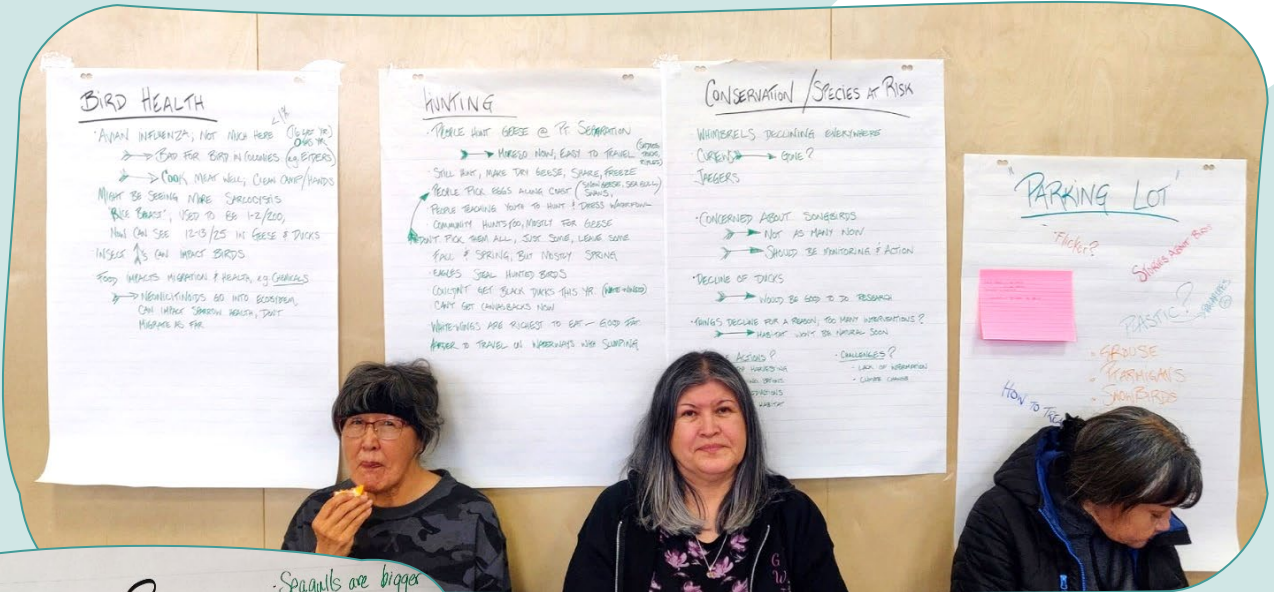


Gwich'in Knowledge of Birds: Summary Report of the 2024 Sharing Sessions



CHANGES IN BIRDS

- Seagulls are bigger
- Seagulls & geese stand @ same time
- See lots of water where grouse mixed forest
- Not many cranes now
- Absence of songbirds; no black ducks for a couple years e.g. Still lake tend to have loads of them
- Climate change → impacts water levels → don't see many birds
- Lots of ravens in Aklavik → due to garbage
 - Roosting in town, nesting in town → ANYONE
- Also lots of eagles hanging around @ dump
- Lots of ptarmigan last year → maybe connected to food
- Seeing strange birds in Aklavik, nesting in Delta
- Don't see ^{many} jaegers this summer, or Northern shrike
- Lots of small hawks/falcons (^{kestrels} ~~kestrels~~) killing sm
- Seeing MORE ^{more} ~~convict~~ backs recently; go where
- Not seeing stipes/sandpipers as habitat changes for sm they come in spring as ice melts, see in willow
- Lots of blackbirds suddenly 2 yrs ago; had
- No ruffed grouse anymore
- Vipers can't over-winter
- Lots of grouse on my last year
- Turkey vulture, ~~agouti~~, great blue pelican, heron, or

Maintain Camp

- Never see Kingfishers are more (not needed) → 2 yrs
- No phalaropes either (SAR.)
- Don't see bank swallows
- Seeing less Arctic terns & fork-tailed jaegers, ~~chickadee~~ (fox sparrow?)
- Lots of whiskey jacks here but declining in

throughout Delta



GTC
GWICH'IN TRIBAL COUNCIL

A part of the Nin Nihlinehch'i' – Li' hàh Guk'àndehtr'inahtii (Animals at Risk – animals we are watching closely) 2022-2025 Project

K. Benson, Department of Culture and Heritage, Gwich'in Tribal Council
April 6 2025

Haii Choo: Acknowledgements

The Department of Culture and Heritage wants to thank the meeting participants for both days of workshops: Day one, held in Fort McPherson, and Day two, held in Inuvik.

Day one participants:

1. Billy Wilson
2. Ryan McLeod
3. Abe Wilson
4. James Andre
5. Joe Kay
6. Abraham Peterson
7. George Vittrekwa
8. Robert Francis
9. Walter Vittrekwa

10. Wayne Greenland
11. Doug Wilson
12. Wilbert Firth
13. John Norbert
14. Willie Blake
15. Mary Clark
16. Sharon Snowshoe
17. Arlyn Charlie

Day two participants:

1. Ryan McLeod
2. William Modeste
3. Donald McLeod
4. Arlyn Charlie
5. Mary Clark
6. Leon Cardinal
7. Robert Charlie Tetlich
8. Martin Kunnizzi
9. Charlie Furlong

Scientists/other attendees:

1. Pete Davidson – COSEWIC representative
2. Christian Artuso – COSEWIC representative
3. Margaret Campbell – Canadian Wildlife Service representative
4. Samuel Haché – Canadian Wildlife Service representative
5. Jay Frandsen – Parks Canada representative
6. Steve Anderson – Gwich'in Renewable Resources Board representative
7. Jackson Sung Hoon Joo – Gwich'in Renewable Resources Board representative
8. Steve Baryluk – Environment and Climate Change NWT representative (day 2)
9. Janet Winbourne - Facilitator
10. Kristi Benson – Department of Culture and Heritage, Gwich'in Tribal Council

A summary of what we did

The Gwich'in Tribal Council Department of Culture and Heritage held two sharing sessions about birds in early October of 2024. Gwich'in knowledge-holders, including Elders and hunters, met with scientists and wildlife managers to share knowledge about important birds that may be at risk in the Gwich'in Settlement Region. We spoke about shore birds, migratory waterfowl, songbirds, birds of prey, ravens, ptarmigan and grouse, and others. Along with the Gwich'in participants, there were invited guests from the Canadian and NWT governments, our project partners at the Gwich'in Renewable Resources Board, and others. We spoke about many topics: bird ecology, threats, changes, conservation, new sightings, proposed research, and many other themes. Although we did take notes from the sharing session and have included that information in this summary report,

the goals and objectives of this project were mainly to promote knowledge-sharing between the scientific/bureaucratic communities who work with species at risk, and the Gwich'in land-users with close knowledge of the species in question. In essence, the conversations at the workshop were the deliverable. The sharing of knowledge increased the capacity of the Gwich'in to monitor and manage their lands and resources and will increase the knowledge of the scientific, wildlife management, and bureaucratic communities on how to undertake species at risk assessments and decision-making that are in line with Indigenous ways of knowing.

