NORTHWEST ARCTIC SUBSISTENCE REGIONAL ADVISORY COUNCIL

Meeting Materials

October 24-25, 2018

Anchorage

What's Inside

On the cover...

A family subsistence camp in the Selawik National Wildlife Refuge.

USFWS photo

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NORTHWEST ARCTIC SUBSISTENCE REGIONAL ADVISORY COUNCIL

Northwest Arctic Borough Assembly Room
Kotzebue

October 24-25, 2018
9:00 a.m. daily

TELECONFERENCE: call the toll free number: 1-877-638-8165, then when prompted enter the passcode: 9060609.

PUBLIC COMMENTS: Public comments are welcome for each agenda item and for regional concerns not included on the agenda. The Council appreciates hearing your concerns and knowledge. Please fill out a comment form to be recognized by the Council chair. Time limits may be set to provide opportunity for all to testify and keep the meeting on schedule.

PLEASE NOTE: These are estimated times and the agenda is subject to change. Contact staff for the current schedule. Evening sessions are at the call of the chair.

AGENDA

*Asterisk identifies action item.

1. **Invocation**
2. **Call to Order** (*Chair*)
3. **Roll Call and Establish Quorum** (*Secretary*).....3
4. **Welcome and Introductions** (*Chair*)
5. **Review and Adopt Agenda*** (*Chair*) 1
6. **Review and Approve Previous Meeting Minutes*** (*Chair*) 4
7. **Reports**
   - Council Member Reports
   - Chair's Report
8. **Public and Tribal Comment on Non-Agenda Items** (available each morning)
9. **New Business** (*Chair*)
   a. Fisheries Resource Monitoring Program (FRMP) Notice of Funding Opportunity
   b. FRMP Priority Information Needs* (*Joshua Ream, Jarred Stone*)
   c. Identify Issues for Annual Report* (*Zach Stevenson, Council Coordinator*) 18
10. **Agency Reports**

    (*Time limit of 15 minutes unless approved in advance*)

a. Tribal Governments

b. Native Organizations and Alaska Native Corporations

c. Special Actions

d. National Park Service

1. Western Arctic National Parklands 30

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e. U.S. Fish and Wildlife Service

1. Selawik National Wildlife Refuge

f. Bureau of Land Management

g. Alaska Department of Fish and Game

h. Alaska Wildlife Troopers

i. Bureau of Indian Affairs

j. Office of Subsistence Management

11. Future Meeting Dates*

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Select fall 2019 meeting dates and location 52

12. Closing Comments

13. Adjourn (*Chair***)**

To teleconference into the meeting, call the toll free number: 1-877-638-8165, then when prompted enter the passcode: 9060609.

Reasonable Accommodations

The Federal Subsistence Board is committed to providing access to this meeting for all participants. Please direct all requests for sign language interpreting services, closed captioning, or other accommodation needs to Zach Stevenson, 907-786-3674, zachary_stevenson@fws.gov, or 800-877-8339 (TTY), by close of business on February 22, 2018.

REGION 8
Northwest Arctic Subsistence Regional Advisory Council

Seat	Year Appointed *Term Expires*	Member Name and Community	
1	 ***2019***	***VACANT***	
2	2016 ***2019***	**Beverly M. Moto** Deering	
3	2011 ***2019***	**Hannah P. Loon** Kotzebue	**Secretary**
4	2010 ***2019***	**Michael C. Kramer** Kotzebue	**Vice-Chair**
5	1995 ***2020***	**Raymond E. Lee, Jr.** Buckland	
6	 ***2020***	***VACANT***	
7	1993 ***2020***	**Louie A. Commack, Jr.** Ambler	
8	1999 ***2018***	**Enoch A. Shiedt, Sr.** Kotzebue	**Chair**
9	2014 ***2019***	**Enoch L. Mitchell** Noatak	
10	2003 ***2018***	**Calvin D. Moto, Sr.** Deering	

NORTHWEST ARCTIC SUBSISTENCE REGIONAL ADVISORY COUNCIL
Meeting Minutes

February 28 – March 1, 2018
Northwest Arctic Borough Assembly Room, Kotzebue

Call to Order
The meeting was called to order at 9:16 AM.

Roll Call and Establish Quorum
The following Council members present: Enoch Shiedt, Sr.,; Louie Commack, Jr.; Michael Kramer; Raymond Lee, Jr., and Hannah Loon, Secretary. Beverly Moto and Enoch Mitchell did not arrive until the second day of the meeting due to weather delays in travel. Calvin D. Moto, Sr. was excused for medical reasons. Enoch Shiedt, Sr. was excused from the meeting at 1:00 p.m. on February 28, to escort his wife to the hospital and attend to job related obligations mandated by his employer.

Welcome and Introductions
The Chair welcomed everyone to the meeting and asked that those in attendance intorduce themselves. The following people were noted in attendance at the meeting, either in person or by teleconference (indicated with an asterix "*").

- Alex Hansen, Wildlife Biologist, Alaska Department of Fish and Game (ADF&G) (Kotzebue)
- Bonnie Million, Field Manager, Anchorage District Office, Bureau of Land Management (Anchorage)
- Brandon Saito, Area Biologist, ADF&G (Kotzebue)
- Brittany Sweeney, Outreach Specialist, United States Fish and Wildlife Service, Selawik National Wildlife Refuge (Kotzebue)
- Bruce Seppi, Wildlife Biologist, Bureau of Land Management (BLM) (Anchorage)
- Carmen Daggett, Biologist, ADF&G (Kotzebue)
- Paul "Chris" McKee, Supervisory Wildlife Biologist, Office of Subsistence Management (OSM) (Anchorage)
- Christine Brummer, Pathways Anthropologist, OSM (Anchorage)*
- Clarence Summers, Subsistence Manager, Alaska Region, National Park Service (NPS), Alaska Regional Office (Anchorage)
- Dan Stevenson, Ranger Pilot, NPS, Western Arctic National Parklands (Kotzebue)
- Dr. Glenn Chen, Subsistence Program Manager, Bureau of Indian Affairs (BIA), Alaska Region (Anchorage)
- Dr. Joshua Ream, Cultural Anthropologist, OSM (Anchorage)
- Hannah Atkinson, Cultural Resource Specialist, NPS, Western Arctic National Parklands (Kotzebue)
- Hazel Smith, Arctic Region Board Support, ADF&G (Kotzebue)*
- Hillary Robinson, Wildlife Biologist, NPS, Western Arctic National Parklands (Kotzebue)
- Jake Wells, General Manager, Noorvik Native Community (Noorvik)*
- Jeanette Koelsch, Superintendent, NPS, Bering Land Bridge National Preserve (Nome)*
- John Chase, Community Planner, Northwest Arctic Borough, Planning Department (Kotzebue)
- Kenneth Adkisson, Subsistence Program Manager, NPS, Bering Land Bridge National Preserve (Nome)*

- Kyle Joly, Wildlife Biologist, NPS, Yukon-Charley Rivers and Gates of the Arctic National Park and Preserve (Fairbanks)*
- Maija Lukin, Superintendent, NPS, Western Arctic National Parklands (Kotzebue)
- Marcy Okada, Subsistence Coordinator, NPS, Yukon-Charley Rivers and Gates of the Arctic National Park and Preserve (Fairbanks)*
- Mark Burch, Wildlife Biologist, ADF&G (Palmer)*
- Mike Brubaker, Department Director, Community and Environmental Health, Alaska Native Tribal Health Consortium (Anchorage)*
- Nicole M. Bream, Cultural Anthropologist, NPS, Bering Land Bridge National Preserve (Nome)*
- Neil DeWitt, Member of the Anchorage and Matanuska Valley Fish and Game Advisory Committees (Anchorage)*
- Rammy Fonston, Wildlife Biologist, NPS, Western Arctic National Parklands (Kotzebue)
- Susan Georgette, Refuge Manager, United States Fish and Wildlife Service (FWS), Selawik National Wildlife Refuge (Kotzebue)
- Tina McMaster-Goering, General Engineer, BLM, Central Yukon Field Office (Anchorage)*
- Trooper Justin McGinnis, Alaska State Troopers (Kotzebue)
- Walker Gusse, Law Enforcement Ranger, Anchorage District Office, BLM (Anchorage)
- Zach Stevenson, Subsistence Council Coordinator, Designated Federal Officer, OSM (Anchorage)

Review and Adopt Agenda

Zach Stevenson provided an updated draft agenda to the Council. The Council reviewed and approved modifications specified in the updated draft agenda.

- Approved Item 10E, located at the top of page 2, addressing the reconsideration of Wildlife Proposal 18-46/47. Alex Hansen, Dr. Joshua Ream, and Superintendent Maija Lukin will address the updated Western Arctic Caribou Herd population census.
- Justin McGinnis, Alaska Wildlife Trooper, will provide a law enforcement presentation between 10:00 AM and 10:30 a.m. on the first day (February 28, 2018) of the meeting.
- The request from Hannah Paniyavluk Loon for an update on the issue of parasites affecting caribou, particularly ticks, was postponed because the rangeland biologist from the University of Alaska Fairbanks is unavailable. The Coordinator will work to book him for the fall meeting in October.
- Hannah Paniyavluk Loon also requested a status update on the region's moose population and discussion on whether the hunting of moose could be closed to non-Federally qualified subsistence users on Federal public lands in Unit 23. Mr. Stevenson responded, noting that updates from all agencies will be provided on day 2 (March 1, 2018) of the meeting.
- Hannah Paniyavluk Loon requested the election of officers be postponed until the arrival of Enoch Mitchell and others facing weather related travel delays.
- Enoch Attamuk Shiedt, Sr. noted he needed to leave the meeting at 1:00 p.m. on February 28, 2018 to escort his wife to the hospital, adding that Mike Kramer, Vice Chair, would serve in his stead as Chair.
- A representative from the Northern Alaska Environmental Center was unable to participate in the meeting due to an unanticipated scheduling conflict.

The Council unanimously approved the draft agenda as modified.

Election of Officers
The Council voted by ballot and elected Enoch Shiedt, Sr., Chair; Mike Kramer, Vice-Chair; and Hannah Loon, Secretary. Results were verified by Chris McKee.

Review and Approval of Previous Meeting Minutes
The Council unanimously approved the meeting minutes featured on page 5 of the meeting book.

Reports
There were a variety of issues and concerns raised by Council members during their initial reports. Additionally, the Coordinator provided a report for the Council.

Council Member Reports

Louie A. Commack, Jr.
Mr. Commack reported that representatives from the BLM visited communities in the Upper Kobuk to hold public meetings focused on dialogue regarding the proposed Ambler Road. Mr. Commack noted that caribou arrived late and that two villages didn't get caribou until November. Mr. Commack added that residents eagerly wait for the comment period.

Raymond E. Lee, Jr.
Mr. Lee reported that Buckland experienced caribou arriving early, that everyone got caribou, and people are happy. Mr. Lee explained that the caribou arrive from three different directions, funneled past Buckland, from as far away as Ambler. Mr. Lee added that fish and berry harvests were good this year too. Mr. Lee also reported that few moose were seen or harvested this year. Mr. Lee added that despite his efforts, he did not harvest a moose.

Enoch L. Mitchell
Mr. Mitchell addressed changes to weather and climate and reported snow arrived late this year.

Mr. Mitchell noted that caribou were present at the Kivalina and Noatak shelter cabin this year, and some were seen near the Kelly River this winter. He added that caribou are not concentrating at Rabbit Creek, Noatak Flats, and Kivalina Flats like they used to a long ago, possibly because of changes in vegetation or because of an increase in muskox in the Rabbit Creek area. Mr. Mitchell also noted the Teshekpuk Caribou Herd arrived late again, in September, adding that while they were hunted in the hundreds in the past, now there are far fewer, with 10, 15, or 20 animals. Though that was enough, we got enough. He added that residents of Noatak saw positive impacts from the closure of Federal public lands to caribou hunting by non-Federally qualified users, specifically noting a reduction in user conflicts and improvements to hunter safety. Mr. Mitchell provided a report from his attendance at the Western Arctic Caribou Working Group Meeting in Anchorage, on behalf of the Native Village of Noatak, held on December 12-13, 2017.

Mr. Mitchell reported that fewer young people are hunting wolves, and that the number of trappers has fallen from four trappers down to two trappers. Mr. Mitchell said that wolverines are present. Mr. Mitchell added that a lot of fishers are out now, as daylight hours increase, and that fishing has been good.

Hannah Paniyavluk Loon
Ms. Loon reported on the Selawik science culture camp held last September that was sponsored by the Selawik National Wildlife Refuge, Northwest Arctic Borough, Davis-Ramoth Memorial School, and the Tribal Council Selawik IRA. Ms. Loon also thanked Brittany Sweeney, Susan Georgette, and Brandon Saito for their participation.

Ms. Loon also reported a late break up of sea ice this spring, adding that it was rainy and cold summer. She also noted the presence of wolves near town while caribou were passing through. Addressing caribou, there were no caribou this past fall. Ms. Loon added that Buckland had a good harvest this year and that she traded some gloves, shells, and groceries for caribou.

Ms. Loon reported there was a good harvest of whitefish and pike, adding that people will be fishing for sheefish in Selawik in a few months. She warned about ice conditions at the mouth of rivers, explaining it is too thin now, and the need to be cautious by the mouth of major rivers. Ms. Loon noted there were few salmonberries and blueberries because it was a cold spring and there was a lot of rain during the summer.

Chair's Report

Mike Kramer
Acting as Chair for Enoch Shiedt, Sr., Mr. Kramer addressed changes to weather and climate and reported high water levels, estimated at 30 feet higher than normal, and difficult conditions for caribou hunters on the Kobuk River this fall. He noted that bull caribou were seen, though they didn't seem interested in traveling and none were harvested. Many boats returned empty, and hunters decided to travel up the Noatak River instead. The Kobuk River and area above Kiana were pretty empty of caribou. There were few people waiting, caribou would get close to the river, and people would push them back as usual. Mr. Kramer reported that he heard local observation of the caribou returning late, estimating that 25 percent of the herd migrated through the Kobuk Valley in September, continuing through freeze-up, and then the majority of the herd followed. It was good to see many fill their freezers with caribou. He reported he attended a NANA meeting in Anchorage, representing himself, where he spoke about the benefits of the closure of Federal public lands to caribou hunting by non-Federally qualified users, explaining that the closure helped local residents put subsistence food on their tables.

Mr. Kramer also expressed concern about the adverse impacts of the Ambler Road on caribou habitat and the food security for the communities of Kiana, Noorvik, Shungnak Ambler, Kobuk, Noatak, Deering, Kivalina, Selawik, and others, who rely on caribou. Mr. Kramer added that the region will honor the memory of Raymond Stoney, continuing his tradition and fight for the caribou herd.

Mr. Kramer added that moose are in decline. He explained that despite having an RM880 permit, he did not harvest any moose and few were seen this season. Mr. Kramer reported lots of bears were sighted, with bears becoming a nuisance and safety hazard. He also noted daily reports of wolves from many communities and encouraged the harvesting of wolves. Mr. Kramer reported that wolverines are doing well and their numbers are on the rise. He reported he has not seen many foxes.

Mr. Kramer reported erratic weather conditions, including frequent blizzards, unseasonably warm weather, and thin sea ice, resulting in delays to trail staking and the need to exercise caution when conducting overland winter travel. He concluded by emphasizing the need for monitoring the region's caribou and moose to determine whether populations are stable.

Coordinator's Report

Zachary Stevenson
Mr. Stevenson reported the deadline for applying to serve on the Regional Advisory Council was extended to February 16. Mr. Stevenson noted that Mr. Calvin Moto, Sr. did not reapply to serve on the Council for medical reasons and two previous members were not reappointed. Mr. Stevenson outlined the timing of appointment process and explained that the OSM had about 450 people respond to posts on social media, Facebook and other media channels. Mr. Stevenson added he sent approximately 192

letters out to every tribe, municipality, State and Federal agency, and Alaska Native Corporation in both in the Northwest Arctic region and the Western Interior regions. Mr. Stevenson explained we want to continue encouraging members of our communities to participate in this program, that it's a very powerful way to make sure that your voices are being heard, particularly when decisions are made about subsistence resources on Federal lands. Mr. Stevenson also thanked everyone who helped with the recruitment process.

