Minutes of the
Ice Seal Committee Meeting

May 30-31, 2019
Dimond Center Hotel
Anchorage, Alaska

PARTICIPANTS

Name	Organization[1]	Contact
Members present		
Billy Adams	NSB	billy.adams@north-slope.org
Helen Aderman	BBNA	haderman@bbna.com
Brandon Ahmasuk	Kawerak, Inc.	bahmasuk@kawerak.org *or* sub.dir@kawerak.org
Sam Gosuk	BBNA	sgosuk@swrsd.org
Jennifer Hooper	AVCP	jhooper@avcp.org
Emerson Moto	Maniilaq Assoc.	emerson.moto@maniilaq.org *or* carol.schaeffer@maniilaq.org
Albert Simon	AVCP	albertpaimiut@yahoo.com
Members not present		
Joe Mello Leavitt	NSB	(907) 852-2258
Cyrus Harris	Maniilaq Assoc.	charris@maniilaq.org
Benjamin Payenna	Kawerak, Inc.	bpayenna@hotmail.com
Alternates present		
Taqulik Hepa[2]	NSB	taqulik.hepa@north-slope.org
Alternates not present		
Gayla Hoseth	BBNA	ghoseth@bbna.com
Agency and Guests		
Peter Boveng	NOAA/ MML	peter.boveng@noaa.gov
Michael Cameron	NOAA/ MML	michael.cameron@noaa.gov
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Danielle Dickson	NPRB	danielle.dickson@nprb.org
Michelle Elizabeth Fournet	Cornell University	mef264@cornell.edu
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Donna Hauser	UAF	dhauser2@alaska.edu
Jon Kurland	NOAA	jon.kurland@noaa.gov

[1] See Appendix-A for list of acronyms
[2] Serving as alternate for Joe Mello Leavitt

Barbara Mahoney	NOAA/NMFS	barbara.mahoney@noaa.gov
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Raphaela Stimmelmayr	NSB	raphaela.stimmelmayr@north-slope.org
Andrew Von Duyke[3]	NSB	andrew.vonduyke@north-slope.org
Skyla Walcott	UAA	

1. **Call to Order**
   Chairman Billy Adams called the meeting to order at 9:05 am.

2. **Invocation**

3. **Roll Call (7 members must be present to establish a quorum)**
   Present:
   1) Billy Adams[4] (NSB)
   2) Helen Aderman (BBNA)
   3) Brandon Ahmasuk (Kawerak)
   4) Sam Gosuk (BBNA)
   5) Taqulik Hepa (Alternate for NSB)
   6) Jennifer Hooper (AVCP)
   7) Emerson Moto (Maniilaq)
   8) Albert Simon (AVCP)

   A quorum was established.

4. **Introductions**

5. **Welcome remarks**
   Billy Adams expressed gratitude to be working on behalf of Alaska Native subsistence communities.
   Jon Kurland expressed appreciation for the good partnership between the federal agencies and Alaska Native co-management partners. He also expressed his satisfaction with the co-management meeting that was held on the previous day.

6. **Approve the agenda**
   A modification of the agenda was requested by the executive manager to adjust the time at which Donna Hauser, Colleen Reichmuth, and Danielle Dickson would present in order to accommodate scheduling conflicts. Specifically it was requested that all three could present at some time on day 1 of the meeting (May 30, 2019). Taqulik Hepa moved to adopt the revised agenda and it was passed by consensus.

[3] Executive Manager of the Ice Seal Committee
[4] Chairman of the Ice Seal Committee

7. Approve the Minutes to the May 23-24, 2018 Ice Seal Committee annual meeting

Brandon Ahmasuk made a minor correction about the Waterway Safety Committee. Helen Aderman corrected the spelling of her name. A motion to accept the meeting minutes with corrections was made, seconded, and passed by consensus.

8. Chairman's Report

Billy Adams provided a verbal report. The following are abridged notes of what was stated:

The ISC was fortunate to have the services of Mike Pederson as its executive manager. His departure led to an uncomfortable transitional period during which time it was necessary for ISC staff and membership to step up to accomplish the time-sensitive needs of the ISC. Specifically, NSB staff (Taqulik Hepa, Larinda Danner, Carla Koyutuk, Doreen Leavitt, and Andy Von Duyke) worked very hard to organize the annual meetings and to submit the ISC grant proposal[5] to NOAA for FY2019-20. Other examples are Brandon Ahmasuk, who attended the Waterway Safety Committee meeting, and Billy Adams, who attended the ICC food security/food sovereignty meetings and the IPCoMM meeting in Anchorage. Chairman Adams recounted his first visit to Bethel, where he learned about hunting practices from other subsistence communities. He also spoke of traveling to Tuktoyaktuk and Aklavik in Canada to discuss bowhead whale surveys, bearded seals, and beluga. During these travels, Chairman Adams mentioned an awareness of the commonality among Inuit people that includes culture and language (i.e., words for 'share' and 'harpoon head'). He mentioned the influence of the environment on the traditional subsistence way of life, that subsistence users are part of the ecosystem (and therefore are stewards of the land), and that there is a need to be conscious of how conditions change and require adaptability. This need to adapt (including a need for safety) is shared among all subsistence communities, as are other new challenges, such as coastal erosion. Billy also spoke of learning about a new challenge—faced by Canadian Inuit—that concerns how to deal with tour boats in waters where subsistence activities occur. He mentioned that in Canada, fisheries researchers are giving fish to communities for free (fish that are caught for research), and that this is a nice idea and would be a good thing to do in the USA. Over the course of these travels and meetings, there was a consistent theme of less ice, more water, more erosion, and increasing concerns about safety concerns from hunters in different regions—including Canada. Nevertheless, subsistence species are also noted as being healthy. Finally, Chairman Adams commented on species that are shared with the Canadians and the Russians, which makes the sharing of international research efforts so important.

