

Project Progress Report

FOR:

**PROJECTS ADDRESSING PROGRAM PRIORITIES
IN SUPPORT OF THE
ICE SEAL COMMITTEE**

NOAA Grant Number # NA11NMF4390135

Reporting Period: 11/01/2011 - 04/30/2012

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Department of Wildlife Management

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Project Progress Report submitted on: May 18, 2012

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Grantee: North Slope Borough Department of Wildlife Management

Summary of progress during reporting period:

Ice Seal Committee Support

Staff worked on and prepared its second proposal under the Alaska Native Co-Management Funding Program. This proposal was submitted in March 2012. The ISC requested administrative support including funds for harvest surveys and capacity building, where a region that is involved in ice seal research allows participants from a region not yet involved in ice seal research to participate in field research, such as assisting in tagging efforts.

On January 19, 2012, a co-management committee meeting was held and business was conducted. An agenda is attached (**Attachment #1**). The only item up for discussion was the adoption of the Ice Seal Management Plan (**Attachment #2**). The co-management committee adopted the management plan by motion.

On January 19-20, 2012 an Ice Seal Committee (ISC) meeting was held and business was conducted. This meeting was held in Anchorage, Alaska. Preparation for this meeting occurred during November-December 2011 and in January 2012. The North Slope Borough Department of Wildlife Management coordinated the hotel, meeting facility, and travel arrangements for the meeting. An Agenda is attached (**Attachment #3**). Information was presented at the meeting about:

- ▶ the financial status for grants received by the North Slope Borough for the Ice Seal Committee from the National Oceanic & Atmospheric Administration; the Federal Program Officer discussed the second round of proposals under the Alaska Native Co-Management Funding Program, and addressed the proposed changes to the program and the federal priorities;
- ▶ Regional reports dealing with the harvest of ice seals and other issues that the regional representatives thought to be important to the work of the ISC were provided;

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- ▶ Election of officers (Chair = John Goodwin Sr., Vice-Chair = Harry Brower Jr., Secretary/Treasurer = Molly Chythlook);
- ▶ Representatives discussed overall priorities to include in the next budget cycle;
- ▶ representatives began discussing issues related to oil and gas development, and for the ISC to start thinking about topics such as oil spill contingency plans relating to ice seals and the response and rehabilitation for stranded/oiled seals from an oil spill;
- ▶ Received a report from Statoil on their operations from 2011 including seal sightings; and viewed a video of a seal that was responding to noise and visual cues;
- ▶ discussed an amendment to the ISC Bylaws, which would increase the number of committee members from each region to the ISC, to allow for a regional representative and someone from each region who is a hunter representative; this issue was tabled after lengthy discussion.

On February 13, 2012, a special meeting via teleconference of the ISC was held. An Agenda is attached ([Attachment #4](#)). Information was presented at the meeting about the Proposed Bearded Seal Research Study in Kotzebue, Alaska from the University of California-Santa Cruz. This was a continuation of an agenda item from the July 2011 ISC meeting held in Fairbanks. The purpose was to review additional information on a research proposal to collect from the wild, up to two bearded seals in Kotzebue, Alaska for a long-term behavioral study that will provide quantitative measurements of the amphibious hearing capabilities of bearded seals, which are needed to improve understanding of the potential effects of expected increases in anthropogenic activities in polar habitats. After several discussion points, it was agreed that a majority of the ISC believes that this project would be able to provide valuable information for evaluating the effects of future development proposals in the Arctic. Information is currently lacking in this area. In reviewing recent offshore seismic and drilling program proposals, it would have been nice to have direct research information available for bearded seals. Instead of repeating statements here, I have attached ([Attachment #5](#)) the February 29, 2012 letter to NMFS on this proposed research.

On April 16, 2012, a special meeting of the ISC was held ([Attachment #6](#)). Information was presented at the meeting about:

- ▶ ISC Logo Contest; and
- ▶ Adoption of “The Subsistence Harvest of Ice Seals in Alaska – A Compilation of Existing Information, 1960-2010”.

The ISC chose two logos, by committee member vote. The smaller logo ([Attachment #7](#)) will go on ISC letterhead, ceramic coffee mugs, stainless steel hot water mugs, water bottles, and caps. The larger logo ([Attachment #8](#)) will go on larger items such as t-shirts and will be our banner logo. A total of 12 logo submittals came from the North Slope, Kotzebue, and Nome regions. Flyers were sent out on February 16, 2012 and logos were submitted up until April 15, 2012. The original date for closing was March 16, 2012. Staff worked with representatives of the ISC

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to make sure each region had the spelling of the ice seals in their own Native language. The 1st place winner (the smaller logo) will receive a \$150 fuel voucher. The 2nd place winner, the larger banner logo, will receive 4 boxes of 22-250 Remington ammunition. We requested that the logo include: all four ice seals, some aspect of seal hunting, and something about all five regions served.