Mr. Stevenson also reported that Orville Lind, OSM Native Liaison, offered to provide Councils with training on tribal consultation. The Western Interior region requested Native Liaison's participation at the Council's fall meeting coming up in October of this year. When presenting before the Western Interior Council last week Mr. Lind, made the point that the consultation process is a really important way that communities, tribes and Alaska Native Corporations can be aware of and be heard on wildlife proposal management decisions that affect them. For villages that have an interest in participating in that process or would like to learn more about how they can participate, he offered his time to come and meet with the Council, and, if the Council wishes the Council can request training on tribal consultation.

Additionally, Mr. Stevenson reported on the work of the Landscape Conservation Cooperatives (LCCs), which are groups that work with different communities and different agencies and businesses to help resource managers, and land managers address the issue of climate change affecting communities. Mr. Stevenson noted that a representative from the Western Alaska LCC delivered a presentation last week before the Western Interior Alaska Subsistence Regional Advisory Council on opportunities to participate in that work, and if this Council is interested, they may request a presentation from the LCCs to learn more about ways in which this Council could get involved in research that addresses the effects of climate change on subsistence resources.

Public and Tribal Comments on Non-agenda Items

Neil DeWitt

Mr. DeWitt spoke in favor of reopening Federal public lands in Unit 23 to caribou hunting by all Alaskans. He justified this position stating there are enough caribou in Unit 23 for all users, specifically noting that after five percent of the Western Arctic Caribou Herd (WACH), or 800 caribou maximum, are harvested by non-Federally qualified subsistence users, the herd will still have 40,000 caribou. Mr. Dewitt added that the WACH Working Group Meeting, held on December 12-13, 3018 in Anchorage, showed the herd increased from 203,000 to 259,000 caribou. Additionally, Mr. DeWitt's position is further supported by the Western Interior Alaska Subsistence Regional Advisory Council (Western Interior Council). He explained that at the Western Interior Council winter public meeting held on February 20-21, 2018 in Anchorage, the Western Interior Council voted to reopen Federal public lands to caribou hunting by non-Federally qualified subsistence users after September 21. This date would help to allow the lead herd to successfully migrate through, crossing rivers and trails in the region while providing those who reside outside the unit some hunting opportunity.

Mr. DeWitt expressed concerns regarding the impact of the proposed Ambler Road on caribou migration in Unit 23. Additionally, he expressed concern regarding the impact of the proposed road on Federally qualified subsistence users as previously stated by the Northwest Arctic Subsistence Regional Advisory Council. Mr. DeWitt emphasized he fully supports the Council's position on this issue.

Zach Stevenson

Mr. Stevenson reminded the Council of its authority to convene a caribou working group to gather information on caribou to be shared with the Council and, as appropriate, among other councils, for further consideration. Mr. Stevenson explained the Northwest Arctic Subsistence Regional Advisory Council, the North Slope Subsistence Regional Advisory Council, and the Western Interior Council

meeting addressed this topic at their fall public meetings and voted to establish a caribou working group, which was a means for sharing information from Council to Council. Mr. Stevenson emphasized that the Council's caribou working group does not have the authority to make decisions. The Council's caribou working group is not a decision-making body, but rather, a means for sharing information. Mr. Stevenson noted that if this Council or others wanted to ever convene or use those groups to share information amongst Council members or other Councils that is an effective tool for making sure that timely information is available to Councils.

New Business

Reconsideration of Wildlife Proposal WP18-46/47

Alex Hansen, wildlife biologist with the ADF&G, provided an update on the population status of the Western Arctic Caribou Herd relevant to the Council during reconsideration of WP18-46/47. He described the results of the updated ADF&G 2017 photo census of the Western Arctic Caribou Herd. Mr. Hansen said 259,000 animals were counted during 2017 census, which is an increase from 2016 when 201,000 animals were counted. Mr. Hansen described the changes in the herd's composition that may account for the increased population size of the herd seen in the updated photo count. He responded to a question from Mr. Shiedt, noting that the Teshekpuk Caribou Herd population census will be scheduled for this summer. The number of caribou in the Teshekpuk herd is counted separately from the Western Arctic Caribou Herd. Mr. Hansen noted we're dealing with both population and user conflict issues.

Maija Lukin, superintendent for Western Arctic National Parklands, explained the closure enacted by special action WSA17-03 would be in place until June 30. She shared a map and explained that the Noatak Controlled Use Area is an Alaska Board of Game Controlled Use Area, located five miles above and below the river. Ms. Lukin added that the National Park Service manages a delayed entry area, used as an administrative tool by the Superintendent, and will be extended. She explained the delayed entry area is from September 1-15 and will be extended through September 22, based on comments the NPS received from Federally qualified subsistence users serving on the Subsistence Resource Commission. Ms. Lukin emphasized that the NPS can use the delayed entry outside of the OSM proposal process.

Ms. Lukin noted that the map was shared with the Advisory Committee and that the Western Arctic Caribou Herd Working Group approved the map. Addressing a question from Mr. Commack regarding clarification about changing hunting patterns from non-Federally qualified subsistence users, resulting from WSA17-03, Ms. Lukin explained how non-Federally qualified subsistence users could still hunt in certain areas of the Noatak National Preserve and the Controlled Use Area, noting that only two concessionaires operate in the Preserve and they are mainly hunting bear.

Ms. Lukin added that it's unclear whether hunting patterns are shifting, though the NPS has reported the location of transported hunters, floaters, and drop-offs within the Western Arctic Caribou Herd (WACH) Working Group meeting, from 2016, back to 2009 or 2010. She noted the information shows these individuals were distributed all over the preserve. Ms. Lukin further explained the map addressing WSA17-03 shared by the NPS, shows the targeted partial closure of Federal public lands to caribou hunting by non-Federally qualified subsistence users. It was developed in response to and with input from several people in Noatak; local hunter education meetings; and discussions with other agencies.

Ms. Lukin further added that outside concession holders who sign CUA agreements with the NPS may not use gravel bars if they are attempting to access the delayed entry area, regardless of whether it's State or Federal Land.

Dr. Joshua Ream, anthropologist with OSM, shared a two-page document, including maps, with the Council that addresses new information for WP18-46/47. He reviewed the document with the Council,

described the issue, citing Proposal WP18-46 submitted by the WACH Working Group, and Proposal WP18-47, submitted by Enoch Mitchell of Noatak that requests that Federal public lands in Unit 23 be closed to caribou hunting except by Federally qualified subsistence users. WP18-47 also requests that the closure extend for two years only (July 1, 2018 – June 30, 2020). Dr. Ream reviewed new information with the Council. He noted changes between the 2016 fall meeting information and new information, showing how in 2017, the WACH population, bull: cow and fall calf: cow ratios improved.

Dr. Ream also reviewed new information pertaining to recommendations from the WACH Working Group developed in response to a comparison of 2016 and 2017 biological information for the WACH. Dr. Ream mentioned how the WACH Working Group voted to change the status of the WACH to conservative stable at the 2017 WACH Working Group Meeting. He explained that while population numbers alone indicate liberal management, the WACH Working Group supported maintaining conservative management due to the use of new technology (digital cameras) in completing population counts and because a large proportion of the herd is currently composed of young caribou that are still vulnerable to harsh winters.

Addressing changes to the regulatory proposal resulting from the increased WACH population size, Dr. Ream explained how the WACH Working Group voted to modify its own proposal, WP18-46, at its 2017 meeting. Specifically, the WACH Working Group voted to support the 2017/18 targeted closure area for two years only (Map 1). The WACH Working Group supported the 2017/18 closure area as it was limited and strategically targeted to Federal public lands where users conflicts have been greatest in past years, while maintaining open access for non-Federally qualified users to other Federal lands in Unit 23.

Additionally, Dr. Ream addressed the number of hunting groups accessing the Noatak National Preserve in response to the 2016 closure. Specifically, from 2010-2015, the number of hunting groups transported into Noatak National Preserve averaged 124. During the 2016 closure, only 11 hunting groups were transported into the Preserve.

Dr. Ream then reviewed the options available for consideration by the Council. He explained that the Council has an opportunity to reconsider its position on WP18-46/47 in light of this new information. Options include making a motion recommending (for 2 years, or an indefinite length of time):

- Maintaining the fall 2017 Council recommendation
- Full closure
- 2017/18 closed area (Map 1 – Area of Federal public lands closed to caribou hunting except by Federally qualified subsistence users in 2017/2018 resulting from Wildlife Special Action 17-03 and supported by the WACH Working Group)
- Area recommended by the Unit 23 Interagency Group (Map 2 – Suggested targeted closure of Federal public lands to caribou hunting except by Federally qualified subsistence users. The Unit 23 Interagency group suggested this area, and it is the OSM Modification in the analysis.

The Council then deliberated the reconsideration of WP18-46/47. The Council clarified the options available with input from Mr. Ken Adkisson, Ms. Hannah Atkinson, and Ms. Susan Georgette. Mr. Shiedt stated that a study of the impacts of climate change on migration of the WACH is needed. Mr. Kramer noted the composition of the Federal Subsistence Board is a consideration, as their decision has far-reaching impact. Mr. Commack emphasized that cooperation between all parties is needed. Mr. Commack also noted the need for Mr. Mitchell's input, but he had not yet arrived to the meeting due to weather-related flight delays.

Dr. Ream noted the timing of any proposal is at the discretion of the Council. The Council may

recommend an indefinite closure; close the unit until the next wildlife regulatory cycle; or recommend a closure for just two years. Dr. Ream stated that if the Council recommends a partial closure-options are presented in the two maps on the document circulated to the Council. Dr. Ream added that some of the Council's concerns could be alleviated using the NPS's delayed entry zone (applicable to commercial users). Chris McKee, wildlife division chief with OSM, clarified that the Superintendent of Western Arctic National Parklands can still enact a delayed entry for the Noatak National Preserve, regardless of any actions taken by their Subsistence Regional Advisory Council with respect to the two special actions.

Mr. Mitchell arrived and was briefed on the topic. Mr. Mitchell indicated he supports a permanent closure of Unit 23 to caribou hunting by non-Federally qualified subsistence users. Mr. Mitchell justified his position, stating that the targeted closure of Unit 23 to caribou hunting by non-Federally qualified users helped resident hunters reach their caribou harvest quota and reduce user conflicts in the vicinity of Noatak. Additionally, Mr. Mitchell stated that residents of Noatak neither intended nor caused the moving of non-Federally qualified hunters to other areas. Mr. Mitchell emphasized he has been working to resolve these problems for 10 years, working through the Tribal Council and asked the Regional Advisory Council for its continued support. Mr. Mitchell noted that Noatak residents are in favor of the first option, supporting a closure that surrounds Noatak, the Noatak River, and the Squirrel River, because it helps Federally qualified subsistence users in Noatak a lot. Mr. Mitchell added that he wants the proposal to be adopted by the Federal Subsistence Board and the closure made permanent.

Addressing the second option, Mr. Mitchell noted that while it includes the Noatak River, and does help Noatak Residents, it was not developed by Noatak residents and would require going back to the community to tell them there is another option in addition to doing another vote with the Noatak/Kivalina Advisory Committee. Mr. Mitchell emphasized he doesn't make a decision by himself; that he works with the Noatak/Kivalina Advisory Committee, the Tribal Council (Native Village of Noatak), and Noatak Elder Council. Mr. Mitchell stressed the closure really does help and reiterated the people of Noatak favor a permanent closure.

After two failed motions, the Council motioned for a roll call vote to support a permanent closure of Unit 23 to caribou hunting on Federal public lands as depicted on Map 1 in the Council's supplemental materials, as justified by Mr. Mitchell for permanent closure, unless otherwise rescinded. The Council took a roll call vote. The motion passed with 4-1. Mr. Commack expressed the dissenting opinion, stating that a permanent closure is forever and needs better clarification to explain exactly what the Council is saying.

Mr. McKee responded, explaining a permanent closure is in regulation. A proposal that is adopted by the Federal Subsistence Board is in regulation. A special action, however, is only temporary. A regulation lasts until someone submits a new proposal to open it back up again and the Federal Subsistence Board adopts that proposal. Or someone submits a special action to open the unit for a limited amount of time and the Federal Subsistence Board adopts it.

Mr. Stevenson noted the motion carried.

Call for Federal Fisheries Proposals

Dr. Ream reported the Federal Subsistence Board is now accepting proposals to change Federal regulations for the subsistence harvest of fish and shellfish on Federal public lands and waters for the 2019-2021 regulatory cycle. He noted the official announcement is expected soon and will be open for a minimum of 30 days. Dr. Ream explained an announcement flyer can be found on Page 18 of the Council's meeting book and that flyer describes the regulatory cycle process in depth.

Dr. Ream explained the Federal Subsistence Board will consider proposals to change Federal fishing seasons, harvest limits, methods of harvest and customary and traditional use determinations. He noted there are a number of ways the public can submit proposals and offered to discuss any proposals the Council or individuals would like to submit. Dr. Ream added that proposals may also be submitted to the OSM through the Council Coordinator, Zach Stevenson, either by hand or by mail or OSM can assist in the crafting proposals. He added there is an online process outlined more clearly on the flyer than in the Council meeting books.

Addressing a comment from Mr. Commack, Mr. Stevenson said that if the Council did want to draft a fisheries proposal, protocol requires a motion on the record. OSM staff are ready and available to assist the Council in preparing draft language that could be considered tomorrow.

Call for Nonrural Determination Proposals

Dr. Ream provided the Council with an overview of the call for proposals for the nonrural determinations in Federal regulations featured on page 21 of the Council's meeting book. Dr. Ream explained that this topic is not an action item but informational in nature. Dr. Ream provided an historical overview of the nonrural determinations developed with input from all 10 Regional Advisory Councils and adopted by the Federal Subsistence Board in January 2017. The final policy was presented to the Council in 2017 and specifies the requirements for submitting a proposal and a three-year timeline.

Dr. Ream added that proposals submitted during the upcoming call will be considered by the Federal Subsistence Board in January of 2021. He noted that call for proposals will open at the same time as the fisheries call for proposals and for a minimum of 30 days. Dr. Ream explained that the flyer provided on page 21 of the Council's meeting book includes a check list with all the criteria required for submitting a valid proposal for consideration by the Federal Subsistence Board.

Dr. Ream said the timeline for this process can be found on page 30 of the Council's meeting book. He emphasized that Councils will have several opportunities to provide recommendations and feedback on proposals affecting their region during the fall meeting cycle in 2018 and again, once the analysis is complete during the fall meeting cycle of 2020. Dr. Ream noted the Federal Subsistence Board would make determinations in January of 2021.

Mr. Commack asked Dr. Ream to explain nonrural determinations. Dr. Ream responded saying there are a number of nonrural areas in the State, listed in the front of the regulation books. Dr. Ream added that residents of those areas are not Federally-qualified users and that the Federal Subsistence Board recently adopted a new policy that reverted to the 1990 list of communities that were established as nonrural. Dr. Ream explained this will allow the reconsideration or new consideration of communities that are currently rural to be defined as nonrural or vice versa. Those that are currently nonrural, if conditions have changed, could become rural.

Responding to a question from Ms. Loon, Dr. Ream addressed the factors for considering a proposal submitted by a community include population size; population density; economic indicators; military presence; industrial facilities; use of fish and wildlife; the degree of remoteness of the community; relative isolation; and any other relevant material, including information provided by the public. Next, Dr. Ream explained information will be brought back to the Councils with a request for input at various points in the process. Dr. Ream emphasized that anyone may submit proposals.

Fisheries Resource Monitoring Program Update and Discussion

Dr. Ream provided the Council with an update on the Fisheries Resource Monitoring Program. Dr. Ream explained at this stage, the OSM is finalizing the funding determinations for the projects submitted in 2016. Next, staff will work with Councils to develop priority information needs for the next cycle. The

priority information needs will be shared on the record, at the Council's next meeting. The priority information needs will help guide the work of the Fisheries Resource Monitoring Program.

Approve Draft FY2017 Annual Report

Mr. Stevenson reviewed the Council's Draft FY2017 Annual Report included in the meeting book. Mr. Louie Commack, Jr. requested the draft report be amended to reflect the position of the Upper Kobuk and Koyukuk villages that recognize the priority of protecting the traditional hunting grounds, artifacts, monuments, and burial grounds. The Council voted to unanimously approve the Draft FY2017 Annual Report as modified.

Agency Reports

Tribal Governments

Jake Wells of the Noorvik Native Community reported to the Council on a scoping letter submitted to the BLM prior to January 31. He emphasized the ecological and cultural significance of the Kobuk River Delta. Mr. Wells explained this area provides fish and wildlife that are essential for meeting the food security needs of Federally qualified subsistence users. He cited relevant research conducted by the ADF&G and Northwest Arctic Borough that documents the significance of the area for meeting the subsistence needs of local residents. He explained the Noorvik Native Community recognizes the Kobuk River Delta as an essential part of the cultural heritage of the region's people, many of whom hunted and camped in the area for generations. Mr. Wells added the area is important for migratory birds and moose.

