and the Mackenzie mountains. Hibernacula are critical for monitoring and managing WNS.

In summer bats rest during the day in roosts found in crevices or cavities in trees and rocks. They can also use buildings for roosts. Reproducing female bats and their young can form large groups called 'maternity colonies' in roofs, attics, and walls. These colonies are very important for the population and bats may return yearly to these roosts. ENR is promoting building artificial roosts (bat houses); there is one at Lady Evelyn falls. ENR is also promoting best practices that homeowners can use to deal appropriately with bats in buildings without harming the bats.

ENR conducted surveys in Sambaa K'e during summer 2017. Exit counts from building roosts were used to estimate numbers and bats were captured in mist nets to determine species, sex, rough age, reproductive status, and to check for WNS. Weight and various length measurements were also collected. Three large maternity colonies of LBM were found associated with buildings. Female reproductive rate was >50%, at least over 300 bats were counted and 83 were captured.

ENR conducted similar surveys in Kakisa, Fort, Providence, Hay River and Fort Smith during summer 2018 as well as banding some female bats. They found similar female reproductive rates counting almost 1000 bats and capturing 167 bats at Kakisa (3 maternity roosts), Hay River (2 maternity roosts) and Fort Providence (2 maternity roosts). At the one maternity roost surveyed in Fort Smith they caught 2 bats with bands on one from 2011 and other from 2014. Five banded bats were caught at the bat houses at Lady Evelyn Falls; bands from 2011, 2012, 2014, and 2016. Future plans are to continue with survey and monitoring, to create an educational program that can be directed at schools, to attempt to locate hibernation sites, and to promote best practices for managing bats in buildings.

While handling bats in surveys ENR followed a stringent decontamination protocol to ensure no accidental spread of WNS between bats or between sites. Fortunately there is no evidence that WNS is present in NT bats.

### *Delegate comments*

Delegates had questions about white-nose syndrome and whether it was a danger to humans or just bats. They questioned whether or not some of the bats surviving the catastrophic die-offs in the east would be better able to survive and adapt, and whether climate change was causing the die-offs. Also 50 years ago it was -50C in winter and bats survived then, is warmer weather affecting them. There are lots of questions as to how climate change may be affecting bats. There were additional questions about the basic biology and physiology of bats. Some delegates recounted experiences stumbling on bats when they were not expected. Some questions were raised about why we should be spending time studying bats, just because some are endangered. But it was pointed out that bats are an important part of the ecosystem and major declines in numbers cause a ripple effect. Just because people are scared of them or don't like them doesn't mean they are not important. It means that we need to educate people more about them like this presentation has done.

### **Presentation on Dehcho Boreal Caribou Program**

The presentation provided an update on the past two years of the boreal caribou population monitoring program, the longest running program in the NT. Thirteen (eight female, five male) collars and 20 (15 female, five male) collars had been deployed in 2017 and 2018 respectively, throughout the Dehcho in areas requested by First Nation partners. Over the past two years nine collars released as programmed and collared caribou expanded the range of the study area to Sibbeston Lake in the west, and further NE of Edézhíé.

Over the past two years, eight collars had released as programmed Eleven female and 6 males collars are available for deployment in February 2019 and as in previous years each First Nation partner will be provided with one collar and the opportunity to designate whether or not they would like to deploy it in their traditional areas, and where.

Female caribou continue to show high pregnancies and birthing, 95% of collared caribou are pregnant and 93% had calves. Recruitment rates and estimated adult female survival over the past two years was about average for the study. The average rate of population increase ( $\lambda$ ) for the 13 year study is 0.97. This indicates a slight decline; a  $\lambda$  of 1.0 indicates stability. Rump fatness measures showed that females entering the winter in relatively good condition exited the winter in relatively good condition.

With similar boreal caribou studies being carried out in both the South Slave and North Slave regions there was a discussion about collaborative work, specifically with annual classification surveys and retrieving collars, to reduce costs, increase efficiency and increase consistency caribou classification and data collection.

There was discussion about collaring male caribou. ENR was asked to deploy collars on male caribou following the last workshop. As a pilot project five GPS collars were deployed on mature males in 2017 and 2018. Collars were programmed to release after their third rutting period. We had a problems with two collars deployed in 2017 that seem to have been corrected with the 2018 deployment. One male was killed by wolves but we have movement



information from four males over the 2017 rutting period. Interestingly, males moved very little during the peak of breeding (average range 285km<sup>2</sup>). Based upon the consistency of calving dates year after year by individual females these preliminary data may imply that large breeding males remain fairly stationary during the breeding season waiting for females to come to them for breeding.

With summer 2018 being a slow fire season, ENR wildlife was able to acquire helicopter time for collar retrievals. Fourteen collars were retrieved, some were scheduled releases, some were mortalities, and some had been down for almost two years. We were able to collect bones and teeth from some sites. One of the collars we retrieved had three years of locations stored on board that had not been transmitted (three more calving events were documented). We refurbished all those retrieved units that could be.

ENR has been working with the Department of Infrastructure (DOI) to erect warning signs for caribou on the Mackenzie Highway as a public safety issue. Although there have been few collisions we would like to prevent them. There is a stretch of highway where collared animals frequent and we have had the most observations of boreal caribou. In September 2018 warning signs were erected at km posts 335 and 405 of Highway 1. ENR communications would also like to create a large interpretive sign on boreal caribou to be located in the Dehcho.

There was mention of a wolf collar being retrieved just south of Wrigley, October 2017. The collar had been deployed on a wolf near Fort Nelson in

April 2015 which had moved to Liard Hotsprings in October 2015 when the collar batteries malfunctioned.

A couple of very recent developments were noted which gave rise to some discussions throughout the rest of the workshop. Firstly there had been the suggestion by local residents at a recent meeting that ENR should collect biological samples from harvested boreal caribou, similar to the sample collection from moose in the Dehcho. Secondly, with the proposed Mackenzie Valley Highway project there is a need to collect baseline movement data on boreal caribou along the highway route north of Wrigley to the Sahtú. This would require deploying collars on 10 females north of Wrigley in addition to the 17 collars being deployed throughout the Dehcho study area.

#### *Delegate comments*

There was a comment that big bull boreal caribou now do not have the large antlers (racks) that they did 30 years ago. It was noted that a decrease in rack size had also been reported for bull Peary caribou on Banks Island during the 1990s. There was a comment that big bull boreal caribou are fat all year long likely because of the food. There was a question about how collars came off. Collars have a release mechanism with a pre-programmed release date. On that date the screws in the release mechanism are ejected and the collar falls off. There was a discussion about ticks and wildlife. Winter tick is the most common species and it is more prevalent on moose. Some delegates indicated they had harvested moose covered with ticks. It can cause severe hair loss hence the term “ghost” moose. Elsewhere it has been found on white-tailed

deer and we have found it on boreal caribou but we do not know the effects on caribou or deer. Ticks typically do not affect the meat of animal. It was reiterated to please report these observations and provide samples to ENR. Delegates indicated that it was easy to take and provide pictures. They wondered if TB could be in moose and boreal caribou. TB hasn't been heard of in them, many bacteria can cause nodules. Both caribou and moose are intermediate hosts to tapeworms; cooking the meat kills the tapeworm. Delegates asked if the small areas used by males during the rut might be because they are avoiding some of the recent big fires. This is certainly a possibility, but we would need more collared males and more time looking at their movements in order to assess this. Delegates wondered if there had been any wolf studies. It was indicated that surveys to estimate wolf density had been conducted in both the Dehcho and the South Slave and studies to look at wolf diet had also been conducted. The South Slave has deployed some collars on wolves. Delegates wondered if there were any vegetation studies going on and if not there should be because of the effects of climate change. It was indicated that preliminary vegetation sampling of boreal caribou foods had been conducted by the lab doing the fat measures. Unfortunately, the lab work that looks at the quality of the food has been delayed. It was acknowledged that more sampling and study of vegetation was overdue. There was a discussion about collecting samples from harvested caribou like ENR had previously done for moose – what biological samples should be collected, what could be learned for different biological samples, why whole kidneys are needed versus a piece of kidney, which communities should be involved, how much should harvesters be reimbursed. Collecting samples was going to be a topic of extended discussion in day 2.

## **Presentation on an Update on Boreal Caribou Range Planning**

Range planning is in response to 2012 National Recovery Strategy and 2017 NWT Recovery Strategy where declines in populations are more likely in areas with higher levels of habitat disturbance and fragmentation. Critical habitat for the recovery or survival of boreal caribou has been defined as at least 65% undisturbed habitat which is habitat that has not burnt in the last 40 years and is at least 500m away from any human disturbance footprint. In the NT there is one boreal caribou range that extends from the AB/BC border to the Inuvialuit Settlement Region. This creates challenges for developing an NT range plan because of: i) the huge area to manage, ii) the location of fire and human disturbance is constantly changing and is unevenly distributed across the range, iii) many decisions are made at a regional level, and iv) there is a need to balance conservation and economic development. Hence the need for a range planning framework to guide the development of regional range plans. Regional plans will be developed for the southern NT, Inuvialuit, Gwich'in, Sahtú, Wek'èezhì, and Yukon portions of the range. Plans will use a tiered approach to managing habitat disturbance with more intensive actions in areas more important for boreal caribou. Tiered management classes are defined by the combination of relative importance of an area for boreal caribou (low, medium, high) and the current amount of human disturbance (low risk, cautionary, high risk) in each region. Habitat is assigned to one of three management classes: basic, enhanced, and intensive. The initial map of management classes in a range plan is revised based upon local considerations of current land protections in place and plans and potential for economic development. Management actions, for fire and industrial development, will be identified in each range plan for the three management

classes. The range plans will include important research and monitoring questions related to habitat disturbance and caribou population trends and would have a 10 year review cycle.

A draft framework was distributed to northern and southern NT working groups in May 2018. Working groups are collaboratively reviewing the Framework to provide input on objectives, alternatives, key choices; seek areas of agreement; make recommendations and communicate issues within member organizations in a timely fashion. The northern working group includes the Inuvialuit, Gwich'in, Sahtú, Wek'èezhì regions. The southern working group includes Akaitcho First Nations, Dehcho First Nations, Acho Dene Koe First Nation, K'at'odeeche First Nation, Salt River First Nation, and the NWT Métis Nation. The northern working group has had two meetings. A second meeting for the southern working group is scheduled in November in Hay River. Both groups will meet again in February 2019 to review a revised Framework. A "What we Heard" document will be produced in March 2019 with a final review by Renewable Resource Boards and Cabinet in April-May 2019. We hope for cabinet approval in June 2019 so that work can start on regional range plans in fall 2019. Range plans for Wek'èezhì and the southern NT regions will be worked on first as they currently have higher levels of habitat disturbance. The Inuvialuit, Gwich'in, and Sahtú plans will be worked on second.

More information is available at:

<https://www.enr.gov.nt.ca/en/services/draft-boreal-caribou-range-planning-framework-have-your-say>

### *Delegate comments*

It was noted that the Range Management Planning was a result of the federal and territorial recovery strategies. Delegates indicated that climate change created more freeze-thawing events where ice crusts formed on top of the snow. These conditions affect the caribou. They wanted to know if snow measurements and tracking weather patterns were part of the work with caribou - part of the work does include taking snow measurements. It was also indicated that movement data can be used to see if icing events cause caribou to stay in one place for an extended period. Delegates discussed disturbed versus undisturbed habitat and the 40 years after a forest fire definition. It was agreed that there were no fixed numbers of years after a fire, in the Dehcho and South Slave there are some places where caribou have avoided areas that burnt 50 years ago. The time since a fire is limited by our collar data. We are starting project using the collared data to better assess how long after a burn caribou start to use the area. Delegates wanted to know if sample kits were provided whether or not they would be returned complete. It was indicated that for the moose studies there had generally been a good response but an abundance of sample kits had to be provided.

### **Presentation on Dehcho Moose Program**

This presentation provided key results from two major projects: the four-year contaminant study and the large-scale surveys of the Mackenzie and Liard River Valleys completed during winter 2017/18. A detailed report on the contaminant study can be found at:

[https://www.enr.gov.nt.ca/sites/enr/files/resources/152\\_file.pdf](https://www.enr.gov.nt.ca/sites/enr/files/resources/152_file.pdf)

Samples from all 38 moose harvested from November 2012 to January 2016 were analyzed for 35 elements, including cadmium, mercury, lead, and arsenic. The results were compared with those from 43 moose harvested in the Dehcho from 2005 to 2007, and from studies conducted elsewhere in North America. Samples included a tooth, a kidney plus accompanying fat, a piece of liver, a piece of muscle, part of longbone and some poop. The hunter provided a ranking of body condition (excellent, good, fair, poor). Hunters were reimbursed \$75 for a complete sample kit.

#### Results included:

- Cadmium concentration highest in kidney lowest in muscle and increased with animal age.
- Cadmium concentration in moose from Mackenzie and Liard River Valleys similar to moose found elsewhere in Canada and much lower than moose from south Mackenzie Mountains.
- Concentrations of naturally-occurring elements similar to those found in moose in other regions of Canada and Alaska.
- Mercury concentration low and lower than other mammals in NT.
- Lead levels too low to be measured.
- Reported body condition and fat stores show a generally healthy moose population in Dehcho during both sampling periods.
- Low incidence of common parasites found in poop.
- Analysis of kidney tissue from 2012-16 showed a low incidence of pathological changes in kidney cells.
- Moose from the Mackenzie and Liard River Valleys are an important and valuable source of traditional food for harvesters in the Dehcho.



Following directions from the last wildlife workshop community meetings were held in July and October 2017 to discuss the survey area, block delineation, and timing of survey(s). Consensus was the survey would be conducted in two parts: 40% in November and 60% in February. The geospatial aerial survey technique was to be used to estimate moose density. In this type of survey, randomly selected blocks of about 16km<sup>2</sup> are flown in such a way as to count all moose in a block. Moose are classified into calves, females, and small, medium, and large males. Two survey planes were used and observers were hired from local communities. We planned to survey 250 blocks total, 165 in the Mackenzie and 85 in the Liard with 40% flown in November and 60% flown in February. Previous similar large-scale surveys were conducted in winters 2003/04 and 2011/12.

For the Mackenzie portion, survey conditions in November (part 1) were excellent, 66 blocks were flown, 63 moose (including two cows with twins) and 19 boreal caribou were observed. In February (part 2) there were some windy days, 99 blocks were flown, 127 moose and 12 boreal caribou were observed. Total coverage was 11.33%, 165 of 1457 blocks surveyed. Two cows with twins were observed. For the Liard portion, survey conditions in November (part 1) were excellent, 34 blocks were flown, 72 moose and 26 wood bison were observed. In February (part 2) there were some windy days, 51 blocks were flown, 62 moose (including two cows with twins), 92 wood bison, 11 boreal caribou and 1 wolf were observed. Total coverage was 15.80%, 85 of 538 blocks surveyed.

Density estimates were 4.47 and 7.16 moose/100km<sup>2</sup> for the Mackenzie and Liard survey areas, respectively. When comparing the current adult moose density estimates for surveys in winter 2003/04 and winter 2011/12, the Mackenzie area estimates are relatively stable; for the Liard area estimates show a possibly increasing trend.

The two part winter survey worked very well and should be used for future large-scale surveys. Large-scale surveys are costly. Small-scale surveys have been conducted in the past but they cannot detect changes in number over larger areas. The current 6-year rotation of large surveys should be revisited in light of the current survey results and in forgoing small-scale surveys. Maybe a large-scale survey for one area in 3-4 years should be considered.

#### *Delegate comments*

Delegates were happy with the contaminant study and that the results did not raise any concerns for the health of moose harvested in the Mackenzie and Liard Valleys. They wanted to know what happens with future moose surveys given the results of the last survey and the ongoing problem of reduced access to caribou. It was indicated that it would be wise to conduct another large-scale survey of the Mackenzie Valley in 3-4 years. A large-scale survey of the Liard Valley could probably wait for 5-6 years.

### **Presentation on Boreal Bird Monitoring in the Dehcho**

One of the responsibilities of the Canadian Wildlife Service (CWS) is to conserve migratory birds and their habitat. Migratory birds are generally sensitive to environmental change, some species are hunted, and they all

vocalize so are easy to count. Bird song can be considered a language, each species communicating using unique vocalizations. CWS monitors landbird populations by visiting a location and counting all species seen or heard. By visiting the same location over many years, species population trends can be generated. New technologies, like acoustic recording units (ARUs), are being used more frequently for data collection in place of human observers in the field. These units record sound, in particular bird song, which can be used to identify species. This provides an easy way to collect a lot of information, much more than could be collected and processed traditionally. Fortunately, new computer programs are being developed to process the immense amount of data. These programs do require human validation to remove false positive recognition. As ARUs record all sound (human noise, insects, amphibians, mammals) there is lots of potential for collaborative work. In the Dehcho, CWS has ongoing monitoring programs including: Edézhíé, winter road, wildfire, North American Breeding Bird survey, and the Common Nighthawk Survey.

In 2016, CWS established the Edézhíé long-term monitoring program utilizing ARUs, the goal to document all breeding birds in Edézhíé and estimate population sizes. Because Edézhíé is a relatively pristine area we can address questions such as: what are the effects of wintering ground disturbance? How climate change affects bird populations? How natural disturbances affect bird populations? The project has 41 monitoring stations with grids of five ARUs/station. From the data collected during the 2016 field season CWS was able to predict the population sizes of 38 different bird species; the white-throated sparrow was the most abundant. Most density estimates were high considering Edézhíé is at the northern limit of the

breeding range for many species. In particular, Edézhíé population estimates for four bird species at risk (Common Nighthawk, Olive-sided Flycatcher, Rusty Blackbird, and Yellow Rail) represented a substantial proportion of the current estimates for the national populations. The program is scheduled to be repeated in summer 2019 with teams from Fort Simpson and Fort Providence deploying ARUs in the same locations during May and retrieving them in July.

In 2017, CWS initiated a bird monitoring program along the Mackenzie winter road with 54 ARUs deployed between Fort Simpson and Wrigley. The units were deployed in winter but programmed to record in summer, so it takes a year to collect the data. In 2018, 175 ARUs were deployed along the Sambaa K'e winter road. From Fort Simpson and Wrigley ARUs 40 species were detected including three declining or at risk species (Common Nighthawk, Olive-sided Flycatcher, and Lesser Yellowlegs) and two edge of the range species (Townsend's Solitaire and Varied Thrush).

In 2014-2016, CWS measured the effects of fire severity (low, medium, and high) and time since fire along Highway 3 and in Edézhíé. These sites will be monitored every three years. Preliminary results show that fewer species are found in high severity burns but after two years there is no noticeable difference in the bird community.

The North American Breeding Bird (BBS) and Common Nighthawk (CONI) are national, volunteer-based, road-based annual surveys; the BBS started in the early 1990s while the CONI started in 2016. The BBS has 50 stops at sunrise

while the CONI has 12 stops at sunset. All birds heard are recorded. Additionally, CWS captured Common Nighthawks in 2017 and 2018 to collect blood samples and equip birds with satellite tags. Common Nighthawks have declined nationally by 68% over the last 45 years and the reasons for this decline are not understood. Handling birds was required to investigate migration routes and whether NT populations were genetically related to other populations.

CWS is trying to determine if ARUs can measure the song rate of Olive-sided Flycatchers. Because song rate differs with the status of nesting (i.e. paired, nesting, fledged young) song rate could be used to estimate breeding success. ARUs are also being used to determine the nesting periods of Bank and Barn Swallows in gravel pits and culverts to assess the importance of these human structures and to reduce incidental take of these species at these sites.

#### *Delegate comments*

Delegates noted that they haven't been hearing common nighthawks much anymore, just a few birds in the area. Once the magpie came north, nighthawk numbers declined, magpies attack them. They asked whether there were GPS units used with the birds. It was indicated that they wear backpack GPS units which provides real time transmissions. Delegates wanted to know if they were monitoring spring ducks as they came north there was concern that with them landing in sewage lagoons on their northward migration that they would not be safe to eat. Ducks are being monitored in collaboration with the USFWS but not for food safety. Delegates indicated they were seeing fewer black ducks and that geese were sometimes flying in different directions. Numbers

of ducks and geese fluctuate but many places where we hunted ducks and geese they aren't there. It was indicated that migration routes shift sometimes in response to how wet or dry the prairies are. A small shift can mean that waterfowl completely miss an area where they used to be. Without many long term studies it is hard to say what is going on with numbers and distribution. It was noted that there was an overabundance of snow geese. There was a question of how birds slept when -20C. Blood flow in the legs prevents frostbite. Ravens will group together to sleep, ptarmigan will bury themselves in the snow which insulates them.

### **Presentation on Amphibians in the Dehcho**

Amphibians are frogs, toads and salamanders that spend part of their lives in the water and part on land. They breed and lay their eggs in the water and the tadpoles are aquatic. Tadpoles grow and transform into adults, which typically live on land. Amphibians breathe partially through their skin and so are sensitive to changing environmental conditions. They are good indicators of environmental change and ecosystem health. Globally, amphibians face many threats including disease, habitat destruction, pollution and populations are declining. Wood frog, boreal chorus frog, Western toad, Northern leopard frog, and Canadian toad are found in the NT. Western toad is only found in the Dehcho and is threatened in the NT. Northern leopard frog is found only in the South Slave and is also threatened in the NT. Long-toed salamander has been reported in the southern Liard Valley; any photos or specimens would be greatly appreciated. Amphibians need fresh water habitat for breeding and use a wide variety of ponds and wetlands. They typically show strong fidelity to breeding sites.

Western toad is a threatened species in the NT that is only found in the Liard Valley. They cannot tolerate freezing, overwintering below the frost line, either underground or in natural cavities. A single over-wintering site may be used by many individuals. Early deep snow is thought to be important for providing insulation. During a 2007-2008 amphibian survey, western toads were found breeding in ponds in the gravel pit south of the Muskeg River. This is the only known breeding site for western toad in the NT. Local residents said they had first observed western toads in the Muskeg River area in summer 1989. Since then toad numbers have increased every summer and there are burrows along the river banks. During the last five years they started seeing toads on the roads and around their summer camps and more recently they saw toads run over by vehicles. During spring 2018, ENR received reports of squashed western toads on highway 7 near the Muskeg River bridge; six carcasses in 10 days (May 2018). Vehicle mortality of western toads is actually a common problem in other places, like B.C. Because female toads take 4-6 years to mature, and most breed only once in their lifetime, the population cannot sustain much of this kind of additional mortality. In response to the vehicle mortality of this threatened toad, road warning signs were erected at the approaches on either side of the Muskeg River bridge to encourage drivers to slow down and watch for toads. Other measures, like barriers around the breeding ponds, are being considered to encourage people to be careful to avoid harming toads when using the gravel pit area.

ENR is implementing the NWT Amphibian Management Plan, which was completed in 2017. ENR tried a new method to detect amphibians this past



summer. eDNA can determine if a certain species is present or absent by detecting the amphibian's DNA in the water. The sample collection protocol is rigorous, and water samples must be kept cool and filtered within 24 hours to prevent degradation of DNA. Having a portable filtration pump, instead of sending samples to a lab for filtration, would expand the geographic area where samples can be realistically collected. This method can also test for the presence of diseases like chytrid fungus and ranavirus in the water.

### *Delegate comments*

Some delegates questioned whether frogs were capable of staying up north during the winter. It was reiterated that burrows, leaf litter and snow cover were important for amphibians to overwinter. There were comments that frogs are not heard as much as they used to be in the Wrigley area. There was speculation that some aspects of climate change were affecting frog numbers. With less snow cover and more freezing and thawing events that insulating layer would not be providing as much protection from the cold for frogs. There was also a comment that frogs would often stay in borrow pits near the highway even though the water level is going down.

### **Presentation on Dehcho Bison Program**

This presentation provided an update on the past two years of the program including the results of the March 2017 population survey, classification surveys, and highway signage.

A population survey was conducted from 15-21 March 2017. This was an aerial strip line transect survey, with most transects spaced 3.5km apart.