Next, the ISC discussed the adoption of the above-mentioned report. It will become a report of the ISC, and the goal is to have harvest information compiled annually so that this will become a living document. The purpose of this document is to document subsistence needs and to show that harvests are sustainable, the number of seals used by a community should be determined and reported annually. Bearded, ringed, spotted, and ribbon seals are the species of Alaska's seals collectively called ice seals because of their association with sea ice and their dependence on it for feeding, resting, and pupping. Ice seals are an important component in maintaining Alaska Native subsistence culture because seals are a source of food; skins are used for clothes, boats, and crafts. Hunting, processing, and using seals is an important part of Alaska Native culture and heritage. Reporting subsistence seal harvest information by community shows how important seals are to communities and how many are needed. This information will become more important if climate change or other factors reduce the number of seals in a population or change their distribution. In situations where no harvest data are available more conservative decisions are often made to conserve the resource than would be necessary if good harvest data were available. Reliable estimates of the numbers of seals in each population do not exist because it is difficult to count them. Aerial surveys are currently the best tool for documenting population numbers and distribution but they are expensive, dangerous and currently have large margins of error. Learning more about the current level of subsistence harvest of ice seals, which is thought to be sustainable, could also provide valuable information about the size of seal populations where little information is available.

The ISC, originally called the Ice Seal Working Group, was formed in December of 2004 and consisted of five representatives, one from each of the five regions where ice seals occur in Alaska. The purpose of the ISC as stated in the bylaws is "to preserve and enhance the marine resources of ice seals including the habitat; to protect and enhance Alaska Native culture, traditions, and especially activities associated with subsistence uses of ice seals; to undertake education and research related to ice seals." The ISC has identified the collection of harvest information as a priority. Collecting and reporting harvest information demonstrates concern for the resource and is an important contribution to management that federal managers have not been able to accomplish. This report serves to compile existing ice seal harvest information for the years 1960-2010 to determine where and how often harvest information is being collected and where efforts need to be focused in the future.

Seal harvest data has never been collected on a regular basis, statewide. Most recent information comes from household surveys done intermittently, often when money is available due to development projects. Interestingly, the most comprehensive harvest data was acquired for a different objective. From 1927 to 1972, hunters were paid a \$2-\$6 bounty to turn in noses of seals they harvested. The original purpose of the bounty was to encourage the harvest of seals in order to decrease predation on commercial fish species. The bounty started in south-central Alaska as a way to minimize harbor seal impacts on commercial salmon fisheries in the Stikine,

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Taku, and Copper Rivers. Harbor seals were defined as “hair” seals and gradually the bounty was extended further north because ice seals are also included in the general category of “hair” seals. In 1962, the bounty was extended to all “hair” seals north of the Arctic Circle. In most areas it took a couple of years for the bounty system to become recognized by hunters, but by 1968 most communities were participating. As the bounty program was expanded north it became apparent that the bounty was more important for monitoring harvest than for fish depredations. The bounty ended in 1972 with the passage of the MMPA.

Approximately 64 coastal communities harvest ice seals in western and northern Alaska making harvest monitoring statewide a substantial project. Subsistence users have concerns about the collection of harvest information. Seal hunters fear that if they report the number of seals they catch each year federal managers will use it to establish regulations, such as a season and bag limits, and will require them to buy a license to hunt seals. Currently, marine mammals are the only animals that can be harvested without a license and there is no season or bag limit, however, marine mammals can only be harvested by Alaska Natives and only in a non-wasteful manner. This system fits best with subsistence hunting practices and needs because seal hunting is so opportunistic, can occur at any time of year, and a seal hunter may provide seals for multiple families within the community making the concept of a bag limit difficult. Even though it is not the intention of NOAA Fisheries to impose such limits, limits are something the subsistence users have experienced for many other subsistence resources that they rely on. Law enforcement actions over licenses, duck stamps, and hunting and fishing regulations, in rural communities have resulted in arrests that upset many people and created a situation that makes conducting surveys difficult. Alaska Natives fear that reporting their subsistence activities could get them in trouble and thus are reluctant to volunteer such information.

Currently, the most used harvest collection method is a household survey. A household survey consists of a survey technician, preferably locally hired, surveying a predetermined number of households in a community. Survey questions refer to the number of seals harvested by the household. The level of detail varies; some surveys record only the number of each species per year, while others record the number of individuals by sex, months of harvest, struck and loss, and age, the more information the more useful the data is. Harvest information is collected by five regional organizations, local organizations, and state and federal agencies. Each region has unique needs, concerns, and desires of the people in that region that should be considered when planning a survey. Sometimes a harvest calendar is provided prior to the survey for people to keep track of their harvest before being surveyed. The above mentioned bounty records from 1927 to 1972 can be used to compare with more recent harvest data.