Native Organizations

Michael Brubaker of the Alaska Native Tribal Health Consortium (ANTHC) explained the ANTHC works with tribes and regional health organizations and boroughs, in particular the Northwest Arctic Borough and Maniilaq in the Northwest Arctic, to perform climate change assessments and to better understand the types of changes and impacts on communities in the northwest and across the State. The information collected through these efforts was made available to all participants to better understand the different impacts that are occurring. Mr. Brubaker shared some local examples including changes in vegetation in Kiana; changing water levels in Noatak; and erosion and changes in water quality in Selawik.

Mr. Brubaker provided an overview of ANTHC's public health and environmental quality monitoring and surveillance programs, specifically the Local Environmental Observer (LEO) Network. The LEO program uses maps, available for free download by computer or smartphone, to document unusual events. The LEO staff from the ANTHC receives a post and provides a rapid response from a topic matter expert. So far, the network has documented hundreds of local observations across the State of Alaska, totaling 900. This network provides communities, land managers, and health practitioners with traditional ecological knowledge and scientific information that is useful in understanding the effects of changing climate and weather conditions. The LEO program is available online at www.leonetwork.org. Additionally, LEO provides updates on current findings that people report through monthly webinars on the second Tuesday of each month from 2:00-3:30 p.m. The information collected is available to any member of the public who is a member of the LEO network. It is free to sign up.

Alaska Wildlife Troopers

Justin McGinnis, Alaska State Wildlife Trooper, provided a fall season law enforcement update for the Council. He stated that he lives in the region and acknowledged his close working relationships with community members. Trooper McGinnis also reported that he travels throughout the region and spends a lot of time in the field in August and September. He offered to share his observations to support the Council in its decision making process.

Trooper McGinnis said he is short-staffed and that he is the only Wildlife Trooper in the region. He is responsible for covering Units 23, 26, and sometimes the Galena area and Seward Peninsula. He said he was able to get an extra aircraft on floats last year, providing access to the Nigu River and Ativilik River (located near the Upper Noatak), and the Upper Selawik for contacting hunters. In the Upper Selawik, between 250-300 hunters were contacted in the field in September. A Wildlife Trooper should be expected in the fall, with aircraft on wheels and floats, to provide law enforcement coverage and enforce regulations for the region.

Trooper McGinnis noted that support and participation from the public is essential for effective wildlife law enforcement due to limited staffing, limited resources, and the vast geographic area needing law enforcement coverage. He emphasized prompt reporting is needed. Trooper McGinnis encouraged the public to call him; leave a message; call the Alaska State Troopers dispatch line; or call Wildlife Safeguard, whose contact number is on the back of all the regulations. Tell them who you are and how you can be contacted to answer more questions. You will need to report what you saw; where it happened; and when you saw it. Trooper McGinnis explained that if you see him flying around, flag him down, or contact him on VHF on monitor 68 in the aircraft. If it's safe to land, he will land his aircraft to meet with you and take your complaint in person.

Trooper McGinnis also reported on an investigation in the Noatak Controlled Use Area reported at the last meeting. Because of prompt reporting and strong interagency communication exists between the NPS and Alaska State Wildlife Troopers, the person of interest was identified. An investigation revealed that a violation of the Noatak Controlled Use Area had occurred and charges were filed. The case was resolved in court in Kotzebue. Trooper McGinnis reiterated his appreciation for prompt reporting, explaining that without prompt reporting, it's difficult to take any action on complaints.

Alaska Department of Fish and Game

Hazel Smith, Arctic Region Board Support, reported on the meeting of the Kotzebue Advisory Committee, which met last week and supported continuation of the targeted partial closure of Federal public lands in Unit 23 to caribou hunting by non-Federally qualified users until further notice (Wildlife Special Action 17-03). Speaking on her own behalf, and not as representative of the ADF&G, Ms. Smith stated the proposed Ambler project is inevitable. Ms. Smith noted it is resource targeted by those with money. She encouraged people to, "put their heads together and figure out how to do it".

Brandon Saito, Area Biologist, provided the Council with a status update on the region's moose population. Mr. Saito reported on the Lower Kobuk survey which show a dramatic decline. The area had 2,500 moose in 2012 and now has 1,350. This year a moose survey will be conducted in the Lower Noatak. Mr. Saito stated that two other studies were done, on vegetation and twinning, to help figure out the cause of the moose decline. The study looked at what percentage of the forage was browsed. The study found less than 35 percent of the forage was browsed, which is a good number and that browse is decent. This study will continue. In the twinning study, 41 percent of the cows had twins, which is a good measure showing that food is not a limitation. The next step is to understand mortality. Mr. Saito said a study proposed is to radio collar 70 moose calves to track them and determine the cause of death. Responding to a question from Mr. Kramer, Mr. Saito explained there was a 40 percent decline in the Kobuk from 2012, over five years, and a 60 percent drop in Selawik.

Mr. Kramer and Ms. Loon asked if a wildlife temporary special action should be taken to address the moose decline. The Council was made aware a Federal wildlife regulatory proposal had been submitted addressing moose.

United States Fish and Wildlife Service

Selawik National Wildlife Refuge
Susan Georgette, Refuge Manager, provided an update on outreach efforts by staff from the Selawik National Wildlife Refuge (NWR). She reported on caribou hunter education in Selawik involving staff from the Selawik NWR, NPS, and ADF&G. Ms. Georgette also reported on the circulation of an e-newsletter, developed by Brittany Sweeney. Additionally, she reported on work conducted with the University of Alaska Fairbanks oral history program to interview five elders in Selawik and document changes in subsistence resources and hunting, fishing and gathering practices. Ms. Georgette noted the Selawik NWR has been documenting this type of information since its founding. Additionally, she noted Siikauraq Martha Whiting led the migratory bird calendar contest and Ms. Sweeney led the Youth Conservation Corps, which provides a four-week experience for students in Selawik focused on resources and job training.

Ms. Georgette said the Upper Selawik Sheefish spawning study is nearing completion. The study indicates the mudslide on the Selawik River did have an impact on the Sheefish, but the good news is that the Sheefish population still seems really healthy. The study also showed that 20,000 fish spawn in the area.

Ms. Georgette stated that Sony Berry, Maintenance Worker works with the Selawik NWR, conducting trail staking and cabin maintenance in Selawik. Ms. Georgette added that this work is done in partnership with the Northwest Arctic Borough.

Ms. Georgette reported on guides and transporters in the Selawik NWR and said the non-resident moose hunt was closed. She added there is one permited guide, a big game guide, who did not operate at all last year. Ms. Georgette also explained there was only one moose taken on the Refuge last year by hunters who used guides or transporters. She added that the Selawik NWR gives out five transporter permits that are given out, but last year only one took a party of four hunters, who harvested one moose. This is compared to 2005, when there were 50 moose taken on the Refuge by transporters. Ms. Georgette added that in 2000 there were 154 hunters taken to the Refuge. The number of hunters declined to 4 hunters last year. She explained this decline is because the non-resident moose hunting is closed and because caribou have not migrated south onto the Refuge in several years by September, so no one travels there for fly-in caribou hunting.

Bureau of Land Management
Tina McMaster-Goering, General Engineer, provided an update for the Council on the status of the proposed Ambler Road Environmental Impact Statement. She noted the BLM received 100 email messages with distinct letter or report attachments for review by the BLM in addition to 800 email messages, and 6,000 canned messages. Ms. McMaster-Goering noted that a draft scoping report is expected to the BLM and cooperative agencies at the end of this week or beginning of next week. She explained the next opportunity for public comment includes the Draft Environmental Impact Statement (EIS) and tribal consultations, scheduled for January per the Section 106 process, as noted on the BLM website.

Bruce Seppi, Wildlife Biologist, provided an update for the Council addressing the Squirrel River Management Plan. Mr. Seppi reported the Squirrel River Management Plan was delayed and a new plan is being developed and coordinated by Tom Sparks with support from Brian Ublacker and a third-party contractor. Weather delays prevented scoping meetings from being held in Kotzebue, Noorvik and Kivalina. Scoping meetings have been rescheduled for the week of April 9. Public meetings in Anchorage and Fairbanks will likely be held in late April. Mr. Seppi added than an environmental assessment (EA) will be developed for the Squirrel River Area. He explained the EA will address user conflicts and enhanced management of the area. The purpose of the scoping meetings is to help the BLM

understand the issues of interest to the public at the start of the planning process. Mr. Seppi also addressed recent staff changes at BLM.

Walker Gusse reported introduced himself to the Council and explained his role as a law enforcement ranger and stated his intention to facilitate the prompt and timely resolution of law enforcement issues in the region.

National Park Service

Hilary Robinson, Wildlife Biologist, addressed the topic of moose decline in the region and provided an overview of related field studies in the vicinity of Selawik, the Lower Kobuk, and Squirrel River areas.

Maija Lukin reminded the Council that Kobuk Valley National Park and Cape Krusenstern National Monument are closed to non-Federally-qualified subsistence hunters. Ms. Lukin said people must be local, as in from the area, to be able to hunt in both Cape Krusenstern and Kobuk Valley. Ms. Lukin also introduced a new staff member, Rammy Fonston, who works as a biologist.

Mr. Ken Adkisson, Subsistence Program Manager, provided the Council with a distinction between the legal status of Kobuk Valley National Park and Cape Krusenstern National Monument.

Hannah Atkinson, Cultural Resource Specialist, provided an update for the Council on an outreach and education initiative for young hunters focused on increasing caribou hunter success by snow machine. The training has met monthly. Ms. Atkinson reported the Cape Krusenstern Subsistence Resource Commission (SRC) will meet on April 24-25, 2018 and the Kobuk SRC will meet on April 26-27, 2018.

Mr. Commack asked whether there have been reports of hunters above Kiana. Ms. Atkinson responded that exact numbers are not available, though she is aware of the Kiana Elders Council involvement in this issue. Mr. Stevenson said tracking the number of caribou hunters was opposed at the previous meeting by a member of the public. He also noted this topic could be revisited by the Council at their request.

Ms. Robinson provided an update for the Council on wildlife studies. She provided detailed reports on studies covering multiple taxa and species including birds; caribou; bear; moose; Dall sheep; muskox; loons in coastal lagoons; and whitefish overwintering habitat. Detailed information on individual studies can be found in the transcripts. Ms. Loon responded to Ms. Robinson's presentation, expressing ongoing concern for public safety as a result of interactions with bears from Federally qualified subsistence users.

Dan Stevenson discussed his ongoing work as the Ranger/Pilot for the Western Arctic National Parklands. He said his work is a collaborative effort, done in coordination with NANA Purcell Security. Mr. Stevenson noted there are opportunities for local recruitment and the addition of Mr. Dallemolle as a permanent ranger starting this spring.

Mr. Lee expressed concerns regarding muskox in Buckland. They have been a public safety concern in the community. He said that muskox have damaged grave sites in the community.

Marcy Okada, Subsistence Coordinator, provided an update for the Council noting the Gates of the Arctic National Park and Preserve Subsistence Resource Commission (Gates of the Arctic SRC) met on November 14-15 in Fairbanks. She said the Gates of the Arctic SRC received presentations from Toolik Field Station and the Wildlife Conservation Society. The presentations included discussion of a wolverine ecology project. The Gates of the Arctic SRC took action to submit a public comment letter to the Bureau of Land Management addressing the Ambler Road. The next meeting of the Gates of the Arctic SRC is scheduled for April 17-18 in Allakaket.

Ms. Okada provided the Council with an update on studies examining the factors that impact habitat and population dynamics for grizzly bear and Dall sheep. She noted the population numbers for Dall sheep remain low. Ms. Okada explained that recent studies suggest ewe-like sheep, which include adult ewes, yearlings, and very young rams were declining, slightly prior to 2013, and the lack of lamb recruitment and high ewe-like mortality in 2013 is what started the population crash.

Ms. Okada also provided an update on the Ambler Road issue, stating that the scoping period ended in January and 13,000 public comments were received. She noted that many comments were from letters. Ms. Okada noted that 200 substantive comments were received pertaining to the southern and northern routes under consideration. She added that a scoping comment report will be finalized tomorrow or early next week. Additionally, Ms. Okada said that Joe Duremberger, the Ambler road project coordinator, was unable to attend this meeting due to a scheduling conflict.

Office of Subsistence Management

Chris McKee addressed a question from Hannah Loon regarding the potential for a special action to address the decline of moose in the region. He noted that Wildlife Special Action WSA17-02 was previously submitted to address moose hunting in Unit 23 for the 2017-2018 time period. Mr. McKee also noted that Wildlife Proposal WP18-41addresses moose in Unit 23 and is presently scheduled to be reviewed by the Federal Subsistence Board.

Mr. McKee mentioned staff changes at the OSM that include retirements and new hires and a budget update.

Future Meeting Dates

The Council selected the dates for its fall 2018 meeting to be held in Anchorage, budget constraints permitting or, alternatively, in Kotzebue on October 24-25, 2018. The Council also selected the dates for its winter 2017 meeting to be held in Kotzebue on February 27-28, 2019.

Closing Comments

Council Members provided closing comments as noted in the meeting transcripts.

Adjourn

The meeting adjourned at 12:00 p.m. on March 1, 2018 due to a winter storm advisory and mandatory closure of the meeting venue.

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I hereby certify that, to the best of my knowledge, the foregoing minutes are accurate and complete.

_____

Zach Stevenson, Designated Federal Official, OSM *Date*

_____

Enoch Shiedt, Sr., Chair *Date*

These minutes will be formally considered by the Northwest Arctic Subsistence Regional Advisory Council at its fall 2018 public meeting, and any corrections or notations will be incorporated in the minutes of that meeting.

ANNUAL REPORTS

Background

ANILCA established the Annual Reports as the way to bring regional subsistence uses and needs to the Secretaries' attention. The Secretaries delegated this responsibility to the Board. Section 805(c) deference includes matters brought forward in the Annual Report.

The Annual Report provides the Councils an opportunity to address the directors of each of the four Department of Interior agencies and the Department of Agriculture Forest Service in their capacity as members of the Federal Subsistence Board. The Board is required to discuss and reply to each issue in every Annual Report and to take action when within the Board's authority. In many cases, if the issue is outside of the Board's authority, the Board will provide information to the Council on how to contact personnel at the correct agency. As agency directors, the Board members have authority to implement most of the actions which would effect the changes recommended by the Councils, even those not covered in Section 805(c). The Councils are strongly encouraged to take advantage of this opportunity.

Report Content

Both Title VIII Section 805 and 50 CFR §100.11 (Subpart B of the regulations) describe what may be contained in an Annual Report from the councils to the Board. This description includes issues that are not generally addressed by the normal regulatory process:

- an identification of current and anticipated subsistence uses of fish and wildlife populations within the region;
- an evaluation of current and anticipated subsistence needs for fish and wildlife populations from the public lands within the region;
- a recommended strategy for the management of fish and wildlife populations within the region to accommodate such subsistence uses and needs related to the public lands; and
- recommendations concerning policies, standards, guidelines, and regulations to implement the strategy.

Please avoid filler or fluff language that does not specifically raise an issue of concern or information to the Board.

Report Clarity

In order for the Board to adequately respond to each Council's annual report, it is important for the annual report itself to state issues clearly.

- If addressing an existing Board policy, Councils should please state whether there is something unclear about the policy, if there is uncertainty about the reason for the policy, or if the Council needs information on how the policy is applied.
- Council members should discuss in detail at Council meetings the issues for the annual report and assist the Council Coordinator in understanding and stating the issues clearly.

- Council Coordinators and OSM staff should assist the Council members during the meeting in ensuring that the issue is stated clearly.

Thus, if the Councils can be clear about their issues of concern and ensure that the Council Coordinator is relaying them sufficiently, then the Board and OSM staff will endeavor to provide as concise and responsive of a reply as is possible.

Report Format

While no particular format is necessary for the Annual Reports, the report must clearly state the following for each item the Council wants the Board to address:

1. Numbering of the issues,
2. A description of each issue,
3. Whether the Council seeks Board action on the matter and, if so, what action the Council recommends, and
4. As much evidence or explanation as necessary to support the Council's request or statements relating to the item of interest.