Suggested citation

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Cover photos, top to bottom:

May Andre, Mary Clark, and Rosemary Koe in front of workshop notes at the Fort McPherson Sharing Session, October 2, 2024. Credit: Christian Artuso.

Workshop notes from Fort McPherson Sharing Session, October 2, 2024. Credit: Janet Winbourne.

Daagoo (ptarmigan) spotted alongside the highway. September 2023. Credit: Arlyn Charlie, Gwich'in Tribal Council Department of Culture and Heritage.

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What we did

In early October of 2024, the Gwich'in Tribal Council Department of Culture and Heritage held two, one-day sessions to share Gwich'in and scientific knowledge about birds. The first sharing session was held in Teet'tit Zheh (Fort McPherson), a Gwich'in community along the Teet'tit Gwinjik (the Peel River), in the Ehdiitat (Mackenzie Delta) region of the Northwest Territories. The second was held in Inuvik, a diverse community on the East Branch of Ehdiitat. The sharing sessions were part of a much larger, long-term project undertaken by the Department of Culture and Heritage about species at risk. Further information about this project can be found in the “

Concerns about birds have been raised consistently since the early 2000s by Gwich'in participants, and there are numerous birds that make a living in the Gwich'in Settlement Region for at least part of the year that are considered at risk or possibly at risk: Bank Swallow, Barn Swallow, Horned Grebe, Olive-sided Flycatcher, Peregrine Falcon, Harris' Sparrow and Common Nighthawk. The Department was aware that the Gwich'in had concerns and wanted to both learn and share about birds, and we set up these workshops to be preliminary and supportive of a longer-term process to document and promote Gwich'in knowledge about birds, and to enable and support the Gwich'in to learn from scientific programmes as well.

The topics we discussed in the sharing sessions were broadly based on Gwich'in taxonomies (classification) rather than western scientific taxonomies: the waterfowl and shorebirds who make a living on or near the numerous waterways and lakes in the Gwich'in Settlement Region; songbirds, forest birds and ravens and other corvids; birds of prey; and grouse/ptarmigan.

The Gwich'in participants in the sharing sessions included Elders, adults, and youth, and they came from many perspectives: some are professionals who work within wildlife management, some are knowledgeable land-users with careful observations about birds and their ecology; some have decades of experience and some may have only a few. Around the table, we heard stories about hunting trips and travels across the land and stories about how things were long in the past. We heard about the complex interactions between climate change and other cumulative effects on the landscape, and we learned and shared about many bird topics.



Gulls at Chii Chyaa Njik (Pierre's Creek). Photo credit: Ingrid Kritsch, Department of Culture and Heritage.

During the session, there was a facilitator skilled at leading sharing sessions, and a Department representative who took notes. The notes have been useful to create this summary report and as a record of the conversations. However, the goal and the main deliverable of the sharing sessions were the conversations, lessons, and shared experiences of the sessions themselves. In particular, the Department feels that the lessons learned by the Guests and Fellow Travellers (see below) in Gwich'in pedagogies, ways of knowing, and priorities were key deliverables. The Gwich'in are also avidly curious about the research that is being undertaken in their lands or could be planned to address their concerns. The studies and results shared by the scientists and managers at the sessions were also, therefore, well-received. This information may help the Gwich'in to monitor and manage their lands and resources.

Guests and Fellow Travellers

In addition to the Gwich'in participants in the sharing sessions, we also invited experienced and knowledgeable scientists to listen, learn, and share about their own work. This included representatives from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which is an independent advisory panel to the Minister of Environment and Climate Change Canada about species at risk under federal legislation. Two people attended the sharing sessions who are members of the birds specialist subcommittee. We also had two representatives from the

Canadian Wildlife Service of Environment and Climate Change Canada, and one representative from Parks Canada. In addition to these federal representatives, we had one representative from Environment and Climate Change at the Government of the Northwest Territories, and two representatives from the Gwich'in Renewable Resources Board.

Backgrounder: the Nin Nihlinehch'i' – Li' hàh Guk'àndehtr'inahtii (Animals at Risk – animals we are watching closely) project” section, below.

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Backgrounder: the Nin Nihlinehch'i' – Li' hàh Guk'àndehtr'inahtii (Animals at Risk – animals we are watching closely) project

Since 2010, the Department of Culture and Heritage, which was then known as the Gwich'in Social and Cultural Institute, has been carrying out research to record and share Gwich'in knowledge of animals which might be at risk in the Gwich'in Settlement Region of the Northwest Territories and Yukon, Canada. To date, these projects included working with knowledgeable Elders, hunters, trappers, berry-pickers, other land-users from each of the four Gwich'in communities of Teett'it Zeh, Tsiigehtchic, Inuvik, and Aklavik. We have made use of interviews and workshops to gather and share information in ways that are appropriate to Gwich'in values, but we also focussed on the specific types of biophysical information of use to species at risk assessments and planning. Prior to the birds workshops in 2024, this long-term project has studied the following species:

- Boreal Woodland Caribou (2010-11)
- Grizzly Bear (2012-13)
- Wolverine (2013-14)
- Bluenose Caribou (2014-15)
- Bank Swallows (2015)
- Amphibians (2016)
- Insects (2016-17)
- Porcupine Caribou (2018-19)
- Dall Sheep (2020-23)
- Muskrat (2022-2024)

Each of these components has resulted in a report, and in some cases these reports are very detailed and comprehensive. The reports have been used in both Government of the Northwest Territories and Government of Canada species at risk processes, and also for the management of these animals by Gwich'in co-management and other wildlife organizations. The reports are all available online and are regularly read by Gwich'in participants and other researchers as well.

The birds workshops were a part of a three-year project funded by the Aboriginal Funds for Species at Risk. Funding was also provided by the Wildlife Studies Fund of the Gwich'in Renewable Resources Board, the GNWT TK Program, and the Arctic Species Conservation Fund of the World Wildlife Fund.



Ptarmigan. Photo credit: Ingrid Kritsch, Department of Culture and Heritage.

What we learned about birds

What follows is a summary of what was heard in the sharing sessions. As the sessions were not recorded, any quotations ascribed to an individual should be considered a gloss rather than a direct quotation, and not all quotations are attributable to a particular participant.

What do we call different birds?

Gwich'in have their own way of classifying and identifying birds. To ensure everyone at the table was speaking about the same birds, we made sure to ask clarifying questions when a bird was introduced into discussions. If needed, pictures of the birds were brought up on a phone or laptop to ensure we were all speaking of the same bird, or in some cases, the bird's call was played loudly enough for everyone to hear.

