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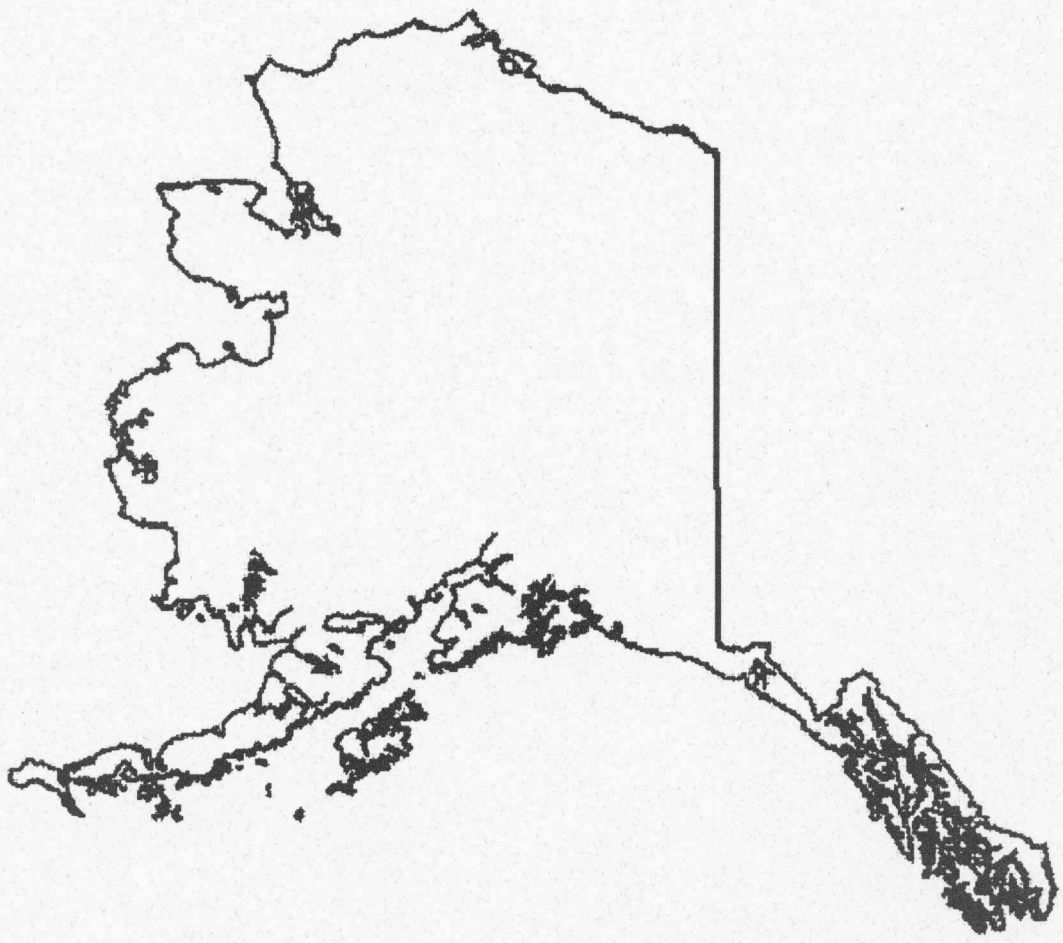
Alaska OCS Region

BEAUFORT SEA INFORMATION UPDATE MEETING

Proceedings

March 28 and 29, 2000
Iñupiat Heritage Center
Barrow, Alaska



MMS
U.S. Department of the Interior
Minerals Management Service
Alaska OCS Region

OCS Study MMS 2000-023

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Barrow, Alaska

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TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

The Minerals Management Service (MMS) held a Beaufort Sea Information Update Meeting on March 28 and 29, 2000 at the Iñupiat Heritage Center in Barrow, Alaska. Honorable George Ahmaogak, Mayor of the North Slope Borough and Mr. John Goll, Regional Director of the MMS Alaska OCS Region welcomed over 100 attendees to the meeting. Fifteen presentations were made including information on bowhead whales, ringed seals, polar bears, waterfowl and marine birds, arctic nearshore monitoring, and social and economic studies on subsistence harvests in Nuiqsut and Kaktovik, traditional knowledge computer databases, and a Geographic Information System to document recent human activity in the Beaufort Sea.

The Beaufort Sea Information Update Meeting is part of the Alaska Environmental Studies Program. The Alaska Environmental Studies Program was initiated by the U.S. Department of the Interior in 1974 in response to the Federal Government's decision to propose areas of Alaska for offshore gas and oil development. Its purpose is to define information needs and implement studies to assist in predicting, projecting, assessing, and managing potential effects on the human, marine, and coastal environments of the Outer Continental Shelf and coastal areas that may be affected by gas and oil development. Lease-management decisions are enhanced when current, pertinent, and timely information is available. To attain program goals, data on specific environmental, social, and economic concerns arising from offshore leasing are required. The Environmental Studies Program then monitors any effects during and after oil exploration and development. It is the largest, single-agency, mission-oriented, marine-studies program in the Federal Government. Since its inception through Fiscal Year (FY) 1998, more than $658 million have been spent on it nationally, with more than $260 million of this amount funding Alaskan studies.

As studies information has been amassed, improved focus has required greater integration of various scientific disciplines. The MMS has initiated Synthesis Meetings, Information Transfer Meetings, and Information Update Meetings to gather maximum expertise and assess the status of existing information, to plan the best possible approach to a study within the constraints of time and resources, and to disseminate information. The Beaufort Sea Information Update Meeting is one of these meetings.

The MMS held an Information Transfer Meeting in Anchorage, January 1999. At that meeting Dr. Thomas Albert, Senior Scientist, Department of Wildlife Management, North Slope Borough and Mr. Thomas Napageak, Chairman, Alaska Eskimo Whaling Commission recommended that a follow-up meeting be held in Barrow, Alaska. The intent of holding such a meeting in Barrow was to provide information more directly to the people of Barrow, Kaktovik, and Nuiqsut who have a great interest in this information. These Proceedings summarize the Beaufort Sea Information Update Meeting.

ACKNOWLEDGMENTS

We especially thank the following persons (in alphabetical order) for providing assistance in the planning and conduct of the Beaufort Sea Information Update Meeting:

Honorable George Ahmaogak, Mayor, North Slope Borough (NSB), meeting planning
Ms. Maggie Ahmaogak, Alaska Eskimo Whaling Commission, meeting planning
Dr. Thomas Albert, Dept. of Wildlife Management, NSB, meeting planning
Mr. Michael Baffrey, MMS, Contracting Officer's Technical Representative
Mr. Ronald Brower, Director, Iñupiat Heritage Center, meeting facility
Ms. Jana Harcharek, Iñupiat Heritage Center, translation
Mr. Tim Holder, MMS, Contracting Officer's Technical Representative
Ms. Francine Hopson Rochon, Iñupiat Heritage Center
Mr. Edward Itta, Barrow Whaling Captains Association, translation
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Ms. Loretta Kunakana, translation
Ms. Kathy Mitchell, MBC, planning, organization, coordination and proceedings
Dr. Thomas Newbury, MMS, Contracting Officer's Technical Representative
Ms. Elaine Patkotak, Iñupiat Heritage Center, registration assistance
Mr. Kenneth Toovak, Elder, opening prayer

WELCOME

Mayor George Ahmaogak

North Slope Borough
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(This is a briefly edited transcript of the Mayor's remarks.)

