

Minutes: Eleventh Meeting of the Alaska Scientific Review Group (29 - 30 March, 2000)

1.1 Introduction

The eleventh meeting of the Alaska Scientific Review Group (AKSRG) was held at the Federal Building (room 135), Anchorage, Alaska from 29 - 30 March, 2000. The principal topics of discussion included: 1) comments on the 2000 draft Stock Assessment Reports (SARs), 2) preliminary review of SARs to be revised in 2000 (for the 2001 edition), 3) review of USFWS/USGS-BRD plans for walrus population monitoring, 4) review of draft NMFS strategy for monitoring Alaska Native subsistence harvests, 5) Rmax values for small cetaceans, and 6) updates on Cook Inlet belugas and other issues. Appendix 1 contains the list of AKSRG, NMFS, USFWS/USGS-BRD and other participants. Appendix 2 presents the agenda. Appendix 3 contains a list of the background papers and AKSRG documents that were distributed prior to, and during the meeting. Appendices 4 - 7 contain copies of meeting documents in support of summaries in the minutes. The meeting was chaired by Lloyd Lowry. Richard Ferrero served as rapporteur.

1.2 Review and Approval of Agenda

The agenda was adopted as shown in Appendix 2. Lowry deleted the election of a new AKSRG chair for the 1999/2000 since this item is routinely dealt with at the fall meeting. Jan Straley added a brief summary of her visit to the Pacific SRG meeting.

1.3 Other Business

Straley and Craig Matkin summarized the contents of a letter they wrote on behalf of the AKSRG regarding comments on the Pacific SRG draft transient killer whale SAR. They suggested that criteria for adding new animals to the photo identification catalogue be developed to avoid double counting of animals previously added by other contributors. The group agreed that improved communication among members of the killer whale research community would help address the issue. Lowry noted that Jay Barlow had responded to the AKSRG letter and the comments were well received. Follow-up will be needed as to how the statistical procedure suggested by Barlow relates to the comments in the AKSRG letter.

2. Report on ringed seal LOAs and IHAs and monitoring programs

Robin Angliss (NMML) presented an overview of recent activities associated with ringed seal LOA and IHA monitoring programs. The history of the AKSRG concerns on the issue were recapped, as well as the NMFS response and key findings of the November 1999 on-ice monitoring and research workshop. Details of the presentation are contained in Appendix 4.

Brendan Kelly commented on the ringed seal monitoring work he completed at the Northstar project since the November workshop. Twenty-six seal holes and six lairs were located with trained dogs. Kelly noted that the workshop recommendations had included follow-up monitoring to determine the fate of the holes, but that work had not been initiated to date. In

response, Mike Williams (LGL) said that BP/LGL did not have authorization (i.e., a permit) to conduct that work. The AKSRG then discussed the value of assessing the fate of the seal holes and the options for doing so. Suggestions included Kelly doing the monitoring under his scientific research permit, and BP/LGL requesting authorization under the LOA. Kelly said, however, that he could not work within the project area without prior authorization from BP. Lowry asked the AKSRG if they wanted to consider some form of recommendation to prompt the followup monitoring, but a consensus was not reached. Doug DeMaster noted that NMFS had not required any permits associated with the ice road construction, that the monitoring work had been done voluntarily by BP at the request of NMFS and that NMFS has informally requested BP to perform or design a followup study.

Charlie Johnson cautioned that the AKSRG may be drawn into other LOA/IHA issues (e.g., bowheads) if it were to pursue the specifics of this (or any other particular) case. Lowry agreed that the AKSRG's energy should not be consumed on LOAs, but he noted that this case had been very instructive. Furthermore, the AKSRG recommendations had precipitated action. Johnson suggested that the AKSRG might want to make a general recommendation on the use of science in the process of developing these kinds of monitoring programs.