Gwich'in name, previous name, or local name	Other name/new name
Long-tailed duck, Oldsquaw, Squaw duck	Long-tailed Duck, <i>Clangula hyemalis</i>
Snipe, Sniper	Solitary Sandpipers, <i>Tringa solitaria</i> , and possibly other birds
Black bird	Rusty Blackbird, <i>Euphagus carolinus</i> , and possibly other birds
Black ducks	"Black ducks" is the term used for surf scoter and white winged scoter, and also scaup.
Windbird	Wilson's snipe
Fork-tailed jaeger	Long-tailed jaeger
Fish ducks, spoonbills	Northern shoveller

In the future, it would make sense to have a session with Elders and speakers of Dinjii Zhuh Ginjik (the Gwich'in language) to record the name of birds, their sounds and calls, and what other names, including the Latin/scientific name, the bird may go by.

Taking care of birds

The Gwich'in have always taken care of the plants and animals they share the world with, including birds. For example, in recognition of how important and vulnerable bird nests can be, May Andre said when they were kids, they were told to stay far enough away from bird nests so that they wouldn't breathe on them.

Gwich'in participants have extensive knowledge about the complex interactions between the species they use for food and their environments from listening to their Elders and other knowledgeable people and from their experiences picking berries, hunting, and trapping. This knowledge is important to record and protect, and it is also important to include in wildlife management and planning.

- “When I start seeing seagulls in town, that’s when I know there’s geese out on the delta. Geese don’t fly over town as much as they did in Aklavik, so can’t tell [that way]” (Ryan McLeod).
- “I noticed that marten hang around where there are lots of grouse...part of what they eat. Like around my camp, it’s not evenly spread out, but where there are grouse there are marten. In the winter, in mixed forest” (Ryan McLeod).
- “There are different bird species in the night and day, so they tell us what time it is. We just have to listen” (Martin Kunnizzi).

Hunting and harvesting eggs

Hunting birds is a traditional activity for the Gwich'in. It is important now and has always been important. It is particularly important considering the prices of northern groceries, which can also be of low nutritional value. Although there is less hunting currently than there was in the past, Gwich'in still hunt birds, including ducks, swans, and geese, as well as grouse and ptarmigan. They also consider this activity as one that it is important to protect and share with future generations.

My dad said that his father told him to go get geese for the community. He put sticks up with rabbit skin over it, as a decoy... We are still hunting ducks in the same places. More people going out and taking their young ones, to hunt geese. We are used to plucking geese and swans, but this spring we skinned them. It's way easier but loses flavour (James Andre).

If it was a bad winter for caribou, we have this fresh protein; it's not just this food, it's after a long winter of quiet when the willows are starting to grow—you hear the geese, and it makes you feel good. It makes you feel lively, and look forward to summer. We put them away and they last all the way through summer. We eat geese quite a bit.

(Ryan McLeod)

There have been some changes in recent decades, to how, when, and where people hunt. James Andre said that these days, everyone goes to Point Separation. Although Point Separation has always been important for migratory waterfowl, it is more common to go there now than in the past. This may relate in part to how transportation to hunting areas has changed with the introduction of new ways of getting around the land. For example, people now use skidoos, trucks, and even helicopters to go out on the land, replacing travel on foot and by dog team.

There have also been some changes in what people hunt. For example, fewer people are hunting ducks, and instead they are tending to focus more on geese. In the past, more black ducks were harvested than today. Black ducks are preferred over other ducks because they have a better flavour and good fat.

But there are lots of changes. In the past our people really depending on ptarmigan and grouse, but they don't harvest them as much. It's an education thing. Education that these are foods that we used in the past. Just because we have easier access to things like caribou. Some people still harvest them, but not as much (Robert Charlie Tetlitchi).

However, there is still some hunting of ducks and swans, among other birds—it's not just geese filling the freezers and roasting pans. "Squaw ducks are good they taste as good as black ducks to me. When the ice is moving we get them" (Martin Kunnizzi).

In the workshops, we spoke about how and if to preserve the meat from a good spring hunt of geese and ducks. The best ways include sharing the meat so it can be consumed without needing preservation, which strengthens the bonds between friends and family and allows those who cannot hunt themselves to enjoy this healthy meat. Geese can also be smoke dried into what is known as drygeese, which is a delicacy. The meat can also be frozen.

Although the Gwich'in know about picking eggs, it isn't that common. The workshop participants felt that it is much more common in Inuvialuit lands, along the coast. "They pick lots! Even like several hundred. Some people even pick geese down." Eggs that Gwich'in might eat include those from seagulls and swans, among other birds. "My mom used to pick seagull eggs up the Peel River" (Wilbert Firth).

Everyone agreed that there is not too much hunting when it comes to ducks, swans, and geese. The populations seem to be strong or growing, even considering the picking eggs along the coast and the ease of accessing hunting areas. There is actually less hunting now than in the past, which is itself a concern. “We could be overrun if we stopped hunting”, one participant said. There are still some community hunts, in both the spring and fall. The community Renewable Resource Council or Hunters and Trappers Committee hires and outfits a few people to hunt and then share the meat.

The people that pick eggs have a way of doing it. Something like, if there's five eggs, take only three, or if there's three eggs, take one.

(Ryan McLeod)

When it comes to birds, what has changed?

One of the topics we discussed at the birds workshop was how things have changed in recent years. These conversations included discussions about the population and diversity of birds, changing weather, and other threats and changes.

There are fewer birds and fewer types of birds

Areas such as around Old Crow which used to be known for having many birds, now have much fewer birds. “Crow Flats used to have millions of birds, now it's dead quiet” (Wilbert Firth). There has also been a reduction in the variety of birds.

Some specific reductions in birds that people have seen include:

- James Andre said that right after the ice would go out, long ago, you'd get 30-40 white-winged scoters easily. Now you're not able to get even one.
- Wilbert Firth said that there used to be a lot of canvasbacks, but they don't see them anymore. “You're lucky if you see them.”
- There are fewer snowbirds than before. Snowbirds are typically seen on the roads (Mary Clark).
- There are fewer kingfishers. “We never see them anymore—kingfisher” (Mary Clark). “We would go up the creeks and see them” (Martin Kunnizzi).
- People don't see red necked phalaropes anymore, and there are fewer bank swallows. “We did used to see both kinds; we'd see 10 or 20 in a bunch. We used to see windbird (Wilson's snipe). We used to hear them and don't hear them anymore” (Martin Kunnizzi).
- Arctic tern is also in decline, along with the long-tailed jaeger (Martin Kunnizzi).
- Fox sparrow are also declining. “When they feed on ground, [they use] both their feet. There are not as many as before” (Martin Kunnizzi).
- There are fewer cranes, although some are seen along the highway (Martin Kunnizzi, Robert Charlie Tetlitchi).
- “Hell divers, aka common and red-breasted merganser. Haven't seen them” (Martin Kunnizzi).

- Northern shovellers have also declined.
- “Ruffed grouse—we used to chase them around as kids. Don’t see them anymore” (Martin Kunnizzi).