Federal Subsistence Board

1011 East Tudor Road, MS121
Anchorage, Alaska 99503-6199

FISH and WILDLIFE SERVICE
BUREAU of LAND MANAGEMENT
NATIONAL PARK SERVICE
BUREAU of INDIAN AFFAIRS

FOREST SERVICE

AUG 2 4 2018

OSM 180066.ZS

Enoch Shiedt, Chair
Northwest Arctic Subsistence
Regional Advisory Council
c/o Office of Subsistence Management
1101 East Tudor Road, MS 121
Anchorage, Alaska 99503-6199

Dear Chairman Shiedt:

This letter responds to the Northwest Arctic Subsistence Regional Advisory Council's (Council) fiscal year 2017 Annual Report. The Secretaries of the Interior and Agriculture have delegated to the Federal Subsistence Board (Board) the responsibility to respond to these reports. The Board appreciates your effort in developing the Annual Report. Annual Reports allow the Board to become aware of the issues outside of the regulatory process that affect subsistence users in your region. We value this opportunity to review the issues concerning your region.

1. Request for the National Park Service to study impact of commercial transporters and outfitters on Federally qualified subsistence users

This Council notifies the Board of its request for the National Park Service to conduct a study examining the effects of commercial transporters on Federally qualified subsistence users is needed to reduce user conflicts in the region. This information could benefit the resource by assisting land managers with decisions impacting the stewardship of the Western Arctic Caribou Herd in Unit 23. This information could also benefit Federally qualified subsistence users by increasing hunter success.

This information should be collected using scientifically defensible methods and incorporating traditional knowledge in a participatory manner that shares results with participants and communities. The methods should be developed in partnership with participants and in alignment with the Institutional Review Board process to ensure the informed consent and protection of the rights and welfare of human subjects involved.

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Numerous examples exist demonstrating local leadership in designing and executing participatory, scientifically defensible, nationally significant, and culturally appropriate scientific research. Several examples include the work of the Native Village of Kotzebue who mapped the distribution of ice seals, a significant subsistence species, involving local hunters and marine mammal biologists.

The Northwest Arctic Borough has demonstrated leadership in designing and executing research as shown through a coordinated five-year research project mapping subsistence use and important ecological areas in seven coastal communities. The project involved more than 250 people including local hunters and biologists. The project used peer reviews-methods. The project results were submitted for publication in peer-reviewed journals. The maps produced through this project are used by land managers, emergency responders, and regional planners to promote subsistence opportunity, natural resource conservation, public safety, and economic development

Regional expertise in developing best practices for research design has been demonstrated by the University of Alaska Fairbanks Chukchi Campus and Northwest Arctic Borough. These organizations recently coordinated a workshop and produced research principles addressing the protocols for increasing local participation in research in the Northwest Arctic. The event involved participants from numerous communities, agencies, and organizations active in the region.

Integrating traditional ecological knowledge in scientific research has also been demonstrated by the Selawik National Wildlife Refuge. The Refuge studied the effects of permafrost melt and soil subsidence on Sheefish (Stenodus nelma), a significant subsistence fisheries resource that spawn in the Selawik River. This project involved local fishers and local fisheries biologists who collaborated throughout the project as described at the Council's public meeting in Kotzebue on October 26, 2017.

Additionally, such capacity is shown by the National Park Service Western Arctic National Parklands who coordinated collaborative research involving residents of the Native Village of Noatak and an anthropologist who documented the cultural significance of caribou and perceptions of user conflicts. Such information was used by the Office of Subsistence Management when analyzing Wildlife Special Action 17-03, initiated by this Council. The Council requests the National Park Service conduct a study to determine the impact of commercial transporters and outfitters on Federally qualified subsistence users in the Northwest Arctic Region.

Response:

The issue of user conflict is a GMU 23 unit-wide concern. The Board recognizes the ongoing concern with potential conflict between subsistence use and sport hunting on Federal public

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lands within Unit 23. Your Council and others have consistently voiced concern regarding aircraft and non-local hunting activity, especially as it pertains to caribou. While the Board does not have funding for wildlife oriented research projects, we do encourage our constituent Federal agencies and other partners to fund research that supports such efforts. We also encourage the establishment of new partnerships that can help inform the Federal Subsistence Management Program.

Your Council indicated in its report a desire to have this research conducted by the National Park Service. It is important to remember that the National Park Service is not the only land management agency with authority over the range of caribou within Unit 23. There needs to be a collaborative process involving all land managers within Unit 23, and the Board encourages the Council to work with these agencies on developing studies that can address the Council's concerns and interests.

With that said, there are several studies that the National Park Service has conducted related to caribou in the region.[1] These studies are summarized below.

A survey of 372 hunters identified as transporter clients in Noatak National Preserve hunting between 2010 and 2013 indicated perceptions of conflict among this group differed from those expressed by local hunters (Fix and Ackerman 2015).[2] Most nonresidents reported that hunting for trophies was more important than hunting for meat while most Alaska residents reported hunting for meat as more important than hunting for trophies. Approximately 58% of respondents reported they were not sure if they salvaged all edible meat. Similar to local hunters, nonlocal hunters reported encounters with other nonlocal hunters and airplanes as the two biggest factors detracting from their trip. Sixty percent of the groups who encountered caribou reported observing low flying aircraft near caribou and less than half of the transporter clients reported receiving information about issues of concern to local hunters.

Halas (2015), in a case study of Noatak caribou hunters and their interactions with transported hunters, examined the links between caribou behavior and migration, user group interactions, and changes to subsistence caribou hunting. She reported that repeated observations of airplanes affecting individual or group caribou behavior have been documented, and that cumulative observations of this over time could lead an observer to conclusions about herd deflection. She also found that many hunters from the Noatak region report having to travel farther, more frequently, and for longer durations to find caribou in recent years. Furthermore, local

[1] In addition to these, Western Arctic Parklands (WEAR) staff are currently working on the first phase of a traditional use study. It is an attempt to address concerns about caribou as a culturally significant resource for Noatak, Alaska. Literature review and interviewing, informed by the Noatak Tribal Council, Cape Krusenstern Subsistence Resource Commission, and your Council, will be used to determine what the traditional caribou hunting grounds are for Noatak.

[2] Fix, P. J, and A. Ackerman. 2015. Noatak National Preserve sport hunter survey: Caribou hunters from 2010 - 2013. Natural Resource Report NPS/NOAT/NRR—2015/1005. National Park Service, Fort Collins, Colorado.

respondents suggested allowing 1,000 caribou to pass before shooting, closing the Agashashok River corridor to nonlocal hunters, and appropriately spacing nonlocal camps.[3] Concerns by residents of communities within Unit 23 were recorded in the documentary "Counting on Caribou: Inupiaq Way of Life in Northwest Alaska" (Betcher 2016). Respondents from several communities expressed concern regarding food security as it pertains to caribou herd diversion and changes in migration routes. Several indicated that both small and large scale changes to migration routes are linked to "nonlocal" hunting activities, particularly low-flying aircraft.[4]

Additionally, a study was recently published concerning the effect of aircraft on caribou migration in the Noatak River drainage.[5] Fullman et al. (2017) studied the effects of environmental features and sport hunting on caribou migration in northwestern Alaska. These authors found that caribou tended to avoid rugged terrain and that the migration of caribou through Noatak does not appear to be hindered by sport hunting activity. They indicated that their results do not preclude the possibility of temporary effects altering the availability of caribou for individual hunters, and that the lack of observed influence of hunting activity could be related to difference in scale between the telemetry and sport hunter datasets used in the study.

Despite the body of research that has been conducted thus far, more research is necessary to understand the impact of commercial hunting and aircraft on caribou migration.

Your Council has on several occasions mentioned that while hunters with aircraft access can position themselves more broadly on the landscape, most local hunters access the area via boat and are restricted to navigable waterways. These concerns have been acknowledged by the Board and were considered in determining the extent of recent targeted closures to Federal public lands for caribou hunting by non-Federally qualified users. The targeted closure area defined by Wildlife Special Action 17-03 is currently closed as a result of Board action on Wildlife Proposal 18-46.

Congress, the Board, and the courts[6] have recognized that "subsistence" is far more than the nutritional value of a resource. They recognize it as vital to culture and a traditional way of life.

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[3] Halas, G. 2015. Caribou Migration, Subsistence Hunting, and User Group Conflicts in Northwest Alaska: A Traditional Knowledge Perspective. University of Alaska Fairbanks.

[4] Betcher, S. 2016. Counting on Caribou: Inupiaq way of life in northwest Alaska. Farthest North Films.

[5] Fullman, T.J., K. Joly, A. Ackerman. 2017. Effects of environmental features and sport hunting on caribou migration in northwestern Alaska. Movement Ecology. 5:4.

[6] *See, e.g.*, *United States v. Alexander*, 938 F.2d 942, 945 (9th Cir. 1991) ("Many Alaska natives who are not fully part of the modern economy rely on fishing for subsistence. If their right to fish is destroyed, so too is their traditional way of life."); *Native Village of Quinhagak v. United States*, 35 F.3d 388, 394 (9th Cir. 1994) (recognizing the "clear congressional directive to protect the cultural aspect of subsistence living.").

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While food security is critically important to rural Alaska communities, we also acknowledge the physical, economic, traditional, cultural, and social aspects of subsistence. Congress recognized these components in Section 801 of the Alaska National Interest Land Conservation Act (ANILCA). In order to ensure the continuation of the opportunity for subsistence practice, including each of these aspects, we need to have ample information pertaining to the factors that affect them. This includes information on the effects of commercial activities on not only hunter success but also on the Federally qualified subsistence user's ability to engage in a meaningful subsistence experience.

Your annual report also indicates the need for research to incorporate and give equal weight to Traditional Ecological Knowledge (TEK). The Board recognizes this need and the value of this knowledge system. We encourage that all subsistence studies in Alaska, when possible, utilize TEK and that it be collected and analyzed in a culturally appropriate and respectful manner. We also support Community Based Participatory Research that equitably involves rural stakeholders in all aspects of the research effort and in which partners contribute expertise and share in the decision-making process.

As the Board continues to try to balance public access while providing for the rural priority mandate under ANILCA, we will continue to look to our regional advisory councils for knowledge and guidance regarding local conditions. You are our eyes and our ears on Alaska's vast landscapes and in our rural communities. The Board thanks you for your service and we look forward to working with you and others to better understand issues pertaining to important subsistence resources such as caribou.

2. <u>Disturbance to hunters by low-flying aircraft and how to report</u>

This Council notifies the Board of the adverse effects of low-flying aircraft on migratory caribou in the Northwest Arctic Region. The Western Arctic Caribou Herd is a critically important subsistence resource to Federally qualified subsistence users. Presently there is no training offered for communities or agencies on how to respond and mitigate user conflicts. The Council requests guidance how to document and report these user conflicts. In the past, this information was available through annual fall season trainings for community members coordinated by the Northwest Arctic Borough Planning Department in partnership with local organizations, State, and Federal agencies. Additionally, such information is currently available through the Western Arctic Caribou Herd Working Group website, though such information may not be readily available in remote areas with limited internet access. Lessons-learned from successful conflict avoidance strategies between local hunters and low-flying aircraft from the Northwest Arctic and/or North Slope Regions could be insightful. The Council requests the Board encourage

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federal agencies and local partners to resume such collaborative efforts aimed at minimizing user conflicts and benefitting resource conservation.

Response:

Through its recent actions of imposing a targeted closure to non-Federally qualified users for caribou in Unit 23, the Board recognizes that cooperation and balance in management approaches is needed to minimize conflicts while providing for opportunity. The Board will do what it can to encourage cooperation in addressing conflicts that arise from low-flying aircraft and potentially-related disturbances.

However, the Board and the various agencies involved are not the only way to address the concerns of low-flying aircraft. Everyone who lives in the region can play a role. If you see low-flying aircraft disturbing caribou on Federal public lands in the Northwest Arctic (Unit 23) you may file a complaint with law enforcement or the Northwest Arctic Borough (Borough).

Law enforcement and the Borough will then use the complaint to investigate an incident and determine if criminal activity occurred. Providing evidence in a complaint helps when doing an investigation.

Effective complaints are precise, provable, and prompt. Take good notes before you file a complaint – preferably as close as possible to the incident. A complaint should include the following information:

1. The date and time when the incident happened.
2. The location description where the incident happened. A useful description includes a map; coordinates; land or water features; place names; distance from camp site; and photos.
3. A description of what happened during the incident. When aircraft are involved, provide a clear photo of the aircraft and tail number. You can use a smart phone camera or a digital camera.
4. Report your complaint to law enforcement or the Borough using the contacts provided below. Information shared on Facebook does not qualify as a complaint.

Western Arctic National Parklands
121 Third Avenue
Kotzebue, Alaska 99752

Dan Stevenson, LE/Ranger Pilot
907-442-8306
Dan_Stevenson@nps.gov

Yukon-Charley Rivers National Preserve
4175 Geist Road
Fairbanks, Alaska 99709

Scott Sample, Northern Hub Chief Ranger
907-455-0616
scott_sample@nps.gov

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Bureau of Land Management
4700 BLM Road
Anchorage, Alaska 99507

Walker Gusse, Park Ranger
907-267-1232
wgusse@blm.gov

Alaska Department of Public Safety
Alaska Wildlife Troopers
Kotzebue, Alaska

Wildlife Trooper Justin McGinnis
907- 442-3241 (Telephone)
907-442-3221 (Fax)

Northwest Arctic Borough, Planning Department
163 Lagoon street/P.O. Box 1110
Kotzebue, Alaska 99752

Charlie Gregg, Land Specialist
907-442-8214
cgregg@nwabor.org

You can help minimize disturbances to caribou on Federal public lands from low-flying aircraft by reporting these incidents to law enforcement or the Borough promptly and accurately. It is worth noting that the State of Alaska also has a Unit 23 Pilot Orientation requirement designed to minimize user conflicts among local subsistence hunters, visiting hunters, guides and transporters.[7]

3. <u>Opposition to the Ambler Road Project due to adverse impact to caribou habitat and caribou migration</u>

Since time immemorial, these lands have been a blessing and provided for the region's food security. This Council has numerous concerns regarding the Ambler Road Project, and stated those concerns on the record at its public meeting in Kotzebue on October 25-26, 2017. The Council noted there are many questions about the road. The Council explained that over the past two years, people had difficulty harvesting caribou. The Council explained that people had to travel as far as Buckland, in the middle of the winter, to harvest caribou. The Council further explained that facing this hardship, people are depending more on fish and berries, as well as other food sources including moose and bear. Acknowledging these challenges, the Council is concerned the Ambler Road Project will adversely impact caribou habitat and caribou migration. The Council is also concerned about potential adverse impact to traditional hunting grounds, burial grounds and important archaeological sites. The Council voted unanimously to oppose the Ambler Road Project and submit written comments on the project presently under public comments for the scoping phase under NEPA by the Bureau of Land Management.

Response:

The Board acknowledges your concerns regarding the Ambler Road Project. Large scale projects involving Federally managed lands in Alaska are required to address the potential impacts to subsistence resources, access, and uses that could be caused by development projects. In light of the importance of subsistence resources in the region, fluctuating caribou populations, and

[7] http://www.adfg.alaska.gov/index.cfm?adfg=unit23pilot.main.

repeated testimony regarding local food security issues, development projects of this nature must ensure the least possible impact to rural communities.

The Board suggests that your Council review §810 of ANILCA, which outlines the procedures that all Federal land management agencies must follow before final land use decisions can be made:

> §810. (a) In determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of public lands under any provision of law authorizing such actions, the head of the Federal agency having primary jurisdiction over such lands or his designee shall evaluate the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes. No such withdrawal, reservation, lease, permit, or other use, occupancy or disposition of such lands which would significantly restrict subsistence uses shall be effected until the head of such Federal agency--
> (1) gives notice to the appropriate State agency and the appropriate local committees and regional councils established pursuant to §805;
> (2) gives notice of, and holds, a hearing in the vicinity of the area involved; and
> (3) determines that--
> (A) such a significant restriction of subsistence uses is necessary, consistent with sound management principles for the utilization of the public lands,
> (B) the proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition, and
> (C) reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.
> (b) If the Secretary is required to prepare an environmental impact statement pursuant to §102(2)(C) of the National Environmental Policy Act, he shall provide the notice and hearing and include the findings required by subsection (a) as part of such environmental impact statement.
> (c) Nothing herein shall be construed to prohibit or impair the ability of the State or any Native Corporation to make land selections and receive land conveyances pursuant to the Alaska Statehood Act or the Alaska Native Claims Settlement Act.
> (d) After compliance with the procedural requirements of this section and other applicable law, the head of the appropriate Federal agency may manage or dispose of public lands under his primary jurisdiction for any of those uses or purposes authorized by this Act or other law.

