Western Arctic Caribou Herd Working Group
2019 Meeting Summary

December 10-12, 2019
Anchorage, AK

The Western Arctic Caribou Herd (WACH) Working Group (WG) met in Anchorage on December 10-12, 2019 (Agenda in Attachment 1). The WG's Technical Committee (TC) met in Anchorage on December 10, 2019 (TC report in Attachment 2). The following is a summary of meeting presentations and WG members' discussion. Motions passed at the meeting are shaded in gray and listed in Attachment 3. Assignments are highlighted in yellow and listed in Attachment 4. The WG Binder with written materials referred to at the meeting is posted at www.westernarcticcaribou.net

Day 1 – Tuesday, December 10, 2019

I. Call to Order – WG Chair Vern Cleveland called the meeting to order at 1:30 p.m.

A. Invocation: Working Group member Willie Goodwin offered the opening invocation, at the request of Chair Cleveland.

B. WACH WG Roll Call / Establish Quorum – Quorum was met. The following table lists WG membership attendance and the status of members as of the end of the 2019 meeting.*

Working Group Seat	Voting Chair	Alternate
1. Anchorage Advisory Committee	~~Neil DeWitt~~	Matt Moore
2. Buckland, Deering, Selawik	Ron Moto Sr	~~Percy Ballott~~
3. Anaktuvuk Pass, Nuiqsut	Eli Nukapigak	~~*Mary Hugo*~~
4. Elim, Golovin, White Mountain	Charles Saccheus	~~Morris Nakaruk~~
5. Fairbanks Hunters	~~*David Kilbourn*~~	*John Siegfried*
6. Hunting Guides	Jake Jacobson	~~John (Thor) Stacey~~
7. Kivalina, Noatak	~~Enoch Mitchell~~	~~Daniel Foster, Sr.~~
8. Kotzebue	~~Cyrus Harris (Vice Chair)~~	Willie Goodwin
9. Koyukuk River (Huslia, Hughes, Allakaket, Bettles, Wiseman)	Pollock Simon, Sr..	~~Jack Reakoff~~
10. Lower Kobuk River (Noorvik, Kiana)	Vern Cleveland, Sr (Chair)	~~Kirk Sampson~~
11. Middle Yukon River (Galena, Koyukuk, Nulato, Kaltag)	vacant	Michael Stickman
12. Point Hope and Point Lay	~~Steve Oomittuk~~	~~Caroline Cannon~~
13. Nome	Charlie Lean	~~Jacob Martin~~
14. Conservationists	Tim Fullman	~~David Krause~~
15. Northern Seward Peninsula (Teller, Brevig Mission, Wales, Shishmaref)	Elmer Seetot, Jr.	vacant
16. Reindeer Herders Association	Tom Gray	~~Harry Karmun~~
17. Southern Seward Peninsula (Koyuk, Shaktoolik, Unalakleet, Stebbins, St. Michael, Kotlik)	Morris Nassuk	~~Leo Charles, Sr.~~
18. Transporters	Julie Owen	*Brad Saalsaa*
19. Upper Kobuk River (Ambler, Shungnak, Kobuk)	Bill Bernhardt	~~Oscar Griest, Sr.~~
20. Atqasuk, Barrow, Wainwright	Wanda Kippi	vacant

Italic print indicates members voted in at the 2019 meeting (see Motions, Attachment 3)
Blue text = vacancies Strike-out text = not present as a WG member at 2019 meeting

C. Audience Attendance: Public and agency attendance is listed in Attachment 5.

D. Approve Agenda: Facilitator Jan Caulfield reviewed the agenda (Attachment 1). MOTION by Charlie Lean, second by Bill Bernhardt, to approve the meeting agenda. Motion carried unanimously.

E. Member Appointments:

- MOTION by Willie Goodwin, second by Morris Nassuk, to accept nomination of Working Group alternate member: Seat 3 Alternate Mary Hugo. Motion carried unanimously.
- M OTION by Morris Nassuk, second by Ron Moto, Sr., to accept nomination of Working Group members: Seat 5 Primary David Kilbourn and Seat 5 Alternate John Siegfried. Motion carried unanimously.
- MOTION by Ron Moto, Sr. to accept nomination of Working Group member: Seat 18 Alternate Brad Saalsaa. Motion carried unanimously.
- ASSIGNMENT – Regarding the Alternate for Seat 20, the Working Group will request, through facilitator Jan Caulfield, that the communities of Atqasuk and Wainwright work together to identify one person to serve as an Alternate for Primary Member Wanda Kippi.

II. Western Arctic Caribou Herd Summary Information

2019 Western Arctic Herd Census Count and Population Trend – Alex Hansen, Alaska Department of Fish and Game (ADFG), Division of Wildlife Conservation, presented information about the WACH population status and trends (see p. 13 in WG Binder). The presentation laid the foundation for the WG's later recommendations regarding future management of the caribou herd. Key points in the ADFG presentation included:

- Herd abundance – The 2019 photo census results provided an abundance estimate of 244,000 caribou in the Western Arctic Herd. This is lower than the 2017 photo census, which estimated 259,000 caribou in the herd. There was no photo census in 2018 due to winds and weather.
- High adult female mortality – Cow survival for 2018-2019 was 78%, which is considered below average for this herd. Adult female survival is the most important metric influencing the population trajectory.
- Recruitment is average – Yearling recruitment in 2019 was 18:100 yearlings:adults, which is the 25-year average. This is lower than in the past three years 2018 - 21:100; 2017 - 22:100; 2016 - 23:100.
- Calving (parturition) is high – Summer calving surveys show that 81% of collared cows had calves in 2019, compared with 86% in 2018 and 83% in 2017. This is a good percentage and parturition rates have never been an issue of concern for the Western Arctic herd.
- Good body condition – In October 2019, calf weights were high and adult body condition was generally observed to be fat and healthy going into the winter.
- High bull:cow ratio – At the most recent fall herd composition survey in October 2017, the bull:cow ratio (54:100) and calf:cow ratio (57:100) were both high. ADFG is recommending that the target bull:cow ratio be lowered in the updated 2019 WACH Cooperative Management Plan from 40:100 to 30:100.
- Herd size has declined, but not at rapid rate – At its December 10, 2019 meeting, the Technical Committee recommended to the Working Group that the Western Arctic herd be considered "Conservative, Declining" on Table 1 of the *2011 Western Arctic Caribou Herd Cooperative Management Plan* (see Attachment 2). The TC discussed whether the herd should be considered to be in the "Conservative, *Stable*" category, because the population estimate is not far below the 2018 estimate and other metrics are relatively positive (e.g., high calf recruitment, high calf production, high bull:cow ratio). However, the TC ultimately agreed that the Conservative, Declining designation was appropriately cautious, given the lower population estimate and a low adult cow survival. The TC felt that the word "Declining" would more accurately convey the current status of the herd to the public, than would the word "Stable". There is no difference in the harvest or management recommendations between the Conservative, Stable and Conservative, Declining categories (see Appendix 2 in the 2011 plan). (NOTE – Later in the meeting, the WG

passed a motion designating the herd as "Conservative, Declining" in 2019. See pages 15-16, below.)

- WAH Collaring – After two years with exceptionally low deployment of collars, agencies were able to collar 80 caribou in 2019 (31 net-gun captures in spring, 49 at Onion Portage in the fall). There are now more than 100 collars in the herd. (Agencies had to mobilize quickly to collar at Onion Portage, so were not able to involve students in that effort.)
- Neonate Study 2017-2019 – ADFG's study of WAH calves indicate calving ground survival is 86% (2017-2019) and annual survival 44% (2017-2018).

National Park Service (NPS) Caribou Monitoring – Kyle Joly, NPS, presented information on the caribou the NPS has collared (see p.15 in WG Binder). Information included: location of collared caribou in November 2019, their movements/range in Sept. 2018-Aug. 2019, timing of calving 2010-2017, the distribution of caribou as they cross the Noatak River in the fall (2010-2019), the timing of the fall crossing of the Kobuk River (2010-2018), and the timing of the spring migration crossing of the Selawik (2011-2019). Points from the presentation:

- Many of Canada's large caribou herds have declined by 90-95% and this is very concerning. With the local extinction of the transboundary Selkirk herd, there are no longer caribou in the Lower 48 states. The situation is much better in Alaska, but there are caribou herds such as the Mulchatna that have declined precipitously in recent years.
- In winter 2018-2019, there were no overwintering caribou in the Bering Land Bridge National Preserve and their presence was also down in Kobuk Valley National Park. Overwintering was high in the upper Gates of the Arctic National Park & Preserve in both 2017-18 and 2018-19.
- The mean distance of travel by collared caribou from Sept. 2018-Aug. 2019 was 1,578 miles. This is the 5th year in a row in which the mean annual distance traveled has declined (it used to average 2,000 miles/year).
- Fall migrations across the Kobuk River were much later in 2017, 2018 and 2019 than in the past. Agencies are uncertain of the reason for this delay in migration.

Working Group members made the following comments:

- Believe that climate change is affecting the caribou distribution and migration.
- The last time caribou moved across the Koyukuk in the area of Allakaket was 1974. Believe that hunting by people using the Dalton Highway caused a change in their migration.
- Noted that the caribou used to walk across the sea ice from Cape Espenberg to Kotzebue as they traveled north in their spring migration – but that route is no longer possible, without sea ice.

III. Guest Elder – Mr. Nathan Hadley, Buckland

Good afternoon ladies and gentlemen. I've been invited to come here by [Working Group member] Ron Moto, Sr. I want to thank him for inviting me here to Anchorage. I'll start from the beginning when my father had his reindeer.

I think it was 1953 or 1954 when [my father] first got a load of reindeer, and there was no caribou around. But around 1955, fall time, we were helping my father round up his reindeer but there was one big bull with big horns with the herd of reindeer when we were rounding up. When we drove the reindeer to the main herd we sent a message to my father, Paul Hadley. We told him there was a big reindeer with big horns in our herd. He got up right away and dressed and went with his nephew to go check what it was. It was a caribou. In 1955, I was 15 years old and helping my father round up the reindeer. And that is how I learned what is reindeer or caribou. There was no [more] caribou for a while but later on big bunches started coming in from the north.

Before my father passed he give me the reindeer so I could take care of them. While I was watching the reindeer there was a bunch of caribou north of Buckland. They were males. They were good meat but

they were already breeding with the females, so we just give them to our dogs to eat, because Buckland can't eat the caribou or reindeer bulls after they mated.

Right now there are some caribou at Buckland. Hunters are getting some. We get out on snow machines and get some. When we start hunting caribou we always let our youngsters try to learn what is good meat of the caribou. And we let them know when they are breeding the meat is not good to eat. But later on in the springtime after the mating, when they start getting fat, the meat gets good. That's when we start hunting them, the bulls anyway, so they could have some meat and dry them up for dry meat. For subsistence we hunt caribou for our food because we lost our reindeer to caribou, which was not good for us.

There were lots of wolves when I was watching reindeer too, over a hundred wolves. And the wolves would just kill them and leave them. I was watching my reindeer once and there were 14 wolves … and they killed 19 reindeer. I started going after those wolves with my snow machine but there wasn't enough snow and I couldn't climb up the riverbank because there was no snow. The wolves stopped and stared at me, but I was not scared because I grew up with my father and he let me know what to do. The 14 wolves stopped and stared at me but I had my rifle so I was not scared. And right now they [hunters] all see wolves with the caribou that are in the Buckland area. The hunters all see them. They talk about how the wolves just knock them [the caribou] down and just eat the tongues of the caribou. That's the story they tell me. It's true.

I always tell people the reindeer are Eskimo, but the caribou, I tell them they are white people. I let them know what is the true story of animals and humans. I let them know and they catch on right away.

I lost our reindeer to caribou in 1997 – that was our last corralling. [At first I was] shooting the caribou that go towards our reindeer. But I respected the game warden, so I let the reindeer go so I wouldn't get in trouble.

Me and my sons we'd go hunt caribou too. We try to pick a fat one from the caribou. Four shots, four fat caribou.

Anyway, right now people are waiting for the main herd of caribou from way up north. We hear that they are fat this time of year because there's hardly any snow to cover the good grass that they eat.

[In] springtime and summer time, the bulls are left behind from the female caribou when they go north. Some caribou stay around the Shishmaref and Deering area; but in mating time like August and September, the bulls start going north to meet the female caribou. They go meet them by Deering and Shishmaref. They walk across the Buckland River. When they do that, Buckland always gets some fat bulls right before they mate.

I just have one more [thing to say]. The late Johnson Stalker and I, we could tell the reindeer among thousands and thousands of caribou because we grew up with the reindeer. Johnson Stalker and I could tell the difference between caribou and reindeer.