I am very honored to welcome you here today–all of the staff from Minerals Management Service, oil and gas industry people, and researchers. We welcome you to the North Slope Borough. Today's meeting is the result of many requests that we had made to the Federal agencies, particularly the Minerals Management Service, to provide us some information. A lot of information has been sponsored by the Federal government as you can see from the agenda–bowhead whale feeding studies, oil spill impacts to bowhead whales, migration of bowhead whales across the Alaskan Beaufort Sea, marine mammals and acoustics, comments on the 1999 fall whale hunt that we will hear from our whalers, monitoring and distribution of ringed seals, and polar bears. Now the Federal government, keep in mind, has been doing and conducting research over a period of time and has worked with a lot with the scientific community to come up with this information. But the problem has often been that we left the whalers and the local community ten miles down the road. Meaning that we should hear some of this information to be given to you, whalers, and the local community. That is the overall intent of this meeting. The transfer information to you, for your information. This is not a "Public Meeting;" this is not a "Public Hearing." There is no reason for anything to be debated upon. Nothing to (speaks in Iñupiat) about. They are here for a purpose–to give you their research and present their findings to you. I wanted to make that very clear to every one of you today in this room. There has been a lot of research that has been conducted. The scientific community has done a lot of research. That research is certainly going to be given in a presentation to you, item by item. Over the years, we never received this information. I didn't know half of the research that was going on. So keep in mind that this is not a public hearing of any sort where you are subject to debate or quarrel or argue or whatever. This is information for you. That is why we requested that these people to come up here and make this presentation to you, the local community, rather than holding it in Anchorage. I wanted to make that perfectly clear to every one of you. This is only information for you. This is not a public debate, public issues, or questioning things. This is the scientific community presenting their findings. But anyway, keep that in mind. I want you to keep that in the back of your mind.

There are some issues that we at the North Slope Borough have been pounding on. Issues such as noise out in the ocean. We complain about seismic noise in the water, in the ocean, flying over the air, especially for Kaktovik whalers and Nuiqsut whalers, and it also impacts Barrow whalers. We complain about noise activity all of the time in the Prudhoe Bay area. This is an impact that we see from our standpoint. The reason I am bringing this out is because maybe after the end of the meeting, I understand, that we will be discussing some of these issues, especially reparations, but I will touch upon that later.

There are several impacts that I want to make clear to you: noise, air and sea traffic out in the ocean–everybody wants to be out in the ocean at the same time–there are odors, diesel engine exhaust, natural gas flaring, and oil contamination. These are impacts and how can these impacts be mitigated?

Mitigation, in my opinion, is to bring back or place back after the damage has been done because of these impacts to try to fix and correct the problem. That is the way I understand mitigation. You try to fix it–even if it is noise, air traffic, odors, oil contamination, etc. There needs to be some mitigation factors that deal with these things.

The last thing that I want you to understand is that we have been pounding on the tables at the MMS, at the Federal government, talking about these impacts: noise, air/sea traffic, odors, oil contamination. We all feel it as whalers, Nuiqsut and Kaktovik especially. Nuiqsut is the one that is most heavily impacted because they are whaling out at Cross Island. Now it is going to be even more worse when Northstar Island is developed. They are constructing Northstar right now and the production facilities are going to be continuing. You can see noise, you are going to see air traffic, odors, oil contamination, and several other things. We have been bringing this to the attention to the Federal agencies as valid concerns. We are talking about Northstar developing now. Now BP has plans to go after Liberty, right next to Northstar, another island. And possibly

even the Phillips Petroleum right at Cross Island. Then ARCO has another offshore rig that they would like to put over there. Simultaneously, Northstar is developing and the first offshore facilities are being constructed for Northstar. But the reason that I am saying this is that once you get Northstar, once you get Liberty, once you get Phillips Petroleum near Cross Island, then you have ARCO. The point I am trying to make is simply this: when one starts from Northstar, Liberty, and several others, it starts creating cumulative impacts. Every one of these operations is going to create some sort of impact that I just talked about: noise, air traffic, odors, oil contamination. It is going to get worse.

But then when you think about mitigation, how do you place back those things so that we don't disrupt the whalers and let them be allowed to continue their whaling? So the whales don't divert to another location? These are serious problems and we have been making it very clear to the Federal government. How do we mitigate those things? How do we place back those things? Well, we are going to have to be able somehow to convince industry, the operators, the Federal government, to work these issues out. But the bottom line is that we have to protect our whaling. It is very important for Nuiqsut. It is very important for Kaktovik. It is very important for Barrow and the rest of the whaling communities. That is the whole reason why we want mitigation.

The last thing that I wanted to point out is when we had these meetings in Seattle with Minerals Management Service, BP was there, ARCO was there, some of their attorneys were there. We kept mentioning these issues of impact. It is going to get even worse with cumulative impacts when Liberty, ARCO, and Phillips Petroleum start. And these are all offshore areas. That is why I am saying that this is serious now. It is our culture, it is our life.

As mayor, that is what I see that I want to resolve.... I don't want to take an adversarial (speaks in Iñupiat) role. I think that is wrong. I think the way we seriously take these issues to heart if we are going to protect our whaling is to roll up our sleeves and be able to try somehow work those factors in to protect our interest instead of (speaks in Iñupiat) that isn't going to get us anywhere. But we need some clear language that is going to protect a lot of these issues. That is where I come from. I don't know what the rest of you think but the moment that cumulative impacts start, these other islands start, you know darn well that there are going to be a lot of problems if we don't dig in and take care of these and start discussing them.

But today, that is not what this meeting is about. That will be at the tail end. The last thing that will be talk about and we are supposed to be making plans. Like I said we met with MMS, we talked about reparations. Reparations....(speaks in Iñupiat). That is what it means. Does BP pay for it because they are out at Northstar? If the pipe bursts, and I know they don't have an oil spill contingency plan that is very... I am not confident in the oil spill clean up plan that BP has. But the question that I raise as a mayor, I don't know how you guys think, but when that day comes and there is an accident, and the pipe breaks who is going to be responsible? When your whole Eskimo life and culture goes out the door, who is going to pay for that? BP? ARCO? MMS? Who? That is what we mean by reparations. Our insurance policy. We need to talk about these issues. I assume that we will be talking about this at the end of the meeting. When that day comes, what are we going to propose?

(The Mayor's then translated his remarks into Iñupiat.)

WELCOME

John Goll

Regional Director
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Welcome Mayor Ahmaogak, AEWC Chair, Thomas Napageak, distinguished whaling captains and every one here in attendance. My name is John Goll. I am the Regional Director of the Minerals Management Service. I would like to thank Mayor Ahmaogak, the Executive Director of the AEWC, Maggie Ahmaogak, and Dr. Tom Albert of the Department of Wildlife Management and others here who have assisted us in putting this meeting together, both the logistics and also more importantly, the agenda. As the mayor said, this is the first time that we have had a meeting like this here in Barrow. We intend that it is not going to be the last one. We have had similar meetings in Anchorage but most of you are not able to attend those. So we wanted to come up to Barrow so that you can hear about some of the research the MMS and others are funding. We do plan to come back. First we want to see how this one turns out and how we can improve future meetings. Also we would like to visit he other villages of Nuiqsut and Kaktovik, not just Barrow.