There are fewer songbirds

Songbirds in particular were noted as having experience declines—and this is something that has been mentioned over and over. “Way back, our Elders started talking about not being able to hear the songbirds. That talks about a spiritual connection. The songbirds coming back; it was a special time, and so not hearing the songbirds is disappointing. It means we don’t have the connection with the land” (Robert Charlie Tetlitchi).

The soundscape is changing.
(Wilbert Firth)

The reasons seem to be complex. “They are not around anymore. Got more hurricanes and stuff in US, causing issues, along with political landscape” (Wilbert Firth).

There are more of some kinds of birds, and new birds

Charles Furlong indicated that there are many ravens in Aklavik, compared to the number expected in other towns or conditions. Ravens have always been around, but not in the same numbers. “Ravens make noise when they are over something, like a moose. I pay attention) (Ryan McLeod).

Blackbirds are new to the area or at least have numbers now that they didn’t used to. “I never seen blackbirds until a few years ago. At a drained-out lake near my camp, it was piled up with minnows, all the bodies piled up with no heads. I heard a noise, and about a thousand blackbirds were nearby” (Martin Kunnizzi).

Other new birds or birds in new places that people are seeing:

- Turkey vulture (Martin Kunnizzi).
- Pelican (Charles Furlong)
- Goshawks on the highway (Donald McLeod)
- Osprey (Ryan McLeod)
- Blue heron (Martin Kunnizzi)
- There are also more merlin than in the past in Aklavik, and in Inuvik as well (Charles Furlong, William Modeste).
- “Seeing more canvasbacks. As big as black ducks” (Martin Kunnizzi).

The weather is changing, and it is having an effect on birds

There was consensus that climate change is affecting birds and the land they need to stay healthy.

Over the years, I’ve had some good positions. I just hear people talking about climate change, but I never really took it seriously. I thought climate change was just something for scientists, to look for funding. So I never really took it serious. I was in a position many times to make a change, but I never cared. I left that for the other people. But after I got out of politics, I witnessed the land and the birds first-hand. And all that stuff I heard from my Elders and researchers and biologists start clicking in. They used to make predictions, and one ... I never forgot is that climate change is going

to have a real drastic impact on our land, and I see it. I witness it. The destruction that's happening along the coastline. Along the rivers. Lots of these smaller rivers, you see where all the banks have fallen in. It affects the animals, it affects the lakes that drain out that used to have fish in it, that are now no more. Fish lakes are where you get your black ducks and other fish birds, they feed there. A lot of [those lakes] are no more. I notice up there that maybe the next 10-15 years, there is going to be a big reduction in black ducks, because their feeding area is being affected. I really try to talk to the younger generation, because they're the culprits, building up the pace...they're like me, they're not taking the climate change very seriously. Just one generation after the other. ... I see a lot of impact on smaller birds; what's going to happen? If people, political leaders and land claim leaders don't start working closely with government, there is going to be nothing left for future generations. When I was growing up, we thought there would never be an end, like it would always be 50 million geese going by...birds taking a different flyway, some years by Anderson River, some years Mackenzie River, some years Alaska. Climate change is having a big effect on everyone (Charles Furlong).

Late winter weather

According to Abraham Peterson, the weather is really changing. For example, he indicated that at Midway (which is a large community camp between Fort McPherson and the Richardson Mountains), he has seen snow in July. This means the weather is simply too cold, and it affects birds. He recalled walking around, finding birds, including dead birds, which had been affected by the cold, rain, and snow. "Yeah, that's a lot of change there." Long ago, he used to hear "lots of birds...only hearing a robin here and there [now]". When asked about what kind of birds he was seeing dead, Abraham said it may have been a few types, he didn't know specifically, but they were songbird-sized.

Low water levels

In a recent summer, the water was very low in watercourses in the Gwich'in Settlement Region. Wilbert Firth indicated that the water was at July levels even in the spring. Later on, they did get some rain and the water came up. He noticed this when he was out on the land, in the middle Peel Channel, between Teet'tit Zeh and Aklavik. In the past while out hunting muskrats in the late spring, they used to hear lots of birds – "We used to hear lots of black birds in the morning. Used to see it around 4am." This has now changed and there are fewer birds. The black bird Wilbert was referring to is the Rusty blackbird.

The Mackenzie River itself is also being affected by low water levels, with climate change and river damming upstream implicated. "Over the years, I always liked to sit with Elders to hear their stories. I sat with my uncle Thomas Manuel from Fort Good Hope, his Elders used to tell him that some day, that Mackenzie River is just going to be a wide stream; there is going to be no water. This year they had to cancel all the barges. Nothing could come up or go down. I don't know how they knew" (Charles Furlong).

Inuvik workshop participants agreed that low water levels are an issue for birds. For example, some noted that the low water levels on Mackenzie River, and the lakes around the Dempster Highway. There are not as many birds as expected in these areas, which triggers the questions: Where are all the birds going?

Slumping and changes to water quality

Climate change is causing slumping and melting permafrost, which changes a river's course and the quality of water. It can cause sandbars, which make it hard for people to travel along traditional routes to hunting grounds. Meeting participants indicated that there has been a lot of slumping, especially on the Mackenzie River. In some places, the slumps are rocky and can include large sections of the riverbank.

It is also causing changes to magnesium and other chemicals, in the water, and really affecting the quality of the water. This directly affects waterfowl.

In some cases, some vegetation can grow on sandbars, which may actually be beneficial for the geese. This is something that should be studied.

Forest and wildfires

There has been an increase in forest fires and wildfires in the Gwich'in Settlement Region, and these fires have an effect on birds. There are several, compounding issues:

- There has been an increase in the number of fires and the amount of area burned,
- The fires themselves affect birds,
- Fires are not always fought immediately and instead are allowed to burn.

"That land is the animals' land. It's just common sense—don't let the country burn. Some people say let it burn, but that kills lots of animals, young birds and ducks. It affects where the birds have their young ones; it destroys everything. All the animals that live in the bush, it's destroyed by forest fire. I've been saying this for years and years" (John Norbert).

"The fires are killing birds. This year, we never even attacked any fires, that's the problem with the government right now: they aren't fighting fires. My trapline got burned out a few years ago, they don't care. Been six years now that I couldn't trap around my place, 20km up from McPherson..." (Martin Kunnizzi).

Other climate change effects

The following climate change effects were also noted as having an effect on birds:

- Late snowstorms are killing small birds and making their habitat unsafe, as noted around Midway Lake (Abraham Peterson). The unpredictability of late winter/early spring weather is also an issue for any birds that migrate, as there is nowhere for them to land.
- Some waterways have become too shallow to support duck hunting, which likely is changing duck movements, as noted up Nagwichoonjik [Mackenzie River] (Abraham Peterson).
- Bird habitat is drying out (Wilbert Firth).
- Shorebirds and other birds that arrive in the spring are being affected by climate change (Charles Furlong)
- Lakes which used to have water all year are now draining out in the summers. They may still flood in the springtime during break up, but they then drain out and are grassy all across. This is a new phenomenon and affects the birds that use these lakes (Charles Furlong).