2200km of transect were flown (63 of 67 planned transects) over an area of approximately 9,000km<sup>2</sup> of the winter range, including areas in NE British Columbia and the SE Yukon Territory. The plane flew at about 400 feet above ground, the wing struts were marked so that observers can count all bison observed in a 500m swath on each side of the plane. All animals will be counted and recorded with a waypoint. The flight path was recorded with a GPS. Large groups of animals were photographed. The survey crew consisted of a pilot, recorder and two local observers that ENR hired to participate in the survey. Six bison (two males and four females) were collared in February 2017 and used to determine a correction factor transect line over heavily forested habitats. We observed 296 bison in total (calves of the year and non-calf animals), 225 on transect and 71 off transect. This is the most bison observed on any aerial survey; bison were observed in the Kotaneelee and in NE British Columbia for the first time. Previous population surveys were conducted in March 2004 and March 2011. The non-calf population estimate was  $962 \pm 367$  (95% confidence interval). After re-analyzing the previous surveys using the same sightability correction factor and only non-calf animals, the 2017 survey results indicate moderate population growth and an increasing trend in numbers since 2004.

Sex and age classification surveys continue to be conducted annually from the river in mid-July when bison frequent exposed sandbars. In 2017 and 2018 we were accompanied on the survey by new biologists from NT and Alberta, respectively continuing these joint ventures which started in 2009 and ensure consistency in classifying bison between jurisdictions. Maps of survey results were provided to First Nations after surveys were completed. On average,

163 bison are observed during classification surveys. Both 2017 and 2018 surveys dramatically surpassed the average. In 2017, 213 bison were observed and in 2018, 360 bison were observed. The increased number of bison observed on the past classification surveys is consistent with the higher population estimate from the 2017 survey. More bison were observed on the 2018 river classification survey than the 2017 aerial population survey. Calf production was about average over the past two years. Overwinter survival of calves rebounded to 34 and 67% for 2016/17 and 2017/18 after the low of 13% in 2015/16 when multiple freeze-thaw events in March and April likely reduced food availability dramatically.

There was good news to report on the highway signage issue. In discussions with the new Department of Infrastructure (DOI) a dozen highway warning signs were erected along Highway 7 and the Fort Liard and Nahanni Butte access roads in September 2017. DOI also moved the large warning sign from Blackstone to Poplar River as requested by ENR. ENR has received positive feedback from the public on the increased number of bison warning road signs. Additionally, ENR communications and DOI are currently working on creating larger interpretive signs describing the Nahanni wood bison population. We hope to erect two of these signs, one at the start of the Fort Liard access road and the other at the pullout just south of Checkpoint.

### *Delegate comments*

Delegates wanted to know how many bison populations in the NT. They wanted to know whether infrared technology had been considered for population surveys and whether the Nahanni bison were moving north

because of better food. There are three bison populations in the NT; the Nahanni has seen bison moving north toward Poplar River. Bison will naturally expand their range finding other areas to use that may have better food. Males usually start the range expansion often following seismic or fire lines into new parts of the range and then females will follow. That is how the Mackenzie bison expanded their range into the Mink Lake area in the 1980's. Infrared technology is still too cost prohibitive to look at as a possible way to count bison.

### **Presentation on Bison Management Plans**

This presentation centred around the three issues that are challenges to bison management (conflicts in communities, collisions, and harvest) and posed questions for discussions on day 2. Fencing and hunting are some options to reduce conflicts with bison in communities, but once bison are in the community what should and what should we not do to reduce conflicts? Collisions with motor vehicles are less common in the Dehcho, but they do occur and accidents with animals of this size can be serious. Most accidents are in the fall and around dusk or when it is dark. Bison are very difficult to see. More highway warning signage is one way to remind drivers of the risk. The current quota of seven Nahanni bison tags are issued based upon the recommendation of Acho Dene Koe Band (five tags) and Nahanni Butte Dene Band (two tags). Most years only one or two bison are harvested. Other communities are interested in acquiring a bison tag(s) and some tag holders do not use them. How to provide fair access to bison tags is a topic of heated debate. Do we re-issue tags when they are not being used? Delegates were

asked to think about the questions raised so they could be addressed in the day 2 discussions.

## Day 2

### **Round table discussions on bison issues (results of recent surveys, presence in communities, equitable access to tags, management plans, highway signs and safety).**

This was a lively discussion with lots of topics discussed by many delegates. Access to harvesting bison and the use of tags was a real topic of discussion. Delegates described how tags were issued in Fort Providence. Because bison are a lot of meat a number of individuals with families share so more chances to get a tag. All tags were issued at once, but with only a few weeks to use them so sometimes there seemed to be too much bison meat in town. Sometimes bad weather or work schedules prevented tag holders from hunting with a tag. Delegates felt that it would have been better to spread out the allocation of tags and to re-issue them if tag holders didn't get to hunt in the short term.

There were comments that bison dry meat was really good encouraging all the meat to be used. When first bison were harvested people didn't like the meat because it was from old tough males. "You couldn't give bison meat away." More recently that has changed, especially after meat from problem bison harvested in Fort Liard was distributed to communities. Now many people in many communities like bison meat and a hind quarter is so big it provides lots of meat. There was definite agreement that people are happy that bison are here because they provide hunting opportunities to get lots of good meat and it is nice to have a change from eating moose or caribou meat. It was pointed out by one delegate who was a butcher, that good cuts from the right animal are preferred but, if you prepare your meat the right way you can make even

the toughest bison meat tender. It was suggested that in two years for the next meeting that a bison was harvested so all could try the meat.

Issuing tags has been different for the Mackenzie and the Nahanni populations so ENR provided a brief synopsis. Tags had been issued for the Mackenzie before 2012, after the anthrax outbreak in 2012 all harvest was stopped except for a few for cultural purposes. Prior to 2012 there were two separate draws. The Fort Providence Resource Management Board (FPRMB) held a draw for their 20 tags, open to community members, whoever's name was pulled got a tag for the year; it was all left to the FPRMB. A second separate limited entry draw held by ENR was for 15 tags which were available to any NT resident that applied for the draw. The season for tags in the Mackenzie for both draws closed on March 15. Both draws were done at the same time and location in Fort Providence with an RCMP member present to ensure a fair draw.

For the Nahanni, historically, two tags had been provided, one each for the communities of Fort Liard and Nahanni Butte. A motion by chief and council was required to allocate these tags. The season for tags was year round (1 July to 30 June). In response to complaints of too few tags and problem bison in Fort Liard and to a lesser extent Nahanni Butte the number of tags issued for the Nahanni population was increased to seven in 2012. There were two aspects to the increase in tags, to increase the opportunity to hunt bison and the opportunity to resolve the issue of bison in communities. This hasn't worked the way intended as tag holders are generally reluctant to use them for bison in communities. However, in one instance, local wildlife officers

found who had been issued tags and arranged for one of them to remove a problem bison from the community. All tags have been allocated by the band councils but rarely are more than two bison harvested annually. The most ever harvested was three. This again raises the issue of access to bison tags. Other First Nations have been unsuccessful at acquiring tags for the Nahanni population. However, it is possible that a community could be issued a tag for one or two animals for a cultural event.

Jean Marie River has been trying to get tags and trying to have some education from communities with more harvest experience on which animals to harvest and when so as to get the most good meat. Fort Simpson Métis have also been unsuccessful at getting bison tags. There was a suggestion that if seven tags were available for the Nahanni population why not issue one tag to each First Nation in the Dehcho at let them decide who gets the tag. This suggestion had some support, but other ideas were tossed around for consideration like: 1) should those dealing with problem bison in the community get the first crack at the tags? 2) should a portion of the tags be put aside and held by ENR for problem bison? 3) should “problem bison” tags be made available for allocation later in the season? By January? 4) what about one tag each for Fort Liard and Nahanni Butte and a pool of 3-4 tags available for other communities with the remainder put aside for problem bison? There was some debate as to whether or not there should be timelines associated with tags once they were allocated. Once a person is issued a tag they can take a bison but currently can hold on to the tag for a full year. The general consensus was that if tags were not used over an extended period of time they



should be turned in and/or reallocated. There was some concern that tags should not be allocated to inexperienced harvesters.

One delegate felt strongly that the process for accessing tags for the Nahanni population was not well known to residents, should be a clearer and simpler process, and should not require seeking permission from either Fort Liard or Nahanni Butte. There was definite agreement that the current situation of tag allocation for the Nahanni population needs to be improved upon, but most realized that changing current legislation would take time - lots of letter writing to MLA's and discussions amongst First Nations. They did want it to change in the future but in the meantime there was a need to talk with Acho Dene Koe and Nahanni Butte leadership about ways to improve the distribution of bison meat to other communities. Most communities are small and could share the meat from one hunt with many families. Possibly group requests for a tag: two First Nations sharing a hunt for a bison, on the land education experience for regional schools with one tag but meat being distributed to all school participants.

Some delegates considering long term solutions to the problems of accessing bison wanted to know if it would be possible to relocate bison from either the Nahanni or Mackenzie populations to other locations near different communities, like Jean Marie River. This would give access to harvest bison to more communities. The idea of relocation is definitely interesting. ENR continues to receive pushback from some individuals for re-establishing the Nahanni herd in the 1980s, however in Fort Liard, bison are now more accepted than they were years ago. Some people love having bison in their

“backyard” while some people don’t. We know from experience that bison don’t always stay where we put them. If a community wanted a herd relocated to their area ENR would consider it, but there would need to be community support for any relocation.

Although people are happy to have bison around because of the increased hunting opportunities they are not happy to have bison physically present in the communities. ENR should try to keep bison out of communities in the first place. Delegates pointed out that it is usually the old matriarch female that leads herds into Fort Providence. If that leader was trained to stay away from the community or removed then herds would not be entering the community. It was hoped tags would be more frequently used for removing bison in communities but that has not been the case.

Delegates wanted to know what bison were eating. They had noticed different tastes in moose from Alberta because they ate more grass than moose in the Dehcho. ENR’s studies show that bison in both the Mackenzie and Nahanni populations eat sedges year round, in snow free seasons they eat new growth of willows and grasses as well as the sedges.

There was a discussion on signs, education and effective communication, especially as it related to highway safety and motor vehicle collisions. ENR collects information on wildlife and specifically bison collisions with motor vehicles which could be distributed to communities. Delegates liked the idea of large descriptive educational signs about the Nahanni population to tell people a bit more than just to be aware there might be bison on the roads.

Some delegates felt strongly that bison on the Liard highway were a safety issue, that's why local residents add light bars to their vehicles. Others wondered if signs at the side of the road were effective and asked if it had been studied. It was noted that after signs were erected on the Liard Highway right-of-way in 2005 the number of collisions had been reduced up until recently. Also, flashing light signs that change have been shown to be the most effective type of warning sign in the short term. ENR monitors wildlife sightings on the Dehcho highways. Bison warning signs on the Liard Highway were erected in high frequency of sighting (and collision) areas. It was agreed that local people driving the Liard Highway know to drive during daylight if possible and to be more cautious driving at dusk or during the night because bison are very hard to see. Their eyes barely shine up even with lights on them. Local people also know which times of the day they might be driving into the sun. There was a suggestion to post a roadside sign of the number of collisions which could be updated. A similar type of roadside sign, tallying moose accidents, can be found at Gros Morne National Park in Newfoundland. One delegate suggested posting a graphic poster of an accident to catch people's interest.

Delegates familiar with the Mackenzie population commented that truckers continue to drive fast even with warning signs and that moving signs around to increase awareness has not slowed them down even when they see bison in the road. They commented about semi-trailer trucks with huge bumpers that have no intention of slowing down yet they can have their truck totalled when they run into a herd of bison. They also noted that people use bad road conditions or bison spontaneously running out into the road as reasons for

collisions when the cause of the accident is really a lack of driver attention. That is why it is so important to educate drivers on roads in bison range. Delegates reported seeing many calves on the highway to Yellowknife for the past two years.

Delegates wanted to know if there was newer research on bison scaring moose away. After the Mackenzie population was re-established people were concerned that bison numbers would increase and they would chase away moose. They were told that this wouldn't happen because moose and bison eat different things. Bison did change things for wolves. Once they learned how to kill bison some people say the wolves got bigger and have shinier fur. There is a lot more meat on a bison than a moose. Many people here and in the Yukon have expressed concern that once bison come into an area all the moose disappear. Some delegates commented that moose avoided bison because of their smell, others noted that moose haven't been seen as frequently on the islands in the Liard River now bison are present. There is no question that fewer moose are seen along rivers and other major right-of-ways frequented by bison but moose have not disappeared; moose are using other areas now. Studies in the Yukon have shown that moose and bison eat different foods and use different habitats. Moose surveys in the Liard Valley have shown an increase in moose density over the past 10 years at the same time bison numbers have also been going up. Cow moose with twins continue to be observed on surveys. Moose are using the range differently now they share it with bison but both moose and bison are doing well in the Liard River Valley.

Delegates also indicated that anthrax is the scariest thing they associate with bison. One delegate stated that bison were historically found around the Horn Plateau because there were old bones found there from 1850, so it is not true when people say that bison weren't in that area. Another delegate noted that he had seen ghost moose in the Martin Hills.

**Round table discussions about boreal caribou program (collaring males for more rut information, collaring additional females along Mackenzie Valley Highway route, wildlife health and harvest sampling [samples/reimbursement], highway signs).**

There was an extensive discussion on collecting samples from harvested boreal caribou. Delegates felt strongly that they needed to know about the health and condition of the food they ate. ENR had done extensive studies on moose health and condition and now it was the time to do the same for caribou. Ticks are being recorded but poop and tissue samples have not been collected. There was a discussion about what samples should be collected.

Delegates asked if there were sample kits already available and reminded ENR about the need for consistency with the instructions and the contents of sample kits. Delegates appreciated the instructions sheet that had been in the Dehcho moose sample kit – “it was easy to follow for people.” Some delegates questioned how many kits might be returned because of an almost negligible boreal caribou harvest by some communities.

There was a brief run down of what samples had been collected in other regions with other projects and what had been collected for the Dehcho moose program. There was consensus that easy to collect poop (used for

parasites, diet, genetic testing), front teeth (used for age), piece of hide (used for diet, stress, genetics), piece of liver (used for contaminants, body condition), whole kidney plus accompanying fat (used for contaminants, body condition) should be collected from harvested animals. More difficult blood strips would not be collected. There was a request to provide an additional sample bag for abnormal things found, like in lungs. Delegates agreed that reimbursement of \$75 for a completed sample kit was appropriate, which also included a page to record harvest date, harvest location, harvester name and any comments about the harvested animal. They also wanted sample kits distributed as quickly as possible because fall harvesting was about to start. ENR Dehcho committed to providing five sample kits for each First Nation within a week of the end of the workshop.<sup>1</sup>

There was a discussion about the continued boreal caribou monitoring program, which would require collaring caribou in future to maintain an adequate number of collared females and males. Delegates were supportive of the continued monitoring program. There was a brief discussion about collared males and whether to increase the number of collared males once there is a better idea of what they are doing in the rut. Delegates were open to increasing the number of collars on males but wanted to wait till more information was available. Delegates wanted to know if collared caribou were still in their traditional areas. ENR indicated that collars were in all traditional hunting areas throughout the Dehcho. They also indicated that with the proposed Mackenzie Valley Highway (MVH) there would be a need to get

---

<sup>1</sup> Between 22 and 25 October, 2019 ENR Fort Simpson distributed packages of five sample kits to Łíídlíj Kųę First Nation, Jean Marie River First Nation, Nahanni Butte Dene Band, Sambaa K'e Dene Band, Fort Simpson Métis Local, Pehdzeh Ki First Nation and Acho Dene Koe Band.

more information on boreal caribou range use and movements in the northern Dehcho towards the Sahtú border along where the new road would be. Delegates from Wrigley indicated there were caribou tracks all over the place in the Fish Lake area and to the west side of the mountains. These delegates were supportive of having additional collars deployed from the Fish Lake area north to the Sahtú border and realized this would be possibly up to ten more collars being deployed in their traditional areas in addition to the one or two deployed for the long term caribou monitoring program. They indicated it would be nice to have community monitors incorporated into the new study. ENR indicated that this study would likely require aerial reconnaissance surveys and local residents would be hired as observers.

Delegates thought it was a good idea to pursue interpretive signs about boreal caribou just like Nahanni bison. There has been a lot of time and money spent on the boreal caribou monitoring program, we have learned a lot and need to show how important boreal caribou are to us here in the Dehcho. Highway interpretive signs are relatively inexpensive. One could go up in the pullout near the Jean Marie River access road or in one of the two pullouts between there and the Enbridge 585 station.

**Round table discussions on moose research findings (results of contaminant study, methodology and results of last large-scale survey, future surveys and timing), regional wildlife issues, change in wildlife harvest since last workshop (abundance, condition).**

Rhiannon from the Canadian Wildlife Service provided an update on some questions about waterfowl abundance asked after her presentation yesterday.

Northern shoveller, teal, and canvasback ducks last year were all above the long-term average. Black ducks (scaup) were lower than the long-term average as had been noted by delegates at the meeting. Snow geese remain extremely abundant but are showing some regional declines. In 2018 there were 13% fewer snow geese than in 2017 but those numbers were still 30% higher than the long-term average. There are plans to put GPS units on snow geese in the USA in the near future.

Delegates were asked to comment on whether the moose they harvested recently in their area were similar, better or worse than a couple of years ago when we had our last workshop. Comments from the Wrigley area were that it wasn't too bad this year they got about 9 or 10 moose, a bit more than the year before. Most animals were harvested along the river but a couple were harvested along the highway. The animals were mostly in good shape although some looked a bit skinny and they wondered if this was because of global warming. A whole bunch of people were up the North Nahanni River this year and we didn't see as many moose. Comments from the Fort Simpson area were that things hadn't changed much over the past couple of years. The moose harvested were good and fat as before and that there were lots of moose around. Caribou were more over toward Trout Lake. Comments from Jean Marie River were that moose numbers were pretty much the same since the last workshop but that they were in different places, especially after the forest fires. Moose are getting smarter now they are not around the highway or riverbanks during fall hunting. Five were harvested around Jean Marie River most in sloughs.



The issue of highway hunting and the concern about safety came up. There seems to be more vehicles on the roads and we see more vehicles with license plates from AB and BC and the states. ENR reminded delegates that we have visitors coming to the region to hunt legally. Many clients of the Mackenzie Mountain Outfitters would drive up from the south to Blackstone, Fort Simpson and even Wrigley. After their hunts they return home. All their hunting was legal. Over the past year ENR has also increased their highway patrols at the request of local First Nations. Once again patrols are finding hunters have their appropriate licenses and are hunting legally. No shooting corridors have been suggested to improve highway safety but they are not an option. It was suggested to use orange or reflective vests especially if hunting near the highways and that ENR work with First Nations to do harvest monitoring on the roads and the rivers.

There were complaints of meat wastage, disrespecting the wildlife, night hunting resulting in wounded animals, disrespect for people's property and the land by damaging cabins and littering. Also people continue to hunt cows. Some delegates thought that moose tags were too cheap for resident hunters. ENR indicated that they have been promoting male only hunting but everyone has a responsibility in educating hunters to "take bull". Also, the number of resident hunters is very small and whenever ENR was notified of wastage or wounded animals officers would go out to investigate.

There was a discussion about the moose survey winter 2017/18 that was split into a November and a February component at the request of delegates at the 2016 Regional Wildlife Workshop. The format was seen by ENR and delegates

alike to have been better than surveying all at one time period. Large-scale moose surveys were certainly considered the best way to spend money on moose surveys in future. ENR indicated they felt more confident in their estimate of moose density and there was a better use of time and money by splitting the survey into two time periods. It also provided information on how moose distribution was affected by fall hunting pressure<sup>2</sup>. There was support from delegates to use this method for future large-scale surveys. Some delegates were concerned that the survey had a lot of blocks where no moose were seen and this was a waste of money because they should go and survey where people said there was moose, not go where the computer said. It was reiterated that in order to get an accurate estimate of moose over such a large area you would expect to fly over blocks where no moose were seen. Also, if ENR only surveyed blocks where we expected to see moose we would inflate the estimate of moose numbers and be telling people there were more moose than there really were. This situation would risk unsustainable harvesting which nobody wants. This had been a problem with moose surveys in the 1980s. Delegates wanted to know if communities had provided information on where moose would be during both November and February periods for the recent survey. ENR confirmed this. Delegates also wanted to make sure survey results were compared properly. ENR indicated that only after the winter 2017/18 survey results would they be able to have confidence in providing a trend in density/population. The briefing results provided for the first time a graph of the three comparable surveys (the others in 2002/03 and 2011). There was a suggestion that ENR should use infrared technology for moose and other wildlife surveys. Unfortunately, the

---

<sup>2</sup> There was a complete lack of moose within 5km of the major river corridors during November when compared with February.

costs are still too great for considering surveying large areas for wildlife with this technology.

### **Additional Comments made during the Discussions**

More collared animals would be needed for wildlife studies for the MVH project. Delegates commented that they didn't put collars on animals in the Sahtú, and wondered if that would be a problem. ENR indicated that currently there is no animal collaring in the Sahtú, but it has been proposed for the MVH and would be important for collecting information on caribou that range along the highway corridor.

One delegate stressed the need for ENR to do more studies of vegetation and plants, a complete an inventory of plants from the medicinal ones to the new invasive plants. It would be useful for looking at what animals eat. It was noted that some vegetation work with caribou food plants had been done but more vegetation research is needed. Invasive plants are a problem. ENR recently held a workshop/symposium about the problem of invasive species.

Some delegates were still concerned about how safe it was to eat migratory ducks. They were concerned that they often stopped off in contaminated water bodies on their way north. They had seen instances where water was contaminated by sewage after hurricanes and floods, water was contaminated by tailings from resource development or contaminated by pesticides and pollutants from high intensity agriculture. They were worried ducks in "shitty" water would have diseases and parasites and not be safe to eat.

One delegate wanted to know if ghost moose cycled. It was believed not. Ghost moose in the Dehcho remain rare, much more so than in BC or AB.

There was a request for a fur handling course to be held in Jean Marie River. ENR indicated that they would try and schedule one in the future.

Finally, there was an active discussion about what key action items ENR should follow up on after the 2018 workshop. Consensus was reached on the ten action items that follow:

### **Action Items from the October 2018 Regional Wildlife Workshop**

- I. ENR to ensure the Final Report of this workshop is completed on a timely basis distributed to all First Nations, and posted on the ENR website.
- II. ENR to secure funding to host another Regional Wildlife Workshop at about the same time of year in two years; the format invitation of two delegates per First Nation to attend the workshop should remain but ENR should provide an honorarium for delegates in addition to covering travel, room and board costs.
- III. ENR should deploy the 17 collars on caribou in February 2019 (11 on females and six on males); ENR should continue to maintain active collars on  $\geq 30$  females during calving period and  $\geq 12$  on males during the rut.
- IV. ENR should pursue constructing and displaying interpretive signs on Highways 1 and 7 for boreal caribou, Nahanni bison, and western toads

(NWT amphibians) and consult with local First Nations about appropriate locations.

- V. ENR should start collecting samples from harvested boreal caribou in the Dehcho as soon as possible. The Fort Simpson office will provide sampling kits to communities and reimburse harvesters \$75/completed sample kit.
- VI. ENR should purchase and deploy collars in late-winter 2019 on ten boreal caribou females located from Wrigley north to the Sahtú in areas adjacent to the Mackenzie Valley Highway. This would be collars in addition to the 17 deployed for the ongoing Dehcho boreal caribou monitoring program.
- VII. At this and future wildlife workshops, ENR should collect info from each community or First Nation on whether they feel that numbers of different wildlife species have gone up or down or remained the same since the previous workshop and what the general condition of harvested wildlife has been over the past year.
- VIII. ENR should continue to use the 40/60 two phase approach with future large scale geospatial moose surveys; based upon results of the winter 2017/18 survey, the Mackenzie study area should be surveyed before the Liard study area and ideally by winter 2021/22.
- IX. ENR needs to pursue changing the current allocation of seven wood bison tags for the Nahanni population to better ensure they are used. First Nations are encouraged to contact ADKB and NBDB to facilitate improvements in allocation and use.