[5] Sarah Ellis and Russell Ortilla of the NSB Grants Department performed a great deal of work to ensure that the ISC grant proposal was complete, correct, and submitted on-time. The timing of the departure of the executive manager of the ISC meant that there was a very tight deadline for the submission of the FY2019-20 grant proposal. The Grants Department did excellent, highly professional work to meet this deadline.

9. Financial and Grant Progress / Final Performance Reports

This section summarizes both the actions and ensuing conversations relating to this agenda item.

Carla Koyutuk provided a copy of the final grant report to the ISC. Andy Von Duyke described the proposed actions within the FY2019-20 grant proposal.

Shawn Carey (NMFS Federal Program Officer) summarized the state of available funding through NMFS. Generally speaking, need is outpacing funding increases, which is therefore leading to more competition among ANO co-management bodies. The award process is a balancing act in finding ways to maximize the value of each dollar spent among all co-management organizations. As such, of the seven ANOs that requested funding[6], none received all of the funds requested from NMFS. This is why the funds for participant costs ($8300) were dropped from the ISC grant proposal[7]. The importance of completing proposed tasks was emphasized because (a) unused funds go away permanently, and (b) uncompleted actions become criteria by which the grant award committee makes decisions on future allocations during the proposal review process. But overall, NMFS was pleased and encouraged by what was proposed by the ISC. Positives attributes of the grant proposal were that it was clean, easy to read, and organized; and that it seemed to provide a lot of value. A potential negative is that perhaps there may not be enough staff time dedicated to accomplish all the proposed work in the upcoming year.

Taqulik Hepa mentioned that ISC members want to do more, and that she is looking forward to taking steps to envision future directions. The proposed workshop to occur in 2020 will be a means to take first steps in this direction. Sam Gosuk asked if there could be a way to pay elders for their time to share their knowledge so that it is documented. Albert Simon mentioned that Henry Huntington would be a great resource for facilitating the documentation of knowledge held by elders. Shawn Carey indicated that this type of project is becoming more common. In his opinion, the matching of youth with elders for the passage of knowledge is "co-management", and therefore eligible for funding by MMPA Section 119 funds through NMFS. Moreover, involving youth with co-management is a high priority and a way to keep younger generations involved and informed so that co-management organizations will have qualified membership in the future. For now, ISC is solely funded through a NMFS grant. But as desired activities of the ISC increase, there may be a need to request more funding from NMFS and/or to find alternative/supplemental funding sources.

Helen asked if the NMFS grant reviewers have become "mellower" over time. In other words, are the reviewers gaining a better understanding about how Native people live? Shawn replied that NMFS seeks the best reviewers they can get, and instructs them to provide constructive comments.

Finally, Brandon Ahmasuk expressed concern about the lack of a Tribal Liaison at NOAA. It was acknowledged that this would be a good idea and that Alaska regions would benefit from this.

[6] A list can be found at: www.mmc.gov/priority-topics/arctic/co-management-and-alaska-native-tribal-consultation

[7] Across the board, participant costs (i.e., honoraria) are not supported by MMPA Section 119 funds.

10. Regional and Hunter Representative Reports

Association of Village Council Presidents

Jennifer Hooper reached out to the coastal communities in the Y-K Delta for information on ice seals and seal hunting but received no direct responses. Therefore, her report is based on monitoring social media to try to get a feel for what was happening in the region. She expressed confidence that unusual observations are reported when/if they occur.

Overall, no serious concerns were reported. While the sea ice broke up early, and bird hunting got off to an early start, temps cooled down and remain cool in the region. In response to early nesting, the USFWS wanted to implement a 30-day closure of hunting earlier; though many residents were still hunting. Ultimately, the closure occurred 3 days early. Fishing activities were normal. High water levels made it difficult to get on-the-ground coastal info because Bethel is so far inland.

Albert Simon reported that there have been 13 deaths in Hooper Bay. Two people were still missing, and that this has been an extremely difficult and painful time for the community. The spring came very early this year. Sea ice is thin (< 1 foot). Persistent SSE winds came early and took out the shore-fast ice; the earliest that it's ever been observed. Hunters found some bearded seals in the shore ice. However, the ice was too thin to butcher harvested bearded seals, which were pulled into the boat (at great risk of capsizing). Hunters in Scammon Bay more successful. They had thicker shore ice than Hooper Bay, but not many bearded seals. Last fall after a storm, a large white bird with a big beak was observed[8]. Overall, seasonal events (spring?) occurred early in the Hooper Bay region. Whales were early, and a couple belugas were present in the winter.

Taqulik Hepa asked if given the fast melt and the need to get ready faster if Hooper Bay was able to meet its needs for ringed and bearded seals. Albert Simon stated that hunters prepared early based on previous experience with early seasonal trends. However, the rapid ice retreat makes it very difficult, dangerous, and expensive to meet needs.

Bristol Bay Native Association

Helen Aderman provided the following written report to the ISC (dated May 27, 2019):

Winter of 2018 and into Spring 2019, the Bristol Bay marine waters were mostly open. In early December 2018, Togiak Bay froze for about 3 weeks then mostly open water with Northeasterly winds. Usually by late October or early November every year, the Togiak Bay sea ice used to go out about 3 to 5 miles from Togiak tribal community. That is when the maklaks, Bearded seals migrated from Northern Bering Sea to Walrus Islands to their traditional sea ice habitat areas, and local tribal members harvested some maklaks, and other ice seals-spotted and ringed seals. In the Bristol Bay side, Nushagak Bay marine waters stay mostly open, when it got cold and some sea ice froze, Alaska Native tribes share hunting marine mammals from Aleknagik, Clarks Point, Dillingham, and Ekuk. Manokotak tribal members also travel by skiff or snowmobiles along the Weary River, Snake River, and Igushik River to hunt seals in Nushagak Bay.