Again, the purpose of this meeting is to pass information on to you about the various studies and research that is being done in your area. We do encourage questions during the presentations. As Mayor Ahmaogak was saying, this is not a debate nor a "public hearing-type" of meeting but we do what to hear any questions you may have for the researchers as time allows or during the breaks or at lunch time, or after the meeting. Please get that dialogue going. We would like some feedback on the studies that we are doing. Are there other areas that you think we should be looking at? We will be working with the North Slope Borough and others if we need to make some modifications on what we are doing.

The Mayor mentioned mitigation. We look at it a little differently than the Mayor described it. In that we look at mitigation as trying to prevent problems before they occur. Sometimes that is adding more steel to a pipe or putting in safety systems. Safety really is the number one priority of our agency. And I know it is the number one priority of all the companies-to prevent that oil spill from happening, to prevent other effects to the whales or animals. Because if they do occur that is a failure. What we try to do is to make sure that we have safety for people and safety for the animals, and safety for the environment.

So as you are listening to the presentations, I ask you to be thinking if there are things that you or we can learn from some of the research that can be applied to prevent things from happening. So the whales don't get diverted or that other effects are not happening. So again please keep that in mind. Ask questions. If you see some work that we should be doing, we want to hear about that.

We had a very good first meeting in Seattle, as Mayor Ahmaogak mentioned. MMS, NMFS, and several of the companies met to try and go over some of these tougher issues, the longer term, cumulative impacts, etc.

I think I am going to end here because it is more important for you to hear from the researchers. Again I ask you to listen. Thank you all for coming.

BOWHEAD WHALE FEEDING IN THE EASTERN ALASKAN BEAUFORT SEA: UPDATE OF SCIENTIFIC AND TRADITIONAL INFORMATION

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The purposes of this MMS-sponsored project are to compile and integrate existing traditional and scientific knowledge about the importance of the eastern Alaskan Beaufort Sea for feeding by bowhead whales; to build consensus on the need for and approach to fieldwork to augment this knowledge; to conduct field studies and analyze the results; to integrate new results with existing traditional and scientific knowledge; and to report on and publish the results. This study is considered necessary by MMS to support environmental risk assessments, EISs, and decisions regarding potential oil and gas leasing.

There was concern that a similar study done in 1985-86 did not sample sufficient years to fully document use of the area by bowheads. The present study, involving fieldwork in three more years (1998-2000), includes more local coordination. This is intended to ensure that: 1) local knowledge is fully used; 2) local residents support the need for the project, its objectives and methods, and the interpretation of its results; and 3) the project does not interfere with hunting. A Scientific Review Board including both scientists and local representatives reviews project plans and draft reports. Project personnel attend meetings in Kaktovik at various times before, during, and after the study. A local resident participates in fieldwork.

The study includes boat-based sampling of zooplankton in areas where bowheads are feeding and areas where they are not feeding. The purpose is to estimate the amount and types of food available to bowheads, and to define the characteristics of bowhead feeding habitats. Plankton nets and an echosounder are used to sample the plankton. Temperature and salinity profiles are taken with plankton samples, and continuous measurements of near-surface water temperature are taken as the boat moves.

Observers in an aircraft document distribution and numbers of bowheads, observe whale behavior, and photograph whales from above. Behavioral observations show rates of movement of the whales, whether they are feeding, and how much of time they spend feeding. Sizes of whales in different parts of the study area are measured from photographs. Individual whales are identified from whale markings visible on photographs. Re-sightings are used to determine how much time some whales spend in the area.

Whales harvested at Kaktovik are sampled by the Alaska Dept. of Fish and Game, a project participant. These stomach samples, and others provided by the North Slope Borough Dept. of Wildlife Management from the Barrow harvest, are analyzed to determine what bowheads eat near Kaktovik (fall) and Barrow (spring and fall).

The ratio of carbon isotopes in bowhead food is different in the Bering and Chukchi seas than in the Beaufort Sea. Isotope ratios in baleen and muscle are analyzed by University of Alaska Fairbanks to determine where bowheads obtain most of their food. Additional chemical analyses of fatty acids in bowhead tissue (by ADF&G and Dalhousie Univ.) may further elucidate prey sources.

Based on scientific results available up to autumn 2000, traditional knowledge, and a model of bowhead energetics, the project will seek (in 2001) to estimate the following: 1) how many bowheads feed in the eastern Alaskan Beaufort Sea in different years, 2) how long they spend there, 3) how much time they spend feeding, 4) what kinds of areas are good feeding areas for bowheads, 5) what kinds of food they consume, and 6) how much food they consume in the study area vs. elsewhere. Based on these results, we will, insofar as the data allow, evaluate the importance of the study area as feeding habitat for bowhead whales. Before the report is finalized, results will be reviewed by the project's Scientific Review Board and discussed at a meeting in Kaktovik to ensure that all perspectives are taken into account.

COMMENTS REGARDING POTENTIAL OIL SPILL IMPACTS TO BOWHEAD WHALES

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Bowhead whales traveling through oil-fouled waters are likely to be adversely impacted. The nature and extent of impacts will be affected by the degree of contact, duration of contact, whether or not feeding, etc. (Albert 1981). There is ample evidence of the toxicity of oil to marine mammals (Loughlin 1994). It is likely that those areas of the skin which come above the surface during breathing will be repeatedly contaminated. The remainder of the skin and the eyes are likely to be contacted by dissolved components (and "globules") in the water column. Presented here are a few comments regarding potential impacts to the skin, digestive tract, and eyes.

Possible Effects of Oil Contact on Skin. The bowhead has many small eroded areas on its skin surface. In all of the bowhead whales examined by me, there have been dozen to hundreds of small (1-3 cm diameter) eroded areas on the otherwise smooth skin surface, particularly the head. These are characterized by a very rough surface with much micro relief, usually some erosion, and by the presence of large numbers of bacteria and diatoms down in the tiny pits and crevices of the rough areas of skin (Haldiman et al. 1984; Henk and Mullan 1996; Mullan 1991). In many of these eroded areas, blood vessels (capillaries) are just beneath the surface. These eroded areas provide a microhabitat for many bacteria (Shotts et al. 1990). As the whale swims through oil-fouled waters, oil might adhere to these rough surfaces. If any of the bacteria present in these lesions are pathogenic or potentially pathogenic and flourish as a result of oil contact, then the stage is set for increased skin irritation. This could lead to further skin damage and possible ulcer formation, with associated localized inflammation. This might result in bacteria entering the blood at this site and/or enhanced absorption of petroleum components.

Possible Effects on Digestive System. If the animal were taking in oil along with prey items, some of the oil would surely be swallowed. In the mouth the oil would have the opportunity to foul the baleen and reduce its filtering efficiency (Braithwaite 1980).

Another "problem" could arise from the inadvertent engulfment of tar balls or large "blobs" of oil, along with prey items. If such globular material would not liquefy due to body heat and/or digestive acids and enzymes, it might well contribute to a mechanical blockage in the stomach at the connecting channel. The connecting channel is quite narrow and is that part of the stomach that serves to connect the fundic chamber with the pyloric chamber (Tarpley 1985; Tarpley et al. 1987). Mechanical blockage could result from the swallowing of broken off baleen "hairs" which have matted together into small "balls" due to the oil.

Possible effects on the eyes. Direct contact of the whale's eyes with oil is not likely to have a beneficial effect. If the oil were to get on the eye surface it will likely get under the eyelids and thereby enter the extensive conjunctival sac of the bowhead whale. The conjunctival sac in the bowhead is far more extensive than in animals such as man. In the bowhead this sac extends more than one-half the way around the globe (Zhu 1996, 1997) and therefore presents an extensive surface for an irritant to damage the eye surface.