In order to evaluate harvest information, we have developed a rating system. Harvest information for each year and community is assigned a rating for general comparison. For example, the bounty estimates are rated good and poor, based on the reports from the years in which they were collected. Poor ratings occurred during years when the people in the communities did not know the bounty was available, thought it had ended, chose not to participate, or if the bounty was collected for only part of the year. Bounty data with a poor rating should be viewed as lower than a minimum estimate of harvest for that year. A good rating occurred when the majority of the community participated in the harvest or where harvest was estimated based on bounty records, local observer estimates, and hunters in the community.

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Household surveys are broken into three categories; poor, good, and census. A poor household survey is one where the survey sampled a small percentage of the households in the community or where the survey only covered a partial year. A good survey sampled more than 30% of the households in the community and properly estimated the results for the whole community. A good rating also reported results for an entire 12 month period. A census rating is where a survey sampled every single household in the community or recorded every seal caught during the 12 month period. A census is considered the most accurate count of the seals harvested for that community and year that is possible.

Ice seal harvest information for over 60 communities in Alaska is presented in the above adopted report. The communities are broken into the 5 regions corresponding to the 5 regions recognized by the ISC. There are many more communities in Alaska that benefit from ice seal harvests through trading, sharing, and traveling to the coast for hunting. Several recommendations to each region were provided. This report was adopted by motion and passed by the ISC.

The following research reports were provided at the January 19-20, 2012 meeting.

Alaska Department of Fish & Game
NMFS Funded Research.

Mark Nelson from the ADF&G Arctic Marine Mammal Program presented preliminary results for the Yukon-Kuskokwim Delta Ice Seal Harvest Pilot Project. The communities that participated in a household survey to determine the number of ice seals harvesting during 2010 were Tununak, Quinhagak and Hooper Bay. The information learned from these surveys is extremely important for showing how many ice seals are needed for subsistence needs. Similar results were reported for Togiak and Twin Hills for 2010.

National Oceanic & Atmospheric Administration – National Marine Mammal Laboratory
Progress report on adult bearded seal tagging in the Chukchi Sea.

Bearded seals are an important Alaska Native subsistence resource, living and breeding in pack-ice habitat. They are also a key element of Arctic and sub-Arctic marine ecosystems and, out of concerns for climate warming and the loss of sea ice habitat, they have been proposed for listing under the ESA. In Alaska, they are thought to occupy the shallow waters of the Bering and Chukchi Sea shelf, areas also of interest to developers of oil and gas resources. To assess the potential impacts of climate change and human activities, it is critical to document and quantify the importance of areas used by bearded seals for breeding, molting, feeding, and migrating. The MMS (now BOEM), funded NOAA's NMML to conduct a pilot study to combine local and traditional knowledge with scientific tools and analyses to improve understanding of the movements, distribution, and habitat requirements of bearded seals. During a 10-day field season in late-June and early-July of 2009, NMML researchers, and Alaska Native hunters from Kotzebue tagged two sub-adult and one adult male bearded seals (ugruks) with satellite-linked dive recorders in Kotzebue Sound. Individual bearded seals hauled out on pack ice were slowly approached in small boats, typically causing the seals to enter the water. One or two large mesh tangle nets were deployed in water nearby. The nets likely were visible to the seals, but some individuals, apparently out of curiosity, approached the nets and became entangled. Entangled seals were mildly sedated, removed from the net, measured and weighed. Small samples of their blood and skin were taken for health assessments and DNA studies. Each seal was also

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tagged with two satellite data recorders, a SPOT tag, attached to the rear flipper, and a Mk10 tag, glued to the hair on the seals' head. The SPOT tag relays information on haul-out timing and seasonal movements and will transmit for up to three years. The Mk10 tag, which falls off when the seal molts the following spring, provides similar information but includes more precise movement data as well as data on the timing and depth of the seal's dives. The information collected with these two tags can be used to identify important habitats, describe feeding and migration behavior, and improve population estimates. In 2010, the field effort was repeated and also expanded to incorporate the NSB. We focused our initial effort on the Peard Bay region. Extremely dense sea ice conditions however, forced us to move the NSB field effort to Barrow. Unfortunately, no bearded seals were captured at either Kotzebue or the NSB region in the spring of 2010. Based on reports of bearded seals using land for hauling-out in the fall, a small field team returned to Barrow in October, 2010. The subsistence bowhead whale hunt and weather prevented teams from working and no seals were captured during this late season field effort. With the respective cooperation of the NSB DWM and the Kotzebue IRA, springtime field efforts were again mounted in Barrow and Kotzebue in 2011. Similar to 2010, no seals were captured in the NSB. However, two sub-adult females and one male were successfully captured and instrumented with SDRs, in Kotzebue Sound. A figure was presented showing the monthly sea ice distribution and movements of bearded seals tagged in Kotzebue Sound in Alaska in June 2009 and 2011 for the time period June 2009 to December 2011. Deployment information for bearded seals captured and instrumented in Kotzebue Sound in 2009 and 2011 was provided.