IV. 2019 Wildfire Activity in the Range of the Western Arctic Caribou Herd

Ben Seifert from the Bureau of Land Management (BLM) Alaska Fire Service, reviewed the location and acreage burned in wild land fires within the range of the WAH – showing percentage of acres burned within the calving grounds, migratory area, summer range, winter range, and peripheral range (see map on p. 25 of the WG Binder). In 2019, there were 81 fires within the herd's range, burning 250,000 acres or 1.25% of the range. Most of the 2019 fires were within the herd's winter range. The following points were noted in the Working Group's discussion of this information:

- Fires in the winter range burn the lichen, which is winter forage. It takes a long time to recover the food lost to fire.
- It appears that caribou avoid burned areas by as much as 40-50 years post-fire. Lichens are slow to reestablish and the caribou's favorite lichen species can take 150 years to reestablish.

V. ADFG Community Harvest Surveys for 2018 – Deering, Noorvik, Shishmaref

Beth Mikow, ADFG Subsistence Division, presented 2017-2018 preliminary estimates of caribou harvest by Deering, Noorvik and Shishmaref based on household surveys in those villages (see p. 27 in WG Binder). The presentation addressed the number and percent of households in each community who harvested and used caribou during 2017-18, total harvest and pounds per capita, timing of harvest, geographic density of harvest, and comparison with prior harvests for which ADFG has survey data. In each village, ADFG coordinates with the Tribal Council, hosts a meeting to explain the household survey and its purpose, and hires local research assistants to carry out surveys.

Day 2 – Wednesday, December 11, 2019

I. Call to Order – The meeting was called to order at 8:30 a.m. Quorum confirmed.

II. Environmental Changes in Northwest Alaska: What's Happened and What the Future May Bring

Rick Thoman from the Alaska Center for Climate Assessment and Policy, International Arctic Research Center (IARC) at the University of Alaska Fairbanks (UAF) presented information about environmental changes in Northwest Alaska (see p. 35 in WG Binder). See also UAF IARC publication "Alaska's Changing Environment: Documenting Alaska's physical and biological changes through observations" (https://uaf-iarc.org/2019/08/23/alaskas-changing-environment)

Key points from past climate data:

- Past 50 Years: Warmer and Wetter – Along with the rest of the Arctic, northwest Alaska has experienced dramatic warming in the past decade, which is an acceleration of warming that started in the 1970s. Annual temperatures are now about 4°F warmer than the middle of the 20th century and 6°F warmer than at the end of the 1800s. Each year in the range 2014-2018 has been warmer than the long-term average and 2018 is the hottest year on record.
- Oceans are very warm – Over the last six years, oceans around Alaska have been persistently very warm – more than 7°F warmer than average in the nearshore waters, and 4°F warmer than average in the open ocean.
- Coast sees the most warming - Temperatures have risen more sharply along the coast of northwest Alaska then inland because of the influence of major changes in sea ice and ocean temperatures.
- Sea ice decreasing – There has been unprecedented low ice extent (spatial and temporal) in the Chukchi and Beaufort Seas in recent years.
- Greening of the Arctic – Vegetation data from 2014-2018 shows that the Arctic is experiencing more vegetation growth and shrubification (conversion from herbaceous tundra to shrubs).

Looking to the Alaska's future climate:

- Alaska will be warmer – Models indicate that, while year-to-year variation will continue, Alaska will continue to warm. By the 2070s, the community of Ambler, AK (latitude 67° N) will be about as warm as Homer, AK (latitude 59° N) is in 2020 under a "business as usual" climate change scenario. If there is active global mitigation of carbon emissions, warming could slow –

but Ambler would still likely experience the same average temperatures in 2070 as Willow, AK (latitude 62° N) does today.

- Sea ice will continue to decline – The *low* ice extent seen in 2018 will be the *average* ice extent by the 2040s, and would be considered a *high* ice year by 2060.
- Winds – Models predict that winters will be windier and summers less windy than today in northwest Alaska.
- Precipitation – Alaska will be warmer and wetter, with higher occurrence of rain on snow events.

What could this changing climate mean for the range of northwest Alaska caribou herds in the future?

- Autumn
  - Later establishment of snowpack but more snow when it comes
  - Increased chances of rain on snow, or rain on frozen ground
  - Increased river levels early in the autumn?
- Winter
  - Deeper snowpack, increased chance of rain on snow
  - Less deep cold
  - More wind?
- Spring
  - Earlier onset of daily freeze-thaw cycle
  - Increased potential for snow melt (as opposed to ice jam) flooding
  - Earlier green-up of vegetation
- Summer
  - Increased number of hot days
  - Increased wildfire threat
  - Impacts to insects?

Working Group members offered observations about weather events and the changing climate:

- Seeing more fall storms and more wind in Nome. (Rick Thoman noted that increased open water in the fall appears to favor stormier conditions – have seen this especially in the past two years.)
- In Noorvik, there should have 2-4 feet of snow by December 2019, but we don't even have an inch. It's hurting our hunters because we can't travel with snowmachine. Need to teach our youth to be careful of ice conditions in spring when ice thaws earlier. Very concerned about changes we are seeing in just one lifetime and the impacts on caribou.
- Is there radiation or toxins in the rain events from Russia? (Rick Thoman noted that he is not aware of evidence of an increase in nuclear debris in the atmosphere.)
- The Koyukuk River is freezing up a month later and breaking up earlier.
- In Nulato, now regularly experience a rain event in February. Rain on snow makes it hard for caribou to get to food.

Caribou biologists Lincoln Parrett, ADFG, and Kyle Joly, NPS, led a discussion about the potential effects of climate change on the Western Arctic herd. Key points of discussion by Working Group members and agency biologists included:

- There is so much variability in what caribou do, where they are, and timing of behaviors, that it is not possible to say that changes we see from year to year are due to climate change.
- It seems to people that they are seeing caribou later in the fall than they used to (e.g., October), but there is not strong evidence that climate is causing them to migrate later – for example, five years ago, the caribou were actually migrating earlier than the average date.
- Changes in migration routes and overwintering areas may be due to grazing range factors.
- A larger percentage of the herd isn't migrating south as far as they used to. When the agencies started collaring caribou, just 15% of the herd did not migrate south. In 2018, it was 80% and in

2019, 50% didn't cross south of the Kobuk River. Agencies are not sure if this change in migration pattern is related is to climate change, herd size (down 50% from 2003), or other factors.
- Climate change is happening and will continue – need to study potential effects on migration, calving, predation, food, and other parameters that affect caribou.
- There is so much to research! However, the WAH already has more research focused on it than other caribou herds in Alaska. Examples of research questions: With climate change, will calves drop earlier? Will peak lactation time line up with when nutrients are available in food sources? Will parasites have two cycles per year rather than one? Will a longer fall season make caribou healthier and fatter as they go into winter? Will rain-on-snow events make it hard for caribou to feed?
- Have seen huge changes on the Seward Peninsula in one lifetime. Suggest studying soil temperature change and vegetative succession.
- NPS and UAF are monitoring permafrost temperatures; trying to "connect the dots" between permafrost and soil temperatures, vegetation change, and caribou.
- We should be doing more to map lichen (food source) across the range. A 2007 BLM report on lichen abundance on the eastern Seward Peninsula in 1982, 1995 and 2004 documented a decline in lichen over that time. Plots were again monitored in 2012 and 2017 but the data has not yet been published.

III. 2019 WACH Cooperative Management Plan Revision

At its 2017 meeting, the Working Group decided to update the *2011 WACH Cooperative Management Plan* and formed a subcommittee to work on this task with Susan Georgette (US Fish and Wildlife Service [USFWS]), Alex Hansen (ADFG) and Kyle Joly (NPS). Subcommittee members included Vern Cleveland, Sr., Morris Nassuk, Al Barrette, Neil DeWitt, Charlie Lean, Jake Jacobson and Thor Stacey (Alternate).

At the December 2019 WG meeting, the subcommittee presented the revised plan for the approval of the Working Group (see p. 41 in the WG Binder). The most significant changes to the plan included:

- Two new plan elements, Human Activities and Climate Change, have been added (p. 37-40 of the new plan).
- In Table 1, adult cow survival and calf recruitment metrics have been added to help define the management level (p. 21 of the new plan).
- The minimum bull:cow ratio has been decreased from 40:100 to 30:100 (p. 24-27 of the new plan).
- In Table 2, the "No harvest of calves" recommendation at the Conservative Management level has been changed to "Encourage voluntary reduction in calf harvest" (p. 25 of the new plan).
- The plan has been reorganized to improve clarity. For example, Population Management Actions and Potential Harvest Recommendations, which used to be Appendix 2, can now be found as Table 2 in the main body of the plan, making this important part of the plan easier to find (p. 24-27 of the new plan).
- WAH range and migration maps have been updated.

Prior to approving the amended plan, Working Group members discussed:

- The main change that the subcommittee made were to add consideration of calf recruitment and cow survival to Table 1 – as these are important metrics to consider when determining whether the herd is increasing in size, stable, or declining. The subcommittee also edited the management plan to make it easier to understand.

- There are different wildlife harvest management systems on state and federal land. Caribou migrate across all land ownerships. Certain federal lands within Game Management Unit (GMU) 23 are closed to non-federally qualified caribou hunters (people who do not live within the range of the herd), such as the Aggie, Squirrel and Noatak Rivers. On lands subject to the state's wildlife regulations, the state would start considering restrictions or reductions to harvest if the herd's population was 200,000 or fewer. It was noted that NANA Corporation shareholders are allowed to hunt land owned by the corporation.

MOTION by Tim Fullman, second by Matt Moore, to approve the changes to the WACH Cooperative Management Plan and adopt the updated 2019 management plan. MOTION by Tom Gray, second by Pollock Simon, to amend the motion to list the "resource management agencies" referenced in Section 5. Reindeer, Strategy A (p. 80 of the WG Binder). Motion to amend was approved unanimously. Main motion, as amended, was approved unanimously.

ASSIGNMENT – The resource agencies that have been assisting the WG planning subcommittee will finalize the *2019 WACH Cooperative Management Plan* and make it available for distribution and use.

IV. Northwest Arctic Conservation Law Enforcement Working Group

The Northwest Arctic Conservation Law Enforcement Working Group was established to coordinate agencies' law enforcement efforts in the Northwest Arctic, primarily GMU 23 (p. 105 in WG Binder). The group collaborates on joint investigations, field operations, addressing public requests, and public outreach/education. Because each agency's law enforcement staffing in GMU 23 is limited, collaboration with this group to increase coverage and capacity is very important. Members of the group include law enforcement rangers from the NPS (Joe Dallemolle), USFWS (Steven Strader) and BLM (Walker Gusse); Alaska Wildlife Trooper Scott Bjork; and Damon Schaeffer of NANA Corporation's Trespass program.

The collaboration with NANA's Trespass program is important and successful. The Trespass program has been in place for 20 years, employing seasonal local officers from each village in the region. Trespass officers primarily patrol NANA land, but also support other law enforcement efforts and help with public education about land status, hunting regulations, and other information important to local subsistence hunters. NANA hopes that the program is a useful model for other corporations.

V. Wildlife Harvest Regulations

Implementation of Registration Permit – Alex Hansen, ADFG, discussed implementation of registration permits RC907 and RC800. Prior to these permits, ADFG made an estimate of the number of caribou harvested annually by referring to periodic community harvest surveys and considering the availability of caribou for harvest. Because of the need for more accurate harvest data for herd management, the Board of Game adopted registration permits with mandatory reporting requirements in GMU 22, 23 and 26A. ADFG needs accurate harvest composition data to inform their management decisions – and this becomes even more important when the herd is declining. ADFG is working hard on public outreach, to explain that harvest reporting will help ADFG manage and conserve the herd for the future.

Alaska Board of Game – Phil Perry, ADFG, explained that the Board of Game will meet in January 2020 in Nome to take action on wildlife regulations for the Western Arctic/Western Regions that will take effect July 1, 2020 (p. 111 in WG Binder). The deadline for comments on the regulatory proposals is January 3, 2020. The Working Group took the following actions on the state regulatory proposals:

- **PROPOSAL 19** – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Open a year-round, resident season for caribou bull harvest in Unit 23 as follows: …

PROPOSAL 20 – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Open a year-round, resident season for caribou bull harvest in Unit 23 as follows: …

MOTION by Michael Stickman, seconded by Matt Moore, to support Proposal 19 and Proposal 20. The motion carried 17:1.

Comment: The WACH Working Group voted to support Proposals 19 and 20 (vote 17:1) to keep the bull season open year-round. If this change is made, some hunters would take young bulls during the currently closed period, which would relieve some pressure on the cows.

- **PROPOSAL 21** – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Reduce the bag limit for caribou in Unit 23 as follows: … Limit total harvest per hunter to 5 caribou a day, 25 caribou total annually, this to include no more than 5 females annually.