Kelly noted that the shift in the approach used to monitor harassment of ringed seals incidental to on-ice seismic activities or oil and gas development activities in general was the result of NMML reviewing the science and taking an active role in its use. Further, it was noted that much of the progress achieved in resolving past problems associated with inadequate monitoring was the result of efforts made by Angliss. The AKSRG expressed their appreciation of the efforts made by Angliss regarding on-ice monitoring and their appreciation for the quality of the report made to the AKSRG. Given the current level of participation by NMML scientists in this process, and the progress made over the past year, the AKSRG agreed that they could devote less attention to the issue.

3. Review USFWS/USGS-BRD plans for walrus population monitoring

Rosa Meehan discussed the status of USFWS/USGS-BRD progress toward development of a walrus population monitoring program. She was joined by Joel Garlich-Miller, Chad Jay, and Eric Knutsen. A summary of walrus co-management, research and monitoring activities was provided (Appendix 5). Meehan noted that the last attempt to census the walrus population in 1990 was only partially successful and that the issue of determining how best to conduct a walrus census still needed to be resolved. A workshop to discuss techniques was held just prior to the AKSRG meeting on 26-27 March, during which a wide range of alternative survey approaches were considered. A report detailing the workshop results should be completed in the next few months, and is expected to aid USFWS/USGS-BRD in developing a direction for future research.

Knutsen indicated that the workshop identified a number of research needs that would constitute prerequisites for a survey design; therefore, the timing of any proposed survey is, in part, contingent on prior completion of baseline studies as well as available funding. Garlich-

Miller summarized the main research topics identified at the workshop which included: a) use of existing survey data to determine sample size requirements for future surveys (i.e., power analysis), b) telemetry based assessment of seasonal distribution patterns, c) alternative aerial platforms for increasing survey efficiency, and d) genetic marking techniques.

Lowry and others provided their impressions of the workshop which were generally positive, although it was uncertain whether a clear research direction will emerge. With respect to walrus management needs, Sue Hills asked if the report and subsequent activities would involve revision of the Pacific Walrus Conservation Plan. She also expressed concern that the current emphasis appeared to be on enumeration with little reference to more comprehensive issues (including biological sampling). Meehan indicated that completion of the workshop report itself was the near term goal. She hoped that it would ultimately provide a basis for revision of the Conservation Plan, but that effort would not occur soon. Several AKSRG members cited other research needs that USFWS/USGS-BRD should address, including determination of age/sex structure, contaminants analyses, incorporation of traditional knowledge and reassessment of struck and lost rates.

The AKSRG agreed that the current population estimates for walrus are in need of improvement. Despite ongoing uncertainty as to the best design, the USFWS/USGS-BRD was encouraged to use the workshop findings to develop a suite of alternative survey approaches which could then become the starting point for substantive review. Further, AKSRG members reiterated the importance of performing the population survey simulation work prior to the development of those alternatives. The AKSRG would like to have sufficient time to read the workshop report and formulate questions well in advance of the November meeting when the walrus research issue may again appear on the agenda. The choice of specific discussion topics for the AKSRG meeting (e.g., survey or biological sampling design or the Conservation Plan) will be deferred, however, pending more information on the report contents and subsequent progress.

Regarding updates of the walrus, sea otter and polar bear stock assessment reports, Meehan did not expect them to be completed in time for review in November. Rather, they would be available next year (suggesting inclusion in the 2002 SARs)

4. NMFS response to AKSRG fall letters

A letter received from Don Knowles (NMFS, Office of Protected Resources) in response to AKSRG recommendations made at the November meeting was reviewed. Except in the case of Cook Inlet beluga whales, NMFS agreed with the AKSRG concerns and anticipated working toward goals of mutual concern. Responses to issues pertaining to observer programs and subsistence harvest monitoring were addressed separately by Brian Fadely (see sections 8.2 and 9.0). Likewise, DeMaster's analysis of alternative R_{max} values for Dall's porpoise was discussed separately (see section 6). Appendix 6 contains additional responses from the NMFS Alaska Regional Office.