Geese

Since geese are so important to the Gwich'in, we asked about them specifically. People were aware of some changes to geese.

There are more snow geese than there used to be, a population shift that began at least five years ago (Wilbert Firth).

The geese population is still high, but their migration is less dependable. Traditional hunting places which used to be good for geese are sometimes changing, so they are not good for geese anymore, even if Gwich'in hunters are in the area at the time when the geese are expected. "I think they're taking different routes – Some years we hear they're getting lots in the Sahtu and at Point Separation, then all of a sudden we hear they're getting lots around Tuk or Blow River, but they seem to skip where we hunt." This may have to do with changes to snowmelt due to climate change. "When there is no snow on the coast, they just go right to the coast" (Ryan McLeod). They may be migrating far away as well, perhaps even to Europe—their migration changes may relate to changes in magnetic north (Wilbert Firth).

Geese may also have a different taste, although there wasn't complete agreement on this. The different species of geese certainly taste different. Ryan McLeod said he doesn't even bother to hunt Canada geese, because the flavour is hit or miss. He hasn't hunted them for 20 years.

Ducks

Ducks are also important birds to the Gwich'in, who hunt them to eat. Black ducks in particular are consumed. "Black ducks" is the term used for both surf scoter and white winged scoter. White wing scoters are much more important locally; they are bigger and "more fat" (Ryan McLeod). But some people do hunt the smaller surf scoter too.

There are changes seen in black duck levels as well. James – "Black ducks, hardly any this spring. Usually right behind the ice. After the ice leaves the Red [Arctic Red River]. But hardly any were there this year" (James Andre). This was also noted by Donald McLeod.

Doug Wilson recalled seeing a tree-nesting wood duck in the 1970s at a spring camp. They were near a lake, and they noticed a duck in a tree. Doug's mother said that it was a wood duck nesting in the tree. He saw it for two springs. "So just about a week and a half ago at camp, we were in the bush, and I saw a rotten tree, half broken off by a bear. I looked in there and saw a duck feather. And I wondered if that was a wood duck's nest. I should have took that feather. I'm wondering about that."

Other threats and changes

Wilbert Firth has noticed an increase of airplane flights, which affects birds. "There are more jets flying over spewing pollution, lots of jets now compared to long ago. That's an effect right there. ... Lots more. Sometimes there are six of them together. We go way up the Peel and see jets flying; we go down the Peel, same thing. The flights are going to Fairbanks or Anchorage, just spewing garbage" (Wilbert Firth).

There are more eagles than in the recent past, perhaps due to the population rebounding after a recent low point. The eagles can cause desired birds to move to different places, which makes them harder to hunt. Additionally, eagles may steal geese after they've been shot. Having eagles around when one is hunting isn't always a bad thing, though. They can scare up a big flock, which allows the hunter to get a few shots off while the eagle also gets a duck for themselves. This feels like the eagle and the hunter are working together.

Pollution in the water may be affecting birds as well, although it is not known to what extent in the Gwich'in Settlement Area. One participant mentioned that the release of a tailing ponds in Alberta was worrisome. The release, which was from Imperial Oil's Kearl mine, happened in 2023. Communities close to the mine are being affected, and so are fish and other animals. It is not known to the Gwich'in if the materials released are travelling in the water systems to affect plants, water, and animals in the Gwich'in Settlement Region.

Some birds may be changing in ways other than their population numbers. For example, seagulls may be getting bigger than in the past (Donald McLeod).

Random bird facts and information

Although the sharing sessions were not carried out as a study to gather and share Gwich'in knowledge, there was information shared which may be of use and interest within the context of larger conversations.

- Wilbert Firth sees flickers at his camp.
- Not everything is a bad news story: "I'm glad the peregrines are coming back. The hawks are coming back because the habitat is good for them – rough legged hawk. Different sizes too. [We are seeing] more of them" (Wilbert Firth).
- Brants do migrate past but they don't stick around; usually after the ice moves (Ryan McLeod).
- Wilbert Firth noted that he had seen a gull a few days before the session (in other words, in late September or early October). He felt it was likely lost.
- Ryan McLeod knew of only one person who might hunt and consume cranes. They eat mice after they arrive, and therefore do not taste as good.
- Wilbert Firth went up the Peel River and there wasn't waterbirds around, but there was raptors who were divebombing them.
- Wilbert Firth indicated that loons are much more timid and scared than other ducks. In the past, there used to be much bigger common loons around as well.
- Charles Furlong indicated that when the lemming population down on the coast is low, there are snowy owls in the community of Aklavik. "They follow the pattern of the lemming, if there are no lemmings on the coast they come inland, but not in big numbers."
- There are a lot of whiskey jacks around.
- Northern shovellers are only occasionally hunted for meat. "Fish ducks, we call them. Haven't seen them around. Don't eat them" (Marty Kunnizzi). "A lot of people know them as spoonbills. I was always told, don't shoot them unless you're really hungry" (Ryan McLeod).
- The populations of grouse and ptarmigan go up and down a lot (Robert Charlie Tetlitchi). There was discussion on social media over the last several years that forest fires to the east

of Inuvik may have pushed the birds towards Inuvik, where people were commenting on seeing them, and hitting them more frequently, with their vehicles on the highway (Ryan McLeod).



Inuvik birds workshop. Photo credit: Steve Anderson, GRRB.

Changes such as novel birds or situations that have been noted:

- Not seeing as many owls as in the past. Only along the highway (Wilbert Firth).
- There was a magpie in the area seen, about 10 years ago (Wilbert Firth).
- There was an egret in Inuvik a couple years ago, hanging out at the river for one week (Ryan McLeod).
- There was a pelican in Tuktoyaktuk or at Shingle Point (Ryan McLeod).
- There was general agreement that there are more swans, including more tundra swans. James Andre recalled that they took children out on the land in Tsiigehtchic with a helicopter, and they sent 70 swans back.

Fellow Travellers

The fellow travellers, who were scientists and wildlife managers, contributed much important information to the sessions as well.

Margaret Campbell, one of the scientists/fellow travellers at the meeting, presented about bird flu and other topics, which prompted some interesting conversations. She indicated that:

- Bird flu showed up in 2021. It was very bad on east coast.
- In 2022, high infection rates.
- Eider ducks got hit, along with other birds in colonies.
- When birds get the bird flu, they look wobbly, they also cough, and then they fall over and perish.
- In the north, there have been very few cases. Birds are shedding the virus but not getting really sick.
- Between 2022 and 2024, only 16 birds total were diagnosed with bird flu.
- They were taking swabs of snow geese on Banks Island and found no cases of bird flu.
- Birds have started to develop antibodies to fight the bird flu. Mortality used to be 50-75% in the first year, and colonial sea birds on the east coast had mortalities closer to 90%. Mallards now, something like 90-95% have antibodies, which protect them from death.