[8] Andy Von Duyke spoke with Albert about this bird. Based on photos and a comparison with the description provided by Albert Simon, it seems that the bird mentioned may have been a Great Egret (*Ardea alba*), which are considered to be a "casual" species (www.universityofalaskamuseumbirds.org/products/checklist.pdf).

This was the same way, with freshwater lake watershed systems. Iliamna Lake, about 90 miles long, and habitat area for the unique freshwater harbor seals was mostly open, although it froze for a short time, and ice was mostly melted by March. I grew up in Lake Aleknagik, about 25 road miles from Dillingham, AK. In the 80's, during the 15 years I worked as City Administrator, by November to early December, the 20 mile long lake would freeze over at least 3 to 5 feet thick and it would stay frozen through early March. We had 'ice roads,' where vehicles had a 'frozen lake road access to cross from South Shore to North Shore side of the lake. For the last 5 years, the lake system has been mostly ice free, and in December 2018 to January 2019, the lake was frozen for about a month, then was ice free the rest of the year. Had strong Northeasterly winds, little patches of snow, rainfall, which reminded me of Southeast Alaska semi-rainy season in winter.

Spring hunting began and in the Nushagak Bay, ring seals are one of the first to come in the Bay. Some local hunters have caught some ringed seals in the Bay, and recently heard hunter from Twin Hills caught ringed seals. Animals appear to be healthy so far. Everything seems to be happening a month early, but weather wise, when it's cloudy, it feels like early fall. This past weekend, Dillingham resident caught a Chinook – king salmon in Scandinavian Beach.

More comments from Helen:

Walrus came early and have been observed in areas not typically associated with normal locations for walrus. Hunters go out hunting in groups because of high fuel costs. Other local regions have similar issues.

Sam Gosuk took his students upriver to teach them about moose hunting. They were able to call in and successfully harvested a moose. He noted that the fall moose season is the time when they see bearded seals up the rivers because of the silver salmon run. As such, there were large adult spotted seals and young bearded seals upriver. In fact, during his moose hunt, a couple of hunters caught young bearded seals. During the winter, seals were seen, but none harvested. At this time hunters saw mostly mature spotted seals. Their wariness to hunters (i.e., 'smart seals') and evasive action when hunted (i.e., they did not swim straight) suggests that these seals have experienced hunting in the past. During this time, fewer "curious" seals and more "smart seals" were seen. Other regions had fewer "smart" seals, and therefore were better areas for hunters to harvest more seals.

Sam generally described the weather as calm. The spring was characterized has having less ice (mostly slush) and no shore ice. There was no big shore ice onto which bearded seals could haul out. Sam did not hear of anybody harvesting bearded seals in the winter.

The spring herring opening was earlier than normal, but herring did not spawn close by; rather, they spawned about 40 miles away from Togiak. Some people got herring roe from this farther location, but the amount of roe is lower than what has been seen previously. In addition, herring have not been observed in high numbers. For example, it has been several years since herring were observed jumping from the water in a boat's wake. Herring numbers are obviously low, which means fewer seals. Generally, seal numbers were low in areas where they were once plentiful. Maybe the seals have moved elsewhere?

Very few murre eggs are available, and last year, no murres nested. Moreover, murres are not nesting like they used to at previously productive locations. Finally, a dead floating whale was observed.

Justin Olnes asked Sam about how common it is to see young bearded seals (maklaks) up river in Togiak region. Sam was not sure if this was a long-term pattern or something new. He said that he will check with other more knowledgeable people and report back. However, at least recently, this behavior has been occurring in the Togiak River. Helen noted that juvenile bearded seals were seen up river (up to 20 miles upstream) feeding on smelt. Peter Boveng asked about the location that Sam mentioned with primarily adult seals… what species? Sam replied that they were adult spotted seals. Sam mentioned seeing a mix of bearded and ringed seals a while ago, but noted that given the lack of sea ice, there are no more ringed seals present.

Kawerak, Inc.

Brandon Ahmasuk said that sea ice came late (end of December). Furthermore, midwinter commercial crabbing was affected because the sea ice was unsafe. He also wondered how these ice conditions may have affected the seals. The shore ice near Nome has been on the decline each year. In the spring in Nome, there was thin shore ice, but no pack ice…just open water. The shore ice melted very early (the 2nd Sunday in March), and broke off right up to the beach. When Brandon was a kid, there was sea ice in October, and the ice went out in June/July. Now, the sea ice is thinner (2-3 feet thick) than it used to be (5-6 feet thick).

Hunters are still able to harvest all 4 ice seal species, and generally the harvest was good harvest. The primary difference now is the time frame for hunting. Hunters are not travelling farther to hunt seals (though farther distances were noted for other marine mammal species), but are starting to hunt earlier in the spring and hunting later into the fall. Travelling farther (80-90 miles out) is considered dangerous and expensive due to fuel costs. In the Nome region it is common for all seals (except ribbon) to travel up river 70-80 miles (including ringed seals). Island communities in the region are able to hunt all year, and no communities were unable to harvest.

There were some hairless seals reported, which, when cut open, had tumors, puss, and a bad smell. Hunters did not transport these seal carcasses back because they had no body-bags/sampling supplies and they were concerned about food safety from cross-contaminating the healthy seals that they have harvested. It appears that the UME is still occurring, though not at the levels observed previously. There were observations of dead seal pups and sub-adults that washed up on the beach. These stranded seals showed no apparent wounds but were healthy looking (other than being skinny). This has been a trend for the past several years across the region.