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FALL 1997 MIGRATION OF BOWHEAD WHALES ACROSS THE ALASKAN BEAUFORT SEA AS NOTED BY THE MMS BOWHEAD WHALE AERIAL SURVEY PROJECT WITH PRELIMINARY FALL 1998-99 SURVEY RESULTS

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Each year since 1987, the Minerals Management Service (MMS) Bowhead Whale Aerial Survey Project has used MMS personnel to monitor the fall migration of bowhead whales across the Alaskan Beaufort Sea. The goals of the ongoing program are to: 1) provide real-time data to MMS and National Marine Fisheries Service on the general progress of the fall migration of bowhead whales across the Alaskan Beaufort Sea, for use in implementing overall limitations on seasonal drilling and geological/geophysical exploration; 2) monitor temporal and spatial trends in the distribution, relative abundance, habitat, and behaviors (e.g., feeding) of endangered whales in arctic waters; 3) provide annual analyses of long-term interyear trends in the distance from shore and water depth of migrating bowhead whales; 4) provide an objective wide-area context for management interpretation of bowhead migrations and site-specific study results; and 5) map beluga whale distribution and incidental sightings of marine mammals.

General ice cover during September and October 1997 was extremely light. The pack ice was more than 200 miles north of the shoreline during most of the September-October field season. The very high number of both bowhead whale groups (n=437) and individual bowhead whales counted (n=1,655) likely resulted from favorable sighting conditions and the presence of prey. Also, there might have been some repeat counting between days of large aggregations of feeding and/or milling whales which appeared to remain in the same area for several days. The project also observed 398 beluga whales, 9 gray whales, 8 bearded seals, 311 ringed seals, 50 polar bears, and 8 sets of polar bear tracks in 1997 during 123.62 total survey hours.

Power analyses of the among-year ANOVA for distance from shore in two regions of the study area (α = 0.05, β = 0.01) showed there was a minimum detectable difference of 4.8 statute miles in the East Region and 6.03 miles in the West. The between-year Tukey HSD test showed that East Region bowheads in 1983 migrated significantly ($P<0.05$) farther offshore than in any other year except 1989. Bowheads in 1989 and 1991 were significantly farther offshore whereas whales in 1997 were significantly nearer to shore, than most other years. For the West Region, the Tukey HSD test showed that distances from shore in 1983 and 1988 were significantly ($P<0.05$) greater than in 1986, 1987, 1989, 1993, and 1997. Other results of the 1997 study were generally within the range of result values from previous MMS-sponsored bowhead whale aerial survey monitoring conducted during September and October in the Beaufort Sea.

During Fall of 1998, the pack ice was again far offshore and the total number of bowheads counted was high (n=1,050) possibly due to similar conditions as in Fall 1997. During Fall 1999, a preliminary total of 397 bowheads was observed.

(Presented by Dr. Cleve Cowles, MMS.)

MARINE MAMMAL AND ACOUSTICAL MONITORING PROGRAMS FOR INDUSTRY

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Reactions of bowhead whales and seals to underwater sounds from oil industry activities have been studied in the Beaufort Sea since 1996. LGL and acoustical subcontractor, Greeneridge Sciences, Inc., have conducted several studies on behalf of BP Exploration (Alaska), Inc. and Western Geophysical. Most of this work was planned in conjunction with the National Marine Fisheries Service (NMFS), Alaska Eskimo Whaling Commission (AEWC), and North Slope Borough (NSB) to ensure that it satisfied monitoring requirements of all stakeholders. In addition to various meetings on the North Slope, annual peer/stakeholder review meetings are convened by NMFS, including AEWC and NSB representatives. At these meetings, monitoring plans for future work and draft reports concerning previous work are reviewed. Plans and reports are finalized after the annual meeting taking account of the comments.

Open-Water Seismic Exploration: During the open-water seasons of 1996 to 1999, a single seismic boat has operated at any given time in shallow water near Prudhoe Bay. In 1996-98, seismic work continued into the whaling season. Monitoring work included biologist and Iñupiat observers on watch from the seismic vessel at all times during airgun operations (summer and fall), aerial surveys for bowheads during fall, and several types of acoustical measurements and monitoring. Aerial surveys showed that almost all bowheads remained at least 12 land miles (20 km) from the operating airguns, with some avoidance out to 18 miles (30 km). The 1996-98 results showed that migrating bowheads deflect away from a seismic vessel at longer distances and lower sound levels than demonstrated in previous scientific studies, although not as far away as proposed by hunters. Bowheads moved back into the 12-mile zone within 12-24 hours after seismic work ended. During the 1996-98 whaling seasons, seismic work was limited to areas west of Cross Island. This avoided interference with the bowhead hunt. Because most bowheads avoid at long distances, it is unlikely that they receive airgun sounds strong enough to affect their hearing.

Seals show only slight avoidance of operating airguns. They do not consistently avoid the zone where received levels *might* be strong enough to affect seal hearing. Whenever boat-based observers saw seals within this "safety zone" in 1996-99, the airguns were shut off immediately. There is a need for hearing studies to determine whether present safety criteria are necessary (and adequate) to protect seals.

Vibroseis Operations on Floating Ice: In early 1998, NMFS renewed the regulations concerning "taking" and monitoring of ringed seals during winter/spring vibroseis seismic operations on floating ice. NMFS convened two workshops, in May 1998 and October 1999, to plan how effects of vibroseis and other on-ice operations can be studied. Monitoring studies under the new provisions have begun.

Offshore Oil Developments: Studies of marine mammals, sounds and vibrations are being done as part of BP's Northstar oil development off Prudhoe Bay. Some studies also concern the potential future Liberty development. During *winter/spring*, four types of studies have been done: 1) on-ice monitoring of ringed seal structures (breathing holes and lairs) in construction areas and buffer zones during 1999 and 2000; 2) acoustical measurements during construction in 2000; 3) spring fixed-wing aerial surveys since 1997 to assess numbers and distribution of seals on the ice in relation to year (before vs. during construction) and distance from activities, with allowance for environmental factors; and 4) helicopter survey in 1999 to assess abandonment of seal holes vs. distance from ice roads. During the 2000 *open-water season*, BP plans to: 1) measure sounds from construction in open water conditions; 2) monitor seals near Northstar island as construction proceeds; and 3) use acoustic localization methods to document the bowhead migration corridor past Northstar in relation to received sounds from Northstar activities.

MONITORING DISTRIBUTION AND ABUNDANCE OF RINGED SEALS IN NORTHERN ALASKA

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Aerial surveys of ringed seals (*Phoca hispida*) were conducted in the Beaufort Sea from Point Barrow to Barter Island during late May-early June 1996-1999 using previously established survey protocols. We surveyed approximately 13,500 linear km of transects covering an area of 11,105 km^2, and sighted 9,935 seals in 5,833 groups. Estimated observed densities ranged from 0.36 seals/km^2 in sector B1 to 1.54 seals/km^2 in sector B4. Sector B4 had the highest density of total seals on both fast and pack ice in all four years, except for pack ice in 1996 where B2 was higher but based on a very small sample.