  MOTION by Bill Bernhardt, seconded by Morris Nassuk, to support Proposal 21. The motion failed 0:18.

  Comment: The WACH Working Group did not vote to support Proposal 21 (vote 0:18). The Working Group does not support the proposed regulatory cow harvest limit at this time. The herd is currently within the Conservative Management Level in the *2019 Western Arctic Herd Cooperative Management Plan, Table 1*. The plan recommends only a voluntary reduction in cow harvest at this management level, not a regulatory restriction on cow harvest.

- **PROPOSAL 22** – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Extend the season for taking cow caribou in Unit 23 Remainder through April 15 (season currently closes March 31).

  MOTION by Michael Stickman, seconded by Bill Bernhardt, to support Proposal 22. The motion failed 9:9.

  Comment: The WACH Working Group did not vote to support Proposal 22 (vote 9:9, motion in support did not carry). As the vote tally indicates, the Working Group was split on this proposal:
  - Those who voted not to support the proposal thought it important to avoid stressing or harvesting pregnant cows in April as they begin migrating toward the calving grounds.
  - Those who voted to support the proposal wanted to provide additional opportunity for hunters to get meat for their families for the spring months and thought that the current herd population level could support additional cow harvest.

- **PROPOSAL 23** – 5 AAC 92.080(4)(B). Unlawful methods of taking game; exceptions. Restrict the use of snowmachines for taking caribou in Unit 23 as follows: …

  MOTION by Michael Stickman, seconded by Bill Bernhardt, to support Proposal 23. The motion carried 11:7.

  Comment: The WACH Working Group voted to support Proposal 23 (vote 11:7).
  - Those who spoke in support of the proposal noted that it would still allow the use of snowmachines to position for hunting. They saw a conservation benefit in requiring the driver to slow to 15 mph when within 200 yards of the herd to avoid harassing or tiring the herd.
  - Those who voted to oppose the proposal believe that current regulation is sufficient and there is no need for change.

- **PROPOSAL 24** – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Remove the restriction on caribou calf harvest in Unit 23 as follows: …

  PROPOSAL 25 – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Remove the restriction on caribou calf harvest in Unit 23 as follows: …

MOTION by Charlie Lean, seconded by Wanda Kippi, to support Proposal 24 and Proposal 25. The motion carried 15:1, with 2 abstentions.

Comment: The WACH Working Group voted to support Proposals 24 and 25 (vote 15:1, 2 abstentions). The intent of this proposal is to allow for calves to be harvested in those circumstances where they have lost their mother and are wandering unattached to the herd.

- **PROPOSAL 28** – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Eliminate the registration caribou permit RC907 and general season caribou harvest ticket requirement for North Slope resident hunters as follows: …

  MOTION by Eli Nukapigak, seconded by Morris Nassuk, to support Proposal 28. The motion carried 12:5.

  MOTION FOR RECONSIDERATION on Proposal 28 by John Siegfried, seconded by Pollock Simon, Sr. The motion for reconsideration carried 14:4.

  MOTION by Bill Bernhardt, seconded by Tom Gray, to support Proposal 28. The motion failed 9:9.

  Comment: The WACH Working Group did not vote to support Proposal 28 (vote 9:9, motion in support did not carry). As the vote tally indicates, the Working Group was split on this proposal:
  - The Working Group members who did not support the proposal noted that the *2019 Western Arctic Caribou Herd Cooperative Management Plan* calls for intensifying efforts to monitor harvest when the herd is at the Conservative Management Level in Table 1. It is important to get more harvest data, through the RC907 permit and other methods, to evaluate management needs and options. The Working Group has been encouraging hunters to report their harvest (e.g., through articles in its annual newsletter Caribou Trails). The North Slope Borough (NSB) collects data on subsistence harvest, but the methodology is more similar to community harvest surveys than reporting of individual harvest data. There is value to continuing both of these methods of collecting data about caribou harvest.
  - The Working Group members who voted to support the proposal have more confidence in the NSB data than in the ADFG registration permit harvest data, and they suggest that the NSB data should be used to inform management. They believe that local hunters will give more accurate harvest information to local NSB interviewers. They view the state registration permit to be duplicative, without substantial benefit.

- **PROPOSAL 32** – 5 AAC 85.025. Hunting seasons and bag limits for caribou. Allow caribou to be taken east of and including the Nuluk River drainage in Unit 22E as follows: …

  MOTION by Tom Gray, seconded by Elmer Seetot, to support Proposal 32. The motion failed 1:17.

  Comment: The WACH Working Group did not vote to support Proposal 32 (vote 1:17). There was not substantial discussion regarding this vote.

Federal Subsistence Board – Lisa Maas, USFWS Office of Subsistence Management, explained that the Federal Subsistence Board will meet in April 2020 regarding wildlife regulations for the 2020-2022 regulatory years (see p. 123 in WG Binder). Proposals WP20-43 and WP20-45 are the same as State proposals 19 and 20. Proposals WP20-44 and WP20-46 are the same as State proposals 24 and 25. MOTION by Tom Gray, seconded by Michael Stickman, to support all four federal proposals. Motion carried unanimously.

ASSIGNMENT – Facilitator Jan Caulfield will work with Chair Vern Cleveland, Sr., to submit the WACH Working Group's comments on regulatory proposals to the Alaska Board of Game and the Federal Subsistence Board.

VI. Caribou Roundtable

The Working Group members met in small groups representing four regions within the range of the herd to offer their observations about the caribou herd, environmental conditions and changes, predation, etc. The regions were: Kotzebue Sound / GMU 23, Koyukuk & Middle Yukon, North Slope, and Seward Peninsula. WG members' responses to the Caribou Roundtable questionnaire are provided in Attachment 6. This information will also be entered into the Caribou Roundtable database (2011-2019) that is posted on the group's website, https://westernarcticcaribou.net

Day 3 – Thursday, December 12, 2019

I. Call to Order – The meeting was called to order at 8:30 a.m. Quorum confirmed.

II. Resource Development in the Western Arctic Caribou Herd's Range

Tim Fullman, Chair of the WG's Resource Development Committee, described resource development projects within the range of the WACH, especially those that needed WG discussion or action at this meeting (p. 131 in WG Binder). Agency presentations and WG discussions and actions are summarized in this section.

Ambler Mining District Industrial Access Project (p. 132 in WG Binder)

The WACH Working Group's comments on the Ambler Road Draft Environmental Impact Statement (DEIS) were submitted to BLM on October 28, 2019 (p. 134 in WG Binder). Those comments state that the WG Working Group is opposed to the road (in accordance with its vote in December 2018) and supports the "No Action" Alternative. BLM said that the Final EIS will be published in early 2020, with a Record of Decision 30-days later. For more information, see www.blm.gov/AmblerRoadEIS

The following comments were raised in Working Group discussion:

- Some of the Working Group's earlier comments on the project during the scoping phase were addressed in the DEIS, but not all. Those that were not addressed were stated again in the WG's comment letter on the DEIS.
- Concern for salmon runs in the creeks that would be impacted by the road routing.
- Concern that the road will divert caribou and subsistence hunters will have to go farther to hunt. Not confident that it will remain an industrial-only access road (closed to public access).
- People are concerned about the impacts of this road. Kiana and Noorvik are on the same river below the road and the mining. Anything that happens there will affect people that live downstream on the Kobuk River– and all the way to Kotzebue.
- However, the high cost of living in the upper Kobuk region is also very real.

National Petroleum Reserve in Alaska (NPR-A) Integrated Activity Plan Revision (p. 142 in WG Binder)

In 2013, the BLM adopted an Integrated Activity Plan (IAP) for the NPR-A to manage land uses, including decisions on future oil and gas development. The 2013 IAP prohibited oil and gas leasing in the core calving grounds and insect relief areas of the Western Arctic and Teshekpuk caribou herds – and was supported by the WACH Working Group. BLM is now revising the 2013 IAP and has published a Draft

EIS for public review. For more information, see https://www.blm.gov/planning-and-nepa/plans-in-development/alaska/npr-a-iap-eis

The Working Group submitted scoping comments to BLM on the IAP revision in January 2019 (p. 144 in WG Binder). Comments on the DEIS are due to BLM January 21, 2020. The Working Group is concerned that the comment period is too short and does not provide enough time for BLM to effectively consult with all affected communities and for the public to understand and comment on this complex, substantial plan revision. MOTION by Michael Stickman, seconded by Matt Moore, to submit a request for extension to the public comment period for the NPR-A Integrated Activity Plan DEIS. Motion carried unanimously. (NOTE: BLM initially rejected the Working Group's extension request. Later, on the January date that comments were due, BLM gave notice that it was extending the comment period to February 5, 2020.)

ASSIGNMENT – WG Resource Development Chair Tim Fullman, in coordination with WG Chair Vern Cleveland, Sr., will submit a letter to BLM requesting that the comment period for the NPR-A IAP DEIS be extended.

BLM staff Laurie Thorpe and Debora Nigro gave a presentation about the NPR-A Integrated Activity Plan revision (p. 167 in WG Binder). The IAP will guide BLM's decisions about future oil and gas development in NPR-A, including where lease sales could occur and how projects would need to operate. The DEIS examines four different alternatives – including a "No Action" alternative that would make no changes to the current plan, and three alternatives with different levels and areas of development. BLM is asking for specific comments on what aspects of each alternative should BLM adopt in its decision (the final decision can be a combination of the alternatives). BLM is also asking for the WG to recommend specific stipulations that would reduce impacts on the caribou herds, and to state why those stipulations are necessary and important.

The following questions / comments were raised in the Working Group's discussion with BLM:

- The DEIS maps the development potential of each of the alternatives and bases its analysis of environmental impacts on those maps. However, a new lease sale was held on December 11, 2019 (*the day before this discussion*) that is not shown on these maps and was not considered in the environmental analysis. In response at the WG meeting, BLM indicated that the maps would be updated and posted on the NPR-A IAP website for people to comment on during the DEIS public comment period. (NOTE: BLM did not complete these map updates, so this updated information was not available to interested parties prior to the February 5 DEIS comment deadline.)
- Clarified that BLM will not require developers to pay compensation funds to communities or other impacted parties to mitigate impacts from the oil and gas development. (NOTE: This type of mitigation was included in the 2013 NPR-A IAP.)
- The Working Group is concerned about impacts to both the Western Arctic and the Teshekpuk caribou herds. Concerned that development infrastructure will "chop up" the areas important to the herds. Simply placing seasonal restrictions on activity during the time of calving is not sufficient. This calving area supports the largest caribou herd in the world.
- Noted that the Nome Fish and Game Advisory Committee (AC) discussed the NPR-A IAP DEIS and is concerned about the caribou calving grounds. However, the AC believes that the process is moving too fast for affected communities to fully and effectively participate.
- We have real caribou people out there. Caribou are their livelihood. Without caribou, we cannot live.
- Nuiqsut is in the heart of the NPR-A development. Our way of life has been surrounded and we talk about what that means for our future. How does BLM address subsistence and our way of life? When caribou are disrupted on their migration route, how we go on as a community from there?

- Nuiqsut's message hit home: Subsistence is the heart of village life. When you develop the land, it never goes back to the way it was. BLM and the government need to acknowledge this – how do we address when bad things come up? How can we address caribou not coming anymore? How do we address oil getting into the river so the fish stop coming? There are many good things that come from oil development, but also many negative things. BLM needs to go to the villages and air these issues – and then not just say, "we will go forward with it whether you like it or not".

Resource Development Chair Tim Fullman reviewed the draft comment letter from the WACH Working Group to BLM on the DEIS (p. 153-2 in the WG Binder). MOTION by Tom Gray, seconded by Morris Nassuk, to approve the draft comment letter regarding the NPR-A Integrated Activity Plan DEIS. Motion carried unanimously.

ASSIGNMENT – WG Resource Development Chair Tim Fullman, in coordination with WG Chair Vern Cleveland, Sr., will submit the WACH WG's comment letter to BLM regarding the NPR-A IAP DEIS.

Noatak – Red Dog Road (p. 155 in WG Binder)
In 2019, the Alaska Department of Transportation and Public Facilities (DOT&PF) announced it is partnering with the Northwest Arctic Borough and Native Village of Noatak to look into building a permanent gravel road connecting Noatak to the Red Dog Road. DOT&PF is inviting early public input as they begin a Planning and Environmental Linkage (PEL) study.

WG Resource Development Chair Tim Fullman reviewed a draft comment letter from the Working Group to DOT&PF (p. 157 in WG Binder) outlining general considerations they would like DOT&PF to incorporate into its study, relevant to minimizing impacts to the Western Arctic and Teshekpuk caribou herds. MOTION by Charlie Lean, second by Eli Nukapigak to send the comment letter to DOT&PF. Motion carried unanimously. The Working Group also expressed their recognition that the community of Noatak has important transportation needs.