- X. ENR should have enforcement make presentations to clear up some of the misconceptions related to fall hunting activity and ENR fall highway patrols.

## **A listing of action items from previous wildlife workshops.**

### **2016 workshop**

- I. ENR to ensure the Final Report of this workshop is distributed to all First Nations on a timely basis.
- II. ENR to secure funding to host another Regional Wildlife Workshop at about the same time of year in two years; the format and the arrangement of covering the costs for two delegates per First Nation to attend the workshop should remain the same.
- III. ENR should post a copy of Final Report of this workshop on the ENR website.
- IV. ENR should conduct an aerial survey of the Nahanni wood bison population in March 2017. The survey area will be defined through consultation with its First Nations partners. ENR should deploy as many of the 10 collars available for bison prior to the survey.
- V. Boreal caribou range plan community meeting outputs have been provided to all communities, but not all communities have responded. ENR should pursue requesting feedback from those communities that have not responded.
- VI. ENR should continue with the trail camera program and provide a brief report for next workshop.
- VII. ENR should provide results from the moose contaminant study as and when received to its First Nations partners. A final report documenting the complete results of all analyses and comparing to the previous study will be prepared after all analyses have been completed.

- VIII. ENR should work with Parks Canada to produce maps showing the locations of collared northern mountain and boreal caribou in the SW Dehcho.
- IX. ENR should deploy the eight female and five male collars on boreal caribou in February 2017. Additional male collars may need to be deployed if adult male survival is lower than that of females. Each First Nation partner will have one collar made available to them so they can advise ENR on where to deploy that collar on a female caribou in their traditional areas.
- X. ENR should conduct a large-scale moose survey in winter 2017/18. ENR needs to consult with First Nations with respect to the timing of the survey and defining survey blocks.
- XI. ENR should pursue working with local trappers to collect observation data of wildlife while out on the land.
- XII. ENR should provide preliminary results from the summer 2016 vegetation study work to its First Nations partners once they become available.
- XIII. At this and future wildlife workshops, ENR should collect info from each community or First Nation on whether they feel that numbers of different wildlife species have gone up or down or remained the same since the previous workshop and what the general condition of harvested wildlife has been over the past year.
- XIV. ENR should continue to work with DOT to increase the number of bison warning signs on the Liard Highway as part of a public safety issue.



- XV. ENR should continue to pursue avenues to separate domestic animals (primarily sheep and goats) from areas inhabited by wild sheep and goat populations.

### **2014 workshop**

- I. ENR to ensure the Final Report of this workshop is distributed to all First Nations on a timely basis.
- II. ENR to secure funding to host another Regional Wildlife Workshop at about the same time of year in 2 years; the format and the arrangement of covering the costs for 2 delegates per First Nation to attend the workshop should remain the same.
- III. ENR should ensure a wide distribution of Final Report of this workshop including having it posted on the ENR website.
- IV. ENR should conduct a Nahanni bison population survey in March 2016 and have collars deployed on bison prior to the survey.
- V. ENR should pursue boreal caribou range management planning, with the Dehcho regional management plan as first priority.
- VI. ENR should pursue a trail camera program where one camera per First Nation partner is deployed on a trail within their traditional area. Its location will be suggested by the First Nation.
- VII. ENR should make completion of the moose contaminant study the highest priority in the moose program, with the small-scale moose survey planned for November 2015 of lesser priority.
- VIII. ENR should deploy up to 9 collars (including 2 iridium units) on boreal caribou in the Dehcho in February 2015. Each First Nation partner will have one collar made available to them so they can advise ENR on where to deploy that collar in their traditional areas.

- IX. ENR should pursue taking ultrasound measures of fatness from captured caribou during the February 2015 collar deployment. Pending discussion of the results of this trail, ultrasound measures may be continued in future deployments.
- X. ENR should facilitate classification surveys of BC collared caribou by advising local First Nations if, when, and where such surveys would occur on their traditional areas.
- XI. ENR with DOT should pursue increasing the number of bison warning signs on the Liard Highway.
- XII. ENR should actively explore avenues to separate domestic animals (primarily sheep and goats) from areas inhabited by wild sheep and goat populations; not permitting domestic sheep and goats west of the Liard River was suggested.

### **2012 Workshop**

- I. ENR to ensure the Final Report of this workshop is distributed to all First Nations on a timely basis.
- II. ENR to secure funding to host another Regional Wildlife Workshop at about the same time of year in 2 years; the format and the arrangement of covering the costs for 2 delegates per First Nation to attend the workshop should remain the same.
- III. ENR should work with DFN to seek funds to ensure summer youth ecology camps, exploring options to offer CTS credits for youth attending the camps. Camp policies should continue to be “tailor” made for each camp and reviewed prior to each camp to minimize difficulties for facilitators.

- IV. Delegates were unanimous in supporting the development of a Nahanni bison management plan and want ENR to proceed in this direction.
- V. ENR should ensure a wide distribution of the Final Report of this workshop including having it posted on the ENR website.
- VI. ENR should provide the Dehcho First Nations Leadership with the list of the workshop action items in time for their winter leadership meeting.
- VII. ENR should conduct another large-scale geospatial moose survey along the Mackenzie and Liard River Valleys no later than November 2017.
- VIII. ENR should reduce the frequency of small-scale moose monitoring surveys to one every two or three years; additional consultation with First Nations is necessary to determine a schedule for the next small-scale survey.
- IX. ENR should actively seek to collect biological samples from harvested moose in order to reassess the level of contaminants in moose; harvesters will be reimbursed at \$75 per complete set of samples.
- X. ENR should schedule another Nahanni Bison population survey in the next 2-3 years and consult with local First Nations regarding collaring bison prior to the survey.
- XI. ENR should deploy up to 10 collars on boreal caribou in the Dehcho in February 2013. Each First Nation partner will have one collar made available to them so they can advise ENR on where to deploy that collar in their traditional areas.
- XII. ENR should try to deploy the one “high tech” collar they acquired on a female boreal caribou in February, 2013.

## **2010 Workshop**

- I. ENR to distribute the Final Report of this workshop to First Nations on a timely basis.
- II. ENR to secure funding to host another Regional Wildlife Workshop in 2 years; the timing of the workshop should remain.
- III. ENR should work with DFN to seek funds to provide future summer youth ecology camps, and if possible extend the length of such camps. Camp policies should be “tailor” made for each camp or at least reviewed prior to each camp to lessen difficulties for facilitators.
- IV. ENR should try to communicate with the schools concerning ecology camps; Career Technology Studies (CTS) credits for high school students may encourage more students to participate in these camps. The number of students participating in camps is sometimes an issue.
- V. ENR should ensure a wide distribution of the Final Report of this workshop, not limited to the agencies and First Nations participants.
- VI. ENR should post the final report of the 2010 Regional Wildlife Workshop on the ENR website. They should try to post final reports of previous workshops.
- VII. ENR should provide hard copies of the final report for the 2010 Regional Wildlife Workshop to Dehcho First Nations Leadership in time for their winter leadership meeting, posters should be made available as well.
- VIII. ENR should distribute the large scale geospatial moose survey maps to their First Nations partners so local harvesters can update survey blocks and modify the survey area for a more accurate moose survey.

- IX. ENR should conduct another large scale geospatial moose survey November 2011 along the Mackenzie and Liard River Valleys covering a similar area to surveys in winter 2003/04.
- X. ENR should endeavour to deploy as many of the 7 available collars on Nahanni wood bison prior to conducting a Nahanni wood bison population survey in March 2011.
- XI. ENR should extend the current moose and bison surveys south of 60°N latitude to include traditional harvesting areas of the Acho Dene Koe Band in northeastern British Columbia.
- XII. ENR should forward letters to First Nations requesting them to provide ENR with suggestions and guidance for future deployment of collars on boreal caribou. There will be no collaring in February 2011 but at least 1 collar will be available for each First Nation to deploy in February 2012. ENR should keep a minimum of 25-30 active collars on boreal caribou for each calving season, depending on mortalities through 2011. ENR will request First Nation permission to deploy collars in areas where mortalities have occurred.
- XIII. ENR should follow up with the Dehcho First Nations' Grand Chief on the formation of a working for boreal caribou.
- XIV. ENR requests that Dehcho First Nations submit names for membership on the Nahanni Bison Management Plan committee.
- XV. ENR should get hard copies of the South Slave moose survey circulated to all First Nation involved, once it is available to the general public.
- XVI. ENR should get hard copies of the northeastern British Columbia boreal caribou and moose survey reports distributed to appropriate Dehcho First Nations.

## **2008 Workshop**

- I. ENR to distribute the Final Report of this workshop to First Nations on a timely basis.
- II. ENR to secure funding to host another Regional Wildlife Workshop in 2 years; the timing of the workshop should remain.
- III. ENR requests that Dehcho First Nations submit names for membership on the Nahanni Bison Management Plan committee.
- IV. ENR should work with DFN to seek funds to provide future summer youth ecology camps, and if possible extend the length of such camps.
- V. ENR should ensure a wide distribution of the Final Report of this workshop, not limited to the agencies and First Nations participants.
- VI. ENR should look into making a brief presentation of the Final Report of this workshop at a DFN Leadership meeting, likely in January 2009.
- VII. ENR should endeavor to deploy as many of the 11 available collars on Nahanni Bison as soon as possible.
- VIII. ENR should extend the current moose and boreal caribou programs to include traditional harvesting areas of the Katlodeeche First Nation.
- IX. ENR should forward letters to First Nations requesting them to provide ENR with suggestions and guidance for future deployment of collars on boreal caribou. Information requested would include where to deploy collars, how many collars to deploy, type of collars to deploy and whether to pursue the deployment of collars in February 2009. (8 collars will be available).
- X. ENR should follow up with the Grand Chief on the formation of a working group for boreal caribou.

- XI. ENR to provide workshop to Jean Marie River and Trout Lake on fur handling and wolf snaring techniques.
- XII. ENR to follow up with ITI regarding access to Western Harvester Assistance Program for Jean Marie River and distribute information on moose and caribou hide program.
- XIII. ENR to include discussion of predator management programs when developing bison management plans and the boreal caribou action plans.

### **2006 Workshop**

- I. ENR to ensure the final report of the workshop is distributed to all First Nations on a timely basis.
- II. ENR to ensure that these workshops become a biannual event, and that participation by elders and youth of the region is actively supported and encouraged. The current timing is good.
- III. ENR to ensure that a bison management plan is developed for the Nahanni Bison Herd.
- IV. ENR to initiate discussion with trappers in the Dehcho communities to stimulate cooperation in designing and conducting basic research and monitoring programs.
- V. ENR to continue seeking proposals for hosting the summer youth ecology camp so that the camp curricula can be varied and can be held in different locations in the Dehcho.
- VI. ENR to seek funding for conducting an additional youth ecology camp during a different season of the year, preferably starting with a winter camp when students could be taught trapping.

- VII. ENR to actively pursue a collaring program for Nahanni Bison to provide baseline information on movement and range of distribution.
- VIII. ENR to pursue the idea of a working group for boreal caribou in the Dehcho by presenting it as a topic for discussion at the November, 2006 DFN leadership meeting in Fort Providence.
- IX. ENR to ensure that the 5 GPS collars and all available satellite collars are deployed on boreal caribou throughout the region in January 2007.
- X. ENR to ensure that once the results of the elemental analyses from moose organs are received, that they are analyzed and a plain language report of the results is circulated as soon as possible.

### **2004 Workshop**

- I. ENR to ensure that the final report of this workshop is distributed to all First Nations on a timely basis.
- II. ENR to ensure that these workshops become a biannual event, and that participation by elders and youth of the region is actively supported and encouraged.
- III. ENR to ensure that a bison management plan is developed for the Nahanni population.
- IV. ENR to initiate discussions with trappers in Dehcho communities to stimulate cooperation in conducting basic research and monitoring program.
- V. ENR to discuss changes and modifications to the current youth ecology camp location, timing, and format with local communities and DFN and investigate other available options for the camps.
- VI. ENR to continue to promote and support community wildlife monitoring programs.



- VII. ENR to support any self-management programs related to wildlife harvest that may be initiated by local First Nations.

### **2002 Workshop**

- I. ENR to ensure the summary and hard copy of the presentations covered at the workshop is distributed to all Dehcho First Nations.
- II. ENR to arrange meetings and discussions with those First Nations that were unable to send delegates to the workshop (Trout Lake, Kakisa, Fort Liard). For the Kakisa meeting the Regional Biologists from both the South Slave and Dehcho should attend.
- III. ENR to circulate letters to schools in the Dehcho indicating that there is now a Regional Biological Program with ENR and that they are available to make school presentations if requested.
- IV. ENR to explore options and develop a proposal for how a science camp/research station could be established in the Dehcho.
- V. ENR to identify ways that moose populations in the Dehcho could be monitored at regular intervals.
- VI. ENR to identify ways that the Nahanni bison population could be monitored at regularly.
- VII. ENR to identify ways that the status of boreal caribou in the Dehcho could be clarified and the potential impacts of oil and gas exploration and development on boreal caribou could be studied in the Cameron Hills area and possibly other key areas in boreal caribou range in the Dehcho.
- VIII. ENR to identify ways that community-based monitoring of wildlife health could be implemented in the Dehcho.

- IX. ENR to identify ways that monitoring the harvest of wildlife in the Dehcho could be enhanced.
- X. ENR to identify appropriate indicators for monitoring and assessing environmental and landscape change (including those resulting from climate change) that could be established in the Dehcho.
- XI. ENR to identify studies that are needed to support protected areas initiatives in the Dehcho.
- XII. ENR to maintain contact and dialogue with all Dehcho First Nations to ensure that all research and monitoring programs are developed and implemented together.

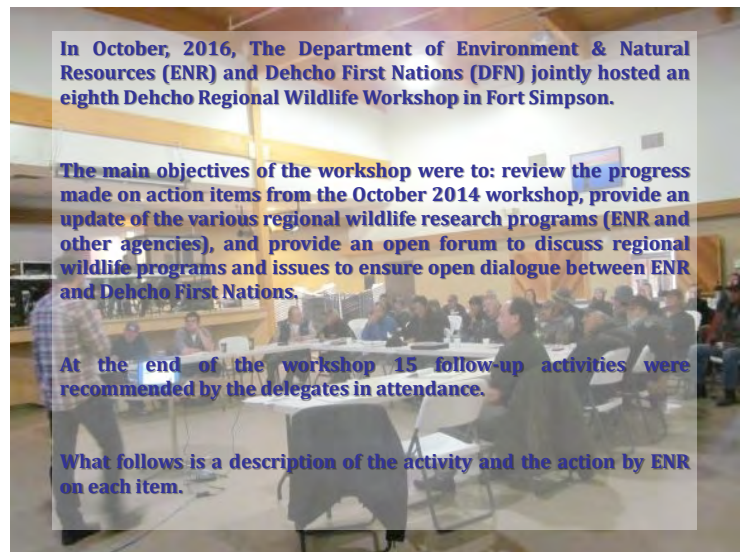
## Appendix 1.

### Review of 2016 Dehcho Regional Wildlife Workshop Action Items

Presented by Nic Larter, ENR Fort Simpson







**Item #1**

Ensure that the final report of the workshop is distributed to all First Nations in a timely basis.

**Action:**  
On 30 January, 2017 hard copies and digital copies of the final report were forwarded to all First Nations. The report was posted on the ENR website. Audio files were made available upon request.

**Item #2**

Secure funding to host another Regional Wildlife Workshop in 2018. The current timing of the workshop is good.

**Action:** Secured funding to conduct 9th Biannual Dehcho Regional Wildlife Workshop, covering the costs for two participants from each First Nation. Encouraged each First Nation to send two participants to the Workshop and to include youth, elders, harvesters and council members as participants. Maintained the timing of the workshop.

**Item #3**

Post a copy of the final report on the ENR website.

**Action:** The Final Report was posted on the ENR website 30 January, 2017.

[http://www.enr.gov.nt.ca/sites/enr/files/2016\\_dehcho\\_regional\\_wildlife\\_workshop\\_report.pdf](http://www.enr.gov.nt.ca/sites/enr/files/2016_dehcho_regional_wildlife_workshop_report.pdf)

**Item #4**

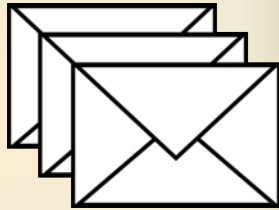
Conduct an aerial population survey of the Nahanni bison in March 2017; define survey area with First Nation partners; have as many of the 10 collars deployed on bison prior to the survey as possible.

**Action:** Meetings with NBDB and ADKB to define survey area; six bison (four females and two males) with functioning collars prior to survey; survey was conducted 15-21 March 2017, blizzard conditions and a mechanical problem with the aircraft prevented flying on 16, 18 and 19 March.



### Item #5

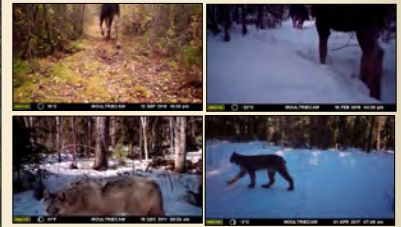
Pursue requesting feedback from communities that have not responded to boreal caribou range management plan community meeting outputs.



*Action: Letters requesting feedback were sent during the first week of November, 2016.*

### Item #6

Continue the trail camera program and provide a brief report for October 2018 workshop.



*Action: Trail cameras program was continued. Report drafted and available.*

### Item #7

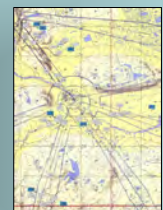
Provide moose contaminant study results as and when received. A final report of this and the previous study should be prepared.



*Action: Results were provided in summer 2017. A final report was published and is available. A plain language document was circulated with a copy of the report in September 2018.*

### Item #8

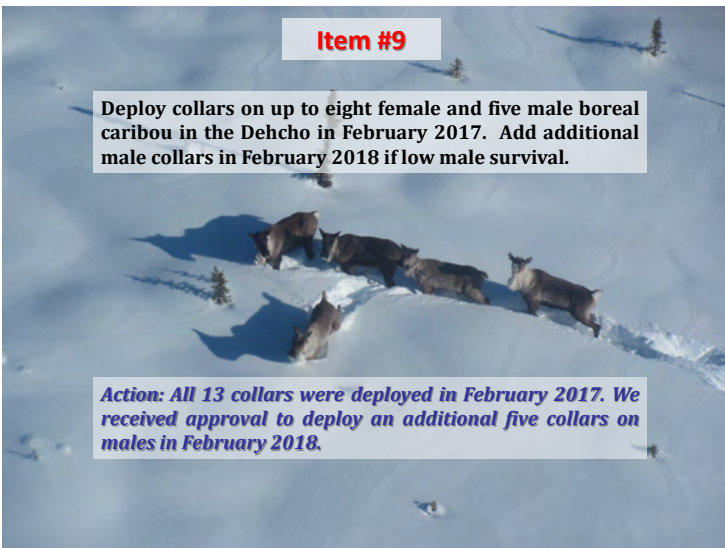
Work with Parks Canada to produce maps showing locations of collared boreal and northern mountain caribou in the SW Dehcho.



*Action: ENR and Parks had initial discussions on how two different mapping systems and location data from different sources could be combined into a useful mapped product. Unfortunately, with a staff change in Parks the project stalled. ENR continues to provide quarterly maps showing areas used by boreal caribou.*

### Item #9

Deploy collars on up to eight female and five male boreal caribou in the Dehcho in February 2017. Add additional male collars in February 2018 if low male survival.



*Action: All 13 collars were deployed in February 2017. We received approval to deploy an additional five collars on males in February 2018.*

### Item #10

Conduct a large-scale moose survey in winter 2017/18. ENR needs to consult First Nations with respect to the timing of the survey and defining survey blocks.

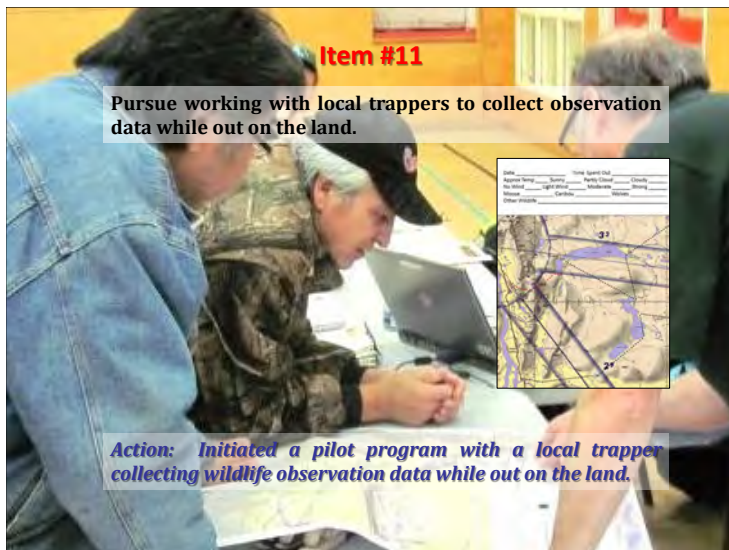


*Action: Consulted with First Nations to define survey blocks and determine survey timing. Survey conducted in two phases: blocks flown in November 2017 and February 2018.*



**Item #11**

Pursue working with local trappers to collect observation data while out on the land.



*Action: Initiated a pilot program with a local trapper collecting wildlife observation data while out on the land.*

**Item #12**

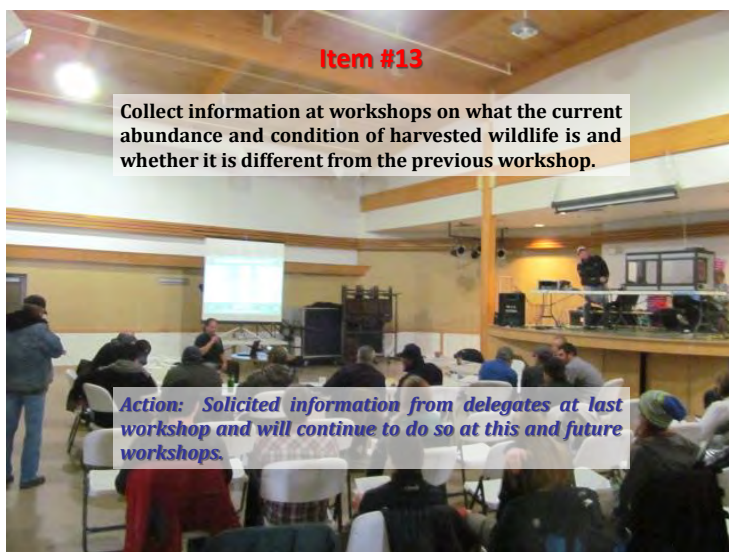
Provide preliminary results from the summer 2016 vegetation study work to its First Nations partner once they become available.



*Action: Report on preliminary results was circulated April, 2017.*

**Item #13**

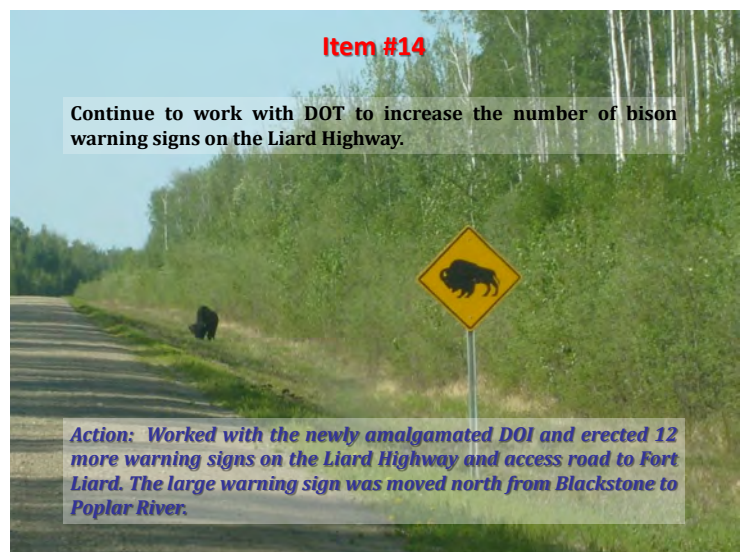
Collect information at workshops on what the current abundance and condition of harvested wildlife is and whether it is different from the previous workshop.