On the Cook Inlet beluga issue, Knowles indicated that NMFS will not apply the AKSRG recommended 0.1 recovery factor in the 2000 SAR, citing three reasons: a) Alaskan Native subsistence hunters are cooperating with NMFS and did not kill any belugas in 1999, b) the population decline has abated, and c) the most recent information from the Cook Inlet fisheries observer program reported zero takes of beluga whales. The AKSRG agreed that while these items are good news, they did not represent the kind of scientific criteria that the AKSRG would use to recommend recovery factors. More importantly, the suggestion that "the decline had abated" on the basis of a slightly higher best estimate of the population size in 1999 compared to the previous year, was unsupportable. In fact, the downward trend since 1994 became statistically significant with the inclusion of the 1999 count. The AKSRG decided not to follow up with yet another recommendation for the 0.1 recovery factor, but a letter will be sent regarding the AKSRG's disagreement with the suggested abatement of the decline.

Fadely described the difficulties associated with developing standards to define marine mammal serious injury and mortality, as had been recommended by the AKSRG. He noted that those data are widely dispersed, originating from sources ranging from trained observers to anecdotal accounts. Little control over adherence to any reporting protocol could be expected from individual data sources. Further, there is no consensus within NMFS on what observed circumstances would equate to serious injury. Until these issues can be resolved, more general categories of injury based on observable characteristics may be the only attainable goal. However, subsequent standards applied to those categories could later sort out the cases constituting serious injury. Lowry noted that although the AKSRG had asked NMFS to develop and implement a plan, the response (an explanation of current circumstances) was acceptable.

5. Final comments on 2000 SARs (harbor porpoise, Dall's porpoise, Pacific white-sided dolphin, and gray whale)

Lowry asked AKSRG members for their final comments on the 2000 draft SAR. No major new issues were raised and editorial comments were directed to Ferrero.

6. Discussion of R_{max} values for small cetaceans

DeMaster provided a report on his analysis of alternative R_{max} values for cetaceans. This issue was raised at the last AKSRG meeting during discussions on Dall's porpoise, where life history characteristics described in Ferrero and Walker (1999) suggested consideration of an R_{max} value other than the default. Further, the AKSRG recommended developing criteria for when to change R_{max} values from defaults to those based on stock-specific data. DeMaster noted that NMFS has used AKSRG recommendations on R_{max} values several times already (DeMaster 2000, Table 1). He added that based on his analysis of the current SAR guidelines and the available data, the only serious issue before the AKSRG regarding alternate R_{max} values for stocks of Alaska marine mammals was for the eastern North Pacific gray whale.

For Dall's porpoise, reproductive interval, age at sexual maturity and longevity have been estimated, but data were inadequate to characterize survival rates. Thus, the current rate of

increase (ROI) could not be estimated directly. Instead, DeMaster constructed four models with different assumptions on age-specific survival, resulting in a range of ROI estimates from 1.020 to 1.072. However, lacking better information on age-specific survival none of the Rmax values derived from the models could be recommended over the default. The AKSRG agreed that the information currently available did not support changing from the default Rmax value for Dall's porpoise.

The AKSRG also discussed changing the Rmax currently used for gray whales. Wade and DeMaster (1996) suggest a range of Rmax estimates from 0.05 to 0.08 (lower 95% C.I.s 0.03 and 0.06, respectively). Lowry asked if the AKSRG was comfortable recommending a value higher than the default, and if so, which one. Milo Adkison suggested using the lowest point estimate based on data, which would be 5% for gray whales. The AKSRG agreed with this approach.

Lowry applied Adkison's approach to Dall's porpoise, assuming that DeMaster's 2% to 7% may actually represent $0.5 \cdot R_{max}$. The lowest point value (4%) corresponded with the default; therefore, no change was recommended by the AKSRG at this time.

7. Attraction factor for Dall's porpoise

Beth Mathews and Adkison reported on their review of papers describing estimation of the Dall's porpoise correction factor for vessel attraction. They noted that a wide range of values (0.13 -0.3) were estimated even though those analyses were all based on the same data. Likewise, the correction factor estimates in Turnock, Buckland and Boucher (1995) even differed from year to year for the same area.