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Public participation in these processes is critical to ensuring that local voices and concerns are heard and that all possible viewpoints and perspectives are considered. We sincerely appreciate that your Council has engaged in this process and that you voiced your concerns during the NEPA scoping phase. We encourage you to remain involved and to take every opportunity to provide public input. We also encourage tribes and ANCSA corporations to remain engaged and to participate in Tribal consultation opportunities with our Board and other entities.

In the event that the Ambler Road is constructed, the Board will look to the Council for proposals to modify fish and wildlife regulations, as appropriate, to reflect the needs of your communities and the resources that may be affected by development. As always, you are our eyes and ears on Alaska's vast landscapes. We value your input and consider it essential to effective conservation and resource management. While change is often inevitable, we commit to working with you to adapt to local conditions and to foster resilience in the coupled social-ecological systems of our state.

Finally, the Board wishes to remind the Council that we recognize the cultural, traditional, physical, economic, and social value of subsistence alongside of the nutritional necessity of wild foods. These components of subsistence are defined by ANILCA and have been upheld by the courts as critical elements that warrant consideration in making resource management decisions on Federal public lands in Alaska. ANILCA also mandates that Federal land managing agencies, in managing subsistence activities on the public lands and in protecting the continued viability of all wild renewable resources in Alaska, shall cooperate with adjacent landowners and land managers, including Native Corporations, appropriate State and Federal agencies and other nations. We commit to the continued application of these ANILCA mandates.

In closing, I want to thank you and your Council for their continued involvement and diligence in matters regarding the Federal Subsistence Management Program. I speak for the entire Board in expressing our appreciation for your efforts and our confidence that the subsistence users of the Northwest Arctic Region are well represented through your work.

Sincerely,

Anthony Christianson
Chair

Chairman Shiedt 10

cc: Federal Subsistence Board
Northwest Arctic Subsistence Regional Advisory Council
Thomas Doolittle, Acting Assistant Regional Director, Office of Subsistence Management
Jennifer Hardin PhD., Subsistence Policy Coordinator, Office of Subsistence Management
Carl Johnson, Supervisory Program Analyst, Office of Subsistence Management
Zach Stevenson, Subsistence Council Coordinator, Office of Subsistence Management
Jill Klein, Special Assistant to the Commissioner, Alaska Department of Fish and Game
Interagency Staff Committee
Administrative Record

Alaska Park Science

National Park Service
U.S. Department of the Interior
Alaska Region

Migration: On the Move in Alaska

Volume 17, Issue 1

History, Purpose, and Status of Caribou Movements in Northwest Alaska

Kyle Joly, Jeff Rasic, Rachel Mason, and Maija Lukin, National Park Service

Caribou (*Rangifer tarandus*) are thought to be a species of Eurasian descent (Osborn 1910). While the species is known for having high fidelity to their calving grounds, the establishment of new calving grounds was essential to allow the species to expand its distribution, which now spans the Arctic globally. Flexibility in this behavioral trait allowed for eastward expansion, hundreds of thousands of years ago, across the now-submerged Bering Land Bridge (Banfield 1962, Guthrie and Matthews 1971).

People followed caribou across the land bridge much more recently, perhaps some 15,000 years ago. These first Alaskans relied on caribou for food, clothing, and tools, and the species has played a prominent role in Alaska Native culture for thousands of years (Anderson 1968, Burch 1972). People who depend on caribou are keenly aware of their movements and have needed to be mobile and flexible enough to move to where the caribou are or were heading. As Noorvik elder Clarence Jackson recalls, he would "hunt way up to the head of the Noatak River, stay there ten days to two weeks until they had enough caribou to bring home" (Betcher 2016). Entire families would work together to drive caribou toward waiting hunters during migration. These community caribou drives are no longer conducted for numerous reasons, including the adoption of new technologies, such as the use of firearms and motorized transportation (Burch 2012). However, Alaska Natives continue to harvest caribou during their migrations by anticipating and then intercepting their movements at strategic locations using knowledge that has been passed down through generations.

Migration is a distinctive behavioral trait of caribou. Caribou display the longest terrestrial migrations anywhere on the planet. In northwest Alaska, caribou travel up to 2,737 miles (4,404 km) per year (Joly and Cameron 2017). One of the main purposes of migration is to minimize exposure to predation, especially during calving when young animals are particularly vulnerable (Fryxell and Sinclair 1988). Migratory barren-ground caribou tend to aggregate during calving and calve synchronously (most females giving birth within a week of each other). The hypothesized purpose of this phenomenon is to "swamp" or overwhelm the finite number of predators that exist within a relatively limited amount of space and time.

For the Western Arctic Herd (WAH), which ranges over all of northwest Alaska, calving has taken place in the Utukok uplands, north of the Brooks Range, for at least a century (Figure 1; Lent 1966, Joly et al. 2011, Burch 2012). Another critical purpose of migration is to track the availability of abundant high-quality forage (Fryxell and Sinclair 1988). Green vegetation emerges this far north (69°N

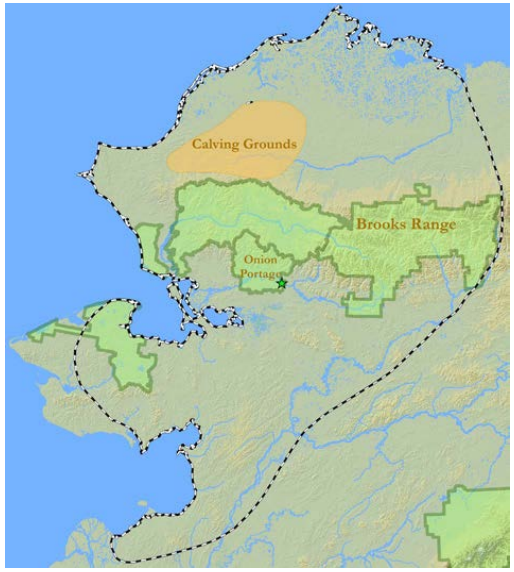

Figure 1. Range of the Western Arctic Herd (black and white dotted line). Their calving grounds (orange polygon) are north of the Brooks Range. Lands managed by the National Park Service are in green. Onion Portage (green star), a traditional location to hunt caribou for thousands of years, lies within Kobuk Valley National Park.

Caribou in April on their northward migration to their calving grounds.
NPS /Kyle Joly

A small band of female caribou and newborn calves on their calving ground in northwest Alaska.
NPS/Kyle Joly

Thousands of caribou on the tundra along the Wulik River.
NPS/Kyle Joly

latitude) soon after calving and provides nutritious forage high in protein. Caribou need this high protein intake to fill nutritional deficits accumulated over the winter, produce milk, and gain body mass during the short summer months. Summer months are not easy on caribou; swarms of mosquitoes, biting flies, and other insect parasites harass caribou incessantly and are the primary driver of caribou movements during this time. Movement rates are greatest during this time of the year as caribou seek out cool and windy places for relief. It is at this time of year that the spectacular congregations of caribou occur, with groups numbering in the tens or even hundreds of thousands of individuals.

After insect harassment subsides, caribou disperse and can be found throughout the Brooks Range and the North Slope of Alaska. With the arrival of fall, most, but not all, caribou start to migrate south through the mountains. Commonly, caribou still cross the Kobuk River at Onion Portage, within Kobuk Valley National Park, during fall migration as they have done for ten thousand years (Anderson 1968, Joly and Cameron 2017). As forage quality decreases in vascular plants with the onset of fall, caribou begin to rely more heavily on lichens. Lichens dominate the winter diets of caribou and are much more abundant south of the Brooks Range (Joly et al. 2015), which may be an important factor driving the fall migration. Mid-winter is the time of energy conservation for caribou and is when movement rates are lowest. Depending on weather and snow conditions, caribou begin their northward spring migration in early April (Joly and Cameron 2017), back toward the calving grounds.

Caribou distribution, movements, and migratory patterns are known to be related to herd size (Messier et al. 1998, Ferguson and Messier 2000). Overgrazing of winter range may be a factor in this relationship. For example, as northwest Alaska elder

Nelson Greist observes "if caribou numbers are too high, they over eat" and "when caribou over eat, they need to change" where they go. The size of the WAH naturally oscillates at the decadal scale (Joly et al. 2011). The herd hit a low of 75,000 animals in 1976, but quickly rebounded, reaching nearly 500,000 by 2003 (ADFG 2011). From 2003, the herd steadily declined to 201,000 caribou in 2016 (ADFG 2016), but again increased to 259,000 caribou in 2017 (ADFG 2018). As herd size increases, there is a tendency for its range to expand; as herd size decreases, its range often contracts. The combination of decreasing abundance and diminishing range size can produce extreme hardships for rural subsistence users that rely on caribou, particularly those at the edge of the herd's range. As the WAH has declined, areas that often saw caribou in the past, such as Unalakleet, have not seen them for 15 years. As lichen abundance has declined on the eastern side of the Seward Peninsula, caribou have migrated out to the western Seward Peninsula to overwinter (Joly et al. 2007, Joly and Cameron 2017). Even annual shifts in migratory patterns can have profound impacts on communities in northwest Alaska that can experience large year-to-year swings in caribou availability even when the overall herd size is steady or growing.

On a global scale, long-distance, terrestrial migrations by large mammals are an imperiled phenomenon (Berger 2004). Encroachment of humans on the vast ranges used by migratory animals is one of the primary reasons for their endangerment. There has been relatively little development of northwest Alaska and thus caribou migrations continue to occur relatively unimpeded. A 50-mile- (80-km) long industrial road connecting a mine to its port site does intersect the western-most fall migration corridor of the WAH. The migration of some caribou traveling this route has been delayed by an average of 30 days (Wilson et al. 2016). Vehicular traffic stirs up dust along the road, which impacts vegetation and may alter caribou movements (Hasselbach et al. 2004, Chen et al. 2017). Other proposed development projects, like the 200-mile- (320-km) long road to the Ambler Mining District, could further constrain caribou movements in the area. Roads can have numerous impacts in addition to altering migratory movement, such as increasing vulnerability to vehicle collisions, predation, and hunting. Typically, it is not a single road or development that jeopardizes long-distance migrations, but the cumulative effects of many such projects. While caribou avoid dense vegetation, rough terrain, and wide sections of major rivers during their fall migration southward, current levels of sport hunting activity by people from outside the region does not appear to hinder migration (Fullman et al. 2017). However, many rural residents, such as Noatak elder Eugene Monroe, suggest that sport hunters that arrive by aircraft "disrupt the migration of the caribou" (Betcher 2016). Weather, climate change, and predators are other factors that may impact caribou movements. For example, hunter Lee Ballot, Sr. notes that caribou do not migrate when "it's just too warm, that's what triggers them to move, it is the cold" (Betcher 2016). Much additional research is required, but local knowledge can guide and enhance western-based scientific inquiries.

Large migratory caribou herds, such as the WAH, require vast spaces. While caribou are tolerant of some levels of development, vigilance, caution, and conservation are required to help maintain one of the greatest migratory spectacles in the world; if not just for its own existence, then for the people of northwest Alaska who are inextricably tied to caribou.

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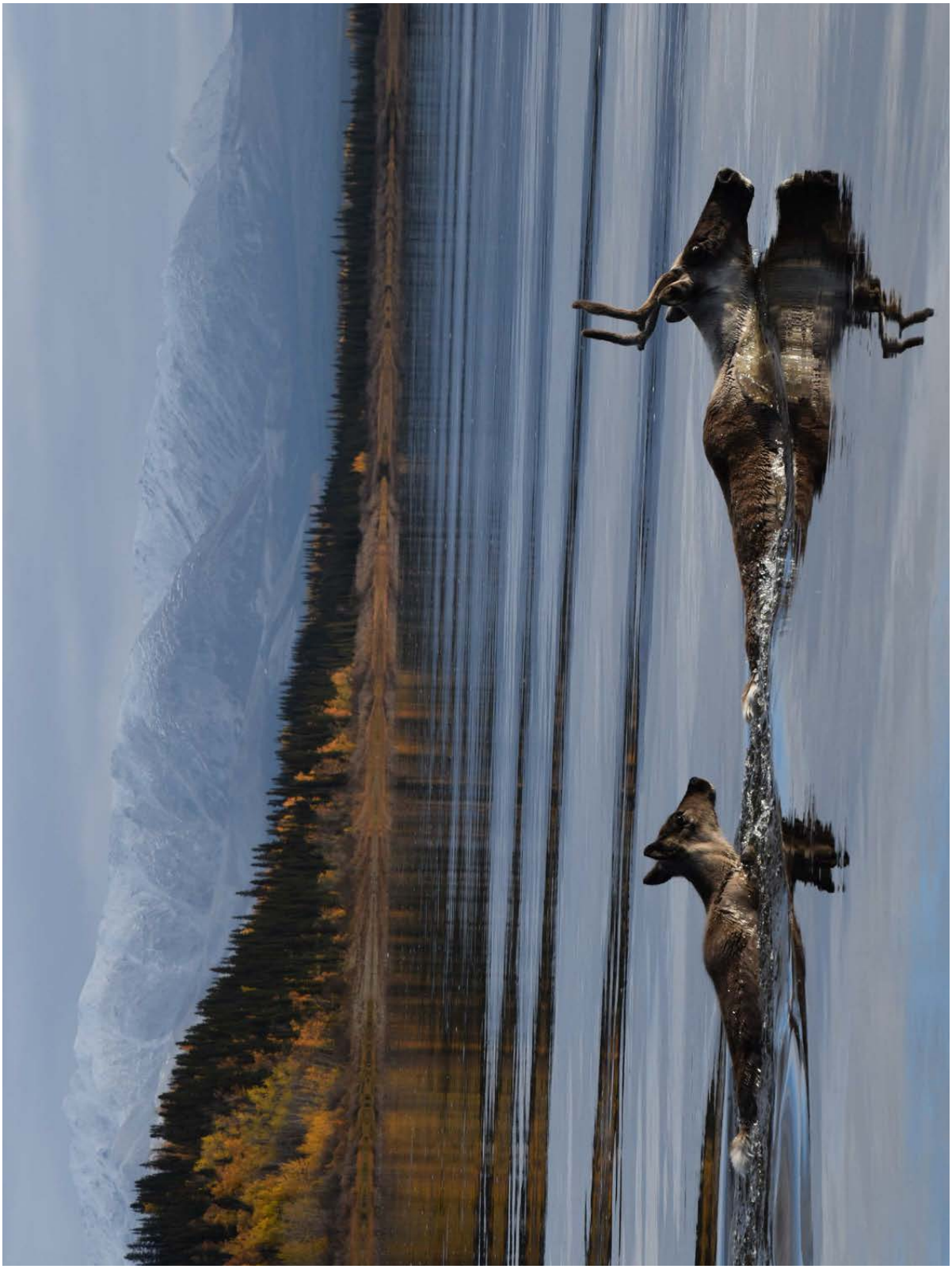
Caribou in fall migrating to their winter grounds.
NPS /Kyle Joly



Early fall and late winter diets of migratory caribou in northwest Alaska

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Abstract: Lichens are the primary winter forage for large herds of migratory caribou (*Rangifer tarandus*). Caribou select for lichens more than they are available across the landscape and they generally avoid, during winter, habitat that has been burned by wildfires for decades while lichen abundance recovers. However, the relative importance of lichens in the diet is subject to debate. From 2010-2013, we conducted one of the largest microhistological studies of the early fall (58 samples from 1 site) and late winter (338 samples from 58 sites) diets of barren-ground caribou. Lichens constituted ~ 71% of the late winter diets of caribou in northwest Alaska, whereas moss (11%) and shrubs (9%) were the next most common forage items. Early fall diets were very similar to late winter, perhaps because deciduous vegetation is senescent during both periods. Diets of males, non-pregnant females and pregnant females were not significantly different. Pregnancy was not associated with the abundance of any forage type during winter, but was associated with higher physiological stress. This result was expected as fall body condition dictates conception, caribou are 'capital' breeders, and gestation can be energetically demanding. Caribou that migrated south (i.e., wintered south of 67.1°N) had lower levels of nutritional stress, higher levels of lichen in the diet, and lower levels of moss and shrubs compared to caribou that did not migrate south. Future investigations into the potential connection between lichen abundance in the winter diet and survivorship, as well as linking the late summer diets of individuals to their reproductive success, should be undertaken.

Key words: body condition; lichens; migration; moss; nutrition; pregnancy; *Rangifer tarandus granti*; stress.