Seals tagged in 2009

Upon release, the three male bearded seals tagged in 2009 moved out of Kotzebue Sound and followed the Alaska coastline north. From June through October, all three seals stayed primarily within 50 nautical miles of shore; remaining in these relatively ice free waters and not hauling out on land. One sub-adult occupied the region between Point Hope and Point Lay, the other between Point Lay and Wainwright. The adult moved further east to an area near Prudhoe Bay making occasional trips to the north's deeper, ice-covered waters. All three seals made repeated foraging dives to the seafloor. Most dives for all seals were 6-10 minutes long, though the adult made a few long dives of roughly 20 minutes when in deeper water. Interestingly, even in areas of abundant winter sea ice, the seals rarely hauled out; preferring instead to remain in the water. Throughout much of the winter and early spring, all three seals occupied fairly distinct and localized areas. One sub-adult foraged to the south and east of St. Matthews Island while the other sub-adult and adult preferred Norton Sound. As expected, the tags provided very few locations between June and November 2010. In the winter of 2010 and early spring of 2011, all three seals were again occupying the approximate areas in the Bering Sea they had occupied the previous year, and by the end of June 2011, all had returned north through the Bering Strait into Kotzebue Sound.

Seals tagged in 2011

The initial movement pattern of the male sub-adult tagged in 2011 was similar to the patterns displayed by the two sub-adult males tagged in 2009. The two females, however traveled much farther from the coast, preferring to occupy the central Chukchi Sea. Again, all seals tagged in 2011 routinely dove to the seafloor. In autumn, the females occupied areas of deeper water than the males, and their dives were of longer duration. In the winter, however, both sexes occupied

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water less than 50 meters deep, dive duration was about 6-10 minutes for all seals. All tags are currently working, and we will continue to receive reports on the seal movements. A field effort is currently planned for Kotzebue Sound and the NSB in 2012.

Synoptic aerial surveys and abundance estimates for ice-associated seals in U.S. and Russian waters.

There are no current, comprehensive and reliable estimates of abundance for any of the four species of ice seals. The distributions of these seals are wide and patchy, and the extent, locations and conditions of their sea ice habitats change rapidly. Any abundance surveys therefore, must cover broad areas throughout their contiguous range and must be completed in a relatively short period of time. For the last two years, scientists with NOAA's NMML have been preparing to conduct synoptic aerial surveys of the eastern Bering Sea in tandem with Russian researchers employed to survey the western Bering and Okhotsk Seas. The 2012 and 2013 surveys will be conducted in April to coincide with the reproductive and molting period when the greatest proportions of bearded, ribbon, and spotted seal populations are hauled out on the ice and detectable. Two years of survey effort are required to achieve adequate precision and to ensure that sufficient periods of suitable weather occur during the survey period. This effort will utilize strip-transect methodology with fixed-wing (manned and unmanned) aircraft equipped with digital photographic and thermal imaging sensors instead of visual observers. In U.S. waters, the primary aircraft will be a NOAA Twin Otter, which is capable of surveying most of the Bering Sea shelf from surrounding airports. Areas inaccessible to the Twin Otter will be surveyed with a second longer range airplane and, perhaps in 2013, a ship-based Unmanned Aircraft System, the Scan Eagle. In Russia, the aircraft will be the Antonov An38-100. The survey design for U.S. waters includes over 10,000 nautical miles of on-effort flight time (22 flights) each year. If used, the UAS could provide an extra 2,000 nautical miles in 2013. The survey design for Russia includes over 7,600 nautical miles (12 flights) in the Sea of Okhotsk and nearly 4,000 nautical miles (6 flights) in the Bering Sea. Each aircraft will be equipped with a thermal imaging sensor to detect the presence of seals on the ice, and high resolution digital cameras to identify the species, and perhaps age-class of the seals. Field tests suggest that a pixel resolution less than 1.92 cm is required to reliably identify these seals to species, which requires a flight altitude of less than 835 meters or 1,000 feet, depending on the lens used. The Twin Otter will use three digital cameras and thermal sensors, providing a total strip-width of about 340 meters when flying at an altitude of 900 feet. After collecting and analyzing the images, a hierarchical spatial regression model will be developed to estimate the abundance of each species. This model will incorporate important behavioral and habitat covariates such as the timing of animal haul out (as measured from animal-borne satellite linked data recorders), sea ice concentration and water depth. Two pictures were shown that paired thermal and visual images of harbor seals on glacial ice collected from an altitude of 800 feet. Proposed track lines and aircraft for the 2012-2013 surveys were also shown.