Overall, the AKSRG was concerned about applying any of the correction factors to the whole North Pacific Dall's porpoise population. However, not correcting the population estimate for vessel attraction was not acceptable either, given the regularity with which Dall's porpoise move to vessels and bowride. Lowry suggested that the AKSRG could leave the Dall's porpoise estimate in the SAR unchanged, then recommend additional analyses be performed with the available data, or express reservations about the tentativeness of both the abundance estimate and the attraction factor. The AKSRG agreed with the latter approach. Mathews and Adkison were asked to provide text explaining the nature of the data and concerns relative to its application.

8.0 Update on current issues

The AKSRG briefly discussed a series of topics representing ongoing concerns and new areas of research.

8.1. Cook Inlet beluga whales

The AKSRG briefly reiterated earlier points concerning the supposed "abatement" of

the Cook Inlet beluga population downward trend. In communications with NMFS, the AKSRG will note that the decline has not abated, rather, there is a statistically significant downward trend. Again, no further comment will be made on the recovery factor.

DeMaster described NMFS Cook Inlet beluga research activities for 2000. Studies will include an aerial survey in June, satellite tagging in August, and development of a GIS database. In addition, a group of articles on Cook Inlet belugas will appear early this summer in Marine Fisheries Review.

Mike Payne described current management activities relative to Cook Inlet belugas. NMFS is working on: a) a depleted listing which may contain a non-zero harvest provision, b) an EIS on rulemaking for regulating Native harvest, and c) a response to a petition to list under ESA.

8.2. Incidental take monitoring programs

Fadely reported on the results of the 1999 Cook Inlet observer program and on plans for 2000 and beyond. In 1999, 739 interactions with gear were reported in the set and driftnet fisheries in Cook Inlet, most of which were birds. Three harbor porpoise were released alive. No belugas were taken. Observer coverage targets were not met, consequently, more observers will be deployed in 2000. Wynne asked if NMFS considered the lack of beluga takes indicative of a zero mortality rate despite achieving only half the target observer coverage. Fadely noted reservations on the point and indicated that the power analysis would be rerun. Lowry added that with three harbor porpoise live releases, the potential for non-zero mortality existed there as well.

Consistent with an earlier AKSRG recommendation, Fadely noted that NMFS would support surveys to ascertain beluga distribution relative to fishing activity every few weeks in 2000. Assuming no lethal takes of marine mammals are observed in Cook Inlet this year, the observer program will move to Kodiak in 2001 where the primary focus will be on incidental take of harbor seals and Steller sea lions.

8.3. North Pacific right whale research

DeMaster reported that base funding is now available for large whale shipboard and aerial survey work. The research will be conducted jointly by AFSC and SWFSC. Aerial survey work will continue in the southwestern Bering Sea where northern right whales have been found in recent years. Photo ID and biopsy work is expected to continue. A large whale survey, focusing on fin whale abundance, may be conducted east of the Pribilof Islands during the summer of 2000.

DeMaster noted that acoustic surveys, using bottom mounted sonic recorders, will begin this year in the SE Bering Sea and Gulf of Alaska. Recordings of several large whale species are anticipated, including northern right, sperm, fin and humpback whales.

8.4. Aleutian Island sea otter surveys

Angie Doroff (USFWS) summarized plans for sea otter surveys in the Aleutian Islands 1 April - 9 May. The aerial survey will emphasize nearshore areas in all of the major island groups from Unimak Pass to the Near Islands, but will include a few offshore transects as well. The objectives are to develop an index count and to document distribution. While a population estimate will not be generated, the uncorrected count should provide some measure of Nmin. Future research plans may include replication of the 1986 Alaska Peninsula survey and counts around Kodiak.

8.5. Southern resident killer whales

Several issues have recently fueled concern over the status of the southern resident killer whale stock. The population has declined to just over 80 animals in recent years, likely driven by reduced survival in all age and sex categories. It was also noted that two pods moved south to Monterey Bay, although they are expected to return. A stranded animal with a large infection has prompted toxic contamination and health issues. DeMaster noted that these items would be discussed at a workshop in Seattle, 1-2 April.