Brandon's family camp (26 miles west of Nome) has more and more spotted seals (couple hundred, not including those in water) hauling out on a gravel island at the river's mouth. He also observed spotted seals foraging cooperatively by pushing fish toward the banks where they were easier to catch. Brandon had not observed this behavior before in spotted seals, and was wondering if this could indicate a change in feeding patterns. Michael Cameron (NOAA) asked about the water depth where the spotted seals cooperatively hunted. Brandon stated that this area was very shallow (6 feet deep) with clear water. Offshore, spotted seals were observed sleeping in the water, where they were "bobbing like a cork". The spotted seals remain in the area until about mid-September. Meanwhile, as spotted seal numbers in the Teller area have been declining, they have simultaneously increased at Brandon's family camp.

Finally, at the end of July a bull Stellar Sea Lion hauled out in the area. This is part of a trend in which more and more Stellar Sea Lions are occupying the region (just west of Nome).

Maniilaq Association

Emerson Moto mentioned that, for the first time, Kotzebue Sound was open most of the year. Although Kotzebue Sound occasionally would freeze over with thin ice, the wind would eventually blow out the ice. East of Kotzebue, the ice from Hotham Inlet and Selawik Lake empties into Kotzebue Sound. Hunters have been able to start hunting inland earlier than normal. A couple years ago, hunters from Buckland, who hunt in Eschscholtz Bay, observed and harvested a Stellar Sea Lion. This was the first time that a Stellar Sea Lion was harvested in that region. Emerson suggested that these may be "scouts" or just the first in what may eventually lead to more and more Stellar Sea Lions in the area. Because the Buckland River is the largest south of Kotzebue Sound, there are herring, smelt, salmon, whitefish, and trout available as forage.

North Slope Borough

Taqulik Hepa noted that, in general, the seals harvested during the previous fall and winter were abundant and healthy. During the previous summer, there were reports of a large bull Stellar sea lion hauled out on the beach in the vicinity of Utqiaġvik (15 miles SW of town). During the fall bowhead whale hunt, Eli Nukapigak of Nuiqsut reported a group of Stellar sea lions at Cross Island. Many polar bears were present in the vicinity of Utqiaġvik during the winter, but when the sea ice was close the bears spent their time on the ice.

Billy Adams described the ringed seals that were harvested ringed near Utqiaġvik as very fat and healthy. He provided information on the timing of the hunts. For example, ringed seals are hunted for food from October to June. During the "rut", male ringed seals can be identified by their black faces and are very smelly. In June and July seal hunting focuses on bearded seals, the skins of which are used as the covering for skin boats that are used to hunt bowhead whales. It takes 5-6 bearded seal skins to cover a skin boat. Ringed seal fat is used for caulking the seams on umiak skins, which are stitched together using braided caribou sinew as thread. In the vicinity of Utqiaġvik spotted seal hunting is not common, but when hunted they are targeted in August and September. Across the region the seals were described as healthy. For example, in Wainwright the harvested really fat seals and the hunters were happy. In Nuiqsut, a couple of bearded seals were harvested in late June. Point Hope was harvesting seals during the ISC Meeting (i.e., end of May). Billy shared concerns about dangerous conditions, such as less ice and more waves. As conditions are changing, it is becoming more dangerous to hold onto Inupiat culture and traditional ways of life[9]. Billy expressed his happiness to be working on behalf of Native hunters and community members. He likes to hear stories about hunting and is glad that young people are present to learn about co-management. In closing, he mentioned that it was fortunate to work with good partners, researchers, etc., but there is still a need to work on improving communications (e.g., more meetings[10]).

[9] In the fall of 2018 Roxy Oyagak, Jr. and Ronald Kanayurak were killed in a whaling accident.
[10] There are 2 teleconferences scheduled to be held in FY2019-20, which should help improve communications.

Carla Koyutuk spoke of the sea ice near Kaktovik which never really went away last year. This made it difficult to hunt seals. Very few fish were caught – Carla mentioned that people would be "lucky to catch 1 fish with rod and reel". Gill-netting for fish also was not good. Only 3 bearded seals were caught. And it was difficult to get out to hunt caribou because of a fear of getting stranded by the sea ice. As such, hunters in Kaktovik had to wait until winter to go hunting for caribou. The sea ice finally went out in September. There was a late freeze-up (but with an open lead) in late December, which is unusual. Carla also noted a pressure ridge (ivu) very close to shore, and an early break-up of the ice that meant there were fewer ducks than usual.

11. Federal Agency Reports

a. NMFS Update:

Jon Kurland provided a brief summary that included notification of the opening of an Unusual Mortality Event (UME) for pacific gray whales. At the time of the ISC meeting there have been 60 dead whales. Opening a UME dedicates funding and expertise for use in addressing the cause(s) of death. Jon put out a request to the ISC communities for gray whale observational data.

Taqulik suggested that an experienced hunter would be helpful with necropsying beached gray whales. Jennifer Hooper asked about the timing of gray whale migration so that the villages can be aware, and Jon replied that the migration is happening "right now". Jon also mentioned that the number of strandings in Alaska is not unusual right now, but recommended vigilance in the event that there is an increase. Lori Quakenbush asked about the recovery plan for ringed seals. Jon mentioned that an update on the listing/delisting process was given in the Ice Seal Co-Management Meeting[11].

b. Marine Mammal Stranding Update

Barbara Mahoney gave a presentation on strandings with summaries of historical data. Increases were apparent but this may be related to increases in effort and in populations (whales in particular). Lately there have been fewer strandings. Regional distributions were mapped. One apparent trend was an increase in the Bering Sea. A time series for gray whale strandings by region was shown. Many gray whales were stranded this year in California. There were ship strikes and also whales in poor body condition (i.e., skinny). Strandings can be reported by contacting:

Stranding Hotline	Barbara Mahoney - Stranding Coordinator
(877) 925-7773	(907) 271-3448
www.alaskafisheries.noaa.gov	barbara.mahoney@noaa.gov