ASSIGNMENT – WG Resource Development Chair Tim Fullman, in coordination with WG Chair Vern Cleveland, Sr., will submit the WACH WG's comment letter to DOT&PF regarding the potential road connecting the Red Dog Road to Noatak.

Arctic Strategic Transportation and Resources (ASTAR) Project (p. 163 in WG Binder) – The State of Alaska's ASTAR project seeks to advance infrastructure development that would benefit North Slope Borough communities. There is not an active public process at this time, but the WG Resource Development Committee will continue to monitor this, as the project maps show roads and other infrastructure that would bisect the WAH and Teshekpuk caribou herds' calving grounds.

Willow Master Development Plan (p. 164 in WG Binder) – The Willow project would expand infrastructure for oil and gas development in the northeastern NPR-A. The Working Group did not comment on the Willow Draft EIS in 2019.

Anarraaq – Aktigiruq Mining Exploration (p. 165 in WG Binder) – Teck American, Inc, is proposing an exploration project to evaluate potential for new mineral deposits north of the Red Dog Mine. The project is currently on hold as Teck reevaluates its plan, but the WG Resource Development Committee will continue to track future opportunities to comment.

Trilogy Metal's Activities in the Ambler Mining District

Cal Craig, Director of Environment & Permitting for Trilogy Metals, Inc, presented information about the Ambler Mining District and the Arctic Mine Project. The Ambler district is one of the biggest in the world and the Arctic Project has 43 million tons of probably mineral reserve. The project would employ

400-450 workers over its expected 12-year mine life, including local workers. The estimated timeline for the project is: at present – advanced exploration and environmental engineering; 2020-23 – engineering, environmental permitting, design; 2024-26 – construction; 2027-2039 – operations; 2039-49 – reclamation and closure.

The following questions and comments were raised during Working Group discussion:

- Q - Concern about engineered tailings dam and release of toxic chemicals (e.g., cyanide) used in ore processing to surface and ground water. A – The tailings facility will be lined, closely monitored, and equipped with pump out wells. Trilogy Metals is of course aware of dam failures in other parts of the world and will not be using that design/construction.
- Noted that 41 villages in the Tanana Chiefs Conference oppose the Ambler Road due to concerns about potential impacts on salmon.
- At Red Dog, everyone was surprised at how quickly their containment pit filled with tailings, snow and water. The pit's planned capacity was 10-15 years, but it filled in a year or two.
- Q - How much of the infrastructure would be used for another project? A – There is potential to use on other projects within the district with similar geology.
- Q – What is Trilogy Metals history, successes, failures? A – This is our only asset. Trilogy has teamed with NANA Corporation on this project.
- Q – How have you handled any minor accidents or spills during exploration? A – We have had spills and are remediating contaminated soil at a "land farm", where contaminated soils are mixed with soil amendments and tilled into the earth to remediate the contaminants.
- Q – Would Trilogy develop the mine, or sell it off? Concern about change in ownership to a company who does not care about the region, its people and its resources. A- Trilogy would take the mine through permitting, but would not construct or run the mine. the new owner would be required by the Alaska Department of Natural Resources to have a full reclamation bond, to reclaim land disturbance and provide for long-term water monitoring and treatment. In addition, the owner would still be in an agreement with NANA Corporation, which understands the interests of the region.
- Q – Why is local hire only 50%? A – Last year was 70% local hire. Noted that the agreement with NANA also provides funding for training and job shadow programs.

Red Dog Mine and Road

Damon Schaeffer, Senior Director of Lands & Facilities for NANA Regional Corporation and Fritz Westlake, Economic Development Coordinator for Teck Resources Limited, discussed how Red Dog manages the road and mine to avoid impacts to the Western Arctic caribou herd and users of the herd. Key points:

- Subsistence Committee (four members from Kivalina, four members from Noatak) meet quarterly and provide guidance on subsistence issues.
- Red Dog caribou policy – When the caribou are migrating through, road operations slow and then stop as necessary. It is the activity on the road that affects migration, not the road itself. Truck operators fill out "caribou cards" documenting caribou observations (#, where, when). In the mine exploration area, a similar policy manages helicopter activity and routes to minimize impacts to caribou.
- Work is going on to build a new road to a new exploration area. Teck is consulting with local hunters on the route.
- The caribou monitoring program (initiated by the Subsistence Committee) hires local people from Kivalina and Noatak to drive the haul road specifically to watch for caribou during fall migration and inform the trucks. The program is very successful.
- Kivalina hunters are allowed to use the Red Dog road to access subsistence hunting, in compliance with safety best practices / guidelines. Teck wants to support subsistence uses.

- NANA Trespass program employ local officers to patrol NANA Corporation lands. Trespass officers meet with Kivalina hunters prior to the season to review the caribou policy. Elders use this opportunity to talk with younger hunters about traditional hunting practices that conserve the herd (e.g., do not shoot the leaders, hunt on the south side of the road).

III. Caribou in the Vicinity of Roads, Infrastructure and Development Activity

Kyle Joly, NPS and Lincoln Parrett, ADFG, presented information about the effect of roads and other development infrastructure and activity on caribou herds. It is very complicated and difficult to study the effects of infrastructure on a herd and its behaviors, due to the many other factors that also affect the herd. It is best if there is pre-infrastructure baseline data that can be compared with post-infrastructure data, but that is rare to have. Key information shared:

- Studies on Alaska's North Slope show that caribou have shifted away from the roads. Cows with calves were most strongly affected. No causative effect on population size has been proven.
- A new US Geological Survey (USGS) paper using 2015-2017 GPS data show that caribou exhibited avoidance responses to oil and gas development in arctic Alaska during all summer time periods. Caribou reduced their use of habitat within three miles of the road/infrastructure and showed weak or no habituation to industrial development.
- Along the Red Dog road, analysis of movement of collared Western Arctic caribou by ADFG (2016 study) showed that the migration of approximately 30% of the herd was delayed by a month.
- Delays in migration have also been documented in Norway and in Quebec, Canada.
- The NPS is using "machine learning" to predict space and migratory patterns of arctic caribou in the fall season.[1] The study is finding avoidance zones along roads. That is, the number of caribou found >20 km from roads was more than would be expected, if there were no avoidance effect. Similar avoidance effects have been found in Canadian studies. The NPS will continue this analysis and expand it to other seasons.
- ADFG showed animations of the movement of collared caribou from the Central Arctic, Porcupine, 40-Mile, and Nelchina herds in the vicinity of six major roads. There is a lot of data on the movement of collared caribou in the vicinity of these and other roads, but the data has not been analyzed for road effects and there is no pre-road collar data to use for comparison.

Working Group members raised the following questions and comments during discussion:

- Q: Is there a certain time of year the caribou "bounce off" the Red Dog road, as compared to times when they will more readily cross the road? A – The initial study was limited to the fall season. Need to continue this study/analysis for other seasons.
- Traditional ecological knowledge (TEK) says that the Dalton Highway affects caribou movements.
- The Nome-Taylor Road extends about 80 miles. Usually the WAH swings north of the road and stays on the north side, although some cross.

IV. Communication, Education and Outreach

Heather Jameson, ADFG serves as the agency coordinator for the WG's Communications Committee. Heather highlighted current communication and outreach efforts related to the WAH (p. 181 of WG Binder). The committee uses a wide variety of outreach tools to share scientific information, traditional ecological knowledge, and current issues regarding the herd. Outreach includes the annual Caribou Trails newsletter, articles on scientific studies, public presentations, education programs, in-person outreach, and media. Caribou Hunter Success Working Groups in the communities of Buckland, Noorvik, Noatak and

[1] https://www.nps.gov/articles/seasonalmigraton.htm

Kiana promote safe hunting and using traditional values in hunting caribou. The Communication Committee report noted:

- The 2020 issue of Caribou Trails will be the 20th edition!
- It is no longer feasible for students to be involved in collaring at Onion Portage, as the trip can no longer be planned in advance. The agencies and Committee are considering new ways to involve students to deepen their knowledge of the WAH, its biology and management.
- In 2020, the Communications Committee will consider whether the annual WACH Working Group meeting should be live-streamed or otherwise made available for the public to listen (only) to the proceedings.

V. Sharing from Nondalton / Subsistence Hunter of the Mulchatna Herd

A gentleman from Nondalton (name not provided) asked for the opportunity to speak with the Working Group about the rapidly declining Mulchatna caribou herd and the devastating effect on subsistence hunting. He urged the Working Group to look closely at all the information that they have been given about the Western Arctic herd and to work to protect the herd from the adverse impacts of industrialization. He expressed concern that Pebble Mine exploration activity within the range of the Mulchatna herd has led to its decline. Non-local hunters that have hunted the Mulchatna will now look to the arctic herds and the number of non-local hunters in northwest Alaska will increase. He urged the WACH Working Group and the Tribes in the region to pass resolutions calling for the protection of the herd from industrial and other impacts.

VI. Business Meeting

Approval of 2018 WACH WG Meeting Summary (p. 185 in WG Binder) – MOTION by Michael Stickman, second by Tom Gray, to approve the 2018 WACH WG meeting summary. Motion carried unanimously.

Election of WACH WG Chair for 2020-2022 – Nominations for Working Group chair were solicited and two names offered: Vern Cleveland, Sr., and Cyrus Harris. Private ballot voting resulted in 14 votes for Vern and two for Cyrus. Vern Cleveland, Sr. will retain the role of Chair for 2020-2022.

Working Group Membership and Committee Appointments

MOTION by Willie Goodwin, second by Morris Nassuk, to appoint Seat 5 member David Kilbourn to the Executive Committee. Motion carried unanimously.

The WG Planning Committee will sunset, as the update to the *2019 WACH Cooperative Management Plan* is completed.

WACH Management Level, 2019 WACH Cooperative Management Plan – MOTION by Michael Stickman, second by Morris Nassuk to assign the WACH to the "Conservative, Declining" category on Table 1 of the *2019 WACH Cooperative Management Plan*. Motion carried unanimously. In discussion, WG members noted that this is the management category that the Technical Committee recommended on December 10, 2019. The herd has declined to an estimated 244,000 in 2019 from 259,000 in 2017. While this is not a steep decline, it seems best to be cautious with this designation. There has been good calf recruitment, but two years of poor cow survival (although there was discussion that the collar results may be biased toward older animals, so possibly not truly representative of cow survival). Assigning the Conservative, Declining category would not inflict any harvest restrictions, but would convey to the public that it is important to be cautious and mindful of conservation of the herd. There is also concern about the potential effects of climate change on the herd.

2019 WACH Working Group Meeting – MOTION by Tom Gray, seconded by Pollock Simon, Sr., to schedule the next Working Group meeting for December 8-10, 2020 in Anchorage for 2.5 days. Motion carried unanimously.

VII. Adjournment – MOTION by Elmer Seetot, second by Jake Jacobson, to adjourn the meeting at 4:09PM on December 12, 2019. Motion carried unanimously.

Western Arctic Caribou Herd (WACH) Working Group Meeting

December 10, 2019 **1:30pm - 5:00pm**
December 11-12, 2019 **8:30am - 5:00pm**

Sheraton Anchorage Hotel
401 East 6th Avenue, Anchorage, Alaska

Western Arctic Caribou Herd Working Group Mission:

"To work together to ensure the long term conservation of the Western Arctic caribou herd and the ecosystem on which it depends, and to maintain traditional and other uses for the benefit of all people now and in the future."