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Unusual Mortality Event (UME) Consultation and UME Declaration: A Brief Overview

Dr. Raphaela Stimmelmayer presented this report. In late November 2011, the NSB DWM submitted a request for a formal consultation to the Working Group Marine Mammal Unusual Mortality Event in response to the on-going disease outbreak in Alaskan ice seals and Pacific walrus. This UME consultation package was developed in collaboration with many tribal, local,

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state, and federal partners. On December 21, NMFS and the U.S. FWS followed the WGMM UME recommendation and officially declared the 2011 Northern Alaska Pinniped an UME. Since then, NOAA and the U.S. FWS have appointed the NSB DWM Wildlife Veterinarian/Research Biologist, Dr. R. Stimmelmayer, as the On-site Coordinator, to oversee and administer the investigation. Joel-GarlicMiller from the U.S. FWS and Aleria Jensen from the Alaska Marine Stranding Network (NOAA) have been appointed Off-site Coordinators. Dr. Steven Raverty is the Liaison to the WGMM UME as well as Dr. Terry Rowles, head of the National Marine Mammal Health & Stranding Response Program. A Core Investigative Team has been selected. Representatives from the ISC and the Eskimo Walrus Commission are on the investigative team.

Title IV of the Marine Mammal Protection Act (MMPA), 16 U.S.C. 1361 et seq. defines a set of multiple strandings to be part of an UME if it has the following characteristics:

- 1) it is unexpected;
- 2) involves a significant die-off of any marine mammal population; and
- 3) demands an immediate response.

The WGMM UME are: members from scientific and academic institutions, conservation organizations, and state and federal agencies who have a wide variety of expertise in biology, toxicology, medicine, pathology, ecology, and/or epidemiology; they are appointed for three-year terms and meet annually in-person, and engage in discussions throughout the year by e-mail or conference call to review and consult on individual cases, events, or disease issues; in addition to the Core members, there are two international participants (Canada & Mexico) and federal government representatives.

The criteria to determine whether an UME is occurring:

- 1) A marked increase in the magnitude or a marked change in the nature of morbidity, mortality or strandings when compared with prior records;
- 2) A temporal change in morbidity, mortality or strandings is occurring;
- 3) A spatial change in morbidity, mortality or strandings is occurring;
- 4) The species, age, or sex composition of the affected animals is different than that of animals that are normally affected;
- 5) Affected animals exhibit similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition (e.g., blubber thickness);
- 6) Potentially significant morbidity, mortality, or stranding is observed in species, stocks or populations that are particularly vulnerable (e.g., listed as depleted, threatened or endangered or declining). For example, strandings of three or four right whales may be cause for great concern whereas strandings of a similar number of fin whales may not;
- 7) Morbidity is observed concurrent with or as part of an unexplained continual decline of a marine mammal population, stock, or species.

The benefit of this UME is that money from the Marine Mammal UME Fund may be made available to help reimburse some of the “special costs” incurred during the investigation as specified in Section 405 of the MMPA and the National Contingency Plan for Response to UME’s for marine mammals.

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2011 Ringed Seal Tagging near Barrow, Alaska.

The work described in this report was conducted as part of a research project entitled “Satellite tracking of ringed seals in the northeastern Chukchi and western Beaufort seas with principal investigator (PI) Jason Herreman. This project is funded through the North Slope Borough/Shell Baseline Studies Program. The objectives of the project are:

1. Determine seasonal and yearly movement patterns of adult and juvenile ringed seals with a focus on the open water season.
2. Document site fidelity and migration routes of ringed seals
3. Document habitat use areas and foraging behavior, such as foraging location within the water column during specific times of year.

The project is designed as a locally based study involving area hunters and biologists. It is intended to combine local knowledge about ringed seals and ringed seal hunting with the knowledge of biologists concerning ringed seal biology, capture methods, and data analysis. Information obtained about the movements and diving behavior of the tagged ringed seals will be distributed to local residents through e-mail, web pages, printed media, and other means as available.

Tag data obtained by this study will be used to describe seasonal movements, habitat use and diving behavior, and to delineate important ringed seal habitat. This information can then be used in the development of policies and guidelines to mitigate effects of human activities such as oil and gas development on ringed seals. Information on the haul out/diving behavior of these seals will be useful for designing methods to census ringed seals and develop population estimates that can be used in future management strategies and to study foraging and resting patterns important to the species.

Seals caught (n=32) and tagged (SPLASH (n=14); SPOT (n=19)) during this project were handled under Scientific Research Permit No. 358-1787-03 which authorizes ADF&G and designated Co-Investigators to catch, tag, and sample seals, including ringed seals (*Phoca hispida*), in Alaska through Dec 31, 2011.

Seals were caught using multifilament gill nets similar to those used in king salmon fishing. Nets used were 20' x 150' constructed of 8" stretch mesh, #12 netting, 1" diameter fluorescent foam-core float line, and 20#/100 fm lead line. Multiple nets were tied together as needed.