Further conversations about bird health

Margaret's presentation started a broader conversation about bird health, including illness and parasites. For example, Ryan McLeod wondered if one of the reasons that they don't see many birds sick in the Gwich'in Settlement Region is because they die on their migration north.

When asked about bird health, Margaret Campbell indicated that she does see low levels of parasitic worms in birds when doing bird banding.

Ryan McLeod has also seen increasing evidence of a parasite, sarcocystis, in birds. He said that the cysts this parasite produces seem to be more common, and a hunter might not realize they're infected with sarcocystis unless they specifically check for it. He said the cysts resemble little white grains of rice in the muscle, or white lines. Ryan cautioned that hunters should always check for it, because it's not obvious. He said, "A few years ago, a friend shot about 20-25, and about half of them were infected. Geese and ducks, and even caribou, bunch of little white lines in the meat." Martin Kunnizzi is not seeing these parasites in mallards. Both Ryan and Martin believe the parasite became much more pervasive, and was 'seen more often', within the last five years.



Teet'tit Gwich'in Elders Walter Vittrekwa, Dougie Wilson, and Wilbert Firth, with COSEWIC member Christian Artuso, at the Fort McPherson bird workshop. Photo credit: Janet Winbourne.

Pete Davidson, another fellow traveller who is a bird scientist, spoke about other effects on bird's health from their time outside the Gwich'in Settlement Region. He said that quite a number of birds are affected by the environment during in their migration, which affects their ability to reproduce. For example, agricultural seeds have chemical coatings as they're planted, including chemicals such as neonicotinoids which are a common pesticide used in farming to kill insects to protect food crops. For birds who are eating seeds, they can consume quantities of this chemical, which is dangerous and can affect the birds' health and reproduction. The chemical can affect birds' migration: Sparrows, for example, may experience delays in their migration and reduce the distances they travel. This chemical is used very extensively in agriculture, so the effects on birds might be pervasive. Pete Davidson also indicated that there are other chemicals in the whole ecosystem, which may act together to harm birds.

Other exchanges and knowledge

The fellow travellers also agreed with the Gwich'in participants about the alarming loss of birds over the last several decades. “We’ve lost a quarter of all birds by number, since the 1970s” (Christian Artuso); “there are a lot of birds been lost, including ½ million forest birds lost” (Sam Hache). They offered up resources and welcomed questions, including after the sessions were complete.

There was a conversation about Eskimo curlews, which are considered extinct. There used to be countless birds of this species, which migrated great distances. There were large harvests in the Caribbean, and South America. William Modeste was in the Anderson River area with a bird scientist, possibly named Richard, in 1963. Richard thought he may have seen one. They were looking for gyrfalcons to bring to the airport to control gulls.

I was in Texas in 1998, I saw an Apache old timer and I sat down with him. I knew the Eskimo curlew was flying south, and I asked him about it, since I knew they flew overhead. He told me that his grandfather told him that there were so many that it was flying steady day and night for four days. And then today you can't even find one. There were lot of people shooting them too (William Modeste).



Inuvik birds workshop. Photo credit: Kristi Benson.

What do people want to know? What should we be doing?

There is lots of good work being done. But one area is missing: providing information back to youth, going to schools, maybe something like having Marty [Kunnizzi] and a researcher going to the schools. We have to think of the future. Our people are very subsistence-based, especially in the spring, hunting geese and waterfowl. And what's going to happen? We get more impacts, like avian flu. How is that going to affect our food security? And it relates to health as well. A lot of our people have high rates of diabetes, due to switch in diet. I see Marty as the PhD of waterfowl (Robert Charlie Tetlitchi).

Reasons for decline in duck population

The general decline in the population of many duck species is well documented. At this point, the Gwich'in participants want to know more about the reasons for the decline (Ryan McLeod).

Snipes/Solitary Sandpiper decline

James Andre mentioned that the Gwich'in have asked the Gwich'in Renewable Resources Board (which is the wildlife co-management board) to study snipes (Solitary Sandpiper, other shorebirds). He said, "We used to see snipes, like we could go up to Thunder River or up the Arctic Red [River], up the Peel [River], [and we] could count." However, at that time, the GRRB did not go ahead with that project. "Used to see snipes all over the place; now [we don't even] see one. It's been 30-40 years. [For a while, we] used to see the odd ones, but now don't even see one." Christian Artuso, of COSEWIC, indicated that Solitary Sandpipers have been added as a "candidate species"¹ and may be assessed by COSEWIC within the next five years. He said they are hard to survey as they cannot do a survey by aerial overflight as the birds are too small, so they have to rely on other ways of assessing the population. He agreed with the concern voiced by James Andre, saying that the general population has declined dramatically since the 1970s; around a 40-50% decline, especially the arctic breeding populations.

Others have noticed the decline in snipes, but didn't know what might be causing it. "[It's] kind of hard to say [why], because the habitat hasn't changed much. We see them when we're hunting geese on sandbars. Snipes are running along eating bugs that come out when the water runs. Last time I seen one I took a video because I hadn't seen them for a few years. Month of May" (Ryan McLeod). There was further discussion about when and where the birds were being seen, and it seems that migratory birds during the month of May are being seen.

Community monitoring and other research about songbirds

The Gwich'in participants at the workshops wanted more information about songbirds and their declines. They want more scientific studies, and they want the results to be shared publicly with them. They want community-based or local monitoring, which could lead into protections and action. "It would be good to do monitoring at the local level. We want protections for songbirds, want action. Robins, they pop up as usual. Down at middle Peel, they show up at a certain time, they're always showing up. Don't know about others. At my grandpa's yard, they used to pop up,

¹ Artuso clarified this during review of this report. He indicated, "There is currently an Arctic shorebird bundle which could theoretically add up to 20 more shorebird species to the SARA."

it's like they're still around but they might be going down" (Wilbert Firth). "Hardly ever hear them anymore. We walk through the bush now and all we hear is ravens" (Donald McLeod).

Management actions need to be carefully discussed

There were differing thoughts about how best to help birds that are suffering, and how much intervention is acceptable. For example, the idea of feeding birds if their populations were at risk was discussed, and some participants felt comfortable with these types of interventions and some felt that it was more appropriate to leave birds to live their lives naturally. In the cases of such interventions, the Gwich'in should be a part of the conversation to ensure that they understand the interventions and the other possible options to best support bird populations and their recoveries.