DAY 1 – Tuesday, December 10

1:30 **Call to Order** (10 min)

Invocation

WACH Working Group Roll Call / Establish Quorum

Introduction of State and Federal Agency Leads

New Working Group Member & Alternate appointments

Approval of Agenda – Preview meeting binder

1:40 **Western Arctic Caribou Herd Summary Information** (100 min)

1:40 Herd population size and trend, calf survival, indicators of herd size and health, 2019 collaring – including Technical Committee recommendation on status of the herd (60 min) – Alex Hansen, Alaska Department of Fish and Game (ADFG)

2:40 Monitoring caribou movements and distribution; timing of calving (20 min) –
Kyle Joly, National Park Service (NPS)

3:00 Working Group observations and discussion (20 min)

3:20 **BREAK** (20 min)

3:40 **Guest Elder** – Mr. Nathan Hadley, Buckland (50 min)

4:30 2019 Wildfire Activity in the Range of the WACH (15 min) – Bureau of Land Management (BLM), Alaska Fire Service

4:45 Caribou Harvest Assessment Program: 2018 – Deering, Noorvik, Shishmaref (15 min) – Beth Mikow, ADFG Division of Subsistence

5:00 ADJOURN DAY 1

DAY 2 – Wednesday, December 11

8:30 Call to Order / Announcements / Review Day 2 Agenda

8:35 Changing Climate in Northwest Alaska – Potential Effects on the Western Arctic Caribou Herd and its Range (85 min)

- Past, Present and Future: the Changing Climate in Northwest Alaska (40 min) - Rick Thoman, Alaska Center for Climate Assessment and Policy, University of Alaska Fairbanks
- Agency and Working Group discussion of potential effects of climate changes on Western Arctic caribou herd – Lincoln Parrett, ADFG; Kyle Joly, NPS; with Working Group members (45 min)

10:00 BREAK (20 min)

10:20 WACH Cooperative Management Plan Review & Revision (60 min) – Susan Georgette, US Fish and Wildlife Service, Alex Hansen, ADFG; Kyle Joly, NPS

- Recommended updates to the 2011 WACH management plan
- Working Group decision on approval of the updated plan

11:20 Northwest Arctic Conservation Law Enforcement Working Group (25 min) – Joseph Dallemolle, NPS; Damon Schaeffer, NANA; Scott Bjork, Alaska Wildlife Troopers; Steven Strader, USFWS

11:45 LUNCH (90 min)

1:15 Wildlife Harvest Regulations (135 min)

- Implementation of registration permit RC800 and RC907 (20 min) – Alex Hansen, ADFG
- Working Group discussion and action on regulatory proposals to be addressed by the Board of Game and Federal Subsistence Board in 2020 (115 min) –
  Phillip Perry, ADFG; Chris McKee, USFWS OSM

3:30 BREAK (20 min)

3:50 Caribou Roundtable (70 min) – Working Group members meet in small groups by region, to discuss their observations in 2019 regarding caribou, the harvest, weather, etc.

***NOTE**: If additional time is needed for Working Group discussion and action on the WACH Cooperative Management Plan or regulatory proposals, this session may be shortened or skipped.*

5:00 ADJOURN DAY 2

Day 3 – Thursday, December 12

8:30 Call to Order / Announcements / Review Day 3 Agenda

8:35 Resource Development in the Herd's Range

8:35 Resource Development Committee Report (30 min) – Ambler Road and other current/pending projects in the herd's range – Tim Fullman, Chair, WG Resource Development Committee

9:05 National Petroleum Reserve in Alaska (NPR-A) Integrated Activity Plan Draft Environmental Impact Statement (DEIS) (65 min)

- NPR-A Integrated Activity Plan (15 min) – Laurie Thorpe and Debora Nigro, BLM
- Review draft comment letter on NPR-A Integrated Activity Plan DEIS / Working Group action on final comment letter required at this meeting (50 min) – Tim Fullman

10:10 BREAK (20 min)

10:30 Resource Development in the Herd's Range (continued)

10:30 Trilogy Metal's Activities in the Ambler Mining District (40 min) – Cal Craig, Director of Environment & Permitting, Trilogy Metals, Inc.

11:10 Red Dog Mine and Road (35 min) **–** Damon Schaeffer, Senior Director of Lands & Facilities, NANA Regional Corporation and Fritz Westlake, Economic Development Coordinator, Teck Resources Limited

11:45 LUNCH (90 min)

1:15 Caribou in the Vicinity of Roads, Infrastructure and Development Activity
(45 min) – Lincoln Parrett, ADFG; Kyle Joly, NPS

2:00 Communication, Education and Outreach (30 min) – Report from communication committee and hunter success working groups – Heather Jameson, ADFG; Hannah Atkinson, NPS

2:30 WORKING GROUP PHOTO & BREAK (30 min)

3:00 Business Meeting – Actions - Assignments (105 min)

- Approval of 2018 WACH Working Group Meeting Summary
- Election of Chair for 2020-2022
- Committee Membership – Revise / reconfirm
- Business / Action Items & Confirm Assignments
- Next Meeting – Date / Location

4:45 Closing Comments – Working Group members (15 min)

5:00 ADJOURN

2019 WACH WG Technical Committee Report

The Technical Committee (TC) met on December 10, 2019 to discuss scientific and technical issues related to conservation and management of the Western Arctic Caribou Herd (WACH). The following are meeting highlights and TC recommendations for consideration by the WACH Working Group at its December 10-12 meeting. The 2019 TC agenda can be found on line at www.westernarcticcaribou.net

1. Western Arctic Caribou Herd (WACH) Population Status and Recommended Management Status

The 2011 WACH Cooperative Management Plan (p. 17) asks the TC to "*evaluate the status of the herd and develop recommendations on herd management level for the Working Group", based on Table 1 in the plan.* On December 10, the TC discussed the following regarding herd status:

- The herd photo census in July 2019 tallied 224,753 caribou, yielding a WACH population estimate of 244,000. There was no census conducted in 2018. The estimate from the 2017 census was 259,000. The estimate from the 2016 census was 201,000.
- Adult cow survival was 78% in 2018-2019, up from 63% in 2017-2018 but still below average.
- There are other good demographic indicators for the herd: calf recruitment matching the 25 year average (18:100 adults) and high calf production (81%). ADFG also observed good calf weights and good adult body condition.
- The most recent herd composition survey in fall 2017 was also very good, with a 54 bull:100 cows (high) and 57 calves:100 cows (high). (Composition survey was not done in fall 2018 or 2019.)

The TC recommends that the WACH be considered to be within the "Conservative" and "Declining" management category, with regard to Table 1 of the WACH Cooperative Management Plan (p. 17 of the 2011 plan). The TC discussed whether the herd should be considered to be in the "Conservative, *Stable*" category, because the population estimate is not far below the 2018 estimate and other metrics are relatively positive. However, the TC ultimately agreed that the Conservative, Declining designation was more appropriate at this time. While there are many positive indicators for the herd (e.g., high calf recruitment, high calf production, high bull:cow ratio), the TC found it better to err on the side of caution, given the lower population estimate and a higher cow mortality data. The TC felt that the word "Declining" would more accurately convey the current status of the herd to the public, than would the word "Stable". There is no difference in the harvest or management recommendations between the Conservative, Stable and Conservative, Declining categories (see Appendix 2 in the 2011 plan).

2. Research Needs related to WACH

The TC determined that the WACH research topics listed below are a high priority:

- Continue to use satellite collars (or other improved technology) to collect data about the herd's movements
- Subsistence harvest information and ethnographic research
- Snow/weather/icing/climate data and the effect of changing environmental conditions on the herd
- Effect of predation on the herd
- Cumulative effects of roads and other infrastructure development on the herd and its habitat

3. Additional Presentations

The TC also heard brief presentations about the following research studies:

- Cultural Significance of Caribou to the People of Noatak – contact Hannah Atkinson, National Park Service (NPS)
- Using seasonal landscape models to predict space and migratory patterns of an arctic ungulate – contact Kyle Joly, NPS
- Longest terrestrial migrations and movements around the world – contact Kyle Joly, NPS
- For everything there is a season: analyzing periodic mortality patterns with the cyclomort R package – contact Kyle Joly, NPS

4. WACH Research and Management Projects and Bibliography

At the request of the Working Group, the TC maintains a list of research and management projects related to the WACH and a bibliography of publications regarding the herd. These lists will be updated in January 2020 and posted to the WACH WG website.

In addition, the TC is planning to develop a communication/outreach document (or series of documents, by key topics) that summarize knowledge and data about the WACH, and presents it in a format (e.g., photos, graphics) and language that will be attractive to and readily understood by the public and students.

Motions Acted Upon at WACH Working Group Meeting

December 10-12, 2019

1. Agenda Approval: MOTION by Charlie Lean, second by Bill Bernhardt to approve meeting agenda. Motion carried unanimously.
2. WG Member Appointment: MOTION by Willie Goodwin, second by Morris Nassuk, to accept nomination of Working Group alternate member: Seat 3 Alternate Mary Hugo. Motion carried unanimously.
3. WG Member Appointment: MOTION by Morris Nassuk, second by Ron Moto, Sr., to accept nomination of Working Group members: Seat 5 Primary David Kilbourn and Seat 5 Alternate John Siegfried. Motion carried unanimously.
4. WG Member Appointment: MOTION by Ron Moto, Sr. to accept nomination of Working Group member: Seat 18 Alternate Brad Saalsaa. Motion carried unanimously.
5. 2019 WACH Cooperative Management Plan Approval: MOTION by Tim Fullman, second by Matt Moore, to approve the changes to the WACH Cooperative Management Plan and adopt the updated 2019 management plan. MOTION by Tom Gray, second by Pollock Simon, to amend the motion to list out the "resource management agencies" referenced in Section 5. Reindeer, Strategy A (p. 80 of the WG Binder). Motion to amend was approved unanimously. Main motion, as amended, was approved unanimously.
6. State Regulatory Proposals 19 and 20: MOTION by Michael Stickman, seconded by Matt Moore, to support Proposals 19 and 20. The motion carried 17:1.
7. State Regulatory Proposal 21: MOTION by Bill Bernhardt, seconded by Morris Nassuk, to support Proposal 21. The motion failed 0:18.
8. State Regulatory Proposal 22: MOTION by Michael Stickman, seconded by Bill Bernhardt, to support Proposal 22. The motion failed 9:9.
9. State Regulatory Proposal 23: MOTION by Michael Stickman, seconded by Bill Bernhardt, to support Proposal 23. The motion carried 11:7.
10. State Regulatory Proposals 24 and 25: MOTION by Charlie Lean, seconded by Wanda Kippi, to support Proposal 24 and Proposal 25. The motion carried 15:1, with 2 abstentions.
11. State Regulatory Proposal 28:
    - MOTION by Eli Nukapigak, seconded by Morris Nassuk, to support Proposal 28. The motion carried 12:5.
    - MOTION FOR RECONSIDERATION on Proposal 28 by John Siegfried, seconded by Pollock Simon, Sr. The motion for reconsideration carried 14:4.
    - MOTION by Bill Bernhardt, seconded by Tom Gray, to support Proposal 28. The motion failed 9:9.
12. State Regulatory Proposal 32: MOTION by Tom Gray, seconded by Elmer Seetot, to support Proposal 32. The motion failed 1:17.
13. Federal Regulatory Proposals: MOTION by Tom Gray, seconded by Michael Stickman, to support all four federal proposals. Motion carried unanimously.
14. National Petroleum Reserve – Alaska Integrated Activity Plan:

- MOTION by Michael Stickman, seconded by Matt Moore, to submit a request for extension to the public comment period for the NPR-A Integrated Activity Plan DEIS. Motion carried unanimously.
- MOTION by Tom Gray, seconded by Morris Nassuk, to approve the draft comment letter regarding the NPR-A Integrated Activity Plan DEIS. Motion carried unanimously.

15. Noatak – Red Dog Road Planning and Environmental Linkage Study: MOTION by Charlie Lean, second by Eli Nukapigak to send the comment letter to DOT&PF. Motion carried unanimously.

16. Approval of 2018 WACH WG Meeting Summary (p. 185 in WG Binder) – MOTION by Michael Stickman, second by Tom Gray, to approve the 2018 WACH WG meeting summary. Motion carried unanimously.

17. Election of WACH WG Chair for 2020-2022 – Nominations for Working Group chair were solicited and two names offered: Vern Cleveland, Sr., and Cyrus Harris. Private ballot voting resulted in 14 votes for Vern and two for Cyrus. Vern Cleveland, Sr. will retain the role of Chair for 2020-2022.

18. Executive Committee Appointment – MOTION by Willie Goodwin, second by Morris Nassuk, to appoint Seat 5 member David Kilbourn to the Executive Committee. Motion carried unanimously.

19. WACH Management Level, 2019 WACH Cooperative Management Plan – MOTION by Michael Stickman, second by Morris Nassuk to assign the WACH to the "Conservative, Declining" category on Table 1 of the *2019 WACH Cooperative Management Plan*. Motion carried unanimously.

20. 2019 WACH Working Group Meeting – MOTION by Tom Gray, seconded by Pollock Simon, Sr., to schedule the next Working Group meeting for December 8-10, 2020 in Anchorage for 2.5 days. Motion carried unanimously.

21. Adjournment – MOTION by Elmer Seetot, second by Jake Jacobson, to adjourn the meeting at 4:09PM on December 12, 2019. Motion carried unanimously.