Only sectors B3 and B4 were surveyed in all four years, making among-year comparisons possible. In sector B3, the raw density of ringed seals on fast ice, based on standard strip transect analysis, was highest in 1999 (0.95 seals/km^2) and lowest in 1996 (0.57 seals/km^2). In sector B4, the density on fast ice was also lowest in 1996 (0.67 seals/km^2), similar in 1997 and 1998 (1.17 seals/km^2 and 1.16 seals/km^2), and slightly higher in 1999 (1.77 seals/km^2). On pack ice, the estimated densities were similar in three of four years in sector B3 (0.81 to 0.92 seals/km^2) and somewhat higher in 1999 (1.16 seals/km^2). Pack ice densities were quite variable in sector B4 (1.17 seals/km^2 in 1996; 2.37 seals/km^2 in 1997; 1.57 seals/km^2 in 1998; 1.35 seals/km^2 in 1999). Densities for sectors B3 and B4 in 1996-1999 generally fell within the range of estimated densities for 1985-1987.

Preliminary covariate analyses were conducted to examine the effects of weather and habitat variables on seal counts. Ice type and deformation, melt water, time of day, distance from shore and from the fast ice edge, and longitude, date and cloud cover were all found to affect the observed density. Seal counts declined as ice deformation increased. Predicted density was greatest when surveys began at 10:00 am "sun time" and declined throughout the day. Observed seal density was fairly constant within about 30 km of shore, and increased beyond that to the edge of the fast ice, where it once again decreased with distance into the pack ice. It is likely that the interaction of distance from shore and distance from the edge complicates this relationship. Seal abundance increased with date, and generally increased from west to east within the survey area. Predicted density was highest with moderate cloud cover, which minimized glare for observers.

We recommend that future surveys be conducted using standard strip transect methods described in the previous MMS-ADF&G protocol. Efforts to develop methods for covariate analysis should be continued.

This is a cooperative project funded primarily by the U.S. Department of the Interior, Minerals Management Service, with additional support being contributed by the Alaska Department of Fish and Game, the National Marine Fisheries Service, the University of Alaska, and the North Slope Borough.

POLAR BEAR RESEARCH IN THE BEAUFORT SEA

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Polar bears (*Ursus maritimus*) occur year-round in northern and northwestern Alaska. Recent analyses of data collected from bears followed by satellite radio telemetry have shown that polar bears occurring between Wrangel Island, Russia and Banks Island, Canada may actually be members of four somewhat separate stocks. During the past year, we built a new model of polar bear movements and distribution that allows us to assign the relative probability that a bear from each group might occur at any geographic location. Pregnant female polar bears occupy dens from early November to early April in order to provide a mild microclimate for neonates. Half of the population occupies widely scattered dens on land. Although we still cannot predict where any individual may choose to den; we now have a digital map of the highest probability denning habitat. We used characteristics of previously observed dens and aerial photos to identify 1782 km of bank habitats suitable for denning. These habitats comprised 0.18% of the coastal study area between the Colville River and the Tamyariak River in northern Alaska. The final map, identified 88% of bank denning habitat in this region, and will help minimize the potential for disruptions of maternal dens by winter exploration activities. In limited tests, Forward Looking Infrared (FLIR) has been 100% successful in seeing denned bears through the surface of the snow. This method may be the most important management tool ever developed to protect denned polar bears. However, extensive efforts to test FLIR capabilities this winter have, thus far, been prevented by poor weather. A new model for estimating numbers was completed in the last year. This model provides the most consistent annual estimates and the tightest confidence intervals of any estimates derived thus far. Early results suggest larger numbers of bears and a faster rate of population growth through the 1980s than previous estimates. In the 1990s the numbers appear to level off, but at higher numbers than previously suspected. Although the new method of analysis is encouraging, sample sizes are still limiting, and the age of our best data continues to give us cause to hold reservations regarding the outcome. It becomes increasingly clear that dependable current estimates can only be derived with a new focused Mark and Recapture effort. Polar bears may be an indicator of the overall health of the arctic marine ecosystem. They may, for example, be among the first species affected by habitat changes due to global warming or other large-scale phenomena. New studies evaluating changes in recruitment of polar bears and indices of productivity in ringed seals, their principal prey, are being started to assess future large-scale changes.

MANAGEMENT OF POLAR BEARS IN THE SOUTHERN BEAUFORT SEA

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The U.S. Fish and Wildlife Service (Service), under terms of the Marine Mammal Protection Act, continues to monitor the harvest of polar bears taken by Natives for subsistence purposes. Since 1980 the statewide harvests have ranged from 46 to 297 bears per year and averaged 108 bears per year. In the Southern Beaufort Sea annual harvests during this period have ranged from 20 to 62 bears per year and averaged 36 bears per year. Hunters present skulls and hides of harvested polar bears to a tagging representative within 30 days of kill and the Service compiles harvest statistics on the annual take. In 1988 the Iñupiat of the North Slope and the Inuvialuit of the Northwest Territories developed a conservation agreement for the polar bears of the Southern Beaufort Sea. This management agreement provides for annual harvest quotas, protection of females and cubs and denning bears, among other provisions, and has operated to maintain harvests at sustainable levels during the past 12 years. The Service participates in this agreement as technical advisors to the Joint Commissioners responsible for reviewing and implementing management programs.

The Service supports population surveys and inventory assessments and plans to conduct a polar bear aerial survey of the Eastern Chukchi Sea area from the U.S. Coast Guard vessel *Polar Star* during July and August, 2000. Primary objectives are to develop aerial survey detection functions, to test the feasibility of conducting future surveys, and, if feasible, to estimate the numbers of bears occupying this area during a series of consecutive years. Also, the Service, in cooperation with BP-Exploration and the U.S. Geological Survey, is designing a polar bear aerial survey of coastal and barrier island areas to be conducted during the open water and freeze-up phase during a series of years in order to gain a better understanding of the timing, location, and relative numbers which are present. The Service also participates in reviewing oil and gas development programs, such as for Northstar, and for authorizing incidental take of marine mammals through a separate regulatory program. Regulations are expected to be issued in the near future. Cumulative effects of expanding offshore and onshore development on polar bears are an issue.

STATUS OF KING AND COMMON EIDER POPULATIONS UTILIZING THE BEAUFORT SEA

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King and Common eiders wintering off western North America migrate north through the Bering Strait in the spring and either head west to Russia or east to northern Alaska and Canada. Those heading east migrate past Point Barrow, Alaska, and mostly nest on or adjacent to Banks and Victoria islands. In the summer and fall, eiders migrate back to the west and again pass close to Point Barrow as they return to molting and wintering areas. Migration counts were conducted at Point Barrow by various researchers in 1953, 1970, 1976, 1987, 1994, and 1996. Analysis of migration counts was standardized to examine population trends. Based on this standardized procedure, the King Eider population appeared stable through 1976 but by 1996 had declined by 56% (from 802,556 eiders in 1976 to 350,835 in 1996). The Common Eider population had declined by 53% by 1996 (from 156,081 eiders in 1976 to 72,606 in 1996). Aerial surveys for eiders on Banks and Victoria islands provide additional evidence of a population decline of King Eiders. Reasons for the declines are unknown.

Molting and wintering areas for King Eiders that utilize the Beaufort Sea are poorly known. In 1997 and 1998, satellite transmitters were implanted into 10 King Eiders on Victoria Island. These eiders were tracked for up to nine months. Molting locations were scattered along the Russian east coast from the Bering Strait to the northeast end of the Kamchatka Peninsula, near Bristol Bay, Alaska, near Point Lay, Alaska, and near nesting areas (for some females). Wintering areas were located along the eastern Chukotka Peninsula, the southeast side of Kamchatka Peninsula, in Bristol Bay and near Kodiak Island, Alaska.