Other desired research and concerns about birds

- In the future, it would make sense to have a session with Elders and speakers of Dinjii Zhuh Ginjik (the Gwich'in language) to record the name of birds, their sounds and calls, and what other names, including the Latin/scientific name, the bird may go by.
- James Andre asked if there are any studies of birds coming from the south, for example, what parasites they may bring into the area, how they are affected by the farms they eat from on their migrations, etc.
- Arctic Borderland Ecological Knowledge Co-operative data should be used to address research questions (James Andre).
- There was general concern on Day 1 about:
 - decreases in bird populations and diversity – “good to have birds for kids, nice to hear them”
 - decreases in duck populations specifically, including reductions in ducks seen on the rivers
 - conservation and bringing birds back
- There were concerns expressed about the effects of plastics in the environment on birds.
- Slumping and sandbars can be bad for travel and water quality, but the vegetation may actually be beneficial for the geese. This is something that should be studied.
- There should be public education about what the Gwich'in should do if they come across leg bands, or see unexpected birds.
- Meetings such as these should have a fuller participation, such as those who make decisions about fighting wildfires.
- Water quality monitoring results should be shared more broadly with the Gwich'in participants, especially when pollutants from outside the area from industrial spills and accidents may be affecting the water quality and therefore the birds that make a home or make use of the water. “It's a food security issue. The access to traditional foods, ducks and geese” (Robert Charlie Tetlitchi).
- Information about sarcocystis should also be shared with the Gwich'in, so there is an increased awareness—that it's important to open the birds up to check. This could be through such things as Facebook posts.
- Ravens are considered a problem in Aklavik, due possibly to the proximity of the dump to the town. There are many ravens, and they even rear young ones right in the community.

This has been brought up in the past but to date there have been no solutions (Charles Furlong).

- Red necked phalaropes are a species at risk, and they are rarely seen anymore. Research about them should include the whole delta.
- Any research should both engage community organizations and rely upon community expertise and labour. The methodological choices should highlight and support Gwich'in expertise and ability to contribute. Partnerships between researchers and Gwich'in should also support, as much as possible, Gwich'in traditional activities.



Arlyn Charlie and Kristi Benson at the Fort McPherson birds workshop. Photo credit: Janet Winbourne.

How did everyone feel about the sharing sessions?

Before the sharing session, the Aurora Research Institute had printed copies of a bird identification guide to hand out to participants. We were unable to bring them to Teet'it Zheh, so we asked Mary Clark to hand the booklets out several weeks after the session and ask the participants follow up questions about the sharing sessions for our use in future planning. An edited summary of their responses follows.

How did you like workshop? Is there anything we could have done better?

- Information about the meeting should have been provided beforehand.
- Numerous participants agreed: "Good workshop!"
- Microphones would have been helpful.

What research steps should we take next?

- Multiple participants agreed: More research should be done, and it should involve the Teet'it Gwich'in.
- Have more similar sessions, both on similar topics and for other topics.
- There should be more research and knowledge-sharing about crows.
- Future research should involve young people and perhaps produce a documentary.

Fellow travellers

We asked the scientists and wildlife managers who attended the sessions as Fellow Travellers about their experiences and thoughts of the sessions. Their responses are included below, with light editing if needed.

What did you enjoy the most about the sessions?

- “It was great to hear from so many community members. I now have a much better understanding of what topics people would like us to work on.”
- “...[I]t was nice to see researchers from all over the country travel here to take part in the workshops.”
- “Fantastic to meet people face to face – not just on zoom and/or name on an email list. This will be super important for future work in the Gwich'in area.”
- “Informal but respectful atmosphere which hopefully means everybody learned a lot (I know I did).”
- “Everyone was interested and wanted to be present to talk about birds in any way that they felt appropriate. Good for idea generation and thinking in a way that's not the usual process from a science perspective.”
- “Dealing with a group of species that are of concern but are outside of a formal/legal process (e.g. SAR or a land-use plan), it removed a lot of the potential for confrontation (i.e. legally we need to do this but that infringes on people's rights/knowledge).”
- “Excellent to be able to have an idea about conservation concerns before it becomes problematic (keep common species common idea).”
- “The opportunity to meet (and learn from) Gwich'in land users with representation from all the communities.”
- “The opportunity to visit Gwich'in communities.”
- “The opportunity to share and gather feedback on work we have been co-producing with [other] Indigenous groups...and have initial discussions about how such work might take place in the Gwich'in Region in a not so distant future.”
- “I also really enjoyed how friendly all the participants were and how it created a safe space for everyone to share and learn.”
- “I loved all the knowledge sharing and the generosity of the knowledge keepers, so it is hard for me to pick one particular aspect.”

What did you think could be improved upon for future sessions?

- Although only a minor issue, several participants felt that the venue in Fort McPherson (the Hall) wasn't ideal. The lack of a projector screen wasn't great, and the space was quite large for the group, making conversations echo-y and the setting less intimate and

conversational. A smaller room would help those who are hard of hearing. Break-out groups were suggested as possibilities for the future.

- Several participants felt that it would be beneficial to have more of a gender balance in the workshops.
- Several participants felt that it would be beneficial to have more details in advance about what is expected for the billeting in the communities, such as paying for meals and bringing gifts.
- Some participants felt that it was such a great experience that little could be improved upon. “Let’s have this type of workshop more often!”
- Including an Indigenous languages component would have been a great add-on.

How have the lessons and information shared by the Gwich’in participants (or your colleagues) changed your work, if at all?

- One participant indicated that their organization was determining research priorities after the birds session which included a lot of discussion of issues that had been brought up at the bird workshops, especially concerns around declines in scoters and songbirds.
- The session also helped to educate scientists about northern research protocols, and to learn about how closely different constituencies can work.
 - “Good reminder of the importance of listening at meetings instead of talking and how important it is to remember there are different ways of knowing/learning. I’ve forgotten how this is a normal way of working but can be very “new and different” for some colleagues.”
 - “Made me realize how much we share common goals, but we can learn a lot more from each other (feeling like we only started scratching the surface), i.e. we need to better communicate our respective findings/priorities related to birds (and how they change) in the Gwich’in Region and beyond, and hopefully work together on monitoring programs that aligns with priorities of Gwich’in land users. Some concrete examples on how this could be achieved have been shared by Gwich’in participants and I already started implementing some of them. I also learned that there is perhaps a need to work together into ways to weave different knowledge systems (Indigenous and “Western” sciences).”
- Some scientists directly integrated the results of the meeting into their work planning, including further engagement, and research topics and focus, and methods.
 - “Have created a list of items to follow up on with the communities.”
 - “Thinking about waterfowl changes seen by the Gwich’in in context of an ongoing survey redesign and future project development. The species of interest to the Gwich’in may not be adequately captured in the current survey design, what kind supplemental surveys and how frequently would they be needed to evaluate population changes.”
 - “Thinking about working on co-developing other surveys and methods (e.g. TK harvest surveys, other work) that “overlap” or expand on work that’s being done in the ISR. There’s an artificial line/boundary that’s created by the land claim agreements and it’s important that we work beyond the boundaries where we’ve always been.”

How have you shared your experiences with colleagues, if at all?