Assignments Made at WACH Working Group Meeting

December 10-12, 2019

1. Alternate WG Member, Seat 20 – Regarding the Alternate for Seat 20, the Working Group will request, through facilitator Jan Caulfield, that the communities of Atqasuk and Wainwright work together to identify one person to serve as an Alternate for Primary Member Wanda Kippi.
2. 2019 WACH Cooperative Management Plan – The resource agencies that have been assisting the WG planning subcommittee will finalize the *2019 WACH Cooperative Management Plan* and make it available for distribution and use.
3. Comments on regulatory proposals – Facilitator Jan Caulfield will work with Chair Vern Cleveland to submit the Working Group's comments on regulatory proposals to the Alaska Board of Game and the Federal Subsistence Board.
4. NPR-A Integrated Activity Plan, Comment Period on DEIS – WG Resource Development Chair Tim Fullman, in coordination with WG Chair Vern Cleveland, Sr., will submit a letter to BLM requesting that the comment period for the NPR-A IAP DEIS be extended.
5. NPR-A Integrated Activity Plan, Comments on DEIS – WG Resource Development Chair Tim Fullman, in coordination with WG Chair Vern Cleveland, Sr., will submit the WACH WG's comment letter to BLM regarding the NPR-A IAP DEIS.
6. Noatak – Red Dog Road – WG Resource Development Chair Tim Fullman, in coordination with WG Chair Vern Cleveland, Sr., will submit the WACH WG's comment letter to DOT&PF regarding the potential road connecting the Red Dog Road to Noatak.

2019 WACH Working Group Meeting – Public & Agency Attendance

First Name	Last Name	Organization
Mark	Burch	Alaska Department of Fish and Game (ADF&G), Division of Wildlife Conservation
Carmen	Daggett	ADF& G, Division of Wildlife Conservation
Tony	Gorn	ADF& G, Division of Wildlife Conservation
Heather	Jameson	ADF& G, Division of Wildlife Conservation
Lincoln	Parrett	ADF& G, Division of Wildlife Conservation
Maria	Gladziszewski	ADF& G, Division of Wildlife Conservation
Sara	Germain	ADF& G, Division of Wildlife Conservation
Alex	Hansen	ADF& G, Division of Wildlife Conservation
Phillip	Perry	ADF& G, Division of Wildlife Conservation
Todd	Rinaldi	ADF& G, Division of Wildlife Conservation
Caroline	Brown	ADF&G, Division of Subsistence
Beth	Mikow	ADF&G, Division of Subsistence
Jeff	San Juan	Alaska Industrial Development & Export Authority
Heather	Harker	Alaska Wilderness Charters and Guides
Scott	Bjork	Alaska Wildlife Troopers
Steve	Contine	Alaska Wildlife Troopers
Yereth	Rosen	Arctic Today
Patricia	Petrivelli	Bureau of Indian Affairs
Bonnie	Million	Bureau of Land Management (BLM)
Debora	Nigro	BLM
Ben	Seifert	BLM
Bruce	Seppi	BLM
Laurie	Thorpe	BLM
Douglas	Ballou	BLM
Chris	Crews	Bureau of Ocean and Energy Management
John	Gaedeke	Brooks Range Council
Stine	Pederson	Colorado State University
Leslie	Sampson	Maniilaq Association
Damon	Schaeffer	NANA Regional Corporation
Alex	Johnson	National Parks Conservation Association
Frantz	Brower	North Slope Borough
Hannah	Atkinson	National Park Service (NPS)
Nicole	Braem	NPS
Matt	Cameron	NPS
Joe	Dallemolle	NPS
Raime	Fronstin	NPS
Kyle	Joly	NPS
Maija	Lukin	NPS
Jeff	Rasic	NPS

First Name	**Last Name**	**Organization**
Greg	Dudgeon	NPS
Suzanne	Little	Pew Trusts
Rachel	James	Salmon State
Kelly	Greene-Gudmundson	Teck American
Michael	Riesen	Teck American
Amanda	Sage	Teck American
Fritz	Westlake	Teck American
Lois	Epstein	The Wilderness Society
David	Krause	The Wilderness Society
Cal	Craig	Trilogy Metals Inc
Bridget	Psarianos	Trustees for Alaska
Rick	Thoman	University of Alaska Fairbanks
Susan	Georgette	US Fish and Wildlife Service (USFWS)
Steven	Strader	USFWS
Derek	Thompson	USFWS
Lisa	Maas	USFWS, Office of Subsistence Management
Judy	Caminer	public

Western Arctic Caribou Herd Working Group
Caribou Roundtable Questionnaire Responses – 2019

At the December 2019 Western Arctic Caribou Herd Working Group meeting, Working Group members and some members of the public participated in small group discussions of the Caribou Roundtable questionnaires with observations for calendar year 2019. Their responses are provided below. This information will also be entered into the database of responses from 2011-2019 that is posted on the group's website, https://westernarcticcaribou.net/

Kotzebue Sound / Game Management Unit 23

Working Group members: Vern Cleveland Sr. (Noorvik), Ron Moto, Sr. (Deering), Willie Goodwin (Kotzebue), Bill Bernhardt (Kobuk), Brad Saalsaa and James Jacobson (Unit 23 guides)

Weather/Physical Environment

1. **When did freeze-up occur? How does this compare with past years? How about the first snowfall? How about break-up?**
   - Willie - First snowfall [2019] was a fake. Then it didn't snow for a long time. Was later and not steady.
   - Bill - Got lots of snow [upper Kobuk].
   - Vern - No snow at all [Noorvik].
   - Ron - Got lots of snow [Deering], then it turned to rain.
   - Brad - Early September, mountains would get snow, and then it would melt. September 3, it started raining, lots of flooding. That stops caribou cold from migrating. Kelly River, Kugururuk River had flooding. Third worst flooding in 50 years.
   - Ron – Two weeks ago [early December], no planes for five days due to wind, snow, fog. After all the snow came in, we started getting rain. Melted all that snow, gone. So we don't get our snow until March-April.

   When did break-up occur [in 2019] and how did that compare with past years?

   - Bill – Lots of snow but warm winter. River went out slowly, water stayed high for a long time but spring breakup wasn't much.
   - Ron – Our spring breakup was different. We didn't have any floods. The earlier years' floods washed out road to airport.
   - Vern – Breakup is earlier and earlier every year. Try to teach our young folks how to go out at breakup. Changing drastically. We've lost 5-6 people last year. Compared to last year, we have less snow. We have no snow. Storm warning last week but storm never came.

2. **What did you notice about snow depth and icing?**
   - No specific responses to this question

3. **What were winds like in winter? In summer?**
   - Ron – Lots of east and south wind in summer and fall.
   - Willie – Lots of east wind in summer.
   - Bill – We had a windy fall. Low after low, windy fall.
   - Ron – Currently north and northeast winds. Where I'm from [Deering], the north winds are cold.

4. **Has there been any unusual weather this year (2018)? If so, what kind? (For example, strong winds, storms, much/little rain or snow, etc.)**

- Bill – Like I said, rain. River came up then tried to re-freeze. Almost went trick or treating to Shungnak by boat, but couldn't quite make it.
- Vern – Really bad, lot of rain.
- Brad – When it starts blowing out of south, raining, caribou turn around and head north. They're coming, coming, coming, then you get a low-pressure system and they turn around and head north. Position hunters, set up camp, then low comes and caribou go north.

5. **Has there been anything else noteworthy this year regarding the air, rivers and lakes, or land? (For example, occurrences of fire that may have impacted caribou range, good/poor vegetation growth, late/early freeze, erosion, etc.)**
   - Bill – Every time you get high water in fall, you get lot of erosion. In spring, high water is cold and ground is frozen, so erosion doesn't take place easily.
   - Vern – Rode upriver (upper Kobuk) with Billy Bernhardt last summer, that river has really changed. Lots of sandbars where there weren't sandbars, bends cut off, river is changing, different bars, river is getting straighter.

Caribou

6. **When were caribou present in your area? When did they first arrive? When were they last seen? How does this compare with past years?**
   - Ron – They arrived in September.
   - Willie – Middle of August up the Noatak River they showed up. Getting earlier than other years.
   - Bill – Didn't get any caribou up there (upper Kobuk). No fall migration. They started filtering through behind Bornite more recently.
   - Vern – A few crossed in August, then they were not seen again until Oct 13. Then they really crossed Kobuk River. People spent thousands on gas looking for those darned caribou. Went to Onion Portage and back and nothing. Everything came to a standstill. Until Oct 11. Then someone said they're downriver below Noorvik. My freezer was empty. Sure enough, they were on the tundra behind Camp Sivu, going north. I know if there's ice along the edge of the river they won't cross. They'll keep following the river until they can see clear all the way across. Sure enough, they start crossing below Kiana. The day before freeze-up they crossed. I told them the river was going to freeze. When you see ice crystals, it's going to freeze. Caribou hung out and they're still migrating.

7. **How many caribou were in your area? What was the composition of the herd like (calves, males/females)? How does this compare with past years?**
   - Ron – Very few came at a time. 1, 2, or 3 at a time.
   - Brad – Really good migration overall compared to a lot of years. Steady. When I started guiding at end of August, caribou were around in early August in the flats between upper Kivalina and Wulik. Pulled last camp on 28 Sept, 8,000-10,000 up the Kivalina. Caribou were coming down from Noatak, but caribou stayed up in the mountains, they didn't head west towards Noatak. Just stayed in the mountains. When I flew on a direct line to Kugururuk, caribou all over on the right wing.

8. **If you harvested caribou, how did the meat and skins compare with past years? What did you notice about fat? Parasites?**
   - Ron – Quite a few parasites. More than other years. In the ribs, like bugs, couldn't deal with it because of bugs. Smelled bad.
   - Bill – Bot flies in the throat. In the fall time you don't see bots. You see them in the springtime.

- Vern – Caribou are very healthy. Very healthy caribou. The ones that came in this fall. I noticed I opened one up and I couldn't stand the smell. I just left it. It was so bad. Their elbows had big pustules and they were sick like. You can't tell that when they're in the water. You can't see their legs in the water.

9. Were there any other notable changes regarding caribou compared with past years?

- Brad - Lots of younger bulls. Didn't see lots of big antlered bulls.
- Vern – Got some that were as big as a moose, ones later in October. But they had no fat, none, zip. They must have been moving for a while. Nonstop. Because when you butcher it, on the radio people say don't get any more bulls, they're skinny. Started getting younger bulls, they had more fat.

Other Animals

10. What did you notice about bears and wolves in your area?

- Bill – Lots of bears and wolves.
- Ron – Lots of people stopped hunting bears in our area. Wolves moved into our area and started digging up fox dens. Three packs of wolves in our area and they start having pups every year.
- Vern – Bear tracks behind Kobuk.
- Jake – There are four kinds of berries. Bears prefer soapberries. I also saw an abundance of new type of lichen. No berries this year at all. Rootless transient lichens are in abundance now.
- Ron – Wolves, waiting down there with their pups. Lots of bears haven't hibernated. Not cold, no snow. For five years, hunters have taken record-sized bears.
- Brad – Bears getting bigger.
- Bill - Really smart wolves now. They come close to the village. They're smart ones. Not like long ago.
- Vern – Way back in … I went with Walter Douglas and Larry Custer, we'd get the back hairs of wolves.
- Ron – Wolves are getting bigger. You can't lift them up any more.

10-A. How did these predators affect caribou in your area?

- Brad – I have six assistant guides out there. Each of them saw 7 sows with 4 cubs each. Every one of my guides saw a bear kill a caribou this year. One of the biggest thing with our adult caribou decline is the bear predation. Amazing how many bears are out there killing caribou.

11. Have there been any notable changes regarding other animals in your area, compared with past years? (For example, new animals arriving in your area, or animals that you do not see much of any more, or changes in behavior or body condition).

- Vern and Ron – Coyotes. Coyotes are starting to come into our area.
- Vern –Polar bears. I think we tracked one. Maybe March, it couldn't be a bear, it had to be a polar bear. We tracked one between Noorvik and Selawik.

Other Comments

12. How do people in the communities use caribou, other than for meat (e.g. clothing)?

- Ron –People use hooves, horns, lower jaws, start making handicrafts out of them. Eskimo sleds, antlers for handles, Eskimo dolls. It's a tough world living out there now, especially the cost of fuel. People do what they can to make money. Price of fuel is going up.
- Bill – Use skin/fur for weather stripping for my door to keep out the cold. That's true.

- Vern – Use skins for door stripping to keep out cold. Sinew too is used.

13. What types of recent exploration and development or other activity have you noticed in the region that may be impacting caribou?

- Vern – Red Dog mine. Guys said they could hear loader at Red Dog while they were at Cutler. Noatak complained about not getting caribou, but now they got caribou this year.
- Ron – Lots of people out mining for gold right now in our back yard in Deering. You should see what they're doing to our river. They've pushed the river to the side.
- Bill – We got that mine going behind Kobuk but we have no caribou anyways so what does it matter.

14. What have you noticed regarding any conflicts between local and non-local hunting in the area of your community? Do you have suggestions for how to reduce conflicts?