POPULATION STATUS AND SURVEYS OF BEAUFORT SEA WATERFOWL AND MARINE BIRDS

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The Outer Continental Shelf Lands Act and its amendments include provisions for post-lease monitoring studies designed to identify changes in quality and productivity of leased environments, establish trends in the lease areas, and design experiments to identify the causes of any changes. Industrial development in the Northstar unit in the Beaufort Sea began in winter 2000. A significant increase in industrial activity is anticipated at the east end of Simpson Lagoon associated with the development of Northstar. Thus, the overall objectives of this study represent a series of interrelated studies designed to answer questions regarding the effects of disturbance on distribution and abundance of waterfowl and marine birds. The primary focus involves aerial surveys designed to describe abundance and distribution of Oldsquaw (OLDS) using several lagoons (near-shore surveys). Additionally, we surveyed offshore areas for seabirds and conducted ground-based studies designed to enhance the interpretation of the aerial surveys.

The near-shore surveys were conducted in Simpson Lagoon as an *industrial* area, an unnamed lagoon formed by the Stockton, Maguire, and Flaxman island complexes as a comparable *control* area, and the near-shore waters between these two lagoons. Six near-shore aerial surveys were conducted between 22 July 1999 to 8 September 1999 from Oliktok Point east to Brownlow Point. A total of five transects were flown on each survey consisting of three transects shoreward of the barrier islands and two transects seaward the barrier islands. The most common waterbirds observed (mean) on the near-shore surveys were; OLDS (9,191), Common Eider (890), small shore birds (513), and Glaucous Gulls (332). All of these species were most commonly observed just shoreward of the barrier islands.

The offshore surveys were conducted seaward of the primary study area including additional areas to the west. The offshore survey area extends roughly 50 km offshore depending on ice conditions. Three offshore surveys were conducted between 28 June 1999 and 1 September 1999.The most common waterbirds (mean) observed were; OLDS (1701), King Eider (1367), Surf Scoter (165), and Common Eider (108). Further analysis of survey data will be conducted after the 2000 field season.

Ground-based studies were conducted on Bodfish Island in Simpson Lagoon and on Flaxman Island. After significant modification of materials and approaches, 430 OLDS were banded at Flaxman (77% male) and 74 OLDS in Simpson Lagoon (82% male) for analysis of survival and fidelity to molting locations. Blood samples were collected from a sub-sample of captured birds to determine exposure to contaminants. Oldsquaw were collected from Simpson Lagoon and Flaxman Island for laboratory analysis, planned for winter and spring 2000. Analysis will include measuring wing surface area, mass of specific muscle and organ groups related to nutrient reserve dynamics, and determination of nutrient composition.

Aerial surveys and ground-based studies will be continued in 2000.

THE ALASKA MARINE MAMMAL TISSUE ARCHIVAL PROJECT (AMMTAP): AN ARCTIC ENVIRONMENTAL MONITORING RESOURCE

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The cryogenic archival of environmental specimens for retrospective analysis can be an important resource in environmental monitoring programs and for both present and future research on population genetics, pathology, systematics, and toxicology. The Alaska Marine Mammal Tissue Archival Project (AMMTAP) is a joint project conducted by three U.S. government agencies to collect and archive tissues from Alaska marine mammals. The project emphasizes the use of standardized sampling and archival protocols, procedures that minimize contamination of samples during collection, and maintaining a detailed record of sample history. Most of the animals sampled are from Alaska Native subsistence harvests; therefore, the project requires cooperation and collaboration with numerous Alaska Native organizations and local governmental agencies. Through AMMTAP, samples are collected for contaminant monitoring in the Marine Mammal Health and Stranding Response Program. In addition, the project has provided samples and/or data for many research programs, both inside and outside the U.S., on a variety of subjects, including: genetics research, the circumpolar distribution of chlorinated hydrocarbons in beluga whales, baseline levels of trace elements in tissues, the identification of arsenic and mercury species in marine mammal tissues, biomarker research, nutritional studies, and studies on potential human health effects of Alaska Native subsistence foods.

(Due to time constraints, presentation was not given orally.)

THE MINERALS MANAGEMENT SERVICE ARCTIC NEARSHORE IMPACT MONITORING IN THE DEVELOPMENT AREA (ANIMIDA) PROGRAM: PHASE I OF A MULTI-YEAR MONITORING PROGRAM IN THE NEARSHORE BEAUFORT SEA

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Both offshore and onshore oil and gas development and production activities are planned for the coming years at the Northstar and Liberty sites in the nearshore Beaufort Sea. There is concern about the long-term effects of these developments as well as long-term effects of any development associated with offshore lease sales. Historical data in the region have been collected over several decades. However, the sensitivity of the region adjacent to Northstar and Liberty, and the highly variable and complex environmental conditions, make further monitoring necessary. In response to interagency reviews of related environmental impact statements (EISs) and development and production plans, the U.S. Department of Interior, Minerals Management Service (MMS) initiated Phase I of the ANIMIDA Program as a comprehensive long-term program for monitoring potential impacts of Northstar and Liberty. ANIMIDA Phase I was started in June 1999, and will continue through FY 2000. During Phase I, hydrocarbon and metals chemistry, as well as acoustic measurements, were performed in the open water season adjacent to the Northstar and Liberty sites. A winter measurement program is planned under Phase I to collect data under ice-covered conditions.

ALASKA FROZEN TISSUE COLLECTION: A RESOURCE FOR NORTHERN BIOTECHNOLOGY

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The Alaska Frozen Tissue Collection (AFTC) is the primary regional archive for frozen zoological samples and a major contributor to biotechnology studies of the North Pacific and Arctic oceans. It has become the world's third largest frozen tissue collection for wild mammals. These specimens span four decades of field work by Alaskan biologists from various universities and government agencies, and include samples from throughout Alaska's waters. It is the largest collection of western Arctic and North Pacific seals worldwide.

Cooperative agreements have been developed or continued with individual collectors and organizations, including the Alaska Native Harbor Seal Commission, the National Marine Fisheries Service, the U. S. Fish and Wildlife Service, the North Slope Borough, and the Alaska Marine Mammal Tissue Archival Project (AMMTAP).

Projects supported use DNA-sequencing methods, stable-isotope analyses of ecological pathways, and immuno-assays for various pathologies. As these methods have become increasingly powerful, frozen tissue samples have become increasingly useful for examining long-term changes in Alaska's marine ecosystems.

The present database structure is being modified to facilitate reporting on the status of projects supported by the Collection. Soon, the database will be congruent with architecture engineered at the University of California's Museum of Vertebrate Zoology thereby facilitating the sharing and joint development of programs.

ESTABLISHING A COMPUTER-ACCESSIBLE TRADITIONAL KNOWLEDGE DATABASE ON THE ALASKAN NORTH SLOPE

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This talk will cover the current status of the North Slope Iñupiat Traditional Knowledge Project. The main thrust of the project as a whole is the construction of a traditional knowledge database (TKDB) containing North Slope Iñupiat traditional knowledge. The TKDB will be used by individuals and entities within and outside of MMS seeking to combine the information contained in the database with other types of information.