Taqulik Hepa asked if there is funding available to apply for in order to actively search for stranding marine mammals. Additional grants can pay for local people already in place to expand their duties in order to monitor coastlines. Barbara mentioned that the Prescott Grant[12] has been applied to these actions previously, and that there may be other possibilities. Brandon Ahmasuk asked about funding for cleanup and safety supplies

[11] This update is available in the minutes to the 2019 Ice Seal Co-management Meeting compiled by NOAA
[12] www.fisheries.noaa.gov/grant/john-h-prescott-marine-mammal-rescue-assistance-grant-program

(e.g., body-bags, rubber gloves, personal protective gear, etc.). Barbara said this was possible and that she would send more information. Albert Simon expressed concern about hunters' need for more information about hunting whales because hunters are asking about harvesting whales yet do not understand the complexities of whale management. Clearly this is a complex issue that requires information from the AEWC (907-852-AEWC or 907-852-2392). Barbara mentioned that she can also provide info on this to the regions.

c. Marine Mammal Commission – Co-management Review (Jenna Malek)

Jenna Malek Provided a summary of the results of a study about co-management in AK. In 2008 a study identified co-management needs as: trust, capacity building, funding & accountability, and recognition of the threat of climate change to subsistence in AK. These needs still existed in 2016 and led to a new review. The final report will be completed by the end of June will be available electronically, in hard copy.

New contact information: jenna.malek@noaa.gov
907-271-1332

12. Ice Seal Research[13]

a. North Pacific Research Board (Danielle Dickson)

Danielle presented a progress report for work that seeks to provide ecological forecasting of biological and ecological "events" such as harmful algal blooms, etc. Her intent is to make connections with NOAA Weather Service and other agencies (USGS, NPRB, etc.). Her case-study applies these methods to assessing the influence of changes in sea-ice habitat upon ringed seals. This can inform population dynamics by quantifying factors associated with critical ringed seal breeding habitat. Danielle will report on where this information can be found and/or how to go about making such a forecast.

Currently, there is not good information about snow on sea ice. Danielle is investigating proxies for this variable, such as the use of satellite imagery to map the locations of pressure ridges (assuming that they create the drifts needed for lairs) and their stability over a period that coincides with ringed seal lair construction and reproduction. Other questions concern the value of small pressure ridges for creating ringed seal pupping habitat. The weather service products that are currently available cannot map small pressure ridges. This may require that people directly collect measurements and document the presence of ringed seals with certain sea ice features.

There are many challenges, such as how to: work with local people on the ground, monitor conditions, document ringed seal distribution, health, and productivity. This requires feedback from Native communities and the ISC in particular. Modelers at NOAA lack data to ground-truth their sea ice models. This info will help to build a better model. There are ideas about what ringed seals "need" to raise pups. Over time, are

[13] Reports and presentations will be made available on the ISC website. Or, contact Andrew Von Duyke to request further information.

these needs changing? For example, since it's not as cold, perhaps the importance of lairs is reduced?

The earliest expected date for report completion is late fall 2019. This report can be used to help agencies (NOAA) understand where to spend money for monitoring. Agencies can fund real, on-the-ground observations by real people in coastal communities. This will help in developing capacity and justifying through co-management for making a case for better training within the coastal regions for observers. This work will hopefully clarify what is needed, including resources on the ground in Alaska, to be able to produce good predictive models. This info will not be a cause for reducing harvest.

To accomplish this, it was recommended by the ISC that experts from the communities and biologists be consulted. Outreach will also be essential to project success.

b. Marine Mammal Laboratory (Peter Boveng)

A report was provided on the health of ringed seals that were observed in the southern Bering region during a period of extremely low sea ice. In particular, during the winter of 2017-18 young ringed seals (pups and yearlings) landed in the Pribilofs and Aleutians. The health evaluation performed was based on photos. No ringed seals have been reported in the southern Bering in 2018-19.
The link to this report is:

www.fisheries.noaa.gov/webdam/download/91850291
or
www.fisheries.noaa.gov/resource/document/health-evaluation-ringed-seals-documented-southern-bering-region-winter-2017

Another report was presented covering ongoing research and monitoring. No major new results were presented. Current efforts are to continue analysis of satellite tag tracking and sampling data, along with finalizing the US-Russia polar bear and seal data. Also presented a new project (not yet funded) on disease, diet, contaminants, and the health of ice seals. Other projects mentioned include: Un-manned Aerial System detection of ice seals and the integration of diverse data sources to determine seasonal density distributions of protected species.

Peter briefly discussed genetics in ice seals. He indicated that there is more of a pattern in bearded seal genetics than in other species. This expected due to their territorial reproductive strategy, with philopatry in males (but uncertainty in female behavior); leading to some population genetic structure. In contrast, ringed seals show much less genetic structure. Advances in genetics will allow for finer look.

Raphaela observed that generalized statements on bearded seals may not be appropriate, supporting the need to sample in different regions to capture this variability.

c. NSB Department of Wildlife Management

Health Assessments (Raphaela Stimmelmayr)
A summary of the ongoing health monitoring program at the NSB-DWM was presented.

Satellite Tagging (Andrew Von Duyke)
A brief intro to the NSB-DWM ice seal research program, including an update on the satellite tagging program, was presented.

Traditional Ecological Knowledge and western science integration (Rowenna Gryba)
Rowenna Gryba is a collaborator who is working directly with the NSB-DWM. She presented a year-1 update on a NPRB funded project that is developing methods to integrate TEK and western science within a Bayesian network for fully informed models.

d. Alaska Department of Fish and Game – Arctic Marine Mammals Program

Biomonitoring Update (Lori Quakenbush)

In summary, biomonitoring signals (high pregnancy rates; lower age of sexual maturity; higher proportion of pups in spring harvest) indicate that seal populations are in good shape and that conditions are good. However, these results do not include 2017 and 2018, which were both very low ice years.