- Vern – We got nonresident hunters year-round. NANA pulls out trespass officers then the nonresident hunters come. That's a big conflict. You can tell if they're not from our area. Lots of complaints from Kotzebue about outside hunters.
- Willie – We have Cabelas convention every fall.
- Brad – Two years in a row, someone goes around the airport, takes photos of airplanes, posts them on internet, tells people to shoot them down. I take that personally. We need education. I'm not out there harassing caribou from 2000'. There's no merit to the complaints, rumors get spread and spread and spread.
- Vern – Somebody actually shot at a plane in the region years ago.
- Brad – So restrictive now, what more can you do. Starts making conflicts among the guides, getting congested where no one can hunt without bothering others. So many corridors, closures, etc.
- Bill – You have all the problems down near Kotzebue. On the upper Kobuk, we like seeing someone new around.
- Brad – We [guide and] hunt where no one in the villages can reach. At least 10 miles from anywhere where a local person can get to. I never see anyone else out there except my own hunters. Zero. I don't bother subsistence hunters at all. One of the problems is instant media, Facebook.

15. Is there anything else that you have seen this year that you would like to mention?

- Nothing additional

Koyukuk & Middle Yukon Region

Working Group member: Pollock Simon, Sr. (Allakaket), Michael Stickman (Nulato)

Weather/Physical Environment

1. **When did freeze-up occur? How does this compare with past years? How about the first snowfall? How about break-up?**
   - Michael - Rain occurs in winter every year now. Little amount of snow must have an impact on vegetation and other things because not as much run-off or ground infiltration. In Nulato, one of our traditional hunting areas for moose (Kaiyuh Slough), we can't get to in last 15 years because of low water levels.
   - Pollock – Much warmer now. Getting wetter and bad for fish drying.
   - Michael - Much warmer now than when we were kids. We definitely needed snow shoes then, might not need them now. Used to be roaring ice break-up, but now much quieter because ice rots in place – not as thick. In 1993, Hughes and Allakaket, had a fall/September flood – whole store in Allakaket floated eight miles downriver. When construction crews came in, hired local people all winter, but tough job because had to work even when 60 below.

2. **What did you notice about snow depth and icing?**
   - No specific response to this question

3. **What were winds like in winter? In summer?**
   - Pollock - Allakaket is not very windy. Snow just keeps piling up.
   - Michael - In Nulato winds are now so strong, knocking over trees – never saw that as a kid.

4. **Has there been any unusual weather this year? If so, what kind? (For example, strong winds, storms, much/little rain or snow, etc.)**
   - Michael - In 1993 had 80 below [zero] for 10 days straight. Colder was better because people could travel safely, but now not as safe to travel on the Yukon River. Used to go to Fairbanks all the time by snowmobile, but now have to wait until after Iron Dog race because afraid [it's not safe.] Sometimes no snow on entire section of river because blown off by wind – just glare ice. Wind will blow sand on snow and makes it melt faster. And makes harder to travel because riding on sand and glare ice (no lubrication for the slides, so look for open water to lubricate machines).
   - Pollock – Last few years in Allakaket, weather has been mild and warmer; cold snaps are shorter.

5. **Has there been anything else noteworthy this year regarding the air, rivers and lakes, or land? (For example, occurrences of fire that may have impacted caribou range, good/poor vegetation growth, late/early freeze, erosion, etc.)**
   - No specific response to this question

Caribou

6. **When were caribou present in your area? When did they first arrive? When were they last seen? How does this compare with past years?**
   - Pollock – [Caribou were last in Allakaket in] 1974; impacted by haul road [Dalton Highway], which created a lot more access for people to harvest caribou. Caribou loop around community. Caribou used to winter in Ray Mountains – good caribou habitat. [Now] people travel about 40 miles to harvest caribou; travel to Bettles to hunt; also travel North to Gates of the Arctic National Park and Preserve (GAAR). [Hunters] don't shoot the lead caribou because then they

will detour/change direction. There are problems with sport (non-local) hunters shooting lead caribou and diverting the herd. If follow river from Allakaket downriver to Hughes – couple of young guys that go halfway to Allakaket when caribou are around, get 10-20 caribou and bring back to Hughes; 80 miles for nomadic people is "nothing".

- Michael – Bunch of caribou went through Nulato in 1993 for the last time. Before 1993, it was at least 50 or 60 years since caribou were in Nulato. Woke up one day in 1993 and were surrounded by caribou; used to have caribou in Nulato area because before European contact, had clans and Michael is part of the caribou clan. 1993 was a wake-up call because always knew we were the caribou clan. In spring-time if really want to get caribou, can get because ground is hard/crusty and easy to travel – travel from Nulato to Point Hope and Kotzebue to hunt; right now go to Kaltag to Unalakeet, about 80 miles one way from Nulato to access caribou.

7. How many caribou were in your area? What was the composition of the herd like (calves, males/females)? How does this compare with past years?

- Little herd near Galena – called Galena mountain herd.
- And traveling between Nulato and Huslia – caribou are on the trail (90 miles by trail); majority of trail is on land, so easy to travel between these villages; these trails are old mail trails from when using dog teams and walking; because of climate change, can't travel on river as much, so using these old trails more, called "portage".
- Can get from to Allakaket from Hughes or from Tanana/Fairbanks if know where old mail trails are. Started marking these trails better. Traveled from Nulato 585 miles to Nome on trails.

8. If you harvested caribou, how did the meat and skins compare with past years? What did you notice about fat? Parasites?

- Michael – Caribou on Unalakleet trail were in really good shape. And got some caribou from friend in Shungnak that were in really good shape. Even though no caribou in Nulato, still the caribou clan, so sing the caribou song every year for the caribou to come back and then next village over also sings the same caribou song. Mostly go over to Unalakleet to harvest caribou.
- Pollock – Depends on the weather and snow depth because if deep snow have to dig more to eat. Last April [2019], got a whole box of caribou meat from friends (in Kobuk/Shungnak?). Caribou travel down valleys from GAAR; caribou cross by Hughes.

9. Were there any other notable changes regarding caribou compared with past years?

- Depends – want to go before the rain comes because they are nice and fat, but once rain comes, they start getting skinnier.

<u>Other Animals</u>

10. What did you notice about bears and wolves in your area?

- Pollock – In Allakaket – had state predator control for wolves; grizzly bear population increasing – not too many black bears.
- Michael – Same in Nulato – lots of grizzles, but not as many black bears; grizzly bears will eat black bears and get them in their dens; know they're super healthy when see a sow with 3 cubs; know not as healthy when only see a sow with one cub. Right now, see most grizzlies with 3 cubs.
- Michael – Do predator control on our own. Have super-hunters in Nulato area – a few guys in 4 days will get 90 wolves and kill most of wolves around Nulato. Moose population seems to be benefiting from this predator control, population is growing around Nulato.

10-A How did these predators affect caribou in your area?

- No specific response to this question

11. Have there been any notable changes regarding other animals in your area, compared with past years? (For example, new animals arriving in your area, or animals that you do not see much of any more, or changes in behavior or body condition).

- No specific response to this question

Other Comments

12. How do people in the communities use caribou, other than for meat (e.g. clothing)?

- No specific response to this question

13. What types of recent exploration and development or other activity have you noticed in the region that may be impacting caribou?

- No specific response to this question

14. What have you noticed regarding any conflicts between local and non-local hunting in the area of your community? Do you have suggestions for how to reduce conflicts?

- No specific response to this question

15. Is there anything else that you have seen this year that you would like to mention?

- No specific response to this question

North Slope Region

Working Group members: Wanda Kippi (Atqasuk), Eli Nukapigak (Nuiqsut)
Comments also noted from member of the public from Utqiagvik (name unknown)

Weather/Physical Environment

1. **When did freeze-up occur? How does this compare with past years? How about the first snowfall? How about break-up?**
   - Utqiagvik – Depends on ice or ocean. Still boating in November. Whaling and ice fishing. Ice on lakes 8-10 inches thick by November 5.
   - Later freeze up, after it melts can warm up again.
   - So much warmer – remember Halloween with 20 below. Not anymore.
   - Break-up was earlier. Began boating earlier, by June 2019.
   - Colville River broke up a week or two early.

2. **What did you notice about snow depth and icing?**
   - Right now it blows, but have lots of snow now. Had rain after first snowfall this winter. Rain has given caribou a hard time.
   - Wanda - The first snow was thin, not very much. Only now getting more snow. Snow was patchy in early this winter.
   - Eli - Lots of powder snow, gets blown by wind. Get a foot but then a day later gets moved by wind.

3. **What were winds like in winter? In summer?**
   - Eli - There's more wind now. More westerly wind compared to other winds, which were north/northeast. In summer, wind was also mostly west wind, less east wind. Weather was circling over the area.
   - Wanda - Felt colder and windier this summer. "Weather felt different. Everything felt different – the winds and the rains."

4. **Has there been any unusual weather this year? If so, what kind? (For example, strong winds, storms, much/little rain or snow, etc.)**
   - Wanda – Creeks were high; made traveling difficult.

5. **Has there been anything else noteworthy this year regarding the air, rivers and lakes, or land? (For example, occurrences of fire that may have impacted caribou range, good/poor vegetation growth, late/early freeze, erosion, etc.)**
   - Utqiagvik - Summer was hot. Used to snow sometimes in July, near freezing. This summer around 40. Hot. This year had the record of not snowing in July.
   - Eli - Vegetation upriver is growing much faster. Plants come out earlier and die out early, but some stay green another month or so. Scrub is growing taller.
   - Wanda – Grass and vegetation was growing taller as well. Growing faster and greener. This year (2019), grew as fast, but didn't seem as much vegetation growth as last year (2018). But since it was so warm, in late September a salmon berry bloomed (this was unusually late).
   - Eli - The bluffs are eroding faster and changing the river. Ride tide is starting to show up in mouth of river in fall. Zooplankton showing up and feeding from the fish that are caught from nets.
   - Wanda - Less blueberries this summer.

Caribou

6. **When were caribou present in your area? When did they first arrive? When were they last seen? How does this compare with past years?**
   - Both – First showed up in April, May. They're still there in Barrow (the ones that came from the west are still there). Teshekpuk Herd (TSH) is still there too. Wainwright did pretty well, caribou farther upriver.

7. **How many caribou were in your area? What was the composition of the herd like (calves, males/females)? How does this compare with past years?**
   - Wanda – A lot within area, especially in summer. Didn't have to go far to get caribou. Creek was high, so no one could travel much, and lots of caribou. Grandson was walking with a caribou. During summer felt like there was more caribou than normal. When creeks and rivers are low, they go farther out/away.
   - Eli – About 2,000 of TSH herd upriver, didn't leave area. Western Arctic Herd already away.
   - Both – Seemed like more cows and calves, and young bulls.

8. **If you harvested caribou, how did the meat and skins compare with past years? What did you notice about fat? Parasites?**
   - Eli – Caribou looked very healthy.
   - Wanda – All looked healthy; calves too.
   - Wanda – Heard that in Wainwright, caribou were fat with few parasites. Heard about one this year and one last year with the worm.
   - Eli – One person harvested about 26 caribou near Nuiqsut, about half were sick. Other reports of them being sick upriver – had parasites, clear puss in joints. Some had clear green (metallic tinged) fluid.
   - Utqiagvik - Some had swollen lymph nodes. Some had small black (like rice grain) throughout meat.
   - Utqiagvik - One caribou harvested had big scar on back leg, maybe an old attack of a bear/wolverine. Another had fresh wound.

9. **Were there any other notable changes regarding caribou compared with past years?**
   - This fall, seeing them doing different migration. Caribou not going to Anaktuvuk Pass.
   - Wanda – Fairly similar to past years, but more caribou to south of town (Atqasuk). Due to more predators.

Other Animals

10. **What did you notice about bears and wolves in your area?**
    - Wanda – Bears broke into camps this year – twice in a week at one place (2 different bears). Bit up the pots and pans.
    - Eli – Younger people getting lots of brown bears in summer. Teaching younger people to take more bears. Getting them in the spring when they first come out.

10-A. How did these predators affect caribou in your area?
   - Wanda – They made the caribou move to different areas near town (Atqasuk).

11. **Have there been any notable changes regarding other animals in your area, compared with past years? (For example, new animals arriving in your area, or animals that you do not see much of any more, or changes in behavior or body condition).**

- Eli – Too many muskox; they are diverting caribou. Muskox come right to the village and change the caribou migration. Wants something done about them. Splits up the caribou groups when the muskox come around.
- Wanda - We also have one muskox that comes to town during hunting season, and scares away the caribou. Saw a pike in the area for the first time.
- Eil – Broad white fish had mold on their slime layer in the spring when they go back up river, but didn't have it when they were coming down.

Other Comments

12. How do people in the communities use caribou, other than for meat (e.g. clothing)?
- No specific response to this question.