The project has several parts. The following is a summary of the research products that will result from this study effort:

Epistemology

This document is written to be used with the traditional knowledge database and the other products of this research effort. It is intended as a discussion specifically tailored to the traditional knowledge included in the TKDB and some of the specific uses (e.g., MMS and other Federal agency environmental baseline and impact assessment type of NEPA documents) to which that traditional knowledge will be applied by users who are not already grounded in Iñupiat epistemology.

Keyword Listing

Keywords are tools for querying the annotated bibliography and traditional knowledge database. The entries in these data sets are keyworded to facilitate searches for specific content. The keywords are a series of shortcuts allowing users to find categories of traditional knowledge information that are required for environmental/resource research on the North Slope in general, and within the MMS environmental assessment and socioeconomic research efforts in particular. This will help in making traditional knowledge data available for direct use in integrated analyses of social and environmental issues rather than having it appear as stand-alone data in appendices.

Annotated Bibliography

This can be conceived of as a broad, shallow portion of the traditional knowledge database, or as a broader set of sources of which the TKDB comprises a specific subset. The goal of the annotated bibliography is to make the user aware of as full a range of potential sources of traditional knowledge as possible, and to provide enough information to enable the interested person to track down those sources.

Traditional Knowledge Database

This database can be conceived of as a deeper, narrower portion of the information about traditional knowledge assembled during the course of the North Slope Iñupiat Traditional Knowledge Project. That is, the items in the database itself will comprise a subset of the entries in the annotated bibliography. The database will consist of that subset of resources noted in the annotated bibliography that can be incorporated in whole or in part directly into the database. The database will be available on CD-ROM.

"Lessons Learned" Report

This report will be produced at the end of the project. It will include identification of areas where more traditional knowledge should be recorded, and information regarding the integration of Iñupiat traditional knowledge and other types of knowledge.

SUBSISTENCE ECONOMICS AND OIL DEVELOPMENT: CASE STUDIES FROM NUIQSUT AND KAKTOVIK, ALASKA

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Results from an investigation focusing on evidence of harvest disruption effects from expanding oil and gas development on the mixed subsistence-cash economies of two northern Alaska Iñupiat communities, Nuiqsut and Kaktovik, is presented. Systematic household and key respondent information collected by the Division of Subsistence, Alaska Department of Fish and Game, in 1985, 1986, 1992, 1993, and 1998 supplied the analytic basis of this effort.

Harvest effects from increasing industrialization on subsistence harvests were documented in the two communities through this study. Comparisons with similar data from SW Alaska communities indicate that variability in resource harvests between years is less strong in Nuiqsut and Kaktovik. Unsuccessful harvest of a major subsistence resource in Kaktovik in 1985, and harvest area displacement in the Nuiqsut area in 1993 (and 1994), recorded in community harvest data sets, are events firmly connected to anthropogenic effects rather than seasonal or population variations as is the case SW Alaska community data sets.

Recent changes in timing of Nuiqsut bowhead whale harvest processing and transportation are documented as taking place due to industry safety concerns in the nearshore area of the mid-Beaufort Sea. Harvest and transportation regulations limiting subsistence hunting options in portions of the industrializing area and other, more subtle, subsistence harvest effects resulting from increasing industrial infrastructure, industry support activities, and personnel within traditional resource harvest areas of both Nuiqsut and Kaktovik will also be discussed.

We recommend steps be taken to devise improved ways for communities near industrial development on Alaska's North Slope to be meaningfully involved in land use planning and evaluation of proposed industry activities. In addition, long-term systematic monitoring, assessment, and evaluation of effectiveness of subsistence protection and mitigation measures now in common use must be undertaken. Finally, increased efforts by government and industry are needed to develop a functional understanding of cumulative impact effects on subsistence resources, harvester access, harvesting activities and productivity resulting from continuing industrialization in northern Alaska.

REFERENCE MANUAL AND GIS GEOSPATIAL DATABASE OF OIL-INDUSTRY AND OTHER HUMAN ACTIVITY (1979-1998) IN THE BEAUFORT SEA

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We have incorporated all available information from daily drilling reports and geohazard studies at proposed drilling locations into the database and compiled information from sources such as public records of seismic permits, U.S. Geological Survey seismic surveys, side-scan sonar surveys of the Boulder Patch, aerial surveys of seals and whales, reports of ice road and artificial island construction, and vessel locations recorded in aerial surveys.

However, we did not receive authorization to access detailed information about seismic surveys conducted under permit. Only one oil company to date has authorized the release of this information. Therefore, with the exception of the geohazard studies the information on seismic surveys lacks detail. Typically, the best available information identifies a large geographic area (sometimes the entire Beaufort Sea) and a wide time period (often the entire open water season).

An important objective is the ability to use this database to analyze whether noise and disturbance associated with drilling, seismic surveys, and ice-breaking is affecting the bowhead whale migration route. Such an analysis requires that the human activity database (1) describes all of these types of activities which occurred during the periods where Bowhead Whale Aerial Survey Project (BWASP) or Naval Ocean Science Center (NOSC) collected data on the whale migrations; and (2) provides an adequate level of detail. For example, it should identify where these activities actually occurred to within 500 meters during each 6-hour period during the whale migrations.

For drilling activity the database is complete and provides a high level of detail. For seismic surveys, the geohazard surveys are completely described with adequate detail. For seismic surveys conducted under permit, the database is complete, but lacks adequate detail. For ice-breaking activity, the database is very incomplete. Incidental observations of ice-breaking activity were often reported, but no comprehensive sources of information were identified.

There seems to be little value in proceeding with the GIS application if the database is not sufficiently complete. Therefore, it would be appropriate to reallocate effort towards compiling the information required for the BWASP/NOSC data analysis. Obtaining complete information on seismic activities is the top priority.

It is proposed to compile the information for seismic surveys conducted under permit between 1990 to 1998 from MMS's confidential files. This information would be remain confidential, but would be available for the proposed analysis of the BWASP/NOSC data. Data on ice-breaking activity will likely be compiled as the number of icebreakers supporting each drilling location per day. The acoustic components of the GIS application that were originally proposed would be eliminated. It is anticipated that the study will be completed in Fall 2000.

(Presented by Dr. W. John Richardson.)

ARCTIC CISCO IN THE MID-BEAUFORT SEA AND COLVILLE RIVER FISHERIES

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In this talk I will address some of the concerns of Nuiqsut residents about poor catches of Arctic cisco (Qaaktaq) in recent years and discuss the life history of this species in the mid-Beaufort Sea region. There has been this concern about Qaaktaq since the late 1970s and mid-1980s when the West Dock and Endicott causeways were constructed. A tremendous amount of research to address the question was conducted in the mid-Beaufort area. Fyke nets (fish traps) used for research were set up from the MacKenzie River area all the way to the Colville River. A tremendous amount of data was gathered and we think the life history of the fish is reasonably well worked out. The interesting thing is that even though the Arctic cisco are abundant in the Colville River and support an important subsistence and commercial fishery, researchers almost never see gravid females in the Colville or any of the other mid-Beaufort drainages. So the current understanding is that all the spawning for this species all takes place in the MacKenzie River drainages. The life-history pattern is the following: the young-of-the-year (YOY) move down the MacKenzie in the spring, become entrained in the wind-driven currents along the Beaufort coast, and depending on the strength of those currents, move to the west. If the east winds are consistent and sufficient, they will make it to the Colville. If not, they don't make it there. This mechanism is so predictable that Colonell and Gallaway could actually predict when the YOY would arrive at different stations along the Beaufort coast based solely on wind speed and direction.