Bearded seals have higher levels of domoic acid and saxitoxin from harmful algal blooms than the other ice seal species. The next highest levels occur in ringed seals, while spotted seals had the lowest levels. These differences are attributed to the diets of each species.

The prevalence of parasite infestation was reported, and no new species were found. Though there was no change in the frequency of species in diets, the size of saffron cod is trending higher. It is normal for bearded seals to carry a higher parasite load (including tapeworms) than other ice seal species, which have different parasite communities. Bearded seals with tapeworms tend to be healthy – able to live normally with tapeworms. It's difficult to understand seal parasites currently because much of their life-history remains unknown. Most seal parasites come from their diet, though the seal louse is also a vector. Heartworm prevalence is low in Alaska but higher in Canada. No increase in heartworm infestation has been seen and apparently seals can live with them.

It was recommended that community members check with fish experts if they see cysts in the fish they have caught.

All biomonitoring information, including comparative blubber thicknesses is funded by NOAA and section 6. This information will be made available to NMFS during its 90 day preliminary science review for the petition to delist ringed seals.

Harvest Monitoring Surveys (Justin Olnes)

The presentation provided a general summary of the household survey program (Section 6 funded), including the goals from the ISC. The summary was for households surveyed in 2018, and it was reiterated that the surveys are confidential—only the local surveyor has knowledge of who was interviewed. The general approach was to tally the

number of seals harvested or received as a gift by month. In the future, an analysis of interannual variability in the harvest would be informative and is now possible given the large data-set. Further, data on whether people are hunting more or less these days and why would also be useful because reasons for this may go beyond sea ice, but may also have to do with economic and/or demographic factors.

A report compiling survey data from 1960-2017 has been written up and submitted for publication (accepted with revisions). The manuscript demonstrates that harvest of ice seals in Alaska is sustainable. The reviewers liked the manuscript, thought this was important information, and that it should be published. The number of *struck and lost* (SL) seals was highlighted as important by 3 out of the 4 reviewers. The manuscript used SL values reported from other sources that ranged 10-40%. It was acknowledged that this method needs improvement, because accurate SL data is difficult to acquire for many reasons. It was suggested that improvements in documenting SL may be a topic that the ISC should consider. This last statement initiated a rather lengthy discussion about documenting SL and other related topics (briefly summarized below).

- Helen was concerned that there was a need to explain that struck and lost seals are an inevitable occurrence due to factors that hunters cannot control.
  Lori indicated that this point has been made in the manuscript. But if it was possible for the ISC to get better information on SL, then this would be very useful and informative. The goal is to understand SL better.

- Taqulik supports research "true" co-management. She shared her concerns about the need to be careful when listing species. For example, listed species provide funds to agencies, but listing also imposes costs to communities.
  Lori noted that Section 6 funding (ESA) was used for the last 2 years only, and that previous funding from came from other sources (not just section 6).

- Billy noted that hunters and communities are "burning out" on research, and that adding too much research will push away community support.
  Lori reminded the ISC that these surveys were given a high priority by the ISC and communities. Also, the ISC and/or their communities can ask that research be stopped. Researchers look to the ISC for guidance.

- Billy requested that survey questionnaires be simplified. This will improve survey accuracy, make it easier on elders and community members, and reduce the potential for burn-out. The ISC can help with revisions to surveys that are appropriate.
  Lori is willing to make modifications to the questionnaire.

- *Lori also noted that Nome has not been surveyed. Given its diverse population, Nome has high variability in hunter harvest levels among households. Because of its size, it is only possible to survey a subsample and then extrapolate the rest of the harvest households. As such, Nome may be overestimated for seal harvest due to extrapolation. ISC may be interested in supporting a harvest survey in Nome.*

Satellite Tagging Project (Lori Quakenbush)

An update was presented on the seal tagging project. This included a preliminary analysis of spotted and bearded seal movements. In particular CTD tags provide oceanographic data at a scale that is relevant to the animal info on habitat characteristics. One observation is that the geographic location where the seal was initially tagged is related to their patterns of movement. An example of this was shown for bearded seals. Early results suggest that bearded seal wintering habitat is different than what has been previously assumed and needs more support from research. This underscores the importance of tagging seals from many locations so that the range of movements can be documented.

Albert commented on the importance of tagging seals in different areas. Taqulik was interested in more satellite tagging in the Beaufort Sea. Carla Koyutuk mentioned the spotted seals that haul out in the Camden Bay area.

e. Pinniped Cognition & Sensory Systems Laboratory – UC Santa Cruz
Colleen Reichmuth

Auditory biology of bearded, ringed, and spotted seals

Goal: Provide information on the hearing capabilities and auditory responses of ice seals to sound in their environment.

Until recently, there has been little quantitative information available for ice seal acoustics. Previous work by PCSSL (published in 2014) suggests that Alaskan ice seals are among the most sensitive marine mammals to low frequency sound (≤ 200 hz); with a sensitivity 100x greater than in toothed whales. Current work with a captive bearded seal is quantifying the sensitivity to these sounds in this species. Specifically, hearing abilities are measured in quiet air and water, with background noise, and with seismic sound. The results will contribute to NOAA's criteria for sound mitigation. PCSSL is also studying bearded seal vocal development, which can inform social behavior and vocalizations with habitat use. This captive individual (Noatak) is a 4 year old male that is just now starting to make sounds that are beginning to sound like the adult "song". Similar work with spotted seals indicates that males vocalize at age 3-4 years, increasing at maturity, with extensive vocalizations that sound very similar to a walrus. Characterizing these vocalizations with respect to age, mating status, etc. will be useful for interpreting acoustic data from hydrophone arrays.