Rangifer, 38, (1), 2018: 27-38
DOI 10.7557/2.38.1.4107

Introduction

The importance of lichens in the winter diet of caribou (*Rangifer tarandus*) has been debated for nearly a century (Klein, 1982). Terricolous lichens constitute the majority of the diet of migratory barren-ground caribou that face predation pressure (Klein, 1982; Russell *et al.*, 1993; Joly *et al.*, 2007b; Gustine *et al.*, 2012; Joly *et al.*, 2015). However, non-migratory populations exist with little to no lichen in their diet (Thomas & Edmonds, 1983; Adamczewski *et al.*, 1988). These populations often experience little to no predation pressure. Migration and predator avoidance behavior both require additional energetic expenditures; expenditures that may be filled by lichen consumption during winter months.

Pregnancy is largely determined by body condition in the fall (Cameron *et al.*, 1993; Cameron & ver Hoef, 1994; Gerhart *et al.*, 1997). Maternal investment in the fetus is relatively small for caribou during the first 2

trimesters (i.e., winter), with approximately 84% of the protein allocation deriving from endogenous sources stored during early winter (Barboza & Parker, 2008). With minimal early maternal investment, fetal resorption is uncommon (Thomas & Barry, 1990). Nitrogen (N) demands peak again during lactation, which occurs in late May and early June (Barboza & Parker, 2008). The abundance of lichen, or any other forage class, in the winter diet should not be strongly linked with pregnancy, parturition or lactation as caribou are 'capital' breeders (Barboza & Parker, 2008; Taillon *et al.*, 2013; Gustine *et al.*, 2017). Capital breeders rely heavily on stored resources to supply fetal development and milk production, in contrast to 'income' breeders which utilize contemporaneous forage intake for these processes.

The amount of lichens in the diets of migratory caribou far exceeds their relative abundance on the landscape (Joly *et al.*, 2007b). Because lichens are so prevalent in the diet and caribou actively select for them, declines in lichen abundance are a concern for caribou management and conservation. Shrubification of the Arctic, overgrazing, and changing climatic conditions are thought to be detrimental to lichens (see review by Joly *et al.*, 2009). Wildfires, which consume caribou forage lichens, are predicted to increase (Joly *et al.*, 2012) in the rapidly warming climate of the Arctic (Comiso & Hall, 2014). Adding concern about the abundance of lichens on the landscape are the effects of proposed and existing industrial development (e.g. Wilson *et al.*, 2013; Wilson *et al.*, 2014; Wilson *et al.*, 2016). In the Arctic, dirt is often the surface of industrial roads and road dust that traffic creates can reduce lichen cover (Exponent, 2007; Chen *et al.*, 2017). In response to lingering questions about the importance of lichens in the diet of overwintering, migratory caribou that face predation pressure in relation to pregnancy, parturition, and sexual segregation, as well as a desire to possess baseline data prior to additional industrial development, we analyzed fall and early winter diets. Specifically, we wanted to test 1) if lichens were a critical component of the diet of caribou in the region, 2) that late winter diet was not related to pregnancy status, 3) if there were differences in the diets of pregnant females, non-pregnant females, and males, and 4) if fall diets at Onion Portage varied annually.

Material and methods

Study area

The study area included most of the annual range of the Western Arctic Herd, covering over 360,000 km^2 (Fig. 1; Joly *et al.*, 2007a). This vast region encompasses coastal to continental climates of the arctic and subarctic with expanses of tundra, boreal forest, wetlands and mountains. See Joly *et al.*, (2007a; 2010) for more details about the study area. The size of the Western Arctic Herd oscillated from a low of about 75,000 in 1976 to maximum of nearly 500,000 caribou in 2003 and declined to 201,000 in 2016 (ADFG, 2011; Joly *et al.*, 2011; ADFG, 2016.). Teshekpuk Lake Herd and Central Arctic Herd caribou can be sympatric with the Western Arctic Herd during winter (ADFG, 2011; Person *et al.*, 2007). Therefore, all samples were designated 'arctic' caribou rather than being parsed by herd (see Joly *et al.*, 2015).

Average temperatures for September of 2010-2012 were about average (5°C) for each year. September 2010 was very dry, 2011 normal and 2012 set records for amount precipitation. Late winter 2011 had normal temperatures (-16°C), but rain-on-snow events in locations occurred earlier in the winter in parts of the study area. In 2012, late winter was colder than normal and had deep snow. Late winter of 2013 was characterized by cool temperatures and low snow accumulation (National Weather Service data available online at http://w2.weather.gov/climate/index.php?wfo=pafc).

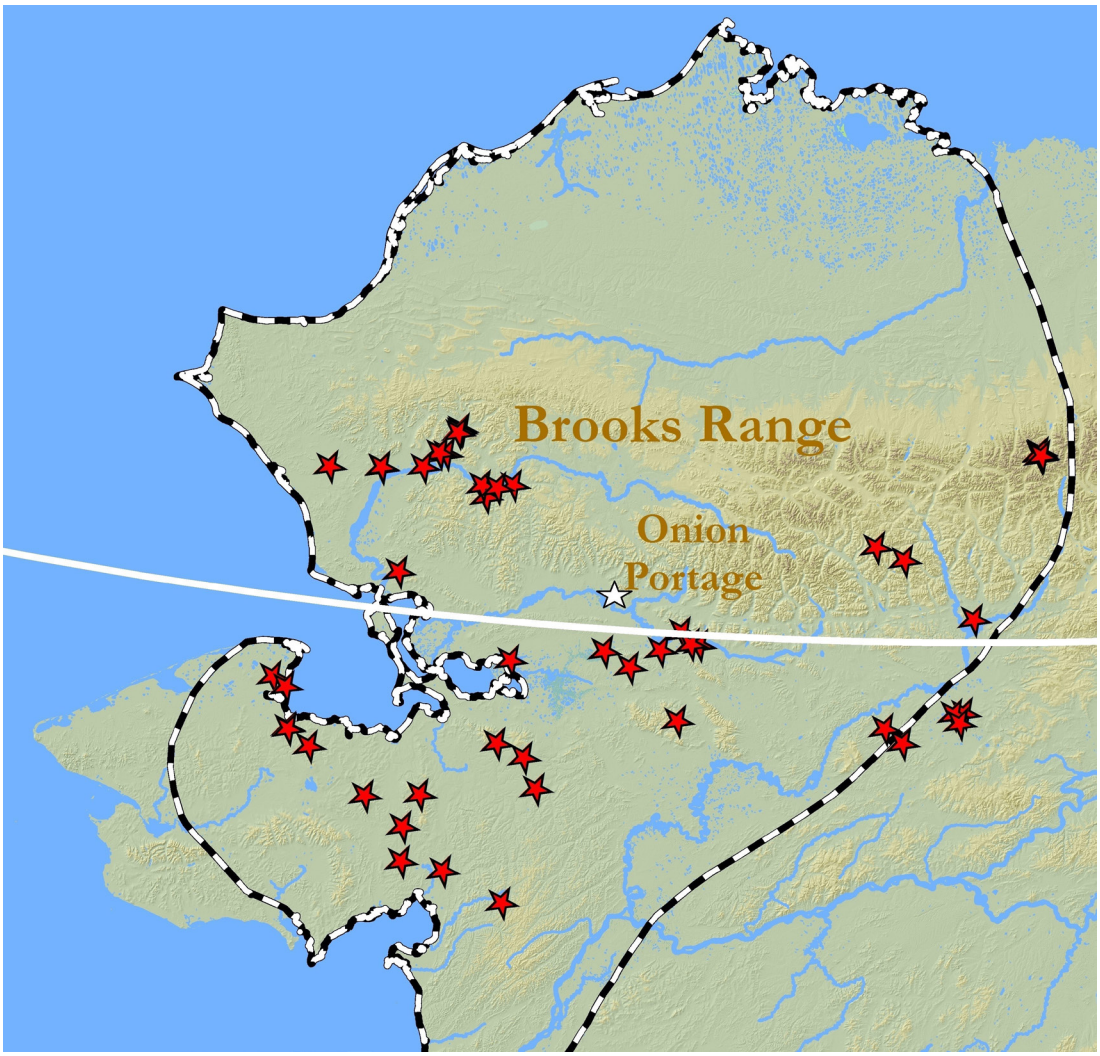

Figure 1. Study area map indicating the locations of fecal sample collection sites in northwest Alaska, 2010-2013. Red stars indicate late winter sites and the white star is Onion Portage where all early fall collections were made. The black and white dashed line indicates the approximate boundary of the Western Arctic Herd's range (courtesy of the Alaska Department of Fish and Game). The white line indicates 67.1°N.

Fecal pellet collection

All fall (n = 58) fecal samples were collected at Onion Portage, Kobuk Valley National Park (Fig. 1) during the month of September, 2010-2012. We collected a total of 338 samples during late winter; 19 samples from 2 sites from April 15-27, 2011, 188 samples from 38 sites from February 7 to April 27, 2012, and 131 samples from 18 sites from April 15-17, 2013. Locations were primarily accessed by small ski-equipped planes (*e.g.*, Piper PA-18 Super Cub), though some were reached by dog team or snowmachine. We collected 10 to 15 fresh pellets from isolated groupings, both in fall and late winter, and stored them frozen in plastic bags until analyses were conducted. The mean

number of samples per location was 6 (range 1-16). We avoided the smaller pellets typical of calves.

Microhistological and hormone analyses

All 396 samples collected were sent in for microhistological diet analysis. Microhistological results for the 188 samples collected during the winter of 2012 were previously reported by Joly *et al.* (2015). We had all of the samples analyzed at the same laboratory to minimize sources of error (see Russell *et al.*, 1993). Relative density of plant fragments was based on 100 views per sample (Level B). We then corrected these results for apparent digestibility following the methodology of Boertje (1984) and Gustine *et al.* (2011).

Late winter samples from 2012 and 2013 were subjected to hormonal analysis and definitive sex determinations were made for 297 of 319 samples (previously reported in Joly *et al.,* 2015); none of the fall samples or the 2011 late winter samples were similarly analyzed. Pregnancy and levels of glucocorticoid (cortisol), and the thyroid hormone triiodothryronine (T3) were also determined (Joly *et al.*, 2015). Analytical methods and results were detailed by Joly *et al.* (2015). Joly *et al.* (2015) identified 67.1°N as a line roughly separating caribou wintering in their traditional, southern core area and those in the more mountainous north that is used by far fewer individuals.

Statistical analyses

For the fall data, we employed analysis of variance (ANOVA) for diet comparisons among years since all samples were collected at the same location and hormone analyses were not performed. Significance was defined at $\alpha = 0.05$ level. For winter data collected in 2012 and 2013, we used linear mixed-effects models to test for relationships for each dietary class and the predictors of pregnancy/sex class (i.e., non-pregnant female, pregnant female, male), winter range (i.e., north or south), cortisol levels, T3 levels, year, and timing in winter (day of year). Site was included as a random effect and we excluded data from 2011 because hormone analyses were not conducted for samples from that year. We used the same procedure to test for differences in cortisol and T3 levels across sex/pregnancy categories, winter ranges, years, and timing in winter. We logit transformed the proportional data for each of the 5 diet categories (Warton & Hui, 2011). We employed a top-down model building strategy to identify significant predictors for each diet category and hormone level following the methods outlined in Zuur *et al.* (2009) and reported results from the most parsimonious model. We used likelihood ratio tests to test for significance of predictor variables and performed all analyses in R 3.3.3 (R Core Team, 2017) using the 'lme4' package (1.1-12, Bates *et al.*, 2015) for model fitting, the 'car' package (2.1-6, Fox & Weisberg, 2011) for data transformation, and the 'MuMIn' package (1.15.6, Bartoń, 2016) to calculate conditional R^2.

Results

Fall data

Lichens dominated the early fall diet of adult caribou, comprising 65.9 ± 1.3% (3-year mean and SE) of their forage intake (Fig. 2). Shrubs and moss were the next most common forage classes but only represented 11.3 ± 1.0% and 8.1 ± 0.5% of the diet, respectively. There was limited inter-annual variability (Fig. 2): mushrooms were a significantly ($F_{2,55} = 58.96$, $P < 0.01$) greater proportion of diet in 2010 (11.0 ± 0.8%) than 2011 or 2012 (none in either year), mosses were a significantly ($F_{2,55} = 20.04$, $P < 0.001$) greater proportion of diet in 2011 (11.7 ± 0.7%) than 2010 (5.8 ± 0.6%) or 2012 (7.7 ± 0.8%), and shrubs were significantly ($F_{2,55} = 4.92$, $P = 0.011$) more common in 2011 (15.1 ± 1.8%) than 2010 (8.1 ± 1.5%), but not 2012 (12.2 ± 1.8%). Lichens, forbs and graminoids

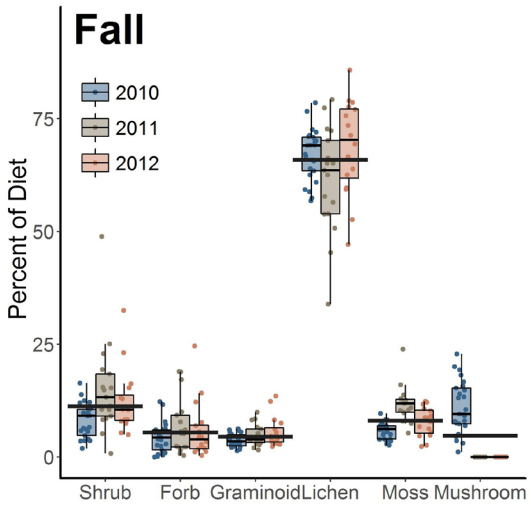

Figure 2. Early fall (September) diets of adult caribou from Onion Portage, Kobuk Valley National Park, northwest Alaska, 2010-2012. The thin bar inside the boxplots represents the median. The thick bar spanning all 3 years represents the 3-year mean.

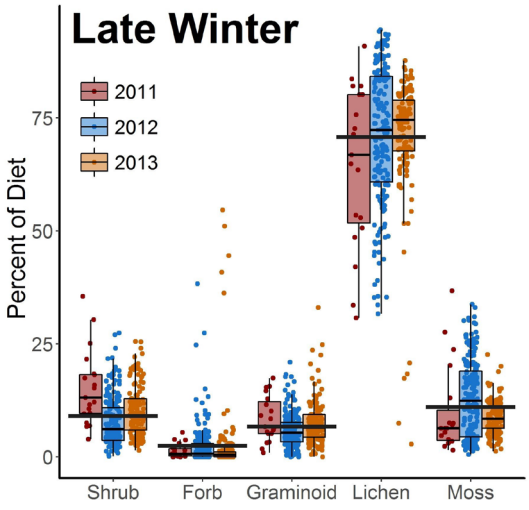

Figure 3. Late winter diets (February-April) of adult caribou in northwest Alaska, 2011-2013. The thin bar inside the boxplots represents the median. The thick bar spanning all 3 years represents the 3-year mean.

exhibited no significant differences among the 3 years of sampling.

Winter data

Overall (2011-2013, n = 338), lichens dominated the diet of adult caribou in winter as well, comprising 70.8 ± 0.8% (3-year mean and SE) of their forage intake (Fig. 3). For the 2012-2013 data, we found significant differences in the percentage of lichens in the diet between winter ranges (χ^2 (1) = 12.53, P < 0.01); diets of caribou on the southern winter range had a greater percentage of lichens in their diets than caribou on the northern winter range (Fig. 4A, $\hat{\beta}_{South}$ = 0.605 ± 0.184 SE, logit space). All sites (n = 9) with an average of < 59% lichens in the diet were on the northern winter range, while all sites (n = 15) with > 80% were in the south. Lichens were significantly positively related to cortisol (χ^2 (1) = 6.53, P = 0.01); greater lichen percentages were associated with higher cortisol levels ($\hat{\beta}_{Cortisol}$ = 0.004 ± 0.001 per unit cortisol, logit space), as well as a significant negative relationship to timing in winter (χ^2 (1) = 5.54, P = 0.02); less lichens were in the diet as winter progressed ($\hat{\beta}_{Timing}$ = -0.022 ± 0.006, logit space). While Joly *et al.* (2015) noted that consumption of lichens by pregnant females was significantly less than either non-pregnant females or males in 2012, with the addition of 2013 data we detected no significant relationships in the percentage of lichens among sex/pregnancy categories (χ^2 (1) = 3.50, P = 0.17). We found no significant differences in the proportion of lichens in the diet across years or T3 levels. Conditional R^2 of the top performing model (lichens ~ winter range + cortisol levels + winter timing) was 80.3%.