All field activities were based out of the North Slope Borough Arctic Research Facility in Barrow, AK. Temperatures during the field season were in the low to mid 40s and 50s during the day and mid 30s to 40s at night. Shore fast ice breakup was occurring throughout the month of July. By the end of July shore fast and pack ice had moved well north of the NSB coastline. Nets were set at the edge of broken ice pans on which seals were hauled out and swimming around. Nets were free floating and attended by a small boat at all times.

Preparations for capture work began in July. Shore fast ice broke in front of Barrow providing boat access on July 2nd. Scouting trips occurred shortly thereafter. Capture work did not begin until July 13th after attempts to capture adult bearded seals for a separate project where

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abandoned for the season. The bearded seal work was conducted under a separate permit. Pertinent literature suggested that the majority of ringed seals would complete molt by the beginning of July making the attachment of glue on satellite tags possible. Capture work began by attempting to catch seals around ice flows. Biologist Jason Herreman was present for all capture work. One to two nets were deployed at a time for 150' to 300' of net in the water at any given time. Nets were continually moved and manipulated to avoid ice floes and deal with ocean currents. Capture teams consisted of 3 individuals including at least one biologist and one hunter at all times.

When a seal was caught, it was removed from the tangle net and placed in a hoop net in the boat until sampling and tagging. Sampling and tagging of animals occurred on the boat or ice depending on conditions. Animals were released as close to the original capture site as possible. Any animal deemed too small or young was released immediately after capture at the same site. Captured animals were weighed, sexed, measured, and blood was drawn. The project study plan called for 8 animals to be tagged with both SPOT and SPLASH tags and 16 animals to be tagged with only a SPOT or SPLASH tag. SPOT tags allow for long term study of animal movement, as tags are attached to flippers, and can function for multiple years but only provide locations when seals haul out. SPLASH tags provide more complete movement and dive data as they can be glued to an animal's head providing locations every time an animal surfaces, but only last until the animal's next annual molt.

Tags were attached using two different methods. SPLASH tags were applied using 5 minute epoxy. Seals were gently restrained and a towel placed over their eyes. The tag was then traced onto the seal's head using a permanent marker. A small amount of epoxy was applied to the animal's fur and also to the tag. The tag was then placed on the seals head and held in place until it had dried firmly to the hair. Additional epoxy was applied as needed to fill any gaps between the edge of the tag and the seal's skin. Epoxy was heated using warm water to aid in the chemical reaction process and make the epoxy fluid for use. SPOT tags were attached by punching holes through the interdigital webbing of a hind flipper between the second and third digits. The tag was placed slightly offset from the center of the webbing to avoid the vein. The most posterior hole was placed approximately 5 cm from the trailing edge and then a backing plate was screwed through these holes onto the tag. Seals were generally calm during capture and required little restraint. It was not necessary to use tranquilizing drugs because the seals do not try to bite and are easy to work on.

Biological sampling was conducted for all seals captured during this project. Samples collected were determined on a case by case basis. Sex, age, and body measurements were recorded for all animals handled. Measurements (cm) included curve length from the tip of the nose to the tip of the tail, straight length from the tip of the nose to the tip of the tail, girth behind the front flippers, and maximum girth around the belly. A small skin sample was taken from the hind flipper of animals that received a SPOT tag for genetic testing. Blood was collected into vacutainer blood tubes from the epidural sinus. Using pliers, a whisker was collected and tufts of hair were shaved or plucked from the dorsal posterior region. A blubber sample was also collected from all animals deemed to be of appropriate size (Juvenile or older of a minimum of 35 lbs.) and health. Biopsy sites were shaved and then cleaned with alcohol and beta-iodine scrubs. A small incision was made using a sterile scalpel blade in the cleaned region. A small sterile biopsy punch was used to collect biopsies.

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A total of 24 animals (SPOT and/or SPLASH) were tagged throughout the course of this study in 2011 (12 females, 12 males). Surprisingly, many of the captured animals were still in some stage of molt. The majority of animals tagged were adults as judged by claw rings (11). In addition 4 pups, 3 sub adults, and 6 juveniles were also tagged. Of the 24 animals tagged only 6 are currently known to still be transmitting as of Dec. 25, 2011. All of the seals still transmitting at this time are adults, and as such future capture and tagging efforts will focus on this age group to prevent tag loss. Multiple transmitters were lost likely due to the disease present in the ringed seal population this year, the associated alopecia (SPLASH tags) and/or death (SPOT tags). One of the animals still transmitting by SPOT tag originally had both a SPOT and SPLASH tags and was fully molted at the SPLASH tag attachment site. Only the SPOT tag is now reporting for this animal. No animals captured onshore and positively identified as diseased are currently transmitting at the time of this report. An additional 8 seals were handled and evaluated for tagging but released without being tagged during this study.