Once the YOY Arctic cisco become established in the Prudhoe area, they grow to catchable size in five, six, or seven years. Their growth rates are variable so they don't necessarily hit the fishery at one specific age. In fact, there is some evidence that in the "heavy" recruitment years there are some density-dependent effects that slow fish growth. In catch data for the Helmericks commercial fishery and at Nuiqsut, and we see tremendous variability. We believe that this variability is explained by good recruitment years and poor recruitment years. Variation in the abundance of YOY Qaaktaq caught at Prudhoe in fish traps also demonstrates the variable nature of the recruitment. Larry Moulton found that fyke net catches at specific stations can be used to predict the following year's catch in the Colville. Benny Gallaway noted that YOY catches translate to potential catch in Nuiqsut many years later but density-dependent survival can "muddy" these long-range predictions. Some years a tremendous number of YOY Arctic cisco make it.

If you examine all the YOY recruitment data since the early 1980s,you'll note that there is fairly consistent recruitment through the 1980s and then in 1990 it was very high. From 1991 on YOY recruitment has been spotty and there are actually several year classes essentially absent. The thinking is that these gaps now reflected in the low catches in Nuiqsut. Previous work on Qaaktaq was mainly associated with permit requirements for the Endicott and West Dock causeways. The North Slope Borough Scientific Advisory Committee spent years reviewing the reports. The general feeling was that the key question that drove the research, which was whether these fish could get around the causeways, was answered. This time series is now broken and we don't have this type of recruitment information and do not know if the young fish are reaching the Prudhoe-Colville area.

We might expect to see the 1995 year class in the Fall 2000 catch and harvest levels might pick up. But, based on the recruitment of YOY Qaaktaq, really it may not be until 2002 or so before Nuiqsut has good catches again. But again this is speculation and test netting is needed to nail down the magnitude of the year classes in the Prudhoe-Colville system.

APPENDIX A
FINAL AGENDA

Minerals Management Service (MMS) - Alaska OCS Region

Beaufort Sea Information Update Meeting
Barrow, Alaska - March 28-29, 2000
Iñupiat Heritage Center

Final Agenda

TUESDAY, 28 MARCH 2000

OPENING SESSION

8:30 am **Registration and coffee**

9:00 am **Welcome**

Honorable George Ahmaogak, Mayor, North Slope Borough (NSB)

Mr. John Goll, Regional Director, MMS, Anchorage

STUDIES OF PROTECTED SPECIES

9:20 am **Bowhead Whale Feeding in the Eastern Alaskan Beaufort Sea: Update of Scientific and Traditional Knowledge**

Dr. W. John Richardson, LGL environmental research associates, King City, Ontario

9:40 am *Questions and Answers (Thomson and Richardson)*

9:50 am **Comments Regarding Potential Oil-Spill Impacts to Bowhead Whales**

Dr. Tom Albert, Department of Wildlife Management, NSB, Barrow, AK

10:10 am *Questions and Answers (Albert)*

10:20 am **BREAK**

10:35 am **Fall 1997 Migration of Bowhead Whales across the Alaskan Beaufort Sea as Noted During the MMS Bowhead Whale Aerial Survey Project with Preliminary Fall 1998-99 Survey Results**

Mr. Steve Treacy, MMS, Anchorage, AK

10:55 am *Questions and Answers (Treacy)*

11:05 am **Marine Mammal and Acoustical Monitoring Program Pertaining to Recent Offshore Industrial Activity**

Dr. W. John Richardson, LGL environmental research associates, King City, Ontario

11:25 am *Questions and Answers (Richardson)*

11:35 am **Comments on the 1999 Fall Bowhead Whale Harvest**

Mr. Thomas Napageak and Mr. Archie Ahkiviana, Nuiqsut, AK;
Mr. Fred Kanayurak, Mr. Harry Brower, Jr., Mr. Edward Itta, Barrow, AK;
Mr. Eddie Rexford and Mr. Charles Brower, Kaktovik, AK

12:00 noon **LUNCH**

1:30 pm **Comments on the 1999 Fall Bowhead Whale Harvest** (Continued)

1:50 pm *Questions and Answers (Napageak, Ahkiviana, Kanayurak, H. Brower, Jr., Itta, Rexford, and C.M. Brower)*

2:00 pm **Monitoring of Distribution and Abundance of Ringed Seals in Northern Alaska**

Ms. Kathryn Frost, Alaska Dept. of Fish and Game, Fairbanks, AK

2:20 pm *Questions and Answers (Frost)*

2:30 pm **Polar Bear Research in the Alaskan Beaufort Sea and Management of Polar Bears in the Southern Beaufort Sea**

Dr. Steve Amstrup, Biological Resources Division/U.S. Geological Survey (BRD/USGS), Anchorage, AK and
Mr. Scott Schliebe, US Fish and Wildlife Service (FWS), Anchorage, AK

2:50 pm *Questions and Answers (Amstrup and Schliebe)*

3:00 pm **BREAK**

3:20 pm **Status of King and Common Eider Populations Utilizing the Beaufort Sea**

Mr. Robert Suydam, DWM, NSB, Barrow, AK

3:40 pm *Questions and Answers (Suydam)*

OTHER BIOLOGICAL STUDIES

3:50 pm **Population Status and Surveys of Beaufort Sea Waterfowl and Marine Birds**

Mr. Ed Mallek, U. S. FWS, Fairbanks, AK

4:10 pm *Questions and Answers (Mallek)*

4:20 pm **Alaska Marine Mammal Tissue Archival Project (AMMTAP): An Arctic Environmental Monitoring Resource**

Dr. Steve Amstrup, BRD/USGS, Anchorage, AK

4:40 pm *Questions and Answers (Amstrup)*

5:00 pm **End of Day One**

WEDNESDAY, 29 MARCH 2000

8:30 am **Registration and coffee**

MONITORING STUDY

9:00 am **Arctic Nearshore Impact Monitoring in Development Area (ANIMIDA)**

Mr. John Brown, A.D. Little, Cambridge, Massachusetts

9:20 am *Questions and Answers (Brown)*

FROZEN TISSUE COLLECTION

9:30 am **The Alaska Frozen Tissue Collection and Associated Electronic Database: A Resource for Northern Biotechnology**

Dr. Gordon Jarrell, University of Alaska Museum, Fairbanks, AK

9:50 am *Questions and Answers (Jarrell)*

10:00 am BREAK

SOCIAL AND ECONOMIC STUDIES

10:15 am **Establishing a Computer Accessible Traditional Knowledge Database on the Alaskan North Slope**

Ms. Anne Jensen, Ukpeagvik Iñupiat Corporation, Barrow, AK

10:35 am *Questions and Answers (Jensen)*

10:45 am **Subsistence Harvests and Oil Development: Case Studies from Nuiqsut and Kaktovik**

Mr. Sverre Pedersen, ADF&G Division of Subsistence, Fairbanks, AK

11:05 am *Questions and Answers (Pedersen)*

11:15 am **Development of Geographic Information Systems (GIS) to Document Human Activity (1979-1998) in the Beaufort Sea**

Dr. W. John Richardson, LGL environmental research associates, King City, Ontario

11:35 am *Questions and Answers (Richardson)*

11:40 am **Arctic Cisco in the mid-Beaufort Sea and Colville River Fisheries**

J. Craig George, DWM/NSB

12:00 noon **END OF THE MEETING**

APPENDIX B
LIST OF ATTENDEES

LIST OF ATTENDEES
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The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.