Moss was the next most common forage class, but represented only 11.0 ± 0.4% of the diet (3-year mean and SE, Fig. 3). For the 2012-2013 data, percentage of moss in the diet varied significantly between winter ranges (χ^2 (1) = 12.25, P < 0.01); diets of caribou in the south contained less moss than caribou in the

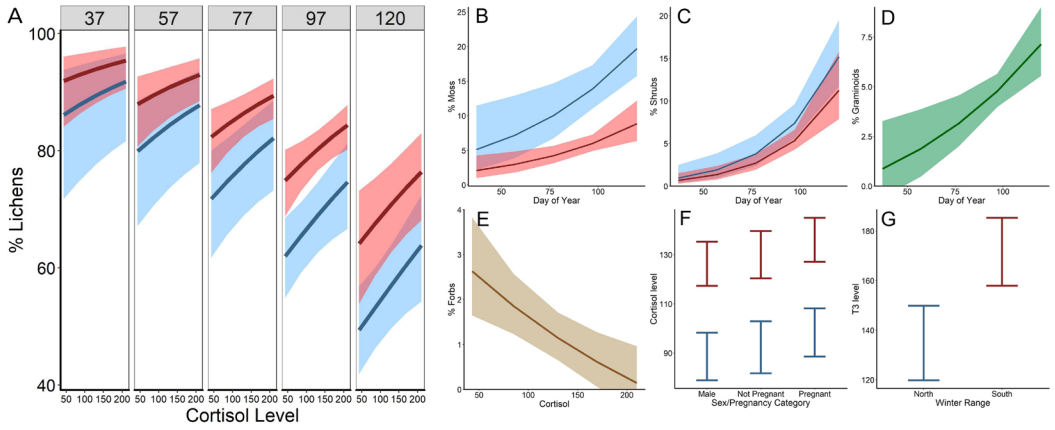

Figure 4. Predicted results from top fitted models in the analysis of winter diet data for caribou in northwest Alaska 2012-2013. Plots are the fitted results from the best performing model for lichen (A), moss (B), shrubs (C), graminiods (D), forbs (E), cortisol level (F) and T3 level (G). When the winter range category was significant, red-shaded lines represent the southern range (south of 67. 1°N) and blue-shaded lines depict the northern range. Bands (A-E) and bars (F and G) depict 95% confidence intervals. For percent lichen (A), sub-plots depict the specified day of year, indicated at the top of each plot.

north (Fig. 4B, $\hat{\beta}_{South}$ = -0.928 ± 0.173, logit space). Caribou on the northern winter range had more than double the amount of moss in their diet (16.4 ± 0.5%) than caribou in the south (7.7 ± 0.4%, 2-year means). Additionally, percentage of moss in the diet increased significantly (χ^2 (1) = 8.64, $P < 0.01$) as winter progressed ($\hat{\beta}_{Timing}$ = 0.018 ± 0.006 per day, logit space). Percentage of moss did not significantly differ across years, sex/pregnancy categories, or cortisol and T3 levels. Conditional R^2 of the top performing model (moss ~ winter range + winter timing) was 77.0%.

Shrubs were the next most common forage class after mosses and represented 9.1 ± 0.3% of the diet (3-year mean and SE, Fig. 3). For the 2012-2013 data, percentage of shrubs in the winter diet varied significantly between northern and southern ranges (χ^2 (1) = 5.22, P = 0.02) and exhibited a significant positive relationship with winter timing (χ^2 (1) = 13.46, $P < 0.01$). Diets of caribou residing in the south contained less shrubs than diets of caribou residing in the northern range (Figure 4C, $\hat{\beta}_{South}$ = -0.346 ± 0.189, logit space). Caribou on the northern winter range had 50% more shrubs in their diet (11.0 ± 0.5%) than those in the south (7.3 ± 0.4%, 2-year means). The percentage of shrubs in caribou diets increased as winter progressed ($\hat{\beta}_{Timing}$ = 0.035 ± 0.007 per day, logit space) in both the northern and southern winter ranges. Percentages of shrubs did not significantly differ between years, sex/pregnancy categories, or either hormone levels. Conditional R^2 of the top performing model (shrubs ~ winter range + winter timing) was 67.6%.

Graminoids comprised 6.7 ± 0.3% of caribou diets (3-year mean and SE, Fig. 3). For the 2012-2013 data, percentage of graminoids significantly varied with timing in winter (χ^2 (1) = 6.29, P = 0.01); greater proportions of graminoids occurred in the diet as winter progressed (Fig. 4D, $\hat{\beta}_{Timing}$ = 0.013 ± 0.004 per day, logit space). We found no significant relationship across years, between sex/pregnancy categories, winter range, or either hormone level for graminoids. Conditional R^2 of the top model (graminoids ~ winter timing) was 59.9%.

Forbs (6.0 ± 0.4%) comprised the smallest proportion of caribou diet classes (3-year mean and SE, Fig. 3). For the 2012-2013 data, percentage of forbs in the diet exhibited a significant negative relationship with cortisol levels (χ^2 (1) = 6.42, P = 0.01); percent of forbs decreased with higher levels of cortisol (Figure 4E, $\hat{\beta}_{Cortisol}$ = -0.004 ± 0.001 per unit cortisol, logit space). We found no significant difference across years, between sex/pregnancy categories, wintering range, T3 levels, or winter timing for percentage of forbs. Conditional R^2 of the top model (forbs ~ cortisol levels) was 61.5%.

Winter range exhibited a significant effect on both cortisol level (χ^2 (1) = 15.92, P < 0.01) and T3 level (χ^2 (1) = 10.68, P < 0.01). Additionally, cortisol levels significantly varied among sex and pregnancy classes (χ^2 (1) = 13.98, P < 0.01). Cortisol levels were highest for pregnant females (9.8 ± 2.7 greater than males, Fig. 4F), followed by non-pregnant females (3.7 ± 3.3 greater than males), and lowest for males (88.6 ± 4.9), while caribou in the southern range had higher cortisol levels for all 3 categories (37.7 ± 6.4 greater for each category). T3 levels were lower for caribou in the northern range (134.8 ± 7.6, Fig. 4G) than for caribou in the southern range (171.6 ± 7.0). Conditional R^2 of the top models were 72.7% (cortisol ~ sex/pregnancy category + winter range) and 72.1% (T3 level ~ winter range). The proportion of females that were pregnant was not significantly different between northern (70.3 ± 5.4%) and southern (69.7 ± 4.4%) sites.

Discussion

This study (which includes data presented by Joly *et al.* (2015)) is one of the most extensive microhistological analyses of caribou diets to date. In concurrence with other studies (e.g., Boertje, 1984; Boertje, 1990; Saperstein, 1996; Joly *et al.*, 2007b; Gustine *et al.*, 2012), we found that lichens constituted the majority of the diet for most caribou, with some (~ 6%) individuals having more than 90% in their diet. For the past 40 years, lichens have typically comprised 65 - 70% of the diet of migratory caribou that face substantive predation pressure (Table 1). Lichens are consumed far more than their relative availability on the landscape (Joly *et al.*, 2007b). Caribou that persist at low densities, do not migrate, face reduced predation pressure, and have smaller body sizes are known to survive with limited lichen consumption (Thomas & Edmonds, 1983; Adamczewski et al., 1988). The question of why large migratory herds of caribou utilize lichens so heavily remains.

The amount of lichen, or any other dietary component, in the late winter diet of caribou was not associated with females being pregnant (Joly et *al.*, 2015; *this study*). Pregnancy is determined in the fall and is associated with body condition, often indexed by mass, at this time (Cameron *et al.*, 1993; Cameron & ver Hoef, 1994; Gerhart *et al.*, 1997). Caribou rely heavily on stored resources for their investment in fetal development and early lactation (i.e., they are 'capital' breeders; Barboza & Parker, 2008; Taillon *et al.*, 2013; Gustine *et al.*, 2017). These resources are typically accumulated prior to vegetative senescence and shortly thereafter. Thus, the importance of lichens does not appear to be linked with pregnancy, parturition or early lactation.

Indices of higher nutritional stress (i.e., low T3 levels) were greater for caribou on their northern winter range as compared to the southern winter range. There was more than 2 times the proportion of moss and 50% more shrubs in the diets of caribou on the northern winter range. Moss and shrubs account for the discrepancy in the levels of lichens reported in their diets on their northern and southern winter ranges. There were ~ 25% fewer lichens in the diets of caribou at these northern locations, which is in concurrence with other studies (Ta-

Table 1. Percentage of lichens in the late winter diet of 'arctic' caribou reported from other projects. WAH is Western Arctic Herd, TCH is Teshekpuk Caribou Herd, CAH is Central Arctic Herd, and PCH is Porcupine Caribou Herd.

Age/Sex Class	Herd(s)	N	Lichens %	Year(s)	Study
All classes	WAH, TCH	3	60	2008	Gustine *et al*., 2012
All classes	WAH, TCH	6	77	2007	Gustine *et al*., 2012
All classes	WAH, TCH	5	68	2006	Gustine *et al*., 2012
Adults	WAH, TCH	23	64	2005	Joly *et al*., 2007b
Adults	WAH, TCH	23	72	1995-96	Joly *et al*., 2007b
All classes	WAH, TCH		59[a]	1991	Saperstein 1996
All classes	WAH, TCH		74[a]	1990	Saperstein 1996
All classes	TCH	2	28	2004	Parrett 2007
All classes	CAH	3	47	2008	Gustine *et al*., 2012
All classes	CAH	4	61	2007	Gustine *et al*., 2012
All classes	CAH	4	76	2006	Gustine *et al*., 2012
All classes	PCH	15	67	1979-82	Russell *et al.* 1993
All classes	PCH	100	67	1973	Thompson & McCourt 1982

[a] Unknown if value corrected for apparent digestibility.

ble 1). These northern sites also have a lower predicted probability of use as determined by resource selection function (RSF) models (Joly, 2011). Pregnancy rates were greater at the northern sites, but not significantly so. Higher levels of cortisol were correlated with being pregnant. Indications of physiological stress (i.e., high cortisol levels; see Morton *et al*., 1995; Dehnhard *et al*., 2001; Möstl & Palme 2002) were low for caribou at the northern sites (*this study*) and highest at mid-latitudes (Joly *et al*., 2015). We posit that some migratory caribou enter winter in good enough condition that they do not migrate to their traditional winter grounds and, instead, spend winter on inferior range. The potential benefits of such behavior are reduced energetic expenditure for locomotion and reduced exposure to predation along the migration route. While robust data is currently lacking, adult survivorship appears to be lower at these northern sites (Joly *et al*., 2015). Hence, abundance of lichens in the winter diet may be linked to adult survivorship (Joly et *al*., 2015), but this hypothesis remains untested. Lower population densities and physiological differences dictated by smaller body size are other potential key, and not necessarily mutually exclusive, factors that could allow some caribou populations to persist without lichens.

In contrast to Joly *et al.* (2015), we found no significant differences in the amount of lichens, or any other forage class, among pregnant females, non-pregnant females and males. Sexual segregation is common in caribou during winter (Cameron & Whitten, 1979; Jakimchuk *et al*., 1987), though it was muted in northwest Alaska (Joly *et al*., 2015). The apparent lack of dietary niche separation during this time suggests behavioral rather than physiological or nutritional differences drive segregation. Males appear to utilize rougher terrain that suggests a risk-adverse, energy conservation strategy versus females that may utilize habitats with greater lichen availability to maximize energy intake but also increase predation exposure (Joly, 2011). Increased exposure could be mitigated by females forming larger groups (Roberts, 1996). Utilization of lichen starts to

decline in late winter (Russell *et al*., 1993; Joly *et al*., 2015, *this study*), while graminoid usage increases (*this study*). This change in diet may reflect the increasing availability of other forage items as snow melts, increasing need for protein, or both (Joly *et al*., 2015).

Most deciduous vegetation has senesced by early fall in the Arctic and northern sub-arctic. In agreement with previous studies (Thompson & McCourt, 1981; Russell *et al*., 1993; Parrett, 2007), we found that early fall diets were very similar to late winter diets (Figs. 2 & 3). Given that most deciduous vegetation has senesced during both of these time frames, this result should not be surprising. This adds support to the hypothesis that late summer (after peak insect harassment but before vegetative senescence) is a critical foraging window for caribou to gain the requisite resources to become pregnant, calve, and endure early lactation requirements for females and for males to endure the rigors of the rut (see Joly *et al*., 2011; Joly *et al*., 2015; Gustine *et al*., 2017).

Conclusions

For at least 4 decades, research has consistently documented lichens as being the most abundant forage item in the winter diets of migratory caribou; however, that abundance of lichens is not related to pregnancy rate. Lichens are highly digestible and high in carbohydrates (Person *et al*., 1980). This makes lichens a good source of energy for caribou, perhaps facilitating overwinter survival. Future research should examine the potential nexus between lichens in the diet and survivorship during winter. Additionally, researchers should investigate links between diets of specific individuals to their reproductive performance and survivorship, especially during the late summer foraging window.

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Office of Subsistence Management

Fall 2018 Report to the
Federal Subsistence Regional Advisory Councils

Staffing Update

Departures

Gene Peltola, Jr. left his position as the Assistant Regional Director (ARD) to become the new Regional Director for the Bureau of Indian Affairs in Alaska. In that role, he will also serve as a member of the Federal Subsistence Board. No official action has been taken as of yet to commence recruitment for a replacement. In the meantime, Tom Doolittle has assumed the role of the Acting ARD.

New Arrivals

Greg Risdahl has started as the new Fisheries Division supervisor at the Office of Subsistence Management (OSM). He received his B.S. in wildlife biology with a minor in anthropology from the University of Montana, and a M.S. from Montana State University in Fish and Wildlife Management. Greg previously worked for OSM as a wildlife biologist. He has served as the Deputy Refuge Manager at Tetlin National Wildlife Refuge and most recently as the Izembek National Wildlife Refuge Manager. Over his career, he has worked in both wildlife and fisheries management.

Vacancies

The following is a summary of current vacant positions and the status in hiring personnel to fill these positions:

Anthropology Division Supervisor
Paperwork has been submitted to the Alaska Regional Director, U.S. Fish and Wildlife Service, for approval to recruit to fill this position.

Staff Anthropologist
The announcement to hire for this vacancy was published on USA Jobs on August 30, 2018, and was open until September 12, 2018. Human Resources is developing a list of qualified candidates.

Fisheries Biologist
The position posted on USA Jobs and Tom Doolittle has received a list of qualified applicants to consider for hiring.

Administrative Assistant
The Office of Subsistence Management has not been authorized to fill this vacancy.

2018-2020 Federal Wildlife Regulations

The wildlife regulatory year began on July 1, 2018, but the changes to the regulations based on the Federal Subsistence Board's action in April have not yet been published in the Federal Register. Those changes are therefore not in effect until that publication.

This has two specific consequences for the Federal Subsistence Management Program. First, the modifications to regulations made at the April Board meeting did not take effect on July 1, and will not take effect until the Federal Register notice is published. For example, the new definition of "bear bait" adopted in WP18-51 does not yet exist, or the C&T for deer in Units 1-5 has not yet been expanded to all Southeast residents, as authorized in the adoption of WP18-02.

Second, any wildlife actions that resulted from Board approval of temporary wildlife special actions last regulatory year expired on June 30.