When the majority of ice had retreated north of the near shore area, seals began to appear hauled out onshore. At first these animals were deemed to just be tired and in a late stage of molt. These seals were captured using a dip or hoop net and evaluated for tagging. Upon closer inspection of several animals, it became clear most individuals were showing similar signs of disease such as lethargy, lesions on the rear flippers, alopecia, sensitive skin around the nose and eyes, and delayed molt. Some individuals also had skin lesions on other portions of their body associated with alopecia. A portion of these animals were tagged to track survival and movement patterns. Only SPOT tags could be used on these animals due to the alopecia preventing the use of glue on tags. A modified sampling strategy was applied to these individuals to avoid cross contaminating animals, limit stress and increase the chance of survival, but still allow for the collection of important information. Interestingly, the very first animal captured and tagged for this study was a seal hauled out onshore in Elson lagoon on July 13th that most likely was diseased. The animal had severe alopecia but otherwise appeared to be in good health and at the time was thought to be suffering the skin disease commonly caused by mites. The animal was tagged with a SPOT tag to track survival and future movements. Upon later review of pictures and behavior, it was determined that this animal shared the signs of the majority of the sick animals that began to appear on shore as the ice retreated.

A figure shown summarizes the movements and haul out behavior of the 5 seals for which SPLASH tags are still functioning. With the exception of a single seal that traveled east along the shelf edge to the Canadian Beaufort, all SPLASH tagged seals not represented showed similar overall movement patterns to those in shown. Seals traveled well north to the pack ice edge during the open water season and spent time hauled out and foraging. These animals have now all traveled south of the Bering Strait Region to winter as of the end of December 2011. SPOT tags report only when seals are hauled out and have been reporting less reliably than expected. Only four tags have reported back in the last several months. No tags placed on sick animals have reported since September including PH2011BW01, 17, 18, 19, and 20. It is unclear if this means that animals died or if tags are just not reporting. Interestingly, several other SPOT tags have reported in recent months as animals begin to spend more time hauled out.

During 2011 training was conducted throughout capture efforts for individuals working on the project. All participants were trained in capturing, sampling, and handling of seals as well managing nets and boats as needed throughout the project. Individual experience and expertise

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varied for participants and as such different skill training was emphasized as needed. Hunter participants were quite skilled in managing boats, reading sea and ice conditions, and managing nets.

Data from tagged seals is down-loaded and mapped on a daily basis and maps are sent out to interested parties on a weekly or bi-monthly basis until all tags cease transmitting. Five of 14 SPLASH tags and 6 of 16 SPOT TAGS were still transmitting in late December 2011, when this report was prepared.

Maps showing movements of tagged seals are distributed weekly or bi-weekly through an email network that includes North Slope residents and state and federal agency personnel. A project description, methods, and photos as well as monthly maps are posted on the NSB web page (<http://www.north-slope.org/departments/wildlife/studies>). Project updates are presented at meetings of the Alaska Ice Seal Committee.

We instrumented 21 ringed seals with a combination of SPOT and SPLASH satellite tags in 2011. We have 2 SPLASH tags remaining that have not yet been deployed but may still be deployed if seals can be captured by the end of the year from the ice edge. Since all seals with working transmitters have now traveled south it is apparent that seals in our area during the winter may be from a separate group of animals. As such it is important to determine where these animals are spending other portions of the year. We will be purchasing additional tags for a minimum of 20 animals for the 2012 season. This project has the potential to continue for a minimum of 3 additional years with community support and continued funding from the granting agency.

Alaska Veterinary Pathology Services

Disease Outbreak in Ice Seals and Walrus in Alaska, 2011

Kathy Burek, DVM, MS, DACVP presented this report. An acknowledgement of several co-authors was provided (NSB, US FWS, NMFS, DFO-Canada, ADF&G, etc.). The team studying this disease outbreak consists of Native communities, the ISC, the Eskimo Walrus Commission, several laboratories, and several state, federal and private organizations. A map of the reported locations of illness in northern marine mammals (ringed, spotted & bearded seals, and walruses) was shown from July to November 2011. People are seeing seals hauled out on the beach and being lethargic and unwilling to move into the water. Ringed, spotted and bearded seals have been necropsied and ringed seals were biopsied. There has been a tendency for seals to bleed from skin lesions and out the nose or mouth. People are seeing retention of old hair (fur) and areas of alopecia in seals. We have seen animals with only hair-loss and no other symptoms sporadically over many years, and this has also been reported in other countries. Walrus with similar disease outbreak symptoms were reported in Point Lay. About 20,000 walruses were hauled out in September 2011. Approximately 6% had skin ulcers. Some walruses were seen with blood coming out of the nose and mouth. Most walrus looked healthy. There were pups and juveniles dead on the beach, many with skin lesions. 2 walrus were necropsied, and biological samples were collected from 4. Typical internal findings on necropsied animals include organ congestion, discolored and soft liver, and abnormal lymphoid systems. Skin histopathology showed dermal vasculitis and mucous membranes. Some have intracytoplasmic inclusion bodies that suggest virus or degenerated proteins. There was occasional intranuclear