- Several attendees have made presentations or spoken informally to their colleagues and to relevant committees about this workshop and the conversations and results. “We had a regional all staff meeting where [we] described the experience, shared what we heard, and what we think could be next steps for new collaborative projects in the area.”
- Both the content and the general scope and idea of the workshops were discussed with colleagues. “Discussed as an example of how to do meaningful Indigenous engagement in waterfowl management at recent Sea Duck Joint Venture (an international Canada/US working group) meetings.”

What’s next?

The Department of Culture and Heritage is keen to continue the conversations and knowledge-sharing, as are many of the bird workshop’s participants. Working with the 2024 strategic plan of the Department², the needs of our resource-management partners, and the direction of the Gwich’in communities, we anticipate both conducting further research studies and holding further conversations to continue these important conversations. We will also share the results of these conversations with our partners, colleagues, and the broader community of wildlife managers and Indigenous organizations to share the wisdom and value of an integrative, knowledge-sharing approach.

² “Strategic Plan, Department of Culture & Heritage; Teetł’it Zheh”. Fort Gwich’in Tribal Council Department of Culture and Heritage. February 2024

Appendix 1: Meeting agendas

Day 1: Waterfowl, shorebirds, and other water birds

October 2nd, Fort McPherson Complex

10am: Introductions (who are we and what are we looking for at this workshop) (30-45 minutes), housekeeping

GUIDED DISCUSSION—CHANGES: What changes have you seen with birds? What changes have you seen in the water and shores that these birds use, or in the food they need to survive?

- Guided discussion about ecological changes affecting waterfowl and other water birds. Are there more or less? Are there threats or is the population safe?
 - o Rain, Snow and Other Weather events
 - o Erosion and slumping
 - o Changes in the Delta hydrology: break-up, drying up
 - o Human disturbance, industry, pollution
 - o Predation
 - o Changes in their food
 - o Diseases and parasites
 - o Population of geese – is it still very high? Why and what does this mean for other birds, animals, and the land?
 - o Health indicators: what do people look at, are they changing?

Ongoing:

Let's make sure we are all speaking the same language: Terms / terminology, definitions, jargon, species ...

e.g., What species does 'black ducks' include? What do we mean by shorebirds? What birds do Gwich'in consider shorebirds? What are some other water birds? Is a crane a water bird? A tern? Seagulls? Kingfishers?

(As necessary; Janet to lead, Margaret as resource).

Introduce the various options for the afternoon and hand out stickers for people to vote.

LUNCH 12:30-1:15 with slideshow

OPTION A STUDIES: What are people studying? What have they found?

- Presentations by research participants
 - o What have we learned about tracking technologies (Pete)
 - o Siku: Citizen Science + Indigenous Science (Christian, with back-up from Pete on NatureCounts)
 - o Waterfowl/waterbird project summary slides (Margaret)
 - o Waterfowl Disease - Highly Pathogenic Avian Influenza (HPAI) (Margaret)
- Guided discussions: Are there any research questions that Gwich'in want scientists to study? How should scientists involve Gwich'in?

OPTION B HUNTING: Tell us what is happening about hunting. Has your hunting changed from the time of your grandparents? Does this matter to you, and why?

- Do people still hunt ducks and geese? Why not?
- What would help them hunt more?
- Are people losing the taste for this meat?
- Do you have any thoughts about egg-gathering?

OPTION C SPECIES AT RISK: Are you concerned about any of these birds? Should we help them, and how?

- Which ducks and geese, if any, have gone down in numbers?
- Has the reduction been so drastic that people are talking about it? When people talk about changes on the land, what are the topics they usually bring up?
- Are there birds that seem to be particularly sensitive to the threats we talked about earlier?
- Are there areas in the GSR that have changed enough with climate change that some birds are no longer using it?

OPTION D OTHER: What do you want to talk about, when it comes to waterfowl and other water birds?

EXTRA OPTIONS:

- Population collapse of Lesser Snow Geese in the Kitikmeot region, NU (Pete)
- *Other presentations brought by guests*

Day 2: Ravens, ptarmigan, birds of prey, songbirds, snowbirds, and other birds.

October 3rd, Nihtat Cultural Room, Inuvik

10am: Introductions (who are we and what are we looking for at this workshop) (30-45 minutes), housekeeping

Summarize Day 1, goals for Day 2.

GUIDED DISCUSSION—CHANGES: What changes have you seen with birds? What changes have you seen in the land or in the food they need to survive?

- Guided discussion about ecological changes affecting birds. Are there more or less? Are there threats or is the population safe?
 - o Weather events
 - o Wildfires
 - o Landscape changes
 - o Human disturbance, industry, pollution
 - o Predation
 - o Changes in their food
 - o Diseases and parasites
 - o Health indicators: what do people look at, are they changing?
 - o New species?
 - o Behavioural changes?
 - o Birds arriving earlier/leaving later?

Ongoing:

Let's make sure we are all speaking the same language: Terms / terminology, definitions, jargon, species ...

e.g., What species do Gwich'in call 'chickens'? What do we mean by 'birds of prey'? Would that include owls? Are we sharing an understanding of what any 'new' species are?

(As necessary; Janet to lead, Margaret as resource).

Introduce the various options for the afternoon and hand out stickers for people to vote

LUNCH 12:30-1:15 with slideshow

OPTION A STUDIES: What are people studying? What have they found?

- Presentations by research participants:
 - o Monitoring song birds using their songs in Ivavik, other ways to use these methods (Jay, Sam)
 - o How is the Canadian Wildlife Service studying birds? (Sam)
 - o What birds might disappear in your lifetime or your children's lifetimes? What do they look like and sound like? (Sam)
- Q and A/Discussion
- Data gaps: Are there any research questions that Gwich'in want scientists to study about songbirds, birds of prey, etc.?

OPTION B HUNTING: Tell us what is happening with hunting ptarmigan and grouse. Has your hunting changed from the time of your grandparents? Does this matter to you, and why?

- Do people still hunt ptarmigan and grouse, or any other bird? Why not?
- What would help them hunt more?
- Are people losing the taste for this meat?
- Do you have any thoughts about egg-gathering?
- Outside of ptarmigan and grouse, do you hunt any other birds that aren't waterfowl?

OPTION C SPECIES AT RISK: Are you concerned about any of these birds? Should we help them, and how?

- Which birds, if any, have gone down in numbers?
- Has the reduction been so drastic that people are talking about it? When people talk about changes on the land, what are the topics they usually bring up?
- Are there birds that seem to be particularly sensitive to the threats we talked about earlier?
- Are there areas in the GSR that have changed enough with climate change that some birds are no longer using it?

EXTRA OPTIONS

- Storytelling about birds
- SAR Updates – based on Gwich'in RRC meeting (Margaret)
- COSEWIC processes and methods: Indigenethics, ATK etc. (Christian)
- Language revitalization and conservation (Christian)
- Boreal Chickadee versus Grey-headed Chickadee (Christian)
- *Others*