Physiology and health of Arctic seals

Goal: Investigate a variety of physiological questions. Provide empirical data that can be used by resource managers for decision making regarding the conservation and management of ice seals.

Information from captive ice seals, those in rehabilitation, and those from the wild[14] is pooled in order to document health parameters. Drawing upon the results of this research, ice seals are now included in handbook of wildlife medicine. Some of the questions under investigation include:

- **Ice seal muscle physiology**. Examining ice seal muscle biochemistry, such as myoglobin and acid buffering, and their foraging ecology (i.e., diving), helps to form a better understanding of how they are adapted to their environment.

- **Whisker growth rates and patterns**. As they grow, ice seal whiskers store hormones, stable isotopes, and other chemicals that circulate within the blood stream. This means that a whisker records certain important physiological events or processes—such as pregnancy, stress levels, foraging patterns, body-condition, and environmental contamination—over a set timespan (i.e., the lifespan of the whisker). To calibrate what is going on with the animal over time, whisker growth rate, lifespan, and the pattern(s) in which they are shed and regrown must be documented. Accomplishing this will help researchers better understand a variety of questions about ice seals.

- **Ice seal metabolism and seasonal energetic requirements.** Using captive ice seals, seasonal energetic demands, body-condition, and molt progression were tracked. Ice seal metabolism and energetic requirements varied over time, with patterns that were related to each species' molting strategy. Variation in ice seal body-condition appears related to seasonal energy use patterns relating to their life history. Understanding what constitutes normal patterns of energetics and molt progression may be informative on the UME and vulnerability to changing environmental conditions.

13. Old Business

a. The ISC recommended a set amount for compensating those who recover and return shed or lost satellite tags. The recommended amount for compensation is an equivalent to $100 (e.g., store gift card) or fuel card that covers the cost of 15 gallons of fuel. This recommendation came out of the Executive Session on day-1 of the ISC Annual Meeting. This recommendation applies to all research in all ISC regions, and is consistent regardless of satellite tag type or how it was recovered. This recommendation is intended

[14] Data provided by NOAA Fisheries – Alaska Fisheries Science Center – Marine Mammal Lab

to avoid confusion, miscommunication, and/or impressions of disrespect. It will also help researchers by avoiding comparisons of compensation from village to village[15].

b. The Kawerak Region does not support satellite tagging in their region. Lori Quakenbush will have Merlin and Koyuk IRA get in touch with Kawerak to sort this out.

c. Brandon Ahmasuk suggested that new research on bearded seal diet would be useful.

14. New Business[16]

a. Evaluating novel assessment approaches for coastal ice seal haulout areas and behavior in the Alaskan Beaufort Sea – **Donna Hauser** (UAF) and Andrew VonDuyke (NSB)

Donna Hauser presented a research proposal for a project that leverages two existing research projects, the AAOKH program at UAF, and the NSB Ice Seal Research Program. The objectives are to (1) assess new technology for monitoring ice seal haulouts, (2) better understand factors pertaining to ice seal haulout behavior and use, and (3) build capacity for science by training local Native field assistants in the use of new technologies. This capacity will provide marketable job skills while also improving the ability to collect scientific data. These methods, if successful, should be applicable to other wildlife species.

Billy commented that success is built upon mindfulness, respect for community needs, and good communication with the hunting community. Appropriate timing is important for eliminating any conflicts with hunting. Albert concurred with Billy's comment that, to do this project right, it should draw upon the knowledge of experienced hunters.

b. Investigating the impact of anthropogenic noise on aquatically breeding ice seals in the Alaskan Arctic – Aaron N. Rice, Holger Klinck, and **Michelle Fourne** (Cornell University)

Michelle Fourne presented a research proposal to analyze an existing set of historical acoustic array data that was recorded in the Chukchi Sea. This data has been collected and paid for already, and as such, does not involve further field operations. The proposed research questions concern whether anthropogenic noise and habitat change (i.e., loss of sea ice) influence the mating behavior (i.e., vocalizations) of bearded and ringed seals, which can be detected and located using acoustic data. Though she and her lab have the technical capabilities to answer these questions, Michelle came to the ISC meeting to request guidance from the ISC about whether their proposed research questions are appropriate, and to determine which other questions may be important to communities of the Arctic and worthwhile of consideration.

[15] Note that this was not voted on as a resolution by the ISC. It has been requested that this be voted on as a resolution, and so will be added to the agenda for the upcoming teleconference meeting.

[16] Reports and presentations will be made available on the ISC website. Or, contact Andrew Von Duyke to request further information.

The ISC suggested that this type of research should be focused in areas where this information is lacking and biologically important (e.g., Bering Straits). In particular, Brandon suggested that Kawarek would likely be interested in this type of work in their region to address concerns about marine vessel traffic. This would also applicable for use in understanding the potential effects of trawl fishing in the YK-Delta region. Also potential for use in hunter education.

ACTION: ISC will take this information back to their communities for further feedback. There is also a need to check with original owners of the data to ensure that it's OK to use for other purposes.

c. BBNA requesting a letter of support from ISC for their Tribal Wildlife Grant to conduct a baseline population study of the bearded seals residing in Togiak Bay, Alaska – Helen Aderman

Helen has requested a letter from the ISC in support of a proposed satellite tagging program for bearded seals in Togiak Bay. This project was proposed because local hunters indicated that it looked as if there were fewer bearded seals in this region than previously seen. Lori Quakenbush is a collaborator on this proposal. If funded, the Arctic Marine Mammals Program staff will travel to Togiak to both capture/satellite tag bearded seals, and train local hunters how to attach the tags and collect the data so that they can do it on their own.

ACTIONS:
OK to proceed but the letter needs revision. Care should be taken to ensure that the wording does not imply that bearded seals are declining, only that they are less commonly seen in the region. Lori Quakenbush will revise and send to Andy Von Duyke who will get it signed and sent out[17].