13. What types of recent exploration and development or other activity have you noticed in the region that may be impacting caribou?
- Eli - Development is heavy in area now. National Petroleum Reserve – Alaska (NPR-A) is opening up and more lease sales are going to happen. Activity from air, lots of helicopters and planes. Nuiqsut is the most heavily studied area. Nuiqsut is a subsistence community that depends on migratory animals. This development changed everything.
- Wanda - We live off the land, development won't bring us food. A group went to the area near my camping grounds to look for gravel and thankfully didn't mine gravel right there. I went to a meeting and stopped it. I'm against Alaska Strategic Transportation and Resources (ASTAR) roads – they would change everything. They would divert animals and fish, with bridges and stuff.

14. What have you noticed regarding any conflicts between local and non-local hunting in the area of your community? Do you have suggestions for how to reduce conflicts?
- Eli - We need to regulate sport hunters and transporters. They are diverting caribou left and right. They put their camps in the path of migrating caribou and divert them. Had 30 sport hunters in an area and it was too much. They leave too much meat in the field and waste it. Most of meat gets left in the field and doesn't get reported.
- Wanda - Saw a flier for sport hunting in Barrow (Utqiagvik) for first time. Haven't had any problems in Atqasuk area – no conflicts. Maybe don't have gas/access for guides.

15. Is there anything else that you have seen this year that you would like to mention?
- When you hear whistling in the wind, that's wolves.

Seward Peninsula Region

Working Group members: Charlie Lean (Nome), Tom Gray (Nome), Morris Nassuk (Koyuk), Charles Saccheus (Elim), Elmer Seetot, Jr. (Brevig Mission)

Weather/Physical Environment

1. **When did freeze-up occur? How does this compare with past years? How about the first snowfall? How about break-up?**
   - Morris - Lots of overflow, fog. So we stayed home because of those types of conditions. That was in January and February 2019. A lot of streams didn't even freeze.
   - Tom - People can't really travel until January.
   - Elmer - Pretty much the same [as above comments]. Cooler summers after the big warm spell, not much snow until late (February-March), but by that time caribou are out in the Kuzitrin Flats. We have to go up to the northwest side of the lava beds to see anything. Pretty much same across the board. Later freeze-ups. Early melting, prevented us from going over to the Bendeleben Mountains. My last trip over to the Bendeleben Mountains was May 9 many years ago. Now I would have to walk there.
   - Tom - [Re: spring breakup and hunting access] - Bear hunting is over by April 22 or 23. I used to do hunts well into the second week of May. Last spring, I went to WMO to haul wood. It was so warm and there was water under the snow, I didn't do it. My client was hunting - it was warm for a week and a half. You could ride anywhere over the snow. The whole countryside had frozen over with snow. We hauled trees for two days. Which I do every year, but didn't last year since the conditions. It was a random freeze.

2. **What did you notice about snow depth and icing?**
   - Elmer - A lot of water on the tundra.
   - Charlie - All the sea ice trails were worthless. Big surges in the fall that cracked the ice at the lagoons so all river crossings along the coast were a hazard. You have to go fast to avoid overflow. Early in the season with all the tundra collapsing there's a lot of snowmachine traps. Probably caribou traps too.

3. **What were winds like in winter? In summer?**
   - No specific responses re: winds.

4. **Has there been any unusual weather this year? If so, what kind? (For example, strong winds, storms, much/little rain or snow, etc.)**
   - Tom - Last couple of years hunting has been hampered by storms. There were 18 storms last year [2019]. So you have to hit the window just right to even go out and get anything. Springtime (March – late) is a good time to go do something.

5. **Has there been anything else noteworthy this year regarding the air, rivers and lakes, or land? (For example, occurrences of fire that may have impacted caribou range, good/poor vegetation growth, late/early freeze, erosion, etc.)**
   - Tom - Algae bloom on the rivers – Niukluk and Fish rivers. The river never got shallow. This climate change stuff is a reality.
   - Tom – Ugruk hunting is different, ice goes earlier. If you don't go out in March you're fighting water earlier. Our whole lifestyle is different – I set nets out for beluga in the fall. But pulled them a month earlier. One or two days isn't good enough. Mid- November it finally calmed down to put nets out. The one good thing about the native community is we'll adapt – we will figure it out.

- Charlie – See evidence of melting permafrost and erosion of the tundra soil. More than one person has commented asking what "that dusty stuff" was at the bottom of the river? Peat washing downriver. On the Nome River we didn't even get to the bridge before I could show them the permafrost goo. It was really noteworthy towards the Sinuk River bridge this year. When you glass the tundra there are big crevasses.
- Morris – During July there were a ton of dead fish before they spawned.
- Charlie - The water gets too hot (15-17 degrees Celsius) and that kills them. The fish gets hot, uses up all its fat reserves, and then dies from half strangulation / half starvation. That heat coming down absorbs oxygen.
- Morris – There were fires too. We had several fires not too far from our village [Koyuk]. They put out the closer one. The fires are good for re-growth.
- Charlie – Some of the biggest fires in western Alaska were the ones at the North River fire. It smoldered for months. There was a smaller one at the Ungalik drainage, east of the Koyuk. Those were former reindeer ranges and now caribou winter range. I don't know if it will stop caribou from coming down. (Noted that Christmas Mountain, Inglatalik, Ungalik. Unalakleet folks call that caribou country.)

Caribou

6. **When were caribou present in your area? When did they first arrive? When were they last seen? How does this compare with past years?**
   - Elmer - About 10 miles north of Brevig Mission. They go through Taylor. Weiouyanna used to say the caribou are always on the north side. They were there in October 2019. Maybe a resident herd.
   - Elmer – The caribou either go through the northside by Kotzebue or come to the Goodhope area. Or they come through the Bendleben Mountains. Those are the two areas we see them. Most caribou are in the eastern portion of the Seward Peninsula.
   - Charles – They come through Darby Mountains. Where there were a lot there would be caribou stretched for 3-4 miles. It was like the whole mountain moved there were so many caribou. I said to my friend, there are caribou and a lot of them! All moving south. Some of the reindeer had purple/pink tags on their ears. There was a lot that come down by Darby Mountains. Almost every year.
   - Tom - People were going past Koyuk over to the Buckland area to get caribou last year. Or they were going north of the lava beds.
   - Morris - In March 2019, there were some about 60 miles east [of Koyuk] that passed through. Folks from other villages would go hunt them. We had to go further because they went somewhere… over 150 miles one-way in February-March. But the caribou we saw were in dispersed groups of about 40-50. Biggest [group] was over 100. My brother used to say that when it's south wind the caribou will travel into the wind to migrate. They'll go southwest in the fall. I don't know if it [wind] has anything to do with how fast and far they move.
   - Charlie – A couple of resident rein-bous by Mt. Bendeleben. Hard to catch. More by Black Mountain by Serpentine. They walk over towards Nuluk and back. There are so few and so much pressure on them that they're hard to get from Nome. They were way, way east. Reminded me of the 1990's when you had to go to Granite Mountain to get caribou.
   - Tom - Too far [from Nome] for me. I didn't go after them. From my cabin it was 26 miles one way. Last 2 years were further than that. They never made it in to McCarthy's Marsh. Guys were going over the mountains into the Kiwalik. Past the lava beds looking for caribou.
   - Elmer - In April they were out in the northern portion [of Seward Peninsula].
   - Charles – My sister used to see them in the fall time – they come from the north. All the women and children used to get on that hard snow and dig out the snow. The caribou would come down and women and children would chase them down. At the bottom men would be there with knives.

- Elmer - Once you start seeing nubs on the bulls, that's when you harvest them. In the Kuzitrin and Fish River Flats, the caribou were real spooky.
- Charlie – You want to get the migrating ones in March. Once they migrate down they travel and are real skinny, but if you wait until March they're plump again. If you wait for nubs, those are the real prime. That happens in March when they're getting ready to go north again.
- Charlie – There's a National Park Service (NPS) cabin at Cottonwoods, at the Goodhope River. It's right at the divide. It's a place to go overnight. And in the morning go to the ridges to look for caribou, but last year there was no luck.
- Elmer – Shishmaref was harvesting caribou year round at the Serpentine Hot Springs area. Right around Ear Mountain.
- Charlie – Kuzitrin Lake was a bust too.

7. How many caribou were in your area? What was the composition of the herd like (calves, males/females)? How does this compare with past years?

- See responses above

8. If you harvested caribou, how did the meat and skins compare with past years? What did you notice about fat? Parasites?

- Morris – I got maybe two. They were pretty good and lean.
- Charlie - The one thing about those resident ones, they seem to be more parasitized with warble and bot flies. Their calving area isn't far from their summer range so the bugs get them bad. Late spring – the bugs are so bad in them that they're hard to eat. I've seen calves of some that never left.

9. Were there any other notable changes regarding caribou compared with past years?

Sharing thoughts about past hunting areas and successes:

- Morris – The little experience I have with them passing the Buckland River and going up north to Granite Mountain. Those were good areas. There was good hunting there. Someone from Nome wants to go to that Candle area.
- Charlie - In my past hunting caribou, I would go over to the Kuzitrin Lake. That's prehistoric. There are big caribou drive camps on the shores of the lake. It's white there with crushed bone from historic marrow extractions. There are big rocks from caribou drive-lines where caribou would drive through the mountains. You can see tent rings right along the Bering Land Bridge National Preserve boundary. Right between Fish River and Kuzitrin.
- Elmer - Boston Creek – don't drive that.
- Charlie – Haven't had much luck that last couple years.
- Elmer - They may have been pushed out of that area by wolves. I don't see any by the lower portion of the Kuzitrin River.
- Charlie - That's where the Darby range runs into the Bendeleben Mountains. Very alpine. Kuzitrin Lake is 800ft in elevation. The highlands are 1000ft. Good alpine habitat for caribou.

Other Animals

10. What did you notice about bears and wolves in your area?

- Morris – I think there are more bears in our area and the wolves are still in good numbers. There is a group [of wolves] hanging around Koyuk waiting for caribou, I think. In 1982 they did research on wolves in the Koyuk watershed. In June and July, they went to Granite Mountain to catalog moose, bears, fish. That was the year that caribou were observed there. [The researcher] didn't go to the village and get traditional knowledge. That part of the report is someone's handbook with Bureau of Land Management (BLM). He figured how many moose per square miles. Not too many bears. But now you see lots of bears – lots where you didn't see many.

- Elmer – There were packs of wolves going towards the Kakaruk reindeer herd. Reindeer won't really run away like caribou. There are four different wolf packs in the last five years.

10-A. How did these predators affect caribou in your area?

- Bears didn't [affect caribou]
- Wolves harassing caribou making them skinny and jumpy
- It is really difficult to say for the area that caribou migrate through [near Koyuk]
- Not too much effect
- Eastern shoreline of the Imuruk Basin was used by four different wolf packs in the past years. Wolves killed within the Kuzitrin River area are replaced by wolves from the lava beds area or the northern portion of Seward Peninsula.

11. Have there been any notable changes regarding other animals in your area, compared with past years? (For example, new animals arriving in your area, or animals that you do not see much of any more, or changes in behavior or body condition).

- Wolves were the "new animal" [to arrive] as the caribou expanded its range into the Seward Peninsula years ago. Too many resident wolves now killing all other resources (moose, muskox, reindeer, etc.)
- Not too much changes regarding other animals
- Bear population might be on the increase in and around the communities of Teller and Brevig Mission as they are not actually hunted.

<u>Other Comments</u>

12. How do people in the communities use caribou, other than for meat (e.g. clothing)?

- No specific response to this question.

13. What types of recent exploration and development or other activity have you noticed in the region that may be impacting caribou?

- Elmer - There were concerns about pollution around Imuruk basin.
- Charlie - Graphite project is messing up moose habitat.
- Morris - I don't know if the GCI towers have any effect. But there are several in the areas that we hunt – they put those transmitters in the area. I don't know if that has any impact.
- Charlie – The towers are north from Unaglik to Granite Mountain. In the winter months, the batteries run low and the generator kicks in. The caribou in close proximity are probably disturbed.

14. What have you noticed regarding any conflicts between local and non-local hunting in the area of your community? Do you have suggestions for how to reduce conflicts?

- Charlie – There's a proposal with the new guide wanting to open up Unit 22D remainder for moose. The guy said some unflattering things about the Northern Norton Sound Advisory Committee. Then he got convicted for doing that exact thing. His successor is putting proposals in to make it legal what they were doing (chasing animals). Definitely some heat between Shishmaref villagers and this guide.
- Morris – I didn't have any conflicts with anyone – when you fight over animals they're going to disappear.
- Morris – In summer, there are planes flying all around.

15. Is there anything else that you have seen this year that you would like to mention?

- No additional responses