The AKSRG also discussed the circumstances surrounding the lack of response by NMFS to a recent killer whale stranding reported by Matt Kookesh. Fadely noted that the AKR office staff had returned Kookesh's call, but were not able to contact the person who had originally reported the stranding. Because Regional staff were not able to confirm the species identification or the exact position of the stranding, the decision was made to not send a response team out to the reported area of the stranding.

While the regional stranding coordinator can grant authority for local people to respond to the stranding, the NMFS regional office is not tasked with the response itself. Several AKSRG members noted that many such opportunities to respond to strandings have been lost because participants in the stranding network are not aware of the events. Improved coordination and communication within the network was urged.

9.0 Review draft NMFS strategy for monitoring Alaska Native subsistence harvests

Fadely provided an overview of NMFS progress toward developing a program to monitor subsistence harvest (see Appendix 7 for details). He noted the AKSRG's record of recommendations since June 1998 that underscore the need for reliable subsistence harvest data. NMFS has drafted a framework plan which, if implemented, would establish a monitoring program consistent with the principles agreed in the 1997 co-management agreement. Fadely added that the draft plan would be distributed to Alaska Native Organizations for comment. While the plan does not specify the type of program to be implemented, it addresses underlying conceptual issues and identifies those cases where monitoring programs already exist (e.g., monitoring of bowhead harvest by the AEWBC and monitoring of harvest from the four western Alaska beluga whale stocks by the ABWC. Those species for which the requisite data are not

being collected by existing programs (Steller sea lion, harbor seals and ice seal) constitute the focus of further plan development.

Much of the AKSRG discussion on this issue concerned the type of program that should be recommended. The existing ADF&G retrospective surveys were contrasted with new options such as building on the existing USFWS marking, tagging, and reporting program, or establishment of entirely new programs with Native organizations. In response to questions from AKSRG members, Lowry also summarized the history of ADF&G's involvement in these harvest monitoring programs.

Wells Stephensen (USFWS sealing/tagging program director) presented an overview of his program which was started in 1988 and has grown to include 103 villages and over 150 taggers. He noted that in some villages there are actually two programs operating, one that specifically monitors and samples the walrus harvest and another for marking and tagging. Compliance has been estimated at nearly 100% for sea otters, 65-70% for polar bears. Walrus compliance differs more, with nearly 100% monitored in some villages, much less in others. He indicated that the operating costs for the program (excluding USFWS permanent salaries) totaled about \$50K per year. Overall, the USFWS monitoring effort represented an established resource, with modest operating costs and a record of success. Stephensen suggested that this program might be a logical starting point for NMFS and was willing to provide assistance.

Lowry agreed that the program appeared to work very well. He asked Stephensen to comment further on any significant problems they had encountered. Stephensen indicated that the walrus compliance was a bit low in some areas and that there is a high turnover among taggers in some locations. He felt that regular, direct contact with the villages greatly facilitated the operation and was essential to maintain relationships. Johnson noted that low compliance problems may not be the result of tagging/monitoring programs, but rather can arise from heavy handed law enforcement. Stephensen concurred, saying that bad feelings had been generated among native hunters when enforcement abruptly came into villages to issue citations. As a result, USFWS is trying to institute a self-regulatory approach where village officers enforce their own rules which mirror the interests of USFWS. This discussion emphasized the fact that these programs are essentially voluntary.

On the issue of impacts to the existing USFWS program if NMFS were to add on their species, Stephensen did not feel strongly either way. He felt that the taggers would be willing to participate, although NMFS might need to expand to some villages not currently covered. AKSRG members noted that startup costs for NMFS would not necessarily equate to USFWS operating costs, but agreed that piggybacking on the existing program would not incur costs as great as establishing an entirely new program.

Lowry compared the efficiency of the USFWS plan with the current