However, the Federal Subsistence Board has issued several temporary delegation of authority letters to authorize land managers in particular areas to enact certain wildlife regulatory actions adopted by the Board in April 2018 but not yet published in the Federal Register. These temporary delegation of authority letters were issued to the following in-season managers, and will expire when the new wildlife regulations are published:

- Craig District Ranger, Tongass National Forest –Unit 2 deer (to implement WP18-01, adopted as WP18-01A)
- Thorne Bay District Ranger, Tongass National Forest – Unit 2 deer (to implement WP18-01, adopted as WP18-01A)
- Yakutat District Ranger, Tongass National Forest – Unit 5A (except Nunatak Bench, east of the Dangerous River) moose (to implement WP18-10 as modified)
- Superintendent, Western Arctic Park Lands – Unit 23 caribou in the Noatak National Preserve (to implement partial closure adopted in WP 18-46 as modified)
- Anchorage Field Office Manager, Bureau of Land Management – Unit 23 caribou in the Squirrel River drainage (to implement partial closure adopted in WP 18-46 as modified)

Winter 2019 Regional Advisory Council Meeting Calendar

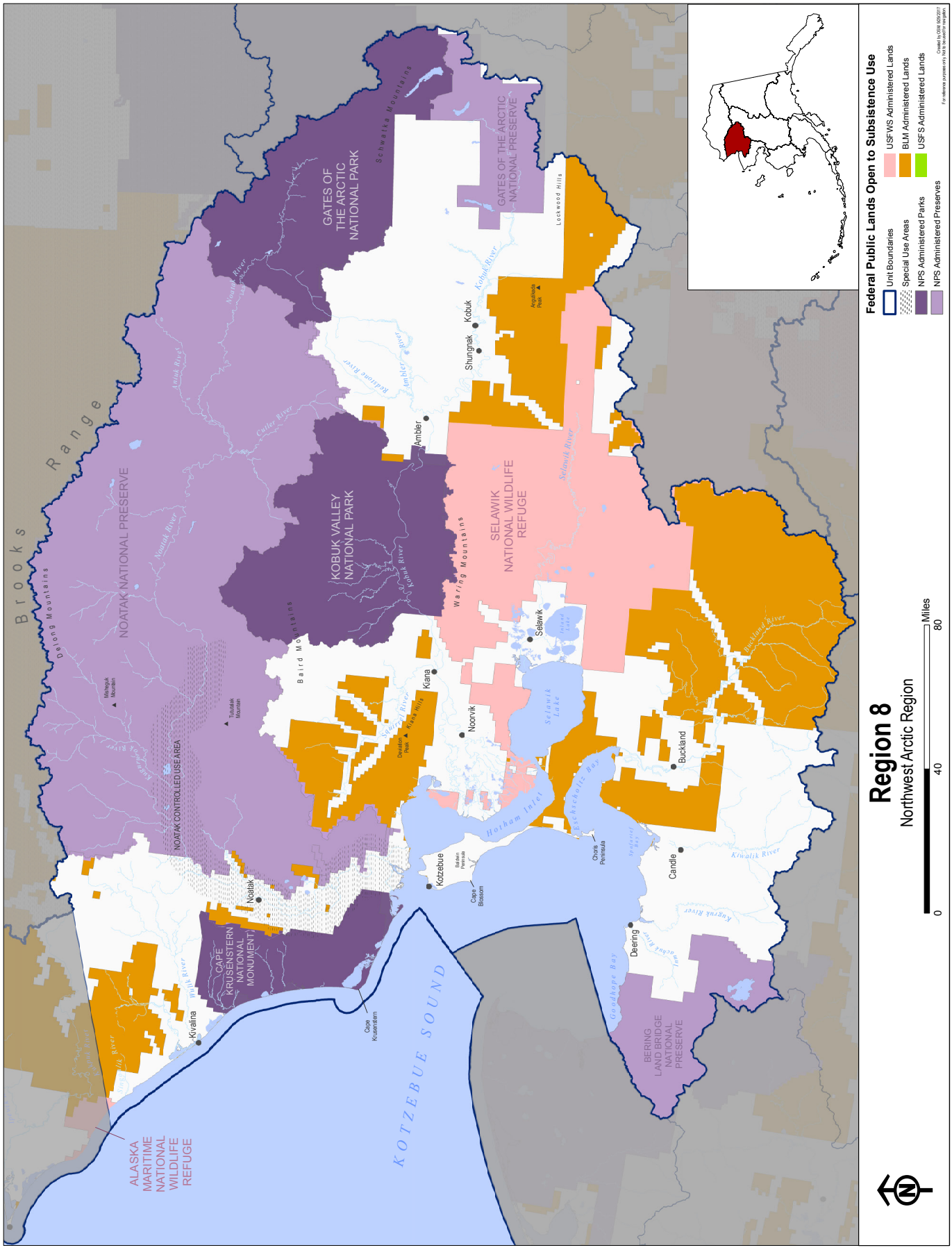
Due to travel budget limitations placed by Department of the Interior on the U.S. Fish and Wildlife Service and the Office of Subsistence Management, the dates and locations of these meetings will be subject to change.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Feb. 3	*Feb. 4* *Window Opens*	*Feb. 5* **BB — Naknek**	*Feb. 6*	*Feb. 7*	*Feb. 8*	*Feb. 9*
Feb. 10	*Feb. 11*	*Feb. 12* **SE — Wrangell**	*Feb. 13* **NS — Utqiaġvik**	*Feb. 14*	*Feb. 15*	*Feb. 16*
Feb. 17	*Feb. 18* ***PRESIDENT'S DAY*** ***HOLIDAY***	*Feb. 19*	*Feb. 20* **WI — Fairbanks**	*Feb. 21* **KA — Kodiak**	*Feb. 22*	*Feb. 23*
Feb. 24	*Feb. 25*	*Feb. 26* **SC — Anchorage**	*Feb. 27* **NWA — Kotzebue**	*Feb. 28*	*Mar. 1*	*Mar. 2*
Mar. 3	*Mar. 4*	*Mar. 5* **EI — Fairbanks** **SP — Nome**	*Mar. 6*	*Mar. 7*	*Mar. 8*	*Mar. 9*
Mar. 10	*Mar. 11*	*Mar. 12* **YKD — Bethel**	*Mar. 13*	*Mar. 14*	*Mar. 15* *Window Closes*	*Mar. 16*

Fall 2019 Regional Advisory Council Meeting Calendar

Due to travel budget limitations placed by Department of the Interior on the U.S. Fish and Wildlife Service and the Office of Subsistence Management, the dates and locations of these meetings will be subject to change.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Aug. 18	*Aug. 19*	*Aug. 20*	*Aug. 21*	*Aug. 22*	*Aug. 23*	*Aug. 24*
Aug. 25	*Aug. 26*	*Aug. 27*	*Aug. 28*	*Aug. 29*	*Aug. 30*	*Aug. 31*
Sept. 1	*Sept. 2* **LABOR DAY HOLIDAY**	*Sept. 3*	*Sept. 4*	*Sept. 5*	*Sept. 6*	*Sept. 7*
Sept. 8	*Sept. 9*	*Sept. 10*	*Sept. 11*	*Sept. 12*	*Sept. 13*	*Sept. 14*
Sept. 15	*Sept. 16*	*Sept. 17*	*Sept. 18*	*Sept. 19*	*Sept. 20*	*Sept. 21*
Sept. 22	*Sept. 23*	*Sept. 24*	*Sept. 25*	*Sept. 26*	*Sept. 27*	*Sept. 28*
Sept. 29	*Sept. 30*	*Oct. 1*	*Oct. 2*	*Oct. 3*	*Oct. 4*	*Oct. 5*
Oct. 6	*Oct. 7*	*Oct. 8*	*Oct. 9*	*Oct. 10*	*Oct. 11*	*Oct. 12*
Oct. 13	*Oct. 14* **COLUMBUS DAY HOLIDAY**	*Oct. 15*	*Oct. 16*	*Oct. 17* **AFN — Fairbanks**	*Oct. 18*	*Oct. 19*
Oct. 20	*Oct. 21*	*Oct. 22*	*Oct. 23* **NS — Utqiagvik**	*Oct. 24*	*Oct. 25*	*Oct. 26*
Oct. 27	*Oct. 28*	*Oct. 29*	*Oct. 30*	*Oct. 31*	*Nov. 1*	*Nov. 2*
Nov. 3	*Nov. 4*	*Nov. 5*	*Nov. 6*	*Nov. 7*	*Nov. 8*	*Nov. 9*


Region 8
Northwest Arctic Region
Miles
0
40
80
Federal Public Lands Open to Subsistence Use
Unit Boundaries
Special Use Areas
NPS Administered Parks
NPS Administered Preserves
USFWS Administered Lands
BLM Administered Lands
USFS Administered Lands
GATES OF THE ARCTIC NATIONAL PARK
GATES OF THE ARCTIC NATIONAL PRESERVE
NOATAK NATIONAL PRESERVE
NOATAK CONTROLLED USE AREA
KOBUK VALLEY NATIONAL PARK
SELAWIK NATIONAL WILDLIFE REFUGE
CAPE KRUSENSTERN NATIONAL MONUMENT
ALASKA MARITIME NATIONAL WILDLIFE REFUGE
BERING LAND BRIDGE NATIONAL PRESERVE
KOTZEBUE SOUND
Brooks Range
Schwatka Mountains
Lockwood Hills
Waring Mountains
Baird Mountains
DeLong Mountains
Hotham Inlet
Eschscholtz Bay
Goodhope Bay
Kobuk River
Noatak River
Selawik River
Buckland River
Kwiguk River
Kwiniuk River
Wulik River
Kivalina
Noatak
Kotzebue
Kiana
Noorvik
Selawik
Ambler
Shungnak
Kobuk
Buckland
Candle
Deering

Department of the Interior
U. S. Fish and Wildlife Service

Northwest Arctic Subsistence Regional Advisory Council

Charter

1. **Committee's Official Designation.** The Council's official designation is the Northwest Arctic Subsistence Regional Advisory Council (Council).

2. **Authority.** The Council is renewed by virtue of the authority set out in the Alaska National Interest Lands Conservation Act (ANILCA) (16 U.S.C. 3115 (1988)), and under the authority of the Secretary of the Interior, in furtherance of 16 U.S.C. 410hh-2. The Council is regulated by the Federal Advisory Committee Act (FACA), as amended, 5 U.S.C. Appendix 2.

3. **Objectives and Scope of Activities.** The objective of the Council is to provide a forum for the residents of the Region with personal knowledge of local conditions and resource requirements to have a meaningful role in the subsistence management of fish and wildlife on Federal lands and waters in the Region.

4. **Description of Duties.** Council duties and responsibilities, where applicable, are as follows:

    a. Recommend the initiation of, review, and evaluate proposals for regulations, policies, management plans, and other matters relating to subsistence uses of fish and wildlife on public lands within the Region.

    b. Provide a forum for the expression of opinions and recommendations by persons interested in any matter related to the subsistence uses of fish and wildlife on public lands within the Region.

    c. Encourage local and regional participation in the decision-making process affecting the taking of fish and wildlife on the public lands within the Region for subsistence uses.

    d. Prepare an annual report to the Secretary containing the following:

        (1) An identification of current and anticipated subsistence uses of fish and wildlife populations within the Region.

        (2) An evaluation of current and anticipated subsistence needs for fish and wildlife populations within the Region.

(3) A recommended strategy for the management of fish and wildlife populations within the Region to accommodate such subsistence uses and needs.

(4) Recommendations concerning policies, standards, guidelines, and regulations to implement the strategy.

e. Appoint three members to each of the Cape Krusenstern National Monument and the Kobuk Valley National Park Subsistence Resource Commissions and one member to the Gates of the Arctic National Park Subsistence Resource Commission in accordance with Section 808 of ANILCA.

f. Make recommendations on determinations of customary and traditional use of subsistence resources.

g. Make recommendations on determinations of rural status.

h. Provide recommendations on the establishment and membership of Federal local advisory committees.

i. Provide recommendations for implementation of Secretary's Order 3347: Conservation Stewardship and Outdoor Recreation, and Secretary's Order 3356: Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories. Recommendations shall include, but are not limited to:

(1) Assessing and quantifying implementation of the Secretary's Orders, and recommendations to enhance and expand their implementation as identified;

(2) Policies and programs that:

(a) increase outdoor recreation opportunities for all Americans, with a focus on engaging youth, veterans, minorities, and other communities that traditionally have low participation in outdoor recreation;

(b) expand access for hunting and fishing on Bureau of Land Management, U.S. Fish and Wildlife Service and National Park Service lands in a manner that respects the rights and privacy of the owners of non-public lands;

(c) increase energy, transmission, infrastructure, or other relevant projects while avoiding or minimizing potential negative impacts on wildlife; and

(d) create greater collaboration with states, tribes, and/or territories.

j. Provide recommendations for implementation of the regulatory reform initiatives and policies specified in section 2 of Executive Order 13777: Reducing Regulation and Controlling Regulatory Costs; Executive Order 12866: Regulatory Planning and Review, as amended; and section 6 of Executive Order 13563: Improving Regulation and Regulatory Review. Recommendations shall include, but are not limited to:

Identifying regulations for repeal, replacement, or modification considering, at a minimum, those regulations that:

(1) eliminate jobs, or inhibit job creation;

(2) are outdated, unnecessary, or ineffective;

(3) impose costs that exceed benefits;

(4) create a serious inconsistency or otherwise interfere with regulatory reform initiative and policies;

(5) rely, in part or in whole, on data or methods that are not publicly available or insufficiently transparent to meet the standard for reproducibility; or

(6) derive from or implement Executive Orders or other Presidential and Secretarial directives that have been subsequently rescinded or substantially modified.

At the conclusion of each meeting or shortly thereafter, provide a detailed recommendation meeting report, including meeting minutes, to the Designated Federal Officer (DFO).

5. **Agency or Official to Whom the Council Reports.** The Council reports to the Federal Subsistence Board Chair, who is appointed by the Secretary of the Interior with the concurrence of the Secretary of Agriculture.

6. **Support.** The U.S. Fish and Wildlife Service will provide administrative support for the activities of the Council through the Office of Subsistence Management.

7. **Estimated Annual Operating Costs and Staff Years**. The annual operating costs associated with supporting the Council's functions are estimated to be $150,000, including all direct and indirect expenses and 1.0 staff years.

8. **Designated Federal Officer.** The DFO is the Subsistence Council Coordinator for the Region or such other Federal employee as may be designated by the Assistant Regional Director – Subsistence, Region 7, U.S. Fish and Wildlife Service. The DFO is a full-time Federal employee appointed in accordance with Agency procedures. The DFO will:

   (a) Approve or call all of the advisory committee's and subcommittees' meetings;

   (b) Prepare and approve all meeting agendas;

   (c) Attend all committee and subcommittee meetings;

   (d) Adjourn any meeting when the DFO determines adjournment to be in the public interest; and

   (e) Chair meetings when directed to do so by the official to whom the advisory committee reports.

9. **Estimated Number and Frequency of Meetings.** The Council will meet 1-2 times per year, and at such times as designated by the Federal Subsistence Board Chair or the DFO.

10. **Duration.** Continuing

11. **Termination.** The Council will be inactive 2 years from the date the Charter is filed, unless, prior to that date, it is renewed in accordance with the provisions of section 14 of the FACA. The Council will not meet or take any action without a valid current charter.

12. **Membership and Designation.** The Council's membership is composed of representative members as follows:

    Ten members who are knowledgeable and experienced in matters relating to subsistence uses of fish and wildlife and who are residents of the Region represented by the Council. To ensure that each Council represents a diversity of interests, the Federal Subsistence Board in their nomination recommendations to the Secretary will strive to ensure that seven of the members (70 percent) represent subsistence interests within the Region and three of the members (30 percent) represent commercial and sport interests within the Region. The portion of membership representing commercial and sport interests must include, where possible, at least one representative from the sport community and one representative from the commercial community.

    The Secretary of the Interior will appoint members based on the recommendations from the Federal Subsistence Board and with the concurrence of the Secretary of Agriculture.

Members will be appointed for 3-year terms. A vacancy on the Council will be filled in the same manner in which the original appointment was made. Members serve at the discretion of the Secretary.

Council members will elect a Chair, Vice-Chair, and Secretary for a 1-year term.

Members of the Council will serve without compensation. However, while away from their homes or regular places of business, Council and subcommittee members engaged in Council, or subcommittee business, approved by the DFO, may be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in Government service under section 5703 of title 5 of the United States Code.

13. **Ethics Responsibilities of Members.** No Council or subcommittee member will participate in any Council or subcommittee deliberations or votes relating to a specific party matter before the Department or its bureaus and offices including a lease, license, permit, contract, grant, claim, agreement, or litigation in which the member or the entity the member represents has a direct financial interest.

14. **Subcommittees.** Subject to the DFOs approval, subcommittees may be formed for the purpose of compiling information and conducting research. However, such subcommittees must act only under the direction of the DFO and must report their ·ide recommendations to the full Council for consideration. Subcommittees must not provide advice or work products directly to the Agency. Subcommittees will meet as necessary to accomplish their assignments, subject to the approval of the DFO and the availability of resources.

15. **Recordkeeping.** Records of the Council, and formally and informally established subcommittees or other subgroups of the Council, shall be handled in accordance with General Records Schedule 6.2, and other approved Agency records disposition schedule. These records shall be available for public inspection and copying, subject to the Freedom of Information Act, 5 U.S.C. 552.

Secretary of the Interior

DEC 0 1 2017

Date Signed

DEC 0 4 2017

Date Filed

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