*Action: Solicited information from delegates at last workshop and will continue to do so at this and future workshops.*

**Item #14**

Continue to work with DOT to increase the number of bison warning signs on the Liard Highway.



*Action: Worked with the newly amalgamated DOI and erected 12 more warning signs on the Liard Highway and access road to Fort Liard. The large warning sign was moved north from Blackstone to Poplar River.*

**Item #15**

ENR should continue to pursue avenues to separate domestic animals (primarily sheep and goats) from areas inhabited by wild sheep and goat populations.



*Action: Wildlife Act regulations restricting import and controlling the possession of certain harmful animal species like llamas, alpacas, domestic sheep, goats, and wild boar from some areas of NT, undergone "Phase 2" public consultations. Regulations planned to take effect on 31 March 2019.*



**Programs/Projects Dehcho ENR Undertook/Participated in Since 2002**

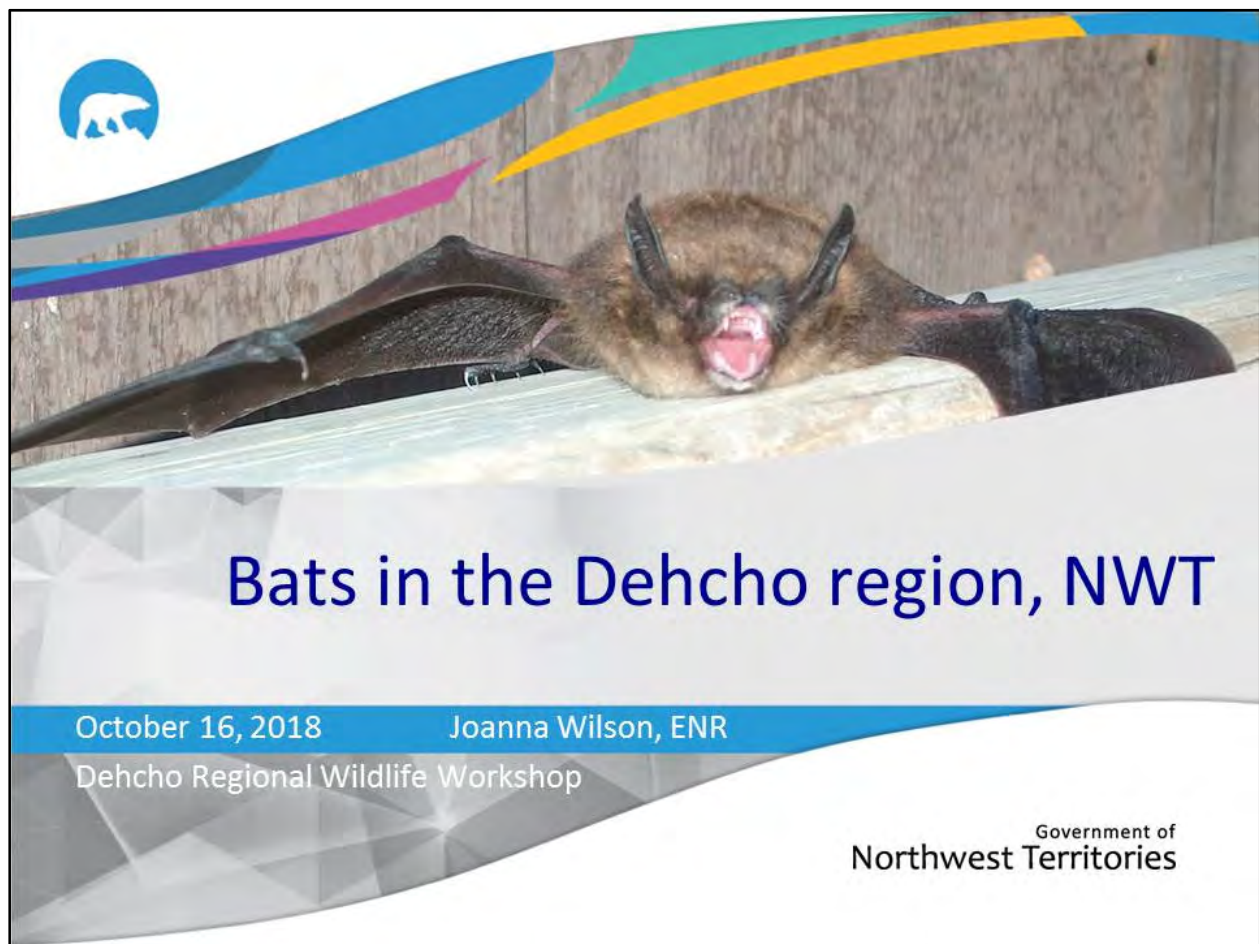
- Problem Bear Disease/Parasites Monitoring
- Diseased/Parasitized/Injured Wildlife Sampling
- Wolf Carcasses/Stomach Collection and Disease Monitoring
- Small Mammal Trapping and Hare Yard Counts
- Bever Heavy Metal and Contaminant Level
- Tourist and Staff Wildlife Observation
- Edkheh and area Wildlife Survey
- Sambaa K's Candidate Protected Area Wildlife Survey
- Boreal Caribou Surveys/Satellite, GPS, VHS Collar Deployments
- Boreal Caribou Disease and Parasite Study
- Boreal Caribou Harvest Sampling (Age, Health, Condition)
- Boreal Caribou Occupancy Model Refinement
- South Slave Boreal Caribou Classification Surveys
- Nahanni Bison Sex/Age Classification Survey
- Nahanni Bison Population Surveys/Satellite, GPS, VHF Collar Deployments
- Nahanni Bison Disease Monitoring
- Youth Summer Ecology Camps
- Moose Population Surveys - Mackenzie River Valley
- Moose Population Surveys - Liard River Valley
- Moose Small-scale Population Monitoring Surveys
- Moose Harvest Sampling (Age, Health, Condition) Heavy Metal, Contaminant, Radionuclide and Persistent Organic Pollutant Levels
- Dall's Sheep Surveys Nahanni/Liard Ranges
- Dall's Sheep Hare Growth with University of Lethbridge and University of Alberta
- Dall's Sheep, Mountain Goat, Mountain Caribou and moose Heavy Metal, Radionuclide, Pollutant and Contaminant Levels
- Non-Resident Hunter Harvest Monitoring/Sampling
- Mountain Goat Surveys Flat River, Ragged Range
- Monitoring Edehka Gravity Survey
- Monitoring Wildlife Observations from Canham, Enbridge, Mackenzie Fibre Link
- Mosquito Trapping for West Nile Surveillance
- Trichinella Occurrence in Different Wildlife Species
- Dehcho Trail Camera Experiment
- Grass DNA Sampling
- Participated in NT Small Mammal Monitoring Program
- Participated in Wolverine Carcass Collection
- Participated in Barren-ground Caribou survey
- Participated in Boreal Caribou Body Condition and Vegetation Study with BC, ON, and Northwest Territories
- Participated in Trout Lake Track Count Study
- Participated in Wolfing Community Caribou Hunt
- Participated in BC Government Percupine Survey and bison classification survey
- Participated in University of Alberta Mink Study
- Participated in University of Calgary Amphibian Study
- Participated in DFO Fish Tagging Studies
- Participated in University of Alberta Small Mammal/Linear Development Study
- Participated in Bear/Wolf Growth with Age Study with Florida Fish & Wildlife
- Participated in NT Bat Monitoring Program
- Participated in NT Insect and Spider Monitoring Program
- Participated in Mackenzie Mountains Dall's Sheep DNA Study with BC, YT and University of Alberta
- Participated in DFO Arctic Salmon Study
- Participated in NASA Dall's Sheep Range Study
- Participated in grizzly bear hair snagging DNA study in Mackenzie Mountains
- Participated in Boreal Caribou Body Condition and Vegetation Study with BC, ON, and Northwest Territories
- Participated in COSEWIC ladybug and insect study, bee survey, & mosses and lichen survey
- Participated in Tamarack biogeographical refuge study with University of Illinois (Urbana)
- Participated in study on genetic relatedness of boreal caribou
- Participated in a study on genetic relatedness of mountain goat
- Participated in a University of Alberta/CWS moose owl study




## Appendix 2.

### Bats in the Dehcho region, NWT

Presented by Joanna Wilson, ENR Yellowknife





## Bats in the Dehcho region, NWT

October 16, 2018      Joanna Wilson, ENR  
Dehcho Regional Wildlife Workshop

Government of  
Northwest Territories

## Outline

- Introduction to bats of the Dehcho region
- Monitoring with sound recorders
- White-nose syndrome
- Hibernation sites
- Summer surveys 2017/18 - maternity colonies
- Bats in buildings
- Conserving bats in the NWT
- What's next?

Photo on title slide: Northern myotis in Fort Simpson, credit Danny Allaire, ENR

Government of  
Northwest Territories

## Bats are Flying Mammals

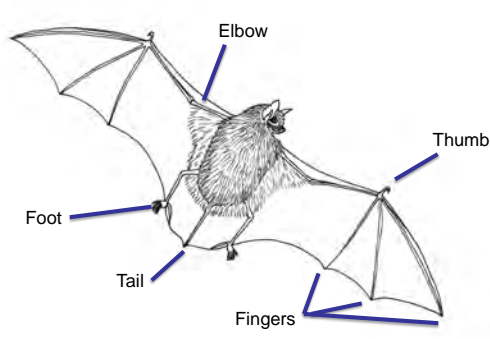
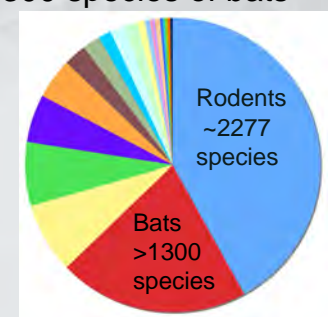


Illustration: Bonnie Fournier

Government of  
Northwest Territories

## Bat Species Diversity

World = more than 1300 species of bats  
North America = 46  
Canada = 19  
NWT = 8  
Dehcho = 7



Government of  
Northwest Territories

## Bats of the NWT




Photo credits: Merlin Tuttle, Cori Lausen and Roger Barbour

Government of  
Northwest Territories



Approximate range of little brown myotis

Map from Species at Risk Committee (2017)



## Bats eat insects



© Michael Durham



Government of  
Northwest Territories

## Echolocation



Credit: Outcrop Communications

VIDEO CLIP  
©Nickolay Hristov



Government of  
Northwest Territories

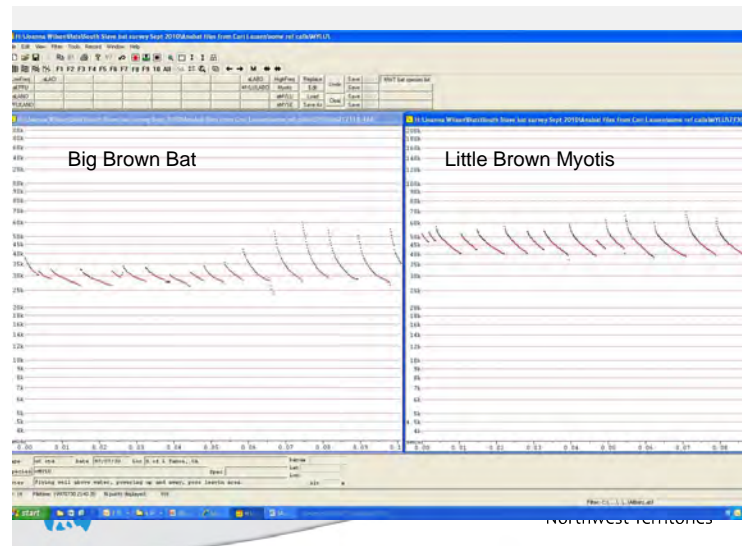
## Bat Detectors



Danny Alaire installing a bat detector by the Island River, Sambaa K'e, NWT, in 2017. Credit Joanna Wilson, ENR

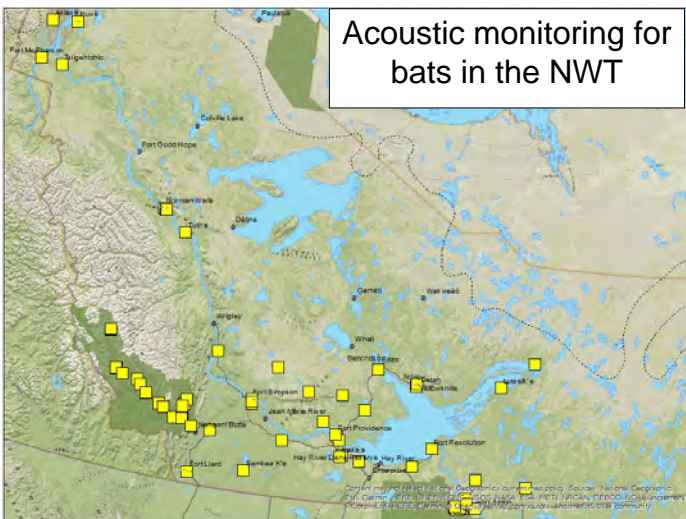


Government of  
Northwest Territories



Government of Northwest Territories

## Acoustic monitoring for bats in the NWT



## Hibernation sites are very important



Photo: Little brown myotis bats in a hibernaculum in the NWT. Credit: Joanna Wilson, ENR



Government of  
Northwest Territories



## White-Nose Syndrome (WNS)

- Disease affecting hibernating bats
- Caused by an introduced fungus (Pd)
- Severe population declines

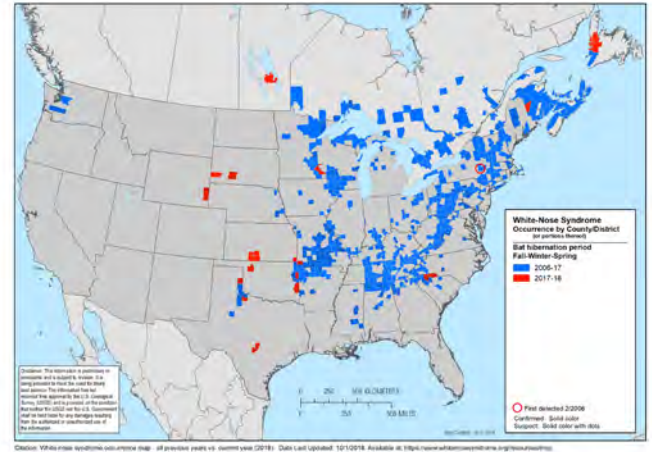


Photo: Ryan von Linden/New York  
Dept. of Environmental Conservation



Government of  
Northwest Territories

## Spread of WNS



## Hibernation sites are very important



Photo: Little brown myotis bats in a hibernaculum. Credit: Cori Lausen



Government of  
Northwest Territories

## Bat Caver



Photo: Researchers deploying ultrasound detectors and temperature/humidity data loggers in an Alberta cave. Credit: Dave Hobson, Alberta Environmental Protection



Government of  
Northwest Territories

## Summer roosts in trees



Split roost (left) and cavity roost (center) used by lactating female Northern Myotis in the NWT. Credits: Laura Kaupas



Government of  
Northwest Territories

## Summer Maternity Roosts in Buildings



Thebacha maternity colony (little brown myotis), NWT. Credit: Jesika Reimer

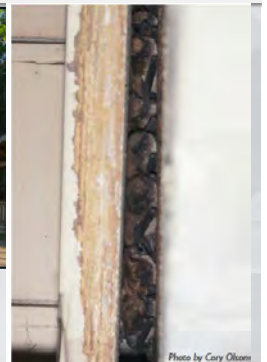


Photo by Cary Olson



Government of  
Northwest Territories



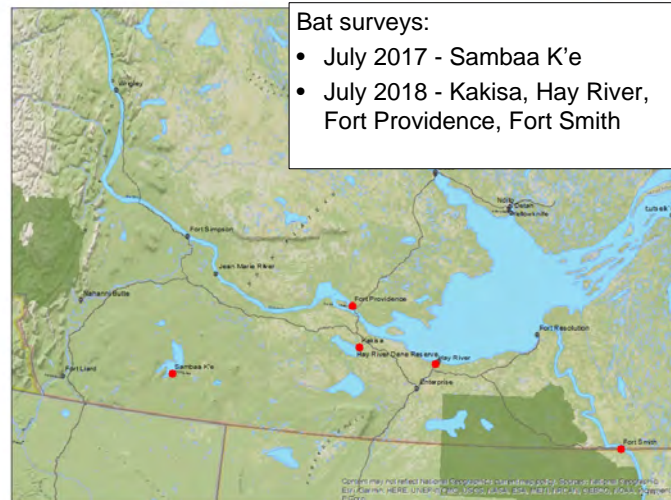
## Summer Maternity Roosts - Bat Houses



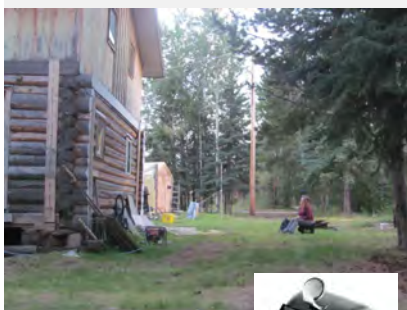
Bat house with little brown myotis maternity colony, Lady Evelyn Falls campground, NWT (L). Little brown myotis pup (R). Credits: Michele Grabke, ENR



Government of  
Northwest Territories



## Exit counts



Kaylin Cooper (L) and Jessica Jumbo (R) performing exit counts at building bat roosts in Smbaa K'e, NWT, in 2017. Credits: Danny Allaire, ENR (L) and Joanna Wilson, ENR (R).



Government of  
Northwest Territories

## Mist netting



Mist-netting bats in the NWT, 2018. Photos: Johanna Stewart, ENR

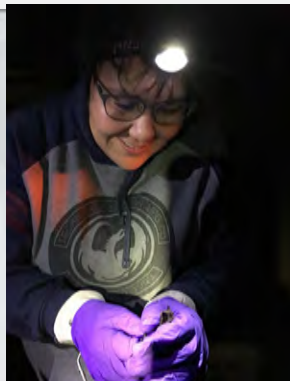


Government of  
Northwest Territories

## Mist netting



Little brown myotis in bat bag (L) and Jessica Jumbo handling a little brown myotis (R). Smbaa K'e, NWT, 2017. Credits: Joanna Wilson, ENR



Government of  
Northwest Territories

## Collecting data



Collecting data from bats in the NWT, 2018. Left – determining age from wing bone fusion. Center – measuring forearm length. Right – UV screening for signs of fungus. Photos: Johanna Stewart, ENR (L & center) and Michele Grabke, ENR (R).



Government of  
Northwest Territories

## Decontamination protocols

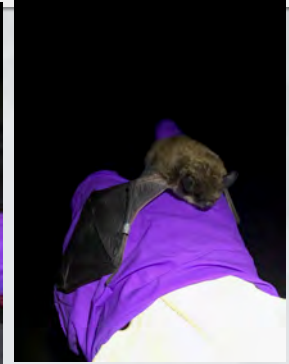


Left: Bat handling and decontamination equipment. Danny Allaire, ENR  
Right: Handling a little brown myotis with leather and nitrile gloves. Michele Grabke, ENR



Government of  
Northwest Territories

## Banding (2018 only)



Banded little brown myotis bats. Photos: Johanna Stewart, ENR.

Government of  
Northwest Territories

## Preliminary results – Sambaa K'e

- Documented 3 maternity colonies of little brown myotis
- Additional buildings used by bats



Little brown myotis in Sambaa K'e, NWT, 2017. Photos: Joanna Wilson, ENR.



Government of  
Northwest Territories

## Preliminary results – Sambaa K'e

July 23-27, 2017	# of bats captured – all little brown myotis	# Juveniles	# Adult Females	# Adult males	Female reproduction rate	# of bats counted
RC Church	31 (+ 19)*	8	19	3	58%	At least 92
TL2 (private building)	10**	1	6	1	100%	147
TL3 (private building)	5	1	2	2	50%	At least 76



\*50 bats were captured but 19 were released without being processed due to time constraints. Age was not determined for one male bat.  
\*\*Age was not determined for 1 male and 1 female bat

RC Church in Sambaa K'e, NWT, 2017. Little brown myotis maternity roost. Photo: Joanna Wilson, ENR

Government of  
Northwest Territories

## Preliminary results – Sambaa K'e

July 23-27, 2017	# of bats captured – all little brown myotis	# Juveniles	# Adult Females	# Adult males	Female reproduction rate	# of bats counted
Really old church Jul 27	16	9	6	1	17%	
Black Dog Creek	2	2	0	0		



Old unoccupied church in Sambaa K'e, NWT, 2017. Little brown myotis roost. Photo: Joanna Wilson, ENR

Government of  
Northwest Territories

## Preliminary results – Kakisa

- Documented 3 maternity colonies of little brown myotis
- At least 4 other buildings used by bats



Little brown myotis maternity roosts, Kakisa, NWT, 2017. Photos: Joanna Wilson, ENR



Government of  
Northwest Territories



## Preliminary results Kakisa maternity colonies

July 23-24, 2018	# of bats captured – all little brown myotis	# Juve niles	# Adult Females	# Adult males	Female repro-duction rate	# of bats counted
Lady Evelyn Falls Campground* (2 bat houses)	30	6	21	3	86%	117
Unoccupied log house						214
Shed (privately owned)						?

\*Caught 5 bats with bands from 2011, 2012, 2014 (2 bats) & 2016



Government of  
Northwest Territories

## Preliminary results Hay River maternity colonies

July 16-17, 2018	# of bats captured – all little brown myotis	# Juve niles	# Adult Females	# Adult males	Female repro-duction rate	# of bats counted
Shed on private property	32	0	32	0	63%	133
Private home	37	0	35*	1	63%	140

\*One female bat escaped before its age could be determined.



Government of  
Northwest Territories

## Preliminary results Fort Providence maternity colonies

July 25-26, 2018	# of bats captured – all little brown myotis	# Juveniles	# Adult Females	# Adult males	Female repro-duction rate	# of bats counted
Shed on private property	30	4	26	0	81%	128
Unoccupied house with fire damage	19	0	17	2	35%	Approx. 70



Unoccupied house with fire damage in Fort Providence, NWT. Little brown myotis roost. Photo: Michele Grabke, ENR.



Government of  
Northwest Territories

## Preliminary results Thebacha maternity colony - Fort Smith

July 18-19, 2018	# of bats captured – all little brown myotis	# Juveniles	# Adult Females	# Adult males	Female repro-duction rate	# of bats counted
Lodge building	19	8	11	0	73%	192

\*Caught 2 bats with bands from 2011 & 2014



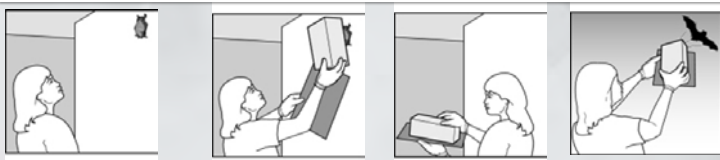
Building used by a maternity colony of little brown myotis at Thebacha campground, Fort Smith, NWT. Photo: Joanna Wilson, ENR.