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inclusion bodies and negative on EM for virus particles. Heavy fungal and bacterial colonization was observed. Also, follicular degeneration was observed. Lungs were extremely congested to hemorrhagic, and in the heart, some had myocardial degeneration of myocarditis. Histopathology on the liver was done. In the kidneys, pigmentary nephrosis was observed. With the lymphoids, there was hemorrhage and erythrophagocytosis observed, and there was remarkable thymic atrophy in the pups and young-of-the-year, along with lymphoid depletion. Several bacterial cultures were done in both seals and walrus. Bacterial Polymerase chain reactions (PCR) were done for walrus and seals, with one positive for bartonella sp. in walrus, and 5 positive for hemotropic mycoplasma in seals. PCR's for viruses were done for skin disease viruses and other types of viruses, which all turned up negative. Virus cultures and others were done also in walrus and seals, and results are pending. Toxicology was done for heavy metals, radionuclides, harmful algal bloom toxins and persistent organic pollutants. Despite extensive testing, no significant pathogens were detected. On-going testing using pathogen discovery work is being done, as well as for hemo-mycoplasmas. We continue to investigate retro-viruses and also, bio-toxins and contaminants are being investigated. This is most likely a complex multi-factorial process. Climate change factors should be considered. Abnormalities in molt is a complex process which occurs over 6 months, it is stressful (energy and nutrient draining) and is initiated by basking, usually on the ice in May-June to mid-July. The endocrine system is very important for normal molt.

Kawerak, Inc.

Community Contributions to Marine Mammal Management. Kawerak Ice Seal & Walrus Project: In collaboration with the ISC, the Eskimo Walrus Commission & Oceana.

Lily Ray presented this report. Elders in the Bering Straits region have stated the importance of seals and walrus in their culture. A coding sheet was shown on how data is coded. A graph showed what makes management of marine mammals work in a traditional view: food chain, habitat and personal ethic. The traditional science relating to harvest has to do with population size and health, whether the mammal is normal or abnormal/ hunting success/health of harvested animals. Several comments related to population size, abnormal events, seal harvests over time, personal ethic (hunting), working together, attitude, harvest choices, care for your catch, the relationship with game, respect for other hunters, taboos, reciprocity, and teaching youth were relayed to the ISC. Elders provided local knowledge about when to stop harvesting, strategies to avoid loss and traditions for respect. When avoiding loss of struck mammals, there was discussion on the preparation and the strategy for hunting. Because this report is currently in draft form and being reviewed by communities that participated in this project, I am unable to offer more detailed information at this time.

National Marine Fisheries Service

NMFS is extending by up to 6 months the timeline for final determinations on the December 10, 2010, proposed rules to list the Arctic, Okhotsk, Baltic, and Ladoga subspecies of the ringed seal, and the Beringia and Okhotsk Distinct Population Segments of the bearded seal as threatened species under the ESA. NMFS is taking this action because substantial disagreements exist for the Arctic ringed seal and the Beringia DPS of the bearded seal, which occur in Alaska waters, related to the analysis of model projections of future sea ice habitat, in particular for ringed seals on-ice snow cover, and related impacts. The disagreements extend to the magnitude and immediacy of the threats posed to these populations by the projected habitat changes. The ESA

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allows for up to a 6-month extension in making final decisions on listing proposals when there are substantial disagreements regarding the sufficiency or accuracy of the available data. This extension moves the deadline by which final listing actions must be taken from December 10, 2011 to June 10, 2012. The additional 6 months will allow us to evaluate and assess special independent peer review of the aspects of the status review reports over which there is substantial disagreement to better inform the final determinations and further ensure that they are based on the best available scientific and commercial data. We intend to reopen the public comment periods to accept comment on the peer review reports. We will announce the dates of the new public comment periods in the Federal Register when the availability of the peer review reports is known. At that time, instruction for obtaining copies of the peer review reports will also be announced. NMFS is also announcing the initiation of a new status review for the ribbon seal under the ESA. On December 30, 2008, NMFS published the 12-month finding that listing of the ribbon seal was not warranted. However, information has become available since publication of this finding that may have implications for the status of the ribbon seal relative to the listing provisions of the ESA, including new data on ribbon seal movements and diving, as well as a modified threat-specific approach to analyzing the foreseeable future that was used in the spotted, ringed, and bearded seal status reviews completed subsequent to the ribbon seal status review. In consideration of this information, NMFS entered into a settlement agreement with the CBD and Greenpeace, under which NMFS agreed to initiate a new 12-month finding on whether listing the ribbon seal as threatened or endangered is warranted and submit a determination to the Office of the Federal Register by December 10, 2012. To ensure that an updated status review of the ribbon seal is comprehensive, NMFS is soliciting scientific and commercial information regarding the ribbon seal during a 60-day public comment period. NMFS remains committed to consultation with the ISC about possible needs to list under the ESA, and management strategies to avoid possible listing, as spelled out in the co-management agreement.

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