15. Recommendations from the Ice Seal Committee

a. Ice Seal Management Plan
Barbara Mahoney suggested, and it was agreed to table this and put it on next year's agenda. Barbara and Andy will coordinate on this.

b. Ice Seal Co-Management Action Plan
Barbara Mahoney informed ISC that this was discussed during the co-management meeting. Barbara Mahoney, Peter Boveng, and Andy Von Duyke will revise this before the end of June 2019.

c. ADF&G Harvest Survey Compilation (1960-2017) DRAFT
Motion to approve updated version – seconded (provided that hard copies are sent to villages based on a mailing list provided by Carla) – passed[18].

[17] This has been completed and sent to the funding agency on June 3, 2019.
[18] In future it will be very helpful to get draft via email prior to the next ISC meeting.

16. Closing comments

Barbara Mahoney: Pleased with how things are progressing.

Jon Kurland: concurs with Barbara.

Lori Quakenbush: Meetings are helpful for focus. Research purpose is to work toward what the ISC feels is important.

Carla Koyutuk: Things are becoming clearer and she is appreciating her work as a harvest researcher more and more.

Billy Adams: Grateful to team (Carla, Larinda, Taqulik, Doreen, Andy) for working on the logistics for the meeting. This co-management group is a family. Much trust and relationships have been built. Things are moving forward.

Jennifer Hooper: Thanks to team for logistics. Request for presenters to provide electronic copies of presentations in advance. These should be printed out for ease of reading.

Sam Gosuk: Thanks to all. Especially to the chair for the muktuk!!! Appreciative of the way the meeting has been conducted. Grateful for agencies that cre about Native food, and willingness to work with local people who have the knowledge and the need to preserve food and traditions. Thankful for the technology that improves lives, makes communication easier and better, helps with conservation and management.

Helen Aderman: Appreciative of the NSB-DWM. Bristol Bay / Togiak Bay area has more trust in agencies and researchers.

Emerson Moto: Thanks for the muktuk. Will share with the elders. Commenting on the ice conditions the way they used to be. Last time there was -50 weather was in the mid 1980s. Elders used to look for white ice (thick) because that's where the ugruks are . Nowadays…where's the ice??? Will bring back info to his village and share it.

Brandon Ahmasuk: Thanks to Jon, Barb, NSB for logistical support. Fully understands the challenges. Thanks for the muktuk. Productive meeting. Things are quiet in Nome. Please report unusual observations ASAP. Lots of change.

Taqulik: Thankful for the knowledge that is shared. Good to see partners at other co-management meetings. Glad to work with good agency partners and researchers. Thank you to guests. TEK/Bayes. Keep Joe Leavitt in thoughts and prayers.

17. Time and Place of Next Meeting

Teleconference 2019-20_#1
Last week of August
Discuss annual meeting date (maybe Jan.) – avoid summer months
Occurring before or after AMSS
Discuss next proposal for regional meeting locations.

Teleconference 2019-20_#2
Set during first teleconference

Annual Meeting 2020
Set during second teleconference

18. Adjournment

EXECUTIVE SESSION

Requested by Brandon. Gay Sheffield is on the line.
Brandon looking for consistency with rewards.
Gay recounted story of tag return and request for information on tag return. ADFG tag. Gay called Justin Crawford. Gay asked if there is a reward and what the reward is. Justin mentioned that there is not a high price on tags so hunters don't shoot the seal just for the tag. Since then, Brandon has the tag. Up to ISC to figure this out. Brandon received an email from Lori on this. Gay thought this was not a good perspective on ADFG's part.
Brandon stated that at previous meetings it has been stated that there is a reward. Brandon thinks it's unfair that there is are variable amounts for compensation. Brandon does not think it's accurate to downgrade the risk or effort behind different methods of recovery. Need to settle this once and for all so there are no misunderstandings.

Billy: caribou tags are $50 no matter where you find them. No tags from a tagged whale. Would not try to get money for it anyways. But whales are different. Perhaps should not argue about money over an animal. Not good practice. Would like to have a standard reward. OK to keep tag if you don't want the reward.

Different compensation levels were discussed ranging from $75-$150. What was agreed upon was the need to be consistent.

Taqulik and Emerson thinks that $100 sounds reasonable. Fish tags get less, is it fair to give less? Would like to give hunter info on where and when it was tagged.

Sam: Value of the dollar is declining over time and in different communities. Perhaps the "reward" could be 15 gallons of gasoline (or cash equivalent).

The value of $100 or 15 gallons of gas. This can be a $100 grocery store card.

Appendix A – List of acronyms

ADF&G	Alaska Department of Fish & Game
AVCP	Association of Village Council Presidents
BBNA	Bristol Bay Native Association
ESA	Endangered Species Act
ICC	Inuit Circumpolar Council
ISC	Ice Seal Committee
MML	Marine Mammal Lab
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPRB	North Pacific Research Board
NSB	North Slope Borough

PCSSL	Pinniped Cognition & Sensory Systems Laboratory – UC Santa Cruz
SL	Struck and lost
UAA	University of Alaska – Anchorage
UAF	University of Alaska – Fairbanks
UBC	University of British Columbia
UCSC	University of California – Santa Cruz

Appendix B – Names of species

Common Name	Scientific Name	Yup'ik Name	Iñupiaq Name
Ringed seal	*Pusa hispida*	Niknik	Natchiq
Bearded seal	*Erignathus barbatus*	Maklak	Ugruq
Spotted seal	*Phoca largha*	Issuriq	Qasiġiaq
Ribbon seal	*Histriophoca fasciata*	Qasruliq	Qaiqulik
Caribou	*Rangifer tarandus*		Tuttu