Government of  
Northwest Territories

## Got Bats?

- [www.albertabats.ca/gotbats/](http://www.albertabats.ca/gotbats/)
- [www.batcon.org](http://www.batcon.org)



CREDIT: J. Scott Altenbach

## Managing bats in buildings



- Wait to do repairs or renovations until the bats are away (October-March)

[www.albertabats.ca/gotbats/](http://www.albertabats.ca/gotbats/)  
[www.batcon.org](http://www.batcon.org)



Government of  
Northwest Territories

## Building bat houses



Building a bat house.  
Photos:  
L – Michele Grabke, ENR,  
R – C. Thomson, NNSL



Government of  
Northwest Territories

## Bat conservation in the NWT



### Management Plan for Bats in the Northwest Territories

By July 2020



Government of  
Northwest Territories

## What's next

- Reports
  - 2017-2018 surveys – Acoustic monitoring
- Monitoring at maternity colonies
- Monitoring for white-nose syndrome
  - Finding hibernation sites (Bat Caver)
  - Reporting bat observations
- Education / outreach
  - Schools – Managing bats in buildings
  - Bat houses



Government of  
Northwest Territories

## Help us monitor bats!

Report all bat observations to  
[WILDLIFEOBS@gov.nt.ca](mailto:WILDLIFEOBS@gov.nt.ca)

**Especially:**  
Winter observations  
Photos  
Carcasses

**Help with:**  
Exit counts  
Bat detectors



Government of  
Northwest Territories

## Thanks To...

Danny Allaire  
Jessica Jumbo  
Ruby Jumbo  
Melaine Simba  
Dennis Deneron  
Kaytlin Cooper  
Laura Kaupas  
Johanna Stewart  
Madison Hurst  
Michele Grabke  
Sasha Ross  
Nic Larter  
Robert Barclay  
Allicia Kelly  
Cori Lausen  
Jesika Reimer  
Heather Fenton

Sambaa K'e First Nation  
Ka'agee Tu First Nation  
Deh Gáh Got'ie First Nation  
Fort Providence Métis Council  
Fort Smith Métis Council  
NWT Territorial Parks  
Parks Canada  
Wildlife Conservation Society Canada  
University of Calgary  
Gwich'in Renewable Resources Board

...and the many community  
residents that helped us find  
bats and allowed us to work on  
their property



Government of  
Northwest Territories

## Questions?



Government of  
Northwest Territories

## Appendix 3.

### Dehcho Boreal Caribou Program

Presented by Nic Larter, ENR Fort Simpson



***Boreal Caribou Program***

- Program Update
  - Classification Surveys
- Collaring Male Caribou
- Collar Retrievals
- Signs – New Developments

**Dehcho Wildlife Workshop – October 16, 2018**



Government of Northwest Territories    Gouvernement des Territoires du Nord-Ouest



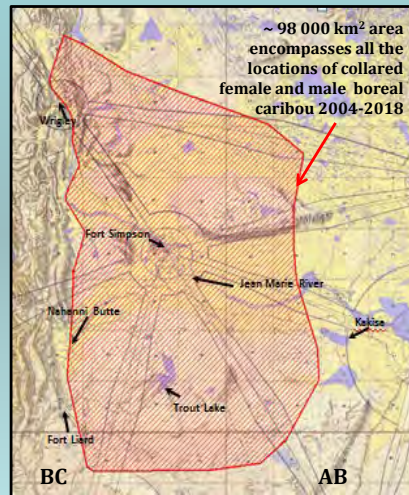
## Boreal Caribou Program

- Program Update
- Classification Surveys
- Collaring Male Caribou
- Collar Retrievals
- Signs – New Developments

Dehcho Wildlife Workshop – October 16, 2018



## Collared Caribou Range



- At First Nations request, 8 and 15 collars were deployed in February 2017 and 2018, respectively to ensure ≥30 collared females for the calving seasons.
- Ten collars were deployed on male caribou; 5 in each year.
- Collars were deployed in areas requested by our First Nations partners throughout the Dehcho.
- No collars were deployed east of Trout Lake or in Edézhíe at the request of First Nations.
- Collared caribou expanded the Dehcho caribou range to west of Sibbeston Lake and northeast of the Horn Plateau.
- Currently there are 37 active collars; 31 females and 6 males.
- Six collars released in 2018; three released in 2017.

## Calving Events

## Births and Bugs

	Had Calf	No Calf	Equivocal
2004	8	0	0
2005	14	3	0
2006	16	1	1
2007	26	3	0
2008	29	1	2
2009	19	0	1
2010	30	1	0
2011	20	0	0
2012	27	3	0
2013	31	2	0
2014	31	0	0
2015	33	3	0
2016	29	1	1
2017	27	0	0
2018	32	3	0
Total	372	21	5

Wearing a collar does not seem to have stopped caribou from getting pregnant or bringing calves to term.

- Females get pregnant and have calves; 93% of 398 calving events produced calves based upon movement data; 95% of 168 from blood serum.
- Most individual caribou calve at close to the same date each year; some caribou calve in the same area each year, while others do not.
- Boreal caribou have few diseases and parasites, however we have found an increasing number of caribou with winter ticks, first reported in 2016. ENR will be monitoring winter ticks in caribou and other wildlife.



Photo credit John Nagy



## Fat Female Caribou

- Late-winter body fat levels of boreal caribou remain consistently high and stable over four years of measurements (ultrasound).
- Females entering the winter in relatively good condition exited the winter in relatively good condition.
- These findings suggest that caribou are surprisingly resilient to the winter weather conditions they have experienced.
- Fatter caribou are more likely to become pregnant and have calves.

## Annual Classification Surveys

- Surveys were conducted in early March 2017 and 2018 to locate as many collared animals as possible and classify all caribou seen.
- We located 35 collared animals and classified 337 caribou in 2017.
- We located 48 collared animals and classified 318 caribou in 2018.
- Information from the surveys is used to determine population vital rates.

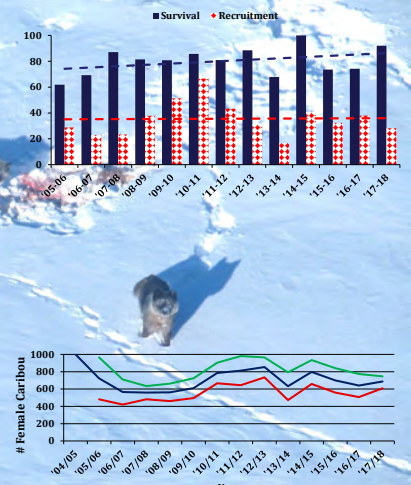
Because collared caribou in both the South Slave and North Slave studies do not respect study area boundaries, classification surveys for these two sister studies are conducted immediately after the Dehcho survey. We share personnel to maintain consistency in classifying caribou, and reduce the amount of time spent flying over caribou range.



## Population Vital Rates

- The average annual adult female survival is 80%.
- Average of 35.5 calves/100 collared adult females from March surveys; this is an estimate of recruitment.
- Some years recruitment and survival are higher, sometimes lower.
- Average rate of increase ( $\lambda$ ) over past 13 years is 0.97; a stable population has a value of 1.00.

If we started the study with 1000 female caribou in 2004 and used our calculated rates of increase ( $\lambda$ ), 13 years later we would estimate 687 female caribou (608-747, 95% CI).





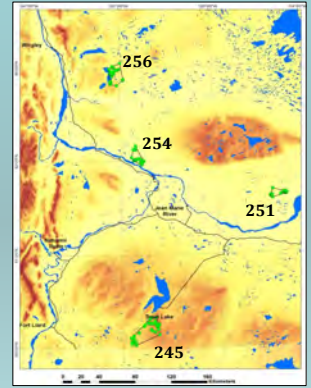
## Collaring Male Caribou

- At the last workshop ENR was asked to deploy collars on males to find out what they were doing particularly during the rut.
  - Do they use certain areas/habitats?
  - Do they congregate? With females? For how long?
- As a pilot project GPS collars, providing locations three times a day were deployed on five mature males in 2017 and 2018.
- These collars were programmed to release after their third rutting period, 31 October 2019 and 31 October 2020, respectively.
- Currently 6 collars are fully functioning; one male was killed by wolves, another died, unfortunately one collar broke but was retrieved, and one collar has not been providing continuous satellite transmissions.
- We have location data from 4 males from the 2017 rut.



## Male Caribou and Breeding Season

- Based upon John Nagy's work the breeding period for boreal caribou in the southern NWT is from 13 September to 20 October - peak being 20 September to 4 October.
- Results from four collared males during the 2017 breeding season show that they moved very little during the peak of breeding.
- Based upon 31-45 locations/male the average range used was 285 km<sup>2</sup>.
- These preliminary data may imply that large breeding males stay in small areas waiting for females to come to them for breeding.
- Based upon the consistency of calving dates individual females get bred on a remarkably consistent date year after year.
- ENR proposes to deploy an additional seven collars on males in Feb 2019.



	245	251	254	256
Locations	45	31	33	45
Area (km <sup>2</sup> )	573	109	157	300

## Collar Retrieval



- Air time to retrieve collars hard to get since 2015.
- Two collars were retrieved in 2017.
- One day of chopper in 2018 we retrieved 11 collars.
  - One collar had 4 years locations on board.
- All units are being refurbished.
- Some downed collars were scheduled releases others were from mortalities
- Some had been down for almost 2 years.
- We collect any bones and teeth.
- An additional 3 collars were retrieved in September.

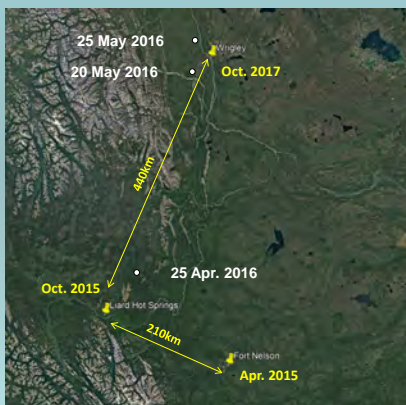
## Caribou Signs

- ENR has been working with Department of Infrastructure (DOI) to add warning signs for caribou on the Mackenzie Highway as a public safety issue.
- Although there have been few collisions there is a stretch of highway where caribou are more frequently seen and collared animals are often near.
- In September 2018 warning signs were erected at km 335 and 405 of Hwy 1.
- ENR Fort Simpson is also working with DOI and ENR communications to create a 6' x 4' interpretive sign on boreal caribou of the Dehcho.
- Possible locations for the sign on the Mackenzie Highway are at pullouts km 379 (just E of JMR access) or km 332 near Sambaa Deh.



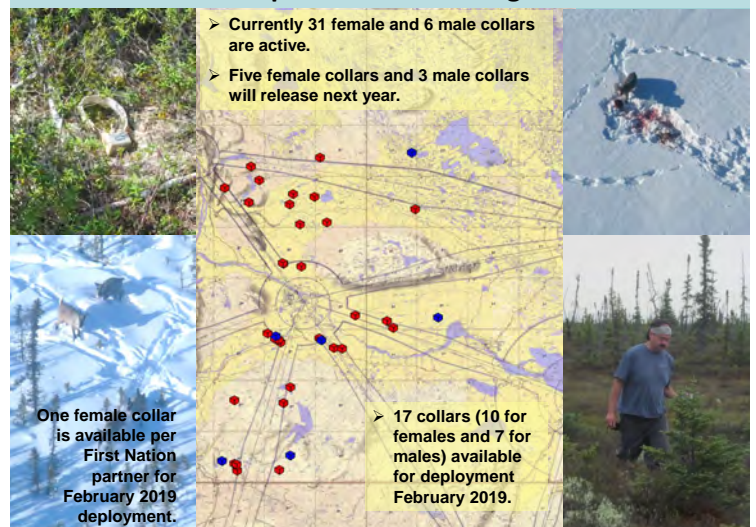
## Well Travelled

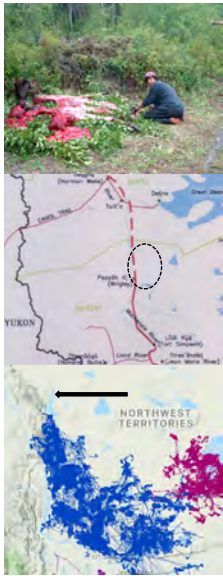
- In April 2015 a wolf (BW51) was collared just a few km north of Fort Nelson BC.



- The wolf moved to the Liard Hot Springs area, but the collar stopped transmitting in October 2015.
- In October 2017 the collar was found on an island just south of Wrigley and turned in to ENR.
- A return phone number tag on the collar lead us to contact biologists in BC, and we returned the collar.
- The collar was sent to the manufacturer; there were additional locations from April/May 2016 on board, which we just received.

## Continued Population Monitoring is Planned





## Recent Developments

### Biological Samples from Harvested Boreal Caribou

- Similar to sample collection for moose.
- Agreed samples, kits and reimbursement.
- Contaminants or baseline health (kidney or not).

### Mackenzie Valley Highway and Boreal Caribou

- Limited information from collared caribou north of Wrigley from Blackwater Lake to Sahtu.
- A need to collect baseline location data on caribou similar to that being collected along the Tłı̄chǫ All-season road.
- This would require collars to be deployed north of Wrigley (likely maximum of 10), in addition to the 17 collars that we plan to deploy throughout the Dehcho study area.

## Acknowledgements

Dennis Deneron (Sambaa K'e Dene Band) has been an avid proponent of this program since its inception. As the program expanded support from other leaders has included Lloyd Chicot, Dolphus Jumbo, Keyna Norwegian, Jim Antoine, Gerald Antoine, Minnie Letcher, Leon Konisenta, Eric Betsaka, Fred Tesou, Mike Matou, Peter Marcellais, Darcy Moses, Tim Lennie, David Moses, Sharon Pellisey, Stanley Sanguez, Isidore Simon, Gladys Norwegian, Marie Lafferty, Danny Peterson, Ernie McLeod, Steve Kotchea, Harry Deneron, and Eugene Hope.

In addition to ENR, this project has received funding from the NWT Western Biophysical Program, Environment Canada, and the Cumulative Impacts Monitoring Program.

We also acknowledge the cooperation and sharing of resources made by the South Slave and North Slave boreal caribou programs lead by Allicia Kelley, Ashley McLaren and James Hodson.

*Mahesho*



Photo credit John Nagy

*Thank you*



Government of Northwest Territories  
Gouvernement des Territoires du Nord-Ouest



## Appendix 4.

### Boreal Caribou Range PLanning Update


Presented by James Hodson, ENR Yellowknife



A photograph showing four caribou in a snowy, forested landscape. The caribou are brown with white underparts, and some have small antlers. They are standing in a field of snow with many thin, bare trees in the background.

# Boreal Caribou Range Planning Update

Dehcho Wildlife Workshop  
October 16, 2018



Government of  
Northwest Territories



## Boreal Caribou Range Planning Update

Dehcho Wildlife Workshop  
October 16, 2018



### Boreal Caribou – A Threatened Species

- Declines are more likely in landscapes with more habitat disturbance
- Habitat disturbance leads to more predators and less safe places for boreal caribou



### What is “critical habitat” for boreal caribou?

Critical habitat = maintain at least 65% undisturbed habitat in each boreal caribou range



**Undisturbed habitat** = Older forests (No fire in the last 40 years or more) + areas 500 m away from human disturbance footprint



**Disturbed habitat** = areas that have burned in last 40 years + areas within 500 m of human-caused disturbance visible on satellite images



## Outline

- Context for boreal caribou range planning
- Why do we need a boreal caribou range planning Framework?
- What’s in the draft Framework?
- Who are we engaging with?
- When will the Framework be completed?
- What happens after that?



### What are we doing about it?

- **National Recovery Strategy (2012)** – a plan to recover and maintain boreal caribou populations across Canada
  - Defines **critical habitat**
- **NWT Recovery Strategy (2017)** – a plan to ensure a healthy and sustainable boreal caribou population across their NWT range that offers harvesting opportunities for present and future generations



### What is a “range”?

- A “range” is the area where a local population of boreal caribou are found
- The NWT has one boreal caribou range (NT1), which extends slightly into the Yukon
- The NT1 range is connected to other ranges in northern Alberta and BC





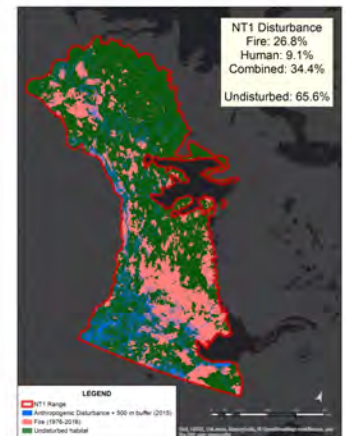
## Why do we need range plans?

- NWT Recovery Strategy – Objective #1: **Ensure there is adequate habitat across the NWT range to maintain a healthy and sustainable population of boreal caribou.**
- National Recovery Strategy: Outline how human development and fire disturbance will be managed to maintain at least 65% undisturbed habitat on an ongoing basis



## Challenges

- Huge area to manage
- Many decisions made regionally
- Fire and human disturbance is uneven across the range
- Location of undisturbed habitat always changing
- Legal requirement to protect critical habitat
- Balance caribou conservation and economic development



## Why do we need a range planning Framework?

- A guide for developing regional Range Plans for boreal caribou across the NWT:
  - What factors regional Range Plans will consider
  - How disturbance will be managed regionally
  - What kinds of actions are recommended for different levels of disturbance
  - How those actions will be implemented

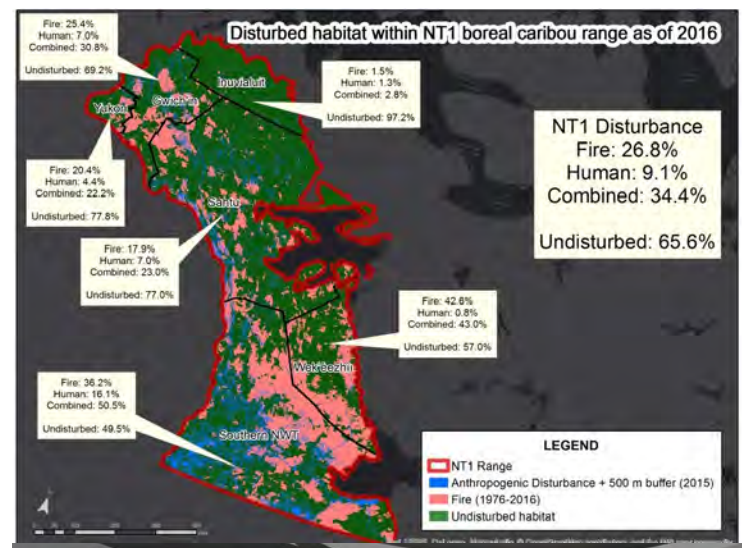
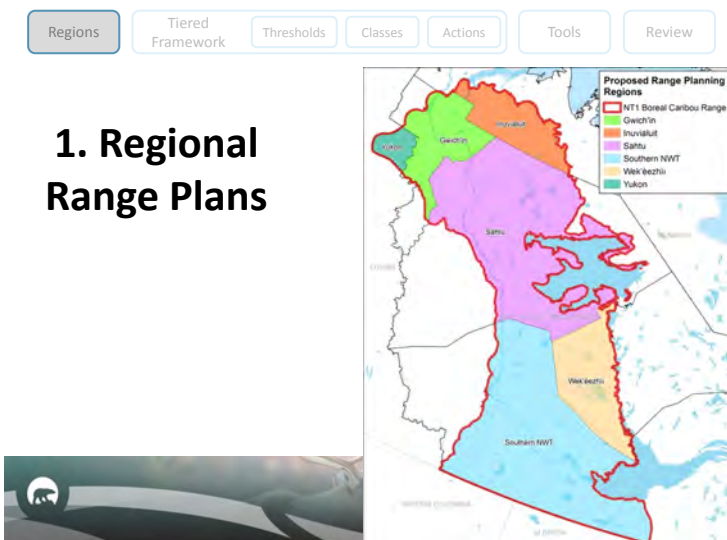


## Framework Elements

1. Regional range plans
2. A tiered management framework
  - Regional disturbance management thresholds
  - Mapping of management classes (Basic / Enhanced / Intensive)
  - Menu of management actions
3. Implementation Tools
4. Monitoring, adaptive management and review



## 1. Regional Range Plans



## 2. Tiered Management Framework

### Purpose

- To guide decisions about development and fire management in caribou habitat in times when there is more disturbance and in places that are more important to caribou.

### The Basics

- Limits and thresholds for habitat disturbance for each range planning region
- Assign different areas of each region to management class areas (Basic / Enhanced / Intensive) based on maps of habitat importance and status relative to thresholds
- Menu of management actions for each class



## Regional disturbance management thresholds

- Long-term limits for the combined amount of human and natural (fire) disturbance in each region
- Limits are adjusted for regional fire history
- Regional limits add up across the range to ensure the NT1 target of 65% undisturbed is met
- Some regions have limits of <35% disturbance, others have limits >35%
- Leaves room for about 10% human disturbance in each region



## Human Disturbance Thresholds

**High-Risk** – this level of human disturbance puts the region at a high risk of going over the long-term disturbance limit.

**Cautionary** – this amount of human disturbance will bring the region close to the long-term disturbance limit.

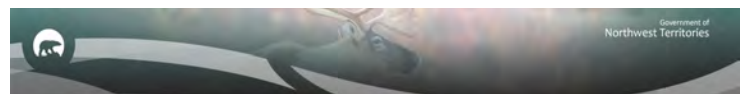
**Low-Risk** – this amount of human disturbance puts the region at a low risk of going over the long-term disturbance limit.



## Tiered Management Classes

Human Disturbance Threshold Status	Relative Importance of an area for Boreal Caribou		
	Low	Medium	High
High Risk			
Cautionary			
Low Risk			

Habitat is assigned to one of 3 management classes



## Tiered Management Classes

Human Disturbance Threshold Status	Relative Importance of an area for Boreal Caribou		
	Low	Medium	High
High Risk	Basic	Enhanced	Intensive
Cautionary	Basic	Enhanced	Enhanced
Low Risk	Basic	Basic	Enhanced

Habitat is assigned to one of 3 management classes

- Basic
- Enhanced
- Intensive

There are different actions and conditions in each class

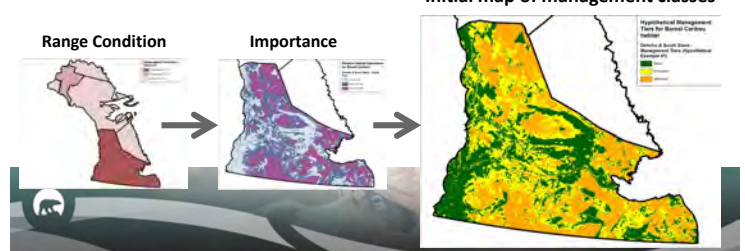


## Illustrative example

Range Condition	Relative Importance of an area for Boreal Caribou		
	Low	Medium	High
High Risk	Basic	Enhanced	Intensive
Cautionary	Basic	Enhanced	Enhanced
Low Risk	Basic	Basic	Enhanced

- Basic
- Enhanced
- Intensive

Initial map of management classes

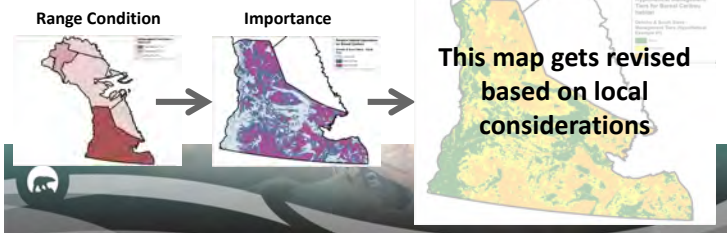


## Illustrative example

Range Condition	Relative Importance of an area for Boreal Caribou		
	Low	Medium	High
High Risk	Green	Yellow	Orange
Cautionary	Green	Yellow	Orange
Low Risk	Green	Yellow	Orange

- Basic
- Enhanced
- Intensive

Initial map of management classes



## What happens in each class?

Management Class	Management Actions	
	Development	Fire
Basic	<ul style="list-style-type: none"> <li>Encourage use of best practices and guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Follow existing GNWT Fire Management Policy</li> </ul>
Enhanced	<ul style="list-style-type: none"> <li>Ensure no net loss of undisturbed habitat through:                             <ul style="list-style-type: none"> <li>Re-use of disturbed areas</li> <li>Balancing new habitat disturbance against recovery</li> <li>Enhanced restoration</li> <li>Offsets for new permanent disturbance</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Reduce fuel loads in strategic locations</li> <li>Identify areas of boreal caribou habitat as Values at Risk</li> </ul>
Intensive	<ul style="list-style-type: none"> <li>Same as Enhanced, plus:                             <ul style="list-style-type: none"> <li>Higher offsetting ratios</li> <li>Stricter requirements for re-use of disturbed areas and habitat restoration</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Same as Enhanced, plus:                             <ul style="list-style-type: none"> <li>Assess feasibility of re-seeding or re-planting burns</li> </ul> </li> </ul>



## 3. Implementation Tools

- Framework includes an evaluation of key legal and policy tools
- Regional range plans will identify how land use plans, legislation, regulations and policy can be used to implement recommended management actions



## 4. Range Plan Development, Monitoring, and Plan Review

- 10-yr Range Plan Review Cycle
- 5-yr mid-term review
- Plans for monitoring population trend, habitat disturbance, effectiveness of management actions, and key research questions



## Engagement on the draft Framework

- Draft Framework distributed for engagement in May 2018
- ENR has since formed two temporary working groups to conduct an in-depth review



## Northern Working Group Membership

North Slave (Wek'eezhii), Sahtu, Gwich'in and Inuvialuit Regions:

- ☐ Renewable Resources Boards
- ☐ Indigenous Government Organizations
- ☐ Land and Water Boards and Review Boards
- ☐ Land Use Planning Boards
- ☐ GNWT
- ☐ Environment and Climate Change Canada
- ☐ Canadian Association of Petroleum Producers
- ☐ Chamber of Mines
- ☐ CPAWS-NWT





## Southern Working Group Membership

<b>Akaiicho First Nations</b>	Fort Simpson Métis Local	Government of the Northwest Territories*
Deninu K'ue First Nation	Fort Providence Resource Management Board	Environment and Climate Change Canada*
Smith's Landing First Nation		Parks Canada Agency*
<b>Dehcho First Nations</b>	Acho Dene Koe First Nation	Mackenzie Valley Environmental Impact Review Board*
Deh Gáh Got'ie First Nation	K'at'odeeche First Nation	Mackenzie Valley Land and Water Board*
Jean Marie River First Nation	Salt River First Nation	NWT/NU Chamber of Mines*
Ka'a'gee Tu First Nation	<b>Northwest Territories Métis Nation</b>	Canadian Association of Petroleum Producers*
Pehdzeh Ki First Nation	Fort Resolution Métis Council	Canadian Parks and Wilderness Society (NWT Chapter)*
Sambaa K'e First Nation	Fort Smith Métis Council	
West Point First Nation	Hay River Métis Council	
Liidlii Kue First Nation	NWT Wildlife Federation	
Fort Providence Métis Council	Dehcho Land Use Planning Committee	



## What happened to the Dehcho / South Slave boreal caribou working group?

- Purpose is to exchange information and provide advice to ENR on range planning, harvest, research and monitoring
- Membership at a regional Indigenous Government Organization level
- Invitation letters sent out on November 28, 2017

### Current Status

- Only two organizations responded to invitation letter.
- Reminder sent with Framework engagement notice + June 2018 webinar
- Discussed at August 2018 workshop - decided to proceed with a broader temporary Southern NWT working group to review the Framework
- ENR still wants to form a longer-term DC/SS WG but need to convene a meeting of the invited organizations to review the draft TOR and finalize membership



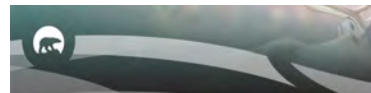
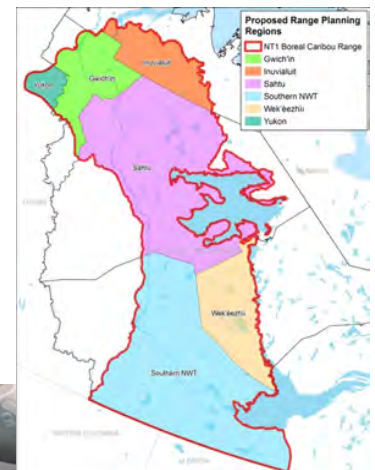
## When will the Framework be completed?

- Southern NWT working group meeting – Hay River – November 13/14, 2018
- Written comments due December 21, 2018
- Revised draft Framework by end of January 2019
- One more meeting with Northern and Southern Working Groups in February 2019
- “What we Heard” document in March 2019
- Final review by Renewable Resources Board's and Cabinet in April-May 2019
- Approved by Cabinet in June 2019



## What happens after that?

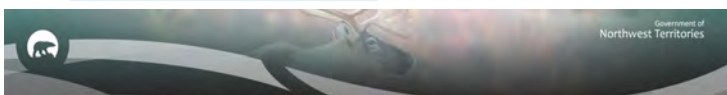
- Start work on regional range plans in fall 2019
- Southern NWT and Wek'eezhii plans will be first
- Sahtu, Gwich'in and Inuvialuit plans will be second
- Aiming to complete all regional plans by end of 2022



**Thanks!**

<https://www.enr.gov.nt.ca/en/services/draft-boreal-caribou-range-planning-framework-have-your-say>

[boreal\\_caribou\\_rangeplan@gov.nt.ca](mailto:boreal_caribou_rangeplan@gov.nt.ca)





## Appendix 5.

### Dehcho Moose Program

Presented by Nic Larter, ENR Fort Simpson

The slide features a background image of three moose in a dry, open landscape. The title 'Dehcho Moose Program' is prominently displayed at the top in a large, bold, black serif font. Below the title, a bulleted list of three items is presented in a bold, black sans-serif font. At the bottom of the slide, the text 'Dehcho Wildlife Workshop' is written in a bold, black sans-serif font, followed by the date 'October 16, 2018' in a larger, bold, black sans-serif font. The footer includes a logo on the left and the government of the Northwest Territories logo on the right.

***Dehcho Moose Program***

- Contaminant Study Results
- Large-scale Moose Survey Results
- Future small/large scale Survey

**Dehcho Wildlife Workshop**

**October 16, 2018**

 Government of Northwest Territories / Gouvernement des Territoires du Nord-Ouest



## Dehcho Moose Program

- Contaminant Study Results
- Large-scale Moose Survey Results
- Future small/large scale Survey

### Dehcho Wildlife Workshop

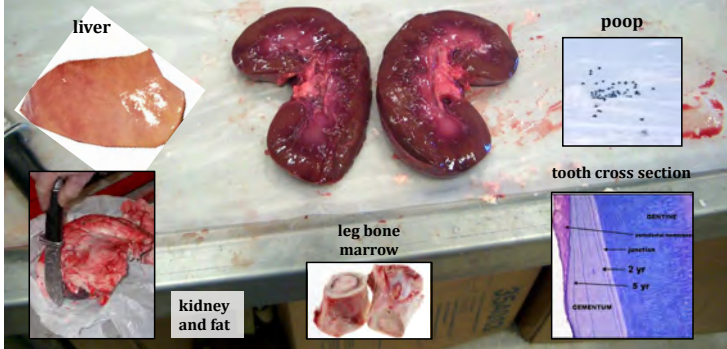
October 16, 2018

Government of Northwest Territories / Gouvernement des Territoires du Nord-Ouest

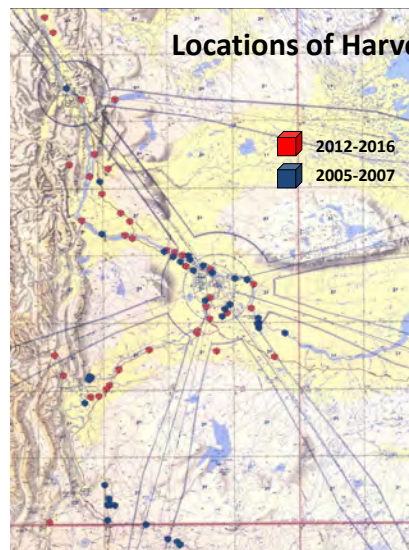
ENR was asked to conduct a study to see if the concentrations of elements, particularly cadmium, mercury, lead and arsenic were elevated in moose harvested in the Dehcho and had changed since 2005-2007.

- Collected samples from moose harvested by local residents.
- Residents reimbursed \$75 for completed sample kit.
- Samples from 38 moose harvested November 2012 – January 2016.

- Hunters provided a ranking of body condition (Excellent, Good, Fair, Poor), a tooth, a kidney plus accompanying fat, a piece of liver, a piece of muscle, a part of leg bone, and some poop.
- Tissues and poop were analyzed at labs for 35 elements and parasites.
- Teeth were aged by the layers of cementum (like tree rings).
- We determined the percent fat of bone marrow and a kidney fat measure.



## Locations of Harvested Moose



2012-2016	2005-2007
43 moose	38 moose
1/3 females	1/4 females
4.3 years	2.9 years
83 tissues	74 tissues
- 43 kidney	- 38 kidney
- 40 liver	- 20 liver
- no muscle	- 16 muscle

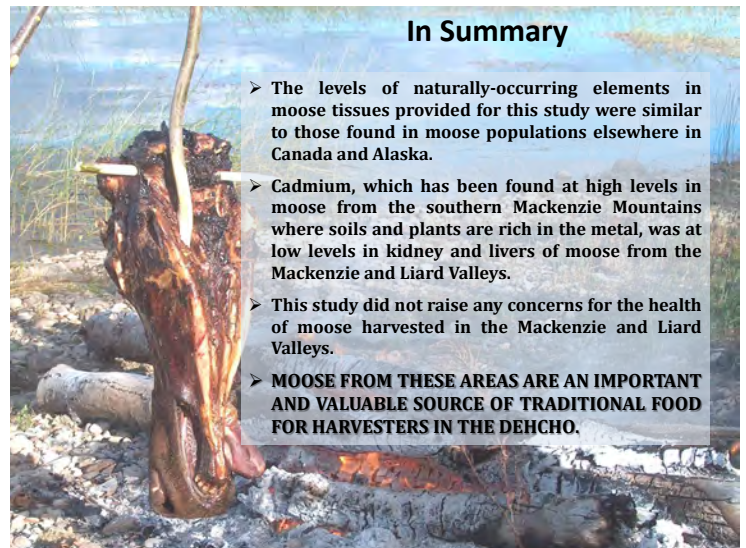


## What We Found

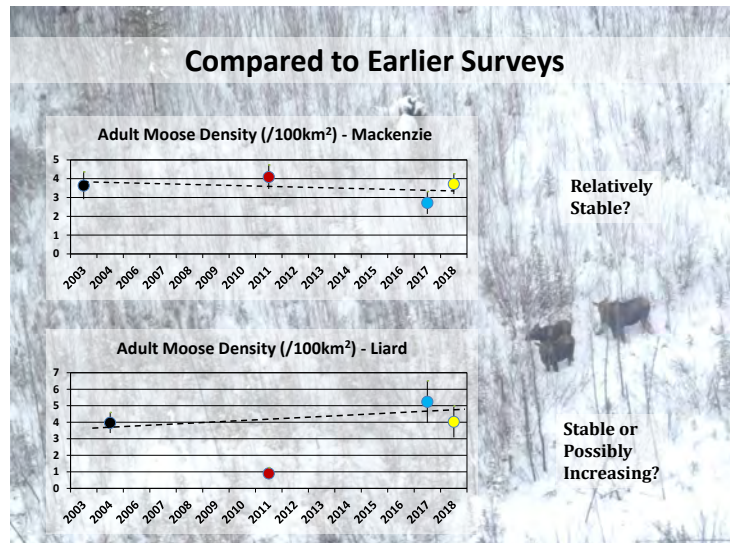
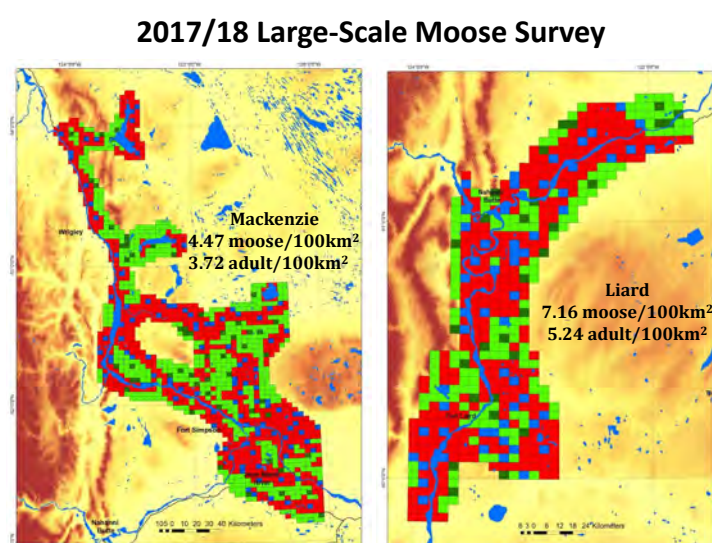
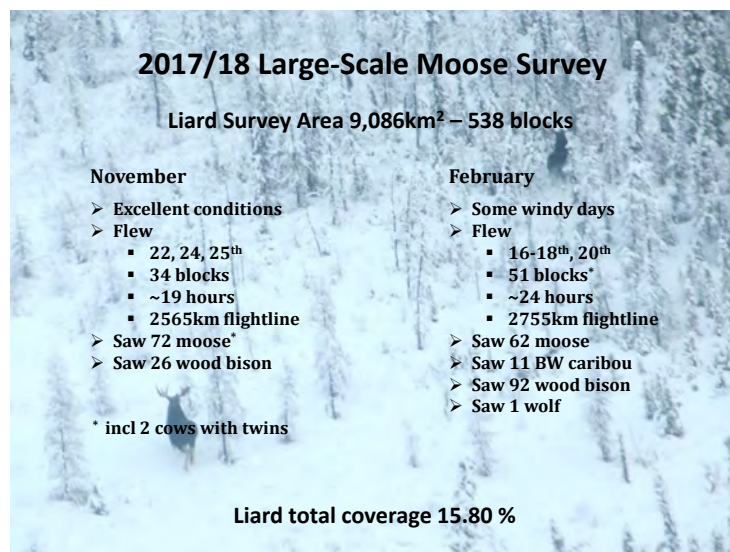
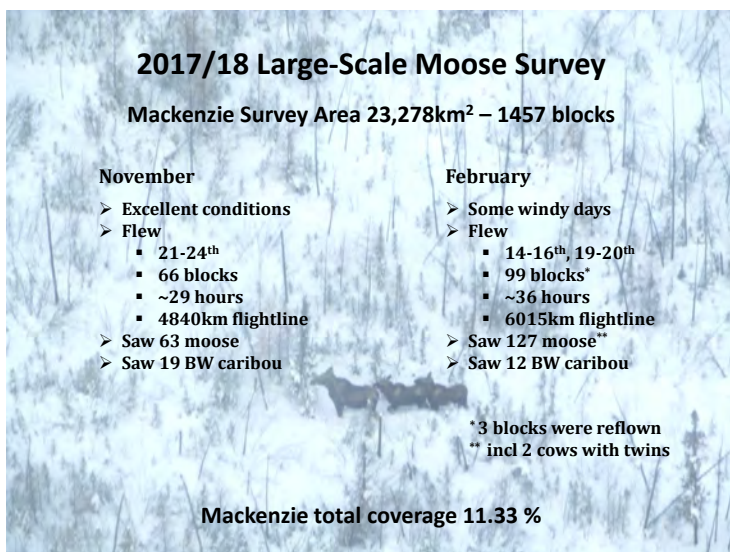
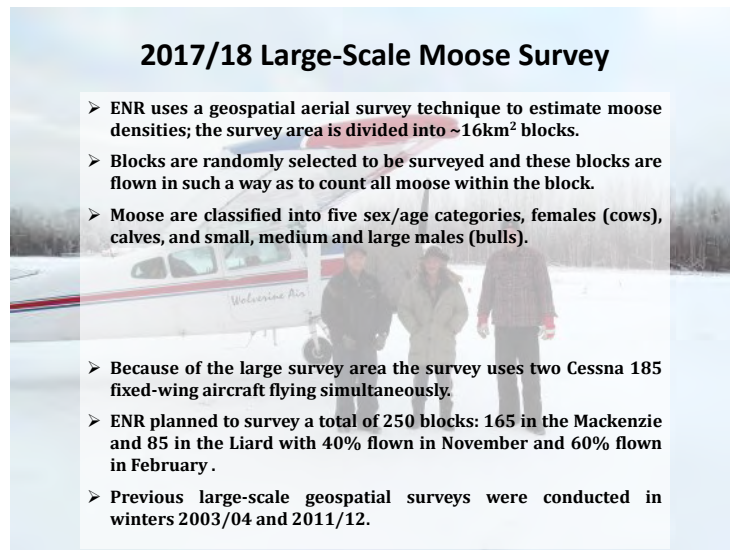
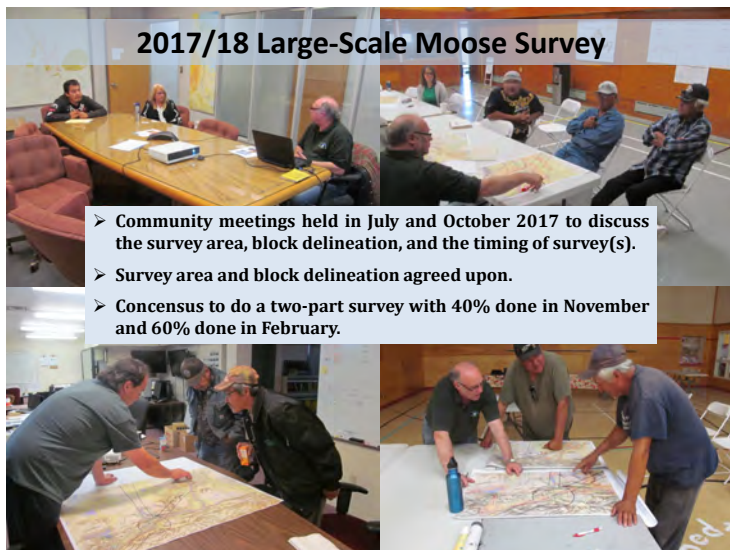
- As has been observed in other studies, the concentration of cadmium was highest in kidney and lowest in muscle, and increased with the age of the animal.
- The concentration of cadmium in moose from the Mackenzie and Liard River Valleys is much lower than in moose from the south Mackenzie Mountains and is similar to moose found in other areas of Canada.
- The concentrations of most elements were virtually the same as in moose from many other regions of Canada and in Alaska.
- Mercury levels were low and lower than other large mammals in NT and lead levels were too low to be measured.
- Body condition reported and fat stores measured showed a generally healthy population during both sampling periods.
- A low incidence of common parasites found in poop.
- The analysis of kidney tissue (from 2012-16) showed a low incidence of pathological changes in kidney cells, 7.7% of 578 potential cell changes.

## In Summary

- The levels of naturally-occurring elements in moose tissues provided for this study were similar to those found in moose populations elsewhere in Canada and Alaska.
- Cadmium, which has been found at high levels in moose from the southern Mackenzie Mountains where soils and plants are rich in the metal, was at low levels in kidney and livers of moose from the Mackenzie and Liard Valleys.
- This study did not raise any concerns for the health of moose harvested in the Mackenzie and Liard Valleys.
- **MOOSE FROM THESE AREAS ARE AN IMPORTANT AND VALUABLE SOURCE OF TRADITIONAL FOOD FOR HARVESTERS IN THE DEHCHO.**









## Future Surveys?

- ENR was requested to conduct a large scale survey split 40/60 between November and February; it worked well but two aircraft are costly.
  - November only surveys risk missing more animals.
  - February only surveys risk inaccurate identification of sex.
- ENR has previously conducted small-scale surveys with a single aircraft but these surveys can't detect changes in numbers over larger areas.

- Should the current 6 year rotation of large-scale surveys be reduced to 4 or 5 years? for both survey areas? sooner for Mackenzie than Liard?
- Should we continue with the 40/60 split of large-scale surveys?
- Should we use small-scale surveys again ?

## Acknowledgements

Mahsi cho to all harvesters who took the time and effort to provide samples from their harvested moose 2012-2016: Danny Allaire, Tumbah Antoine, Wilbert Antoine, Darrell Betsaka, Mitchell Berreault, Peter Cazon, Edward Cholo, Nicholas de Pellham, Kirby Groat, Dawn-Bell Isaiah, Gordon Isaiah, Shane Leahy, George Low, Peter Marcellais, James Mouse, Deneze Nakehk'o, Bob Norwegian, Wesley Pellissey, Roger Pilling, Dan Quevillon, Troy Ruttle, Mervin Simba, Paul Simon, Charlie Tale, Maurice Tanche, Kurt Tsetso & Gary Yendo.

and from 2005-2007: Jonas Antoine, Darrell Betsaka, Francis Betsaka, Peter Cazon, Edward Cholo, Steven Cli, Peter Corneille, Ernest Hardisty, Gabe Hardisty, Loyal Letcher, Elvis Lomen, James Mouse, Roy Mouse, Wesley Pellissey, Troy Ruttle, Angus Sanguez, Stanley Sanguez, Isidore Simon, Ernest Timbre, Ernest Tsetso, Frank Tsetso, George Tsetso, Morris Vital, Raymond Vital & Steven Vital.

Funding came from the Western NWT Biophysical Program and ENR.

## Mahsi Cho

Any questions?

## Appendix 6.

### Boreal Bird Monitoring in the Dehcho

Presented by Rhiannon Pankratz, Canadian Wildlife Service, Yellowknife



Environment and  
Climate Change Canada

Environnement et  
Changement climatique Canada

---

# Boreal Bird Monitoring in the Dehcho

---

**Rhiannon Pankratz**  
Samuel Hache  
*Canadian Wildlife Service*



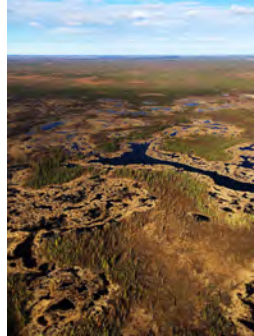


1



## Boreal Bird Monitoring in the Dehcho

Rhiannon Pankratz  
Samuel Hache  
Canadian Wildlife Service



Canada

Thank you!

For your continued support for the work we conduct within your traditional territory, for the assistance we've received from community members and eager students, and for welcoming us into your communities while we visit.

## Who are we?



Environment and  
Climate Change Canada

Environnement et  
Changement climatique Canada

+ many students, field technicians  
and volunteers!

## What do we do?

- Leader for the conservation of Canada's wildlife
  - Protect species at risk
  - Plan and rehabilitate significant habitat
  - Manage protected areas
  - Document effects of climate change
  - Work with First Nations, government and non-government stakeholders
  - Conserve migratory bird populations



### Need to know:

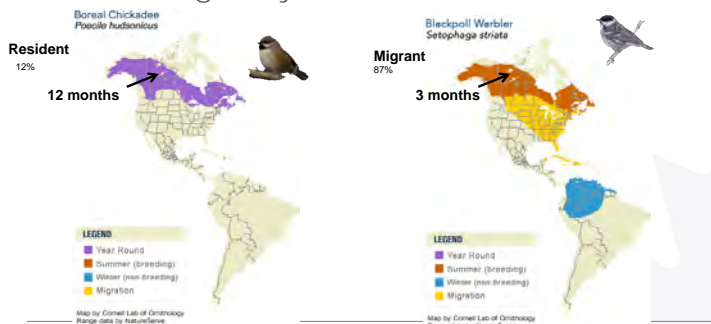
How large are bird populations?

How are they distributed?

How are they changing over time? Why?



## What's a migratory bird?

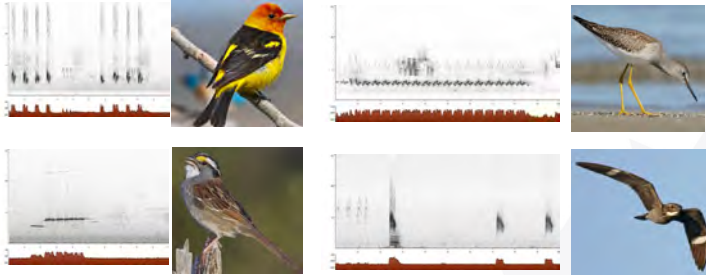


## Why Birds?

- The Migratory Bird Convention Act
- Generally sensitive to environmental change
- Indicator of changes in other populations and ecosystem health
- Economically important – pest control, pollinators
- Some species are hunted
- They vocalize! Easy to count



## Song - a Language



## Landbird Program

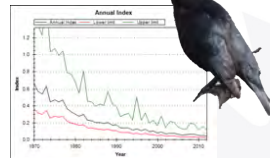
- Distribution, habitat-specific densities, population sizes of bird species in the NWT boreal forest
- Monitor population sizes and distributions (trends)
- Conserve migratory landbird populations



## What can monitoring tell us?

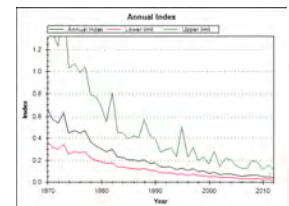
- Trends in population size
- Clues to how the environment is changing throughout a species' annual life cycle
- How human and natural disturbances affect trends
- Information on species status helps us manage bird populations

Through monitoring we know that Rusty Blackbird populations have declined 88% over the last 40 years.



## Changes in Landbird populations (monitoring)

- Visit the same location over multiple years
- Count all the birds heard or seen for each species (point count)



## HPC vs. ARU

Human Point Count (HPC)

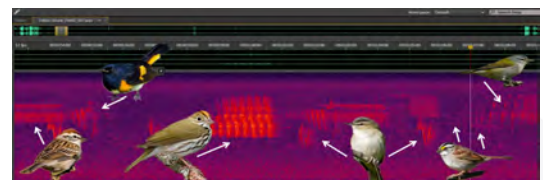


Acoustic Recording Unit (ARU)



## Acoustic Recording Interpretation

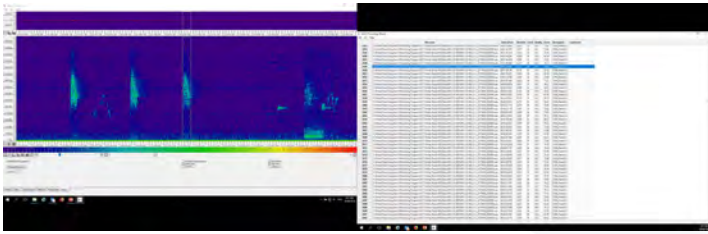
- ARUs record bird song
- Birds can be identified by song
- Collected bird data using ARUs





## Computer Automated Detection

- “Recognizers” - identify species based on algorithms
- Process large amount of data with computer
- Requires human validation - false positives



## Collaborations

- ARUs allow for increased collaboration
  - Can monitor anything that vocalizes not just birds
    - E.g. Insects, amphibians, mammals...
- New monitoring areas through collaboration
  - Dehcho collaborations:
    - University of Alberta and GNWT - Owls
    - Samba K'e - Winter Road
    - Parks Canada – Status of bird populations in Nahanni and Nááts'ihch'oh
    - Environmental Assessment – proponents provide bird data
- Continuing to expand our collaborations

## Example - Collaboration with Canadian Zinc

- Working with proponents to collect baseline data
- ARU deployment on proposed road footprint
- ECCC providing guidance to proponent
- ECCC has access to data for inclusion in other analyses



Monitoring Programs  
TREND DATA

## On-going Dehcho Monitoring Programs

Program	Frequency	Start	Next survey
Edézhíe	Every 3 <sup>rd</sup> Year	2016	2019
Winter Roads	Every 3 <sup>rd</sup> Year	2017/2018	2020/2021
Natural Disturbance (Fire)	Every 3 <sup>rd</sup> Year with subset every year	2015	2019
Breeding Bird Survey	Annual	1990s	2019
Common Nighthawk Survey	Annual	2016	2019



## Edézhíe Bird Monitoring







## Edézhíe Bird Monitoring

- What do pristine boreal bird communities look like?
- What are the baselines to maintain for the area?
- What is the status of birds breeding in this pristine boreal landscape?
- How is climate change affecting bird populations?
- How do natural disturbance affect bird populations?
- How do events occurring outside the breeding season affect these populations?



Recently Burnt Forest

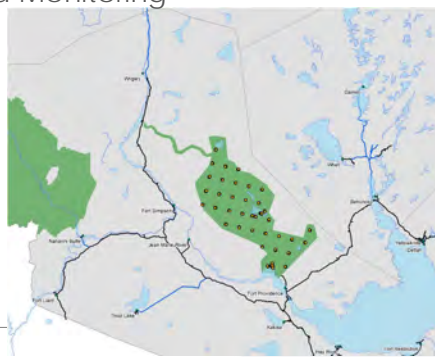


Common Nighthawk



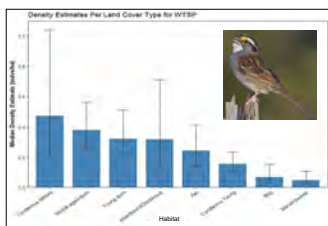
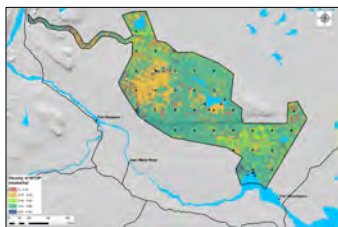
## Edézhíe Bird Monitoring

- 41 monitoring stations
- Grids of 5 ARUs per monitoring location
- 205 sampling locations (ARUs)



## 2016 Edézhíe Results

- White-throated Sparrow (most abundant)
- Habitat-specific density estimates (generalist –wide spread)



## 2016 Bird Monitoring in Edézhíe



## 2016 Edézhíe Results

- Habitat-specific density estimates
- Predicted population sizes for 38 species
- Estimates for 20 most common species:

Species	% stations detected	Estimated Population	Species	% stations detected	Estimated Population
White-throated Sparrow	65	647,646	Grey-cheeked Thrush	33	223,982
Hermit Thrush	65	372,111	Palm Warbler	33	349,864
Lincoln's Sparrow	61	409,177	Wilson's Snipe	33	159,513
Dark-eyed Junco	59	385,816	Yellow-rumped Warbler	33	330,635
American Robin	52	281,085	Northern Waterthrush	30	203,845
Tennessee Warbler	52	521,348	Ruby-crowned Kinglet	29	265,820
Swainson's Thrush	48	40,874	White-crowned Sparrow	28	238,797
Alder Flycatcher	46	216,646	Swamp Sparrow	27	78,219
Fox Sparrow	46	623,775	Blackpoll Warbler	25	595,743
Chipping Sparrow	38	97,657	LeConte's Sparrow	22	112,218



## 2016 Edézhíe Results

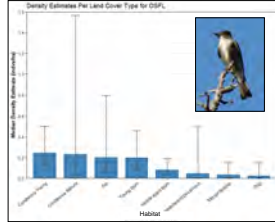
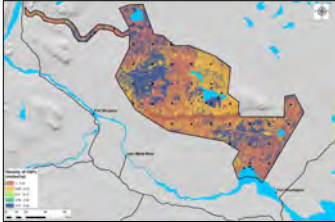
- Species at Risk presence in Edézhíe
- Point count vs. recognizers

Species	% Stations Present (Point Counts)	% Stations Present (Recordings)
Common Nighthawk	0.5%	76%
Olive-sided Flycatcher	12%	36%
Rusty Blackbird	3%	28%
Yellow Rail	9%	15%
Canada Warbler	0%	0%



## 2016 Edézhíe Results

- Olive-sided Flycatcher
- Habitat-specific density estimates



## 2016 Edézhíe Discussion

- High density estimates considering northern limit of the breeding range for many boreal songbirds
- SAR: some estimates represent a large proportion of current national population size estimates
- Baseline data for setting conservation objectives for Edézhíe
- Inform recovery strategies and management plans to support regional/national conservation initiatives



## 2019 Bird Monitoring in Edézhíe

- Guardians program
  - 1 team in Fort Providence
  - 1 team in Fort Simpson
- ARUs
- Deploy in May and retrieve in July
- 2 weeks
- Same locations + rare sites?

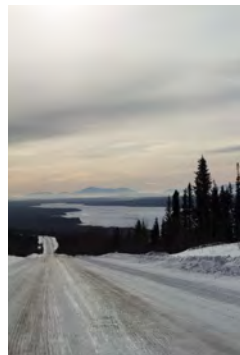


## Winter Road Bird Monitoring



## Winter Road Bird Monitoring

- 2017 - Fort Simpson & Wrigley (n = 54)
- 2018 - Sambaa K'e (n = 175)
- Deploy in the winter, record in the summer
- 1 full year to collect data



## Winter Road results - Fort Simpson & Wrigley

- Total number of species: 40
- Total number of individuals: 383
- 10 most common species:
  - Tennessee Warbler
  - Swainson's Thrush
  - White-throated Sparrow
  - Chipping Sparrow
  - Hermit Thrush





## Winter Road results - Fort Simpson & Wrigley

### Edge of range species:

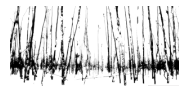
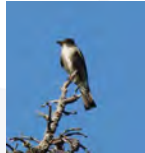
- Townsend's Solitaire
- Varied Thrush

### At risk / declining species:

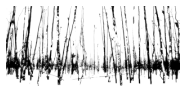
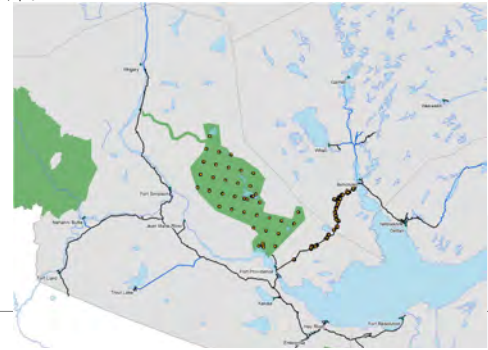
- Lesser Yellowlegs
- Olive-sided Flycatcher
- Common Nighthawk

### Not detected but suspected:

- Canada Warbler
- Rusty Blackbird
- Others?



## Wildfire and Bird Populations



## Wildfire and Bird Populations

- How does wildfire impact songbird populations?
- Measured the effects of fire severity in 2014 burns (2015/2016)

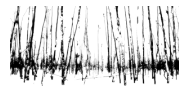


Low severity

Moderate severity

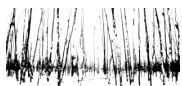
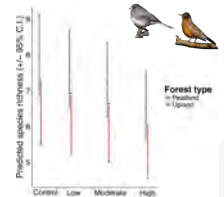
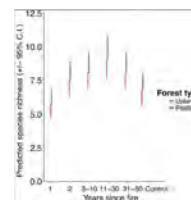
High severity

- Measured changes in different ages of burns along Hwy #3 and in Edézhzie



## Wildfire and Bird Populations

- Fewer species in high severity burns
- After two years, no noticeable difference in the community



## Wildfire and Bird Populations

- Will continue to monitor these sites every 3 years
- Project will document effects of this natural disturbance on landbirds
- Interested in exploring other natural disturbances (i.e. insect outbreaks)
- Understanding these natural disturbance effects can help us understand potential effects of climate change on birds

## Breeding Bird and Common Nighthawk Surveys





## Breeding Bird and Common Nighthawk Surveys

- Road-based
- 50 stops (BBS)
  - sunrise
- 12 stops (CONI)
  - Sunset
- National
- Volunteer-based



Species at Risk Programs  
DIRECTED STUDY DATA

## Migratory Bird Species at Risk

- Species listed as at Risk under the Species at Risk Act (SARA)
- Goal:
  - To prevent wildlife species in Canada from disappearing
  - Recover extirpated, endangered and threatened species
  - Manage special concern species so that they do not become endangered or threatened
- We monitor SAR through monitoring programs but also have specific programs to answer certain questions
  - Identify migratory routes, breeding habitat, population structure...

## Biological Sampling

- Population health
  - Genetic
  - Contaminants
  - Body condition
  - Stress
  - Diet
- Population structure
  - Genetic
  - Tracking (GPS tags)

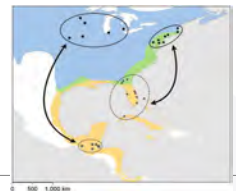


## Common Nighthawk Migratory Connectivity



## Common Nighthawk Migratory Connectivity

- Common Nighthawks have declined 68% over the last 45 years
- Are populations connected or separated throughout their annual life cycle?
  - Is the NWT population genetically related to others throughout their range?
- Inform conservation actions

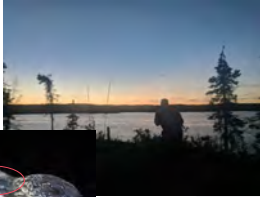




## Common Nighthawk Migratory Connectivity

2017  
Attach satellite tag to determine migratory route

2018  
Take blood sample and feathers to determine genetics



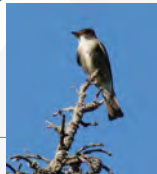
## Olive-sided Flycatcher Breeding Status



## Olive-sided Flycatcher Breeding Status

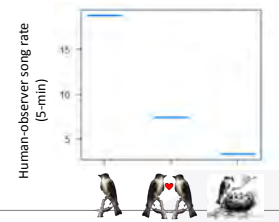
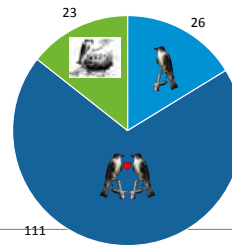


- Olive-sided Flycatchers have declines 70% over the last 45 years
- Can song rate be used to predict breeding status?
  - Birds sing at different rates during different breeding stages
- Can song rate from ARUs be used to predict breeding status?
- Song rate could be efficient method to obtain demographic data






## Olive-sided Flycatcher Breeding Status

N = 160 daily song rates (from 27 Olive-sided flycatchers)



## Olive-sided Flycatcher Breeding Status

Model	True Positive Rates (Sensitivity)		
			
1) Multinomial logistic regression	0.19	<b>0.92</b>	0.52
2) Hierarchical model	<b>0.69</b>	0.50	<b>0.87</b>
3) Classification Tree	0.08	0.89	0.52



## Olive-sided Flycatcher Breeding Status

- Can song rate be used to predict breeding status?
  - Yes
- Can song rate from ARUs be used to predict breeding status?
  - Obtain song rate from ARUs where OSFL present
  - Use statistical method from human based calibration
  - Does not work
    - Detections too few





## Olive-sided Flycatcher Breeding Status



## Olive-sided Flycatcher Breeding Status

- ARUs too far from bird activity

- **ARU location**
- **Nest location**
- **Olive-sided flycatcher observation**



## Bank Swallows and Gravel Pits



## Barn Swallows and Culverts



## Birds, caribou and the future



- Generate current estimates of bird densities and distribution across NWT
- Predict vital rates for caribou
- Use fire simulation models to predict change until 2100
- Predict response from caribou and birds
- Compare current/future areas of high vital rates for caribou and birds
- How will Edézhzie likely contribute to conservation over next century?

## Questions?



## Appendix 7.

### Amphibians in the Dehcho

Presented by Joanna Wilson, ENR Yellowknife







## Amphibians in the Dehcho region, NWT

October 16, 2018      Joanna Wilson, ENR  
Dehcho Regional Wildlife Workshop

Government of  
Northwest Territories

## Outline

- Introduction to amphibians of the region
- Threats to amphibians
- NWT Amphibian Management Plan
- Western toads at Muskeg River
  - Preventing roadkill
- eDNA monitoring

Photo on title slide: Western toad, credit  
Floyd Bertrand, ENR

Government of  
Northwest Territories

## Frogs, toads & salamanders



- Sensitive to environmental change


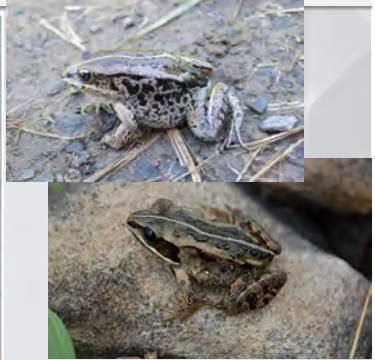


Wood frog photo: Danna Schock  
Diagram: www.frog-life-cycle.com

- Global declines

Government of  
Northwest Territories


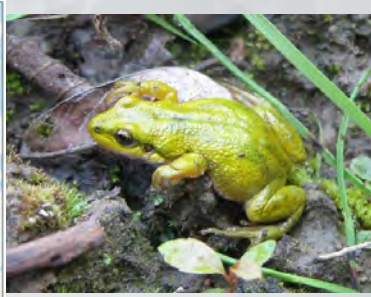
## Wood frog

Wood frogs. Photos: Danna Schock  
Range map from NWT Amphibian Management Plan 2017

Government of  
Northwest Territories

## Boreal chorus frog

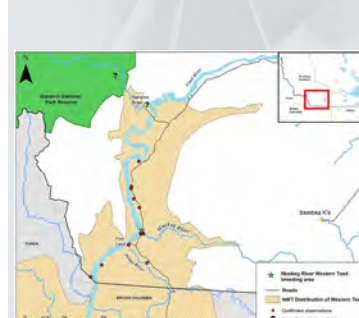




Boreal chorus frog. Photo: Danna Schock  
Range map from NWT Amphibian Management Plan 2017

Government of  
Northwest Territories

## Western toad

Threatened in the NWT

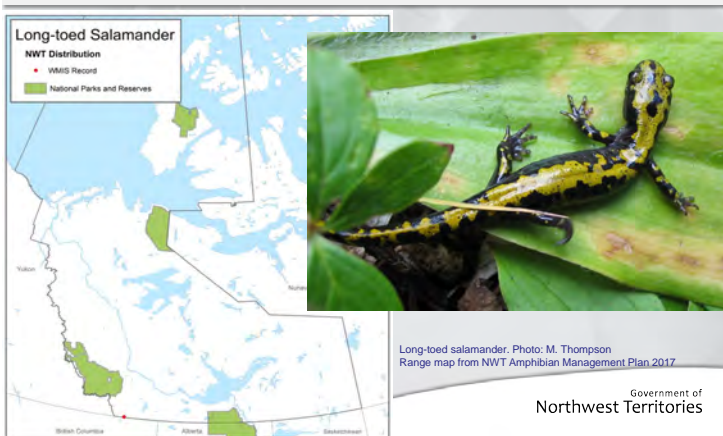



Western toad. Photo: Floyd Bertrand, ENR  
Range map from B. Fournier, ENR, June 2018

Government of  
Northwest Territories



## Long-toed salamander?



## Northern leopard frog?



## Habitat



## Threats in the NWT

- Diseases (chytrid fungus and ranavirus)
- Accidental mortality
- Pollution
- Habitat destruction
- UV-B radiation



Government of  
Northwest Territories

## Threats - disease

- Chytrid fungus
- Ranavirus
- Bsal?



Swabbing a frog for Bd. Photo: Danny Allaire, ENR  
Tadpole with ranavirus infection. Photo: Danna Schock

Government of  
Northwest Territories

## Disinfection protocols

To avoid transporting  
diseases between wetlands



Government of  
Northwest Territories



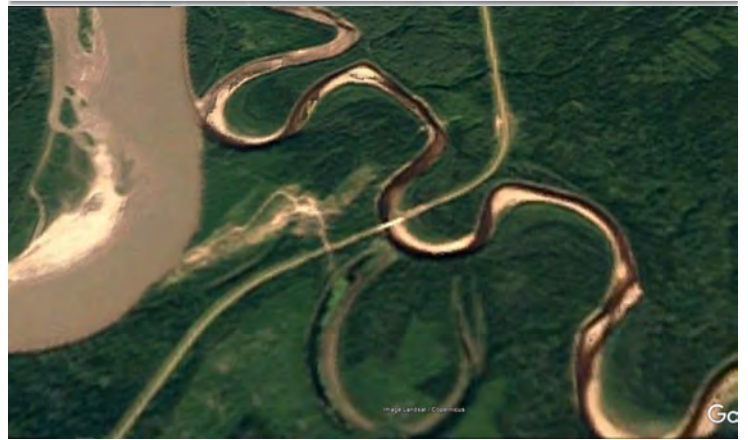
## Accidental mortality



Photos:  
Alpinewatershedgroup.org  
Youralaskavacationn.com  
Jim Deneron, ENR



## Western toads at Muskeg River



Photos: Danny Allaire, ENR

Toads breeding in ponds in the Muskeg River gravel pit



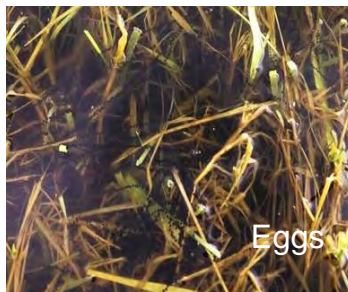
## Road kill mortality



Western toads killed on Highway 7, May-August 2018



Photos: Jim Deneron, ENR



Eggs

Tadpoles

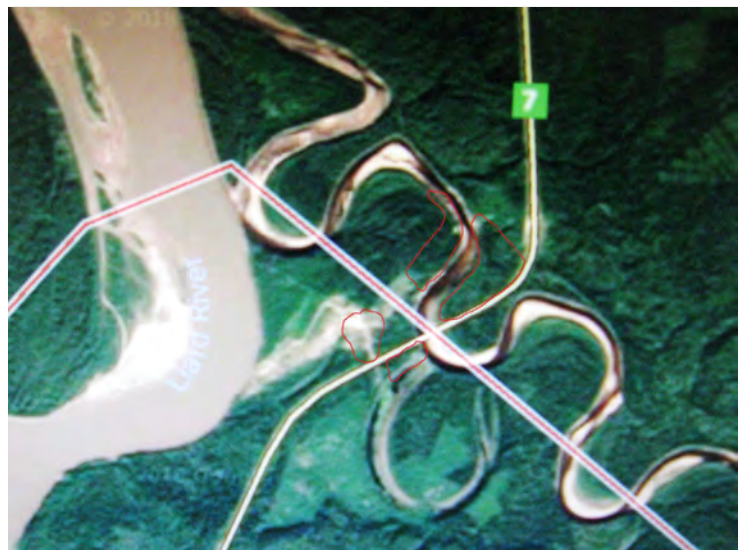
Toadlet



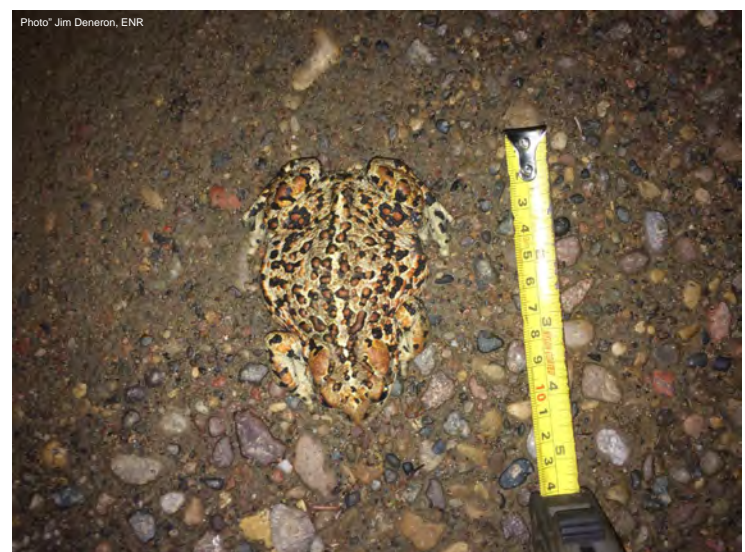
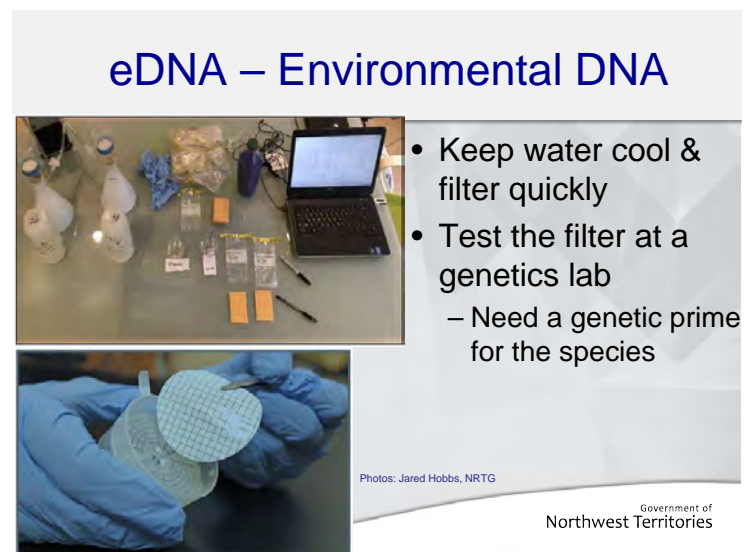
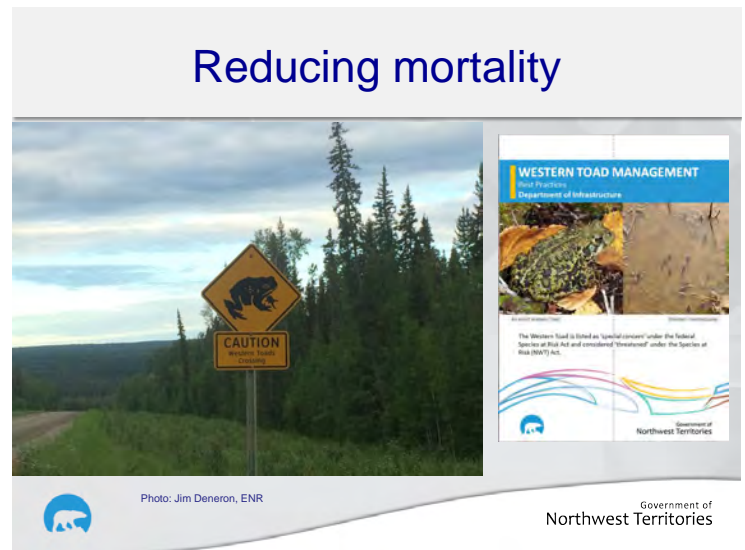
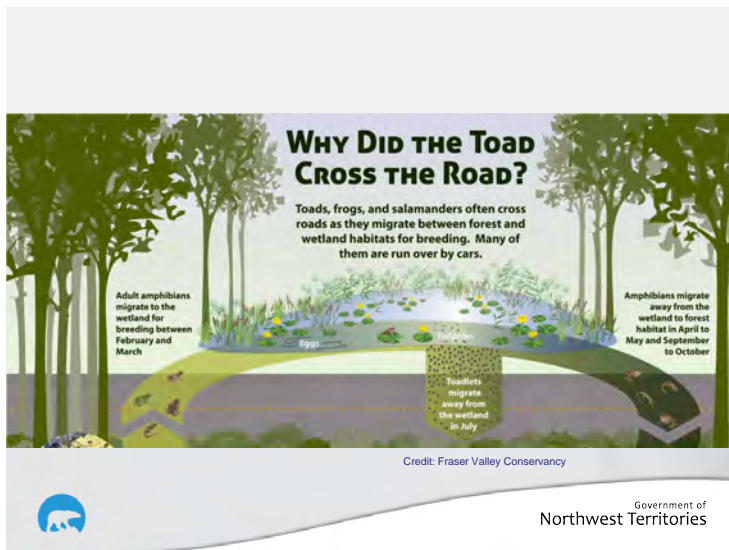
Adult



Photos: Toadlet and eggs - Frodo Valley Conservation  
Tadpoles - Carina Schick, Adult - Jim Deneron, ENR







## Appendix 8.

### Dehcho Bison Program

Presented by Nic Larter, ENR Fort Simpson

A presentation slide for the Dehcho Bison Program. The background is a photograph of a herd of bison grazing on a sandy beach next to a body of water, with mountains in the distance under a cloudy sky. The title 'Dehcho Bison Program' is in a large, bold, black font. Below it is a bulleted list of four items, each preceded by a right-pointing arrowhead. At the bottom, the text 'Dehcho Wildlife Workshop' and 'October 16, 2018' is displayed. A blue and white wavy graphic at the bottom left contains a circular logo with a bison head. To the right of this graphic, the text 'Government of Northwest Territories' and 'Gouvernement des Territoires du Nord-Ouest' is written in a small font.

***Dehcho Bison Program***

- **Bison Population Survey**
- **Sex and Age Classification Surveys**
- **Working with Other Jurisdictions**
- **Bison, Roads, Signs and Collars**

**Dehcho Wildlife Workshop**  
**October 16, 2018**

 Government of Northwest Territories / Gouvernement des Territoires du Nord-Ouest



## Dehcho Bison Program

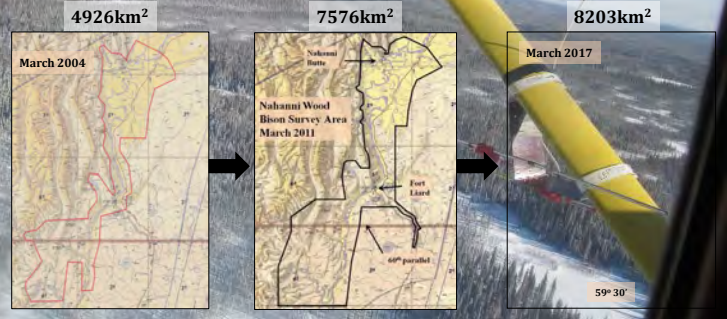
- Bison Population Survey
- Sex and Age Classification Surveys
- Working with Other Jurisdictions
- Bison, Roads, Signs and Collars

Dehcho Wildlife Workshop  
October 16, 2018



## Bison Population Surveys

- Aerial population surveys were conducted in Marches 2004, 2011, and 2017.
- The population has increased the size of its range since 2004.
- Survey area has increased with each survey.



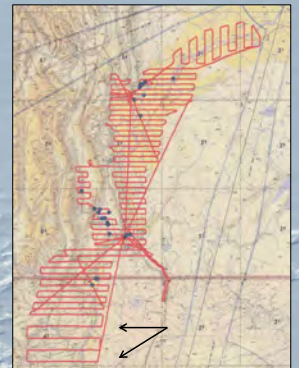
## Bison Population Surveys

- ENR conducts aerial strip line transect surveys on the winter range to estimate bison numbers; most transects are spaced about 3.5km apart.
- The survey crew consists of a pilot, recorder, and two local observers hired by ENR. The flight path is recorded using a GPS.
- The aircraft flies at 400 feet above ground, the wing struts are marked so a 500m transect on each side of the plane can be observed.
- All animals observed (calves and non-calves) are counted and recorded with a waypoint; larger groups are photographed.
- Collared bison have provided measures of sightability for the 2011 and 2017 surveys.



## 2017 Bison Population Survey

- Survey conducted 15-21 March; four days of flying, three days grounded by weather or mechanical issues.
- Excellent conditions for flight days.
- Three local observers from Nahanni Butte and Fort Liard were hired for the survey.
- Over 22 hours of flying we covered 3400km with 2200km on transects
- Surveyed 63 of the planned 67 transects, missing 4 in the southern section of British Columbia.
- Observed 296 bison in total 225 on transect and 71 off transect.
- Also saw 58 moose and 4 caribou.

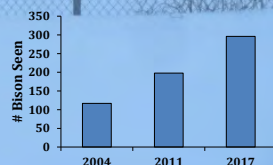


## 2017 Bison Population Survey

- The most bison seen in any survey; greatest number and proportion of bison seen outside NT (BC/YT).
- Bison were seen in the Kotaneelee block and for the first time in NEBC.

- Transect lines in forested (closed) habitats could only see a 100m swath on each side of the aircraft determined by observing collared bison (sightability correction).

- The non-calf population estimate was 962 ± 367 (95% confidence interval).

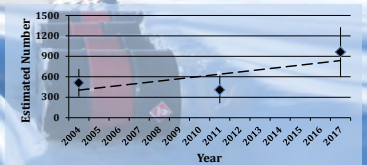


## Bison Population Surveys

Because we could no longer assume that all calves seen in March will survive until May, and calves are more easily missed than adults, to properly compare the three surveys we needed to reanalyze:

- the 2004 survey using the sightability correction factor.
- the 2004 and 2011 surveys using only non-calf animals.

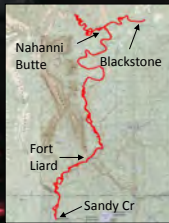
- Three estimates allow us to address trend in numbers.
- Survey results indicate an increase (moderate growth) in numbers since 2004.





## Sex and Age Classification Surveys

- Conducted annually since 2002 with other ENR biologists and biologists from BC/YT/AB participating in 2009-2013, 2016, 2018 for consistency in classifying 7 sex/ages.
- Using a boat, we cover the Liard and South Nahanni Rivers, usually north from Sandy Creek to Nahanni Park and Blackstone River; 2-3 days long.
- Conducted in mid-July when water levels are low and temperatures are high, bison frequent sandbars and the shoreline avoiding heat and insects.
- Survey tracked by GPS, with waypoints recorded for all observations.
- Maps of observations provided to Acho Dene Koe and Nahanni Butte Dene Bands.



## Classification Survey Results for 17 years

	2002	2003	2004	2005	2006	2007	2008	2009	2010
# bison classified	131*	154	137	138	167	164	161	125	153
# calves/100 cows	20	56	42	28	47	41	39	43	36
# yearlings/100 cows	17	10	31	26	25	20	28	27	29
# mature males/100 cows	48	50	40	50	72	52	56	51	52

	2011	2012	2013	2014	2015	2016	2017	2018
# bison classified	212	131	165	141	190	112	213	360
# calves/100 cows	43	65	46	33	33	58	46	48
# yearlings/100 cows	18	10	37	24	17	4	19	31
# mature males/100 cows	40	53	53	64	38	56	30	33

\* Included group of 42 classified at Beaver Camp prior to survey

- On average we observe 163 bison/survey; in 2017 and 2018 we observed the most animals, in 2018 more seen than on the 2017 aerial population survey.
- On average the cow:calf ratio is 42:100, the cow:yearling ratio is 22:100, the overwinter survival of calves is 53%, and there are 48 mature males for every 100 females.
- The last two years saw a rebound from the lowest overwinter survival of calves and cow:yearling in 2015/16 with overwinter survival of 34 and 67%.

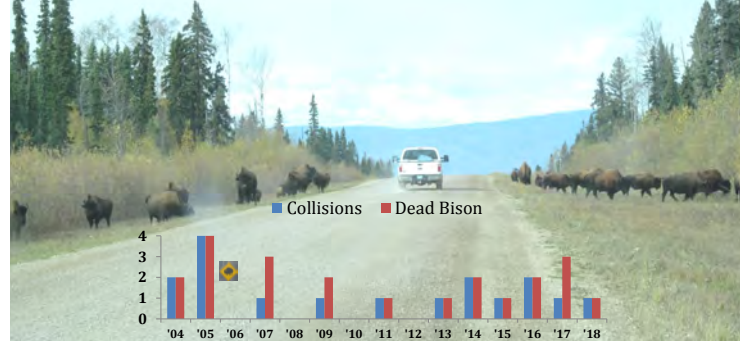
## Working with Other Jurisdictions



- Although most of the Nahanni wood bison range is in the Northwest Territories they range into both British Columbia and the Yukon.
- ENR actively solicits the participation of staff from other jurisdictions with classification surveys because such joint ventures ensure consistency in classifying bison and facilitate communication between jurisdictions related to their bison programs.
- BC/YT staff participated in classification surveys 2009-2013, 2016, new ENR staff in 2017, and in 2018 the new bison biologist from northern AB.
- In 2013 ENR assisted with the BC classification survey of the Norquist population which is found near Liard Hotsprings.

## Bison, Roads and Signs

- Warning signs were first erected in 2005 but since then the bison range has increased and now it is not uncommon to see bison as far north as Poplar River, well beyond the original large signage.



- Collisions have continued almost annually (11 collisions killing 16 bison) and a number of warning signs were no longer present.

## Bison, Roads and Signs

- ENR has been working with Department of Infrastructure (DOI) to improve signage on the Liard Highway as a public safety issue to remind motorists that bison are present.



- In September 2017 the big warning sign was moved from Blackstone to Poplar River and a dozen road warning signs were erected along the highway and the Liard access road.
- We have received positive feedback from the public on the increased number of warning signs.

## Interpretive Signs

- ENR Fort Simpson is also working with DOI and ENR communications to create a 6' x 4' interpretive sign describing the Nahanni bison population.

- We hope put up two of these signs: one at the start of the Fort Liard access road and one at the end of the Liard Highway at the pullout just south of Checkpoint.





## Collars

- Collared animals play an important role in interpreting the results of aerial population surveys for wood bison because they help determine how easy bison are to see in open habitats and how difficult to see in forested habitats.
- Collaring Nahanni bison is an extremely challenging process which has been complicated because we can no longer use the most effective drug combination.
- Currently one female has an active collar; two females died recently; we retrieved the collar and teeth from one of them.
- ENR remains committed to deploying as many of the four outstanding collars as possible.

## Acknowledgements

We thank our survey observers George Bertrand, Derwin Kotchea, and David Konisenta and the Acho Dene Koe and the Nahanni Butte Dene Bands for their continued support of this program, in particular Floyd Bertrand, Francis Betsaka, Tommy Betsaka, Jimmy Deneron, Harry

Deneron, Kayly Deneron, Audrey Gagne-Delorme, Eugene Hope, Jayne Konisenta, Jean Marie Konisenta, Leon Konisenta, William Konisenta, Peter Marcellais, Ernie McLeod, Natalka Melnycky, Michael Sassie, Jacqueline Spies, Manny Vital, and Raymond Vital.

## Mahsi Cho Any Questions?



## Appendix 9.

### Bison Management Plans

Presented by Terry Armstrong, ENR Fort Smith



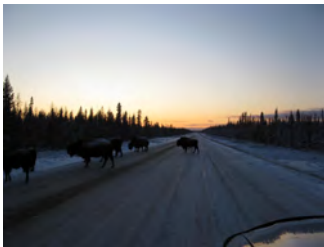




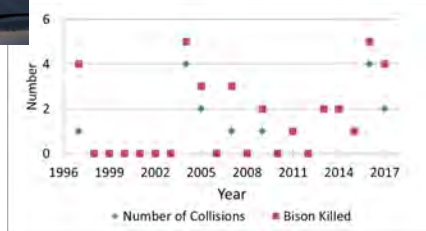
## Management Challenges & Objectives

- Conflicts with bison in communities
  - Work with communities to explore options to reduce conflicts
    - Fencing
    - Hunting
    - What to do, what not to do if bison are in the community

## Collisions



- Improve signs warning drivers
- Information for drivers
- Improve visibility



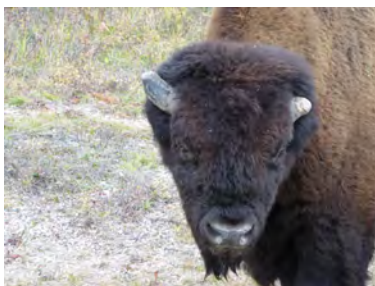
## Harvest Management

- Manage using quota & tags
- Quota based on population size & trend
- Reporting mandatory for all harvesters
- Use harvesting to reduce conflicts in communities



## Questions for you, for tomorrow

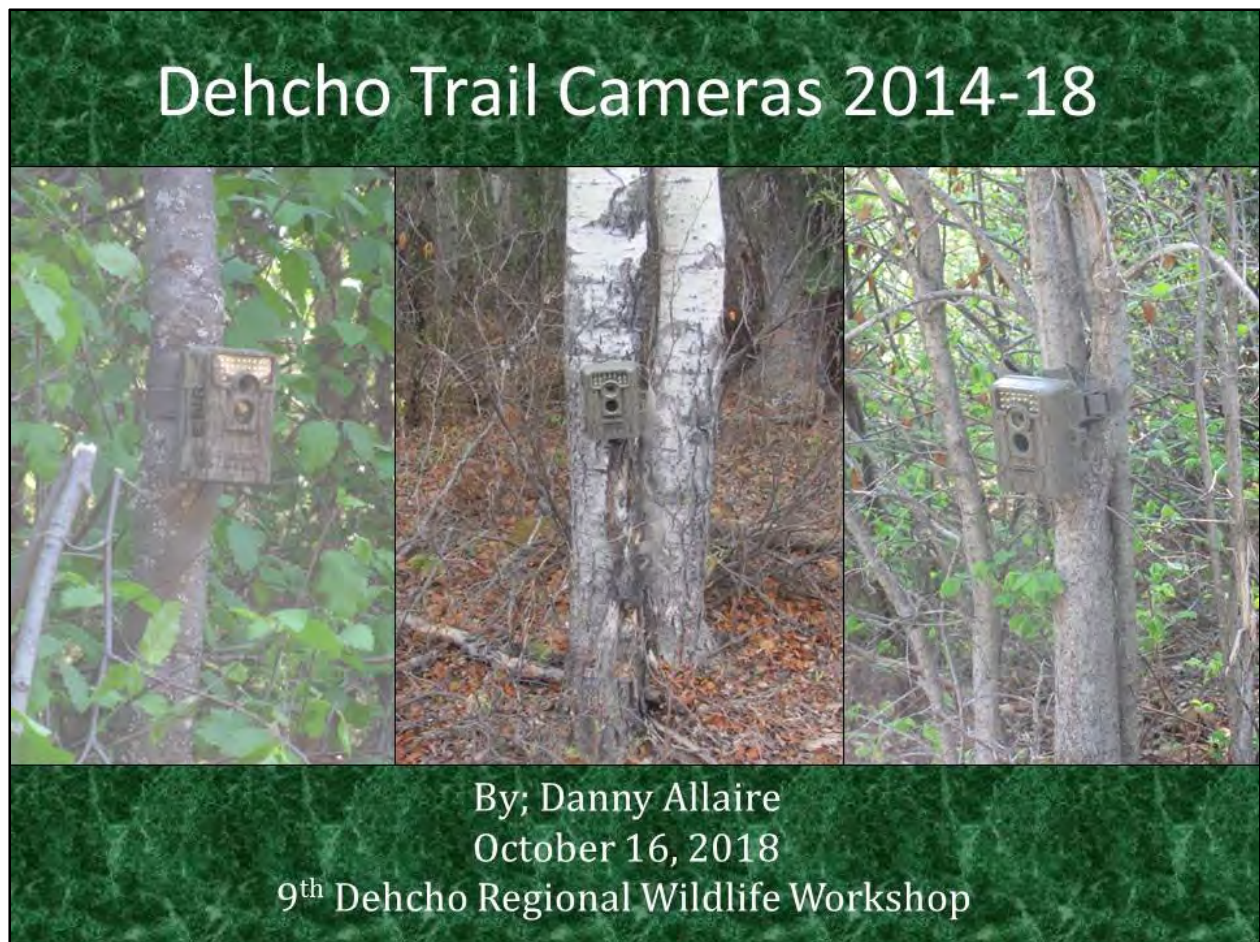
- How to reduce conflicts with bison in communities?
- How to provide fair access to tags?
- Re-issue tags when a harvester does not use it?



## Appendix 10.

### Dehcho Trail Cameras

To have been presented by Danny Allaire, ENR Fort Simpson





## Dehcho Trail Cameras 2014-18



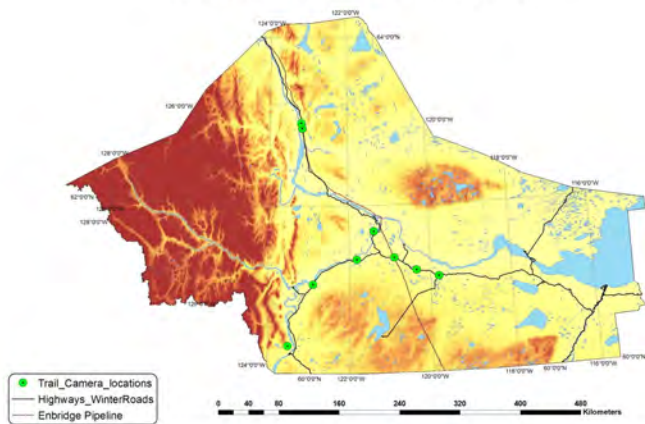
By; Danny Allaire  
October 16, 2018  
9<sup>th</sup> Dehcho Regional Wildlife Workshop

## Trail Camera Objectives

Cameras set up for at least one year/location to :

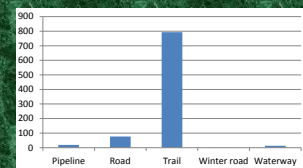
- Document frequency and seasonality of trail use
- Document rare wildlife
- Collect and compile wildlife photo library

## Trail Camera Locations 2014-2016



## Trail Camera Results 2016-2018

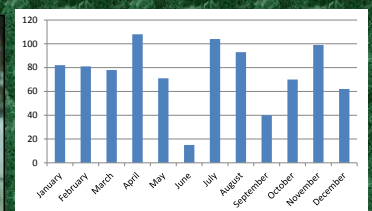
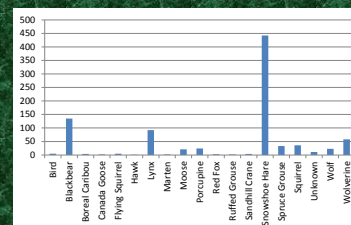
- Trail cameras deployed on roads, waterway, seismic line and traditional harvester trails
- Cameras set up at Fort Liard and Notana Lake went missing
- Harvester trails received most photos so far



## Trail Camera Results

- 903 trail camera wildlife photos captured
- Most large ungulates and predators have been photographed
- Photos taken during every month
- Most photos taken during April
- Most photos taken of: Snowshoe Hare (49%), Black bear (15%), Lynx (10%) and Wolverine (6%).

## Trail Camera Results



## Learning how to use Trail Cameras

- Placement of camera is critical to getting wildlife photos.
- Cameras set up far enough from target area to get a complete photo of any wildlife walking pass
- Not all photos taken were of wildlife in their natural state, they noticed camera sounds and/or flash
- Limited where cameras could be set up, batteries need to be changed and memory cards need to be exchanged.
- No rare wildlife photos were taken so far.

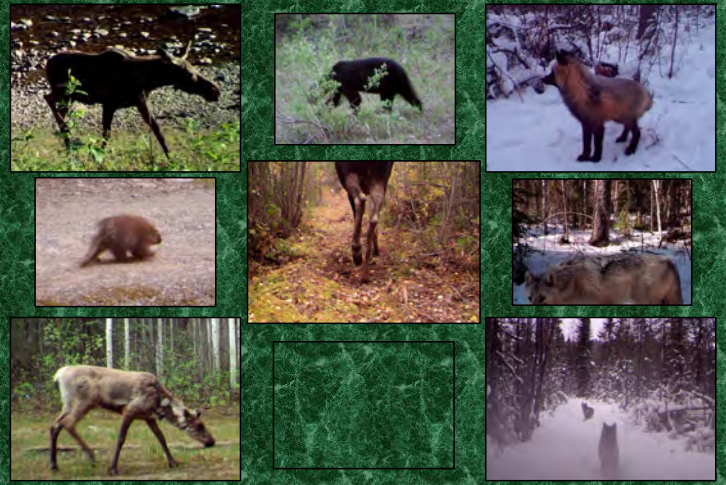
## Trail Camera results on different types of Access

- Winter road/road camera, vehicle traffic noise limit wildlife photos.
- Waterway camera, Too close to road to get a lot of wildlife photos. Do not set up camera during ice breakup.
- Pipeline camera, Too close to pump station, lots of noise. Other areas of pipeline might be better for wildlife photos.
- Harvester trail camera, Trails are established a long time; wildlife regularly come back to use the same trail.
- Seismic lines, need to set up cameras on more lines.
- Animal trails, need to find some trails for cameras.

## Next Steps

- Continue setting up cameras in the field.
- Broaden habitat locations to deploy cameras.
- Replace trail cameras that have gone missing.
- Concentrate half of the cameras to harvester trails.
- Provide instructions for setting up cameras to harvesters.
- Take long term approach to collecting wildlife photos.
- Adapt using the trails cameras when new techniques are found

## Daylight photos



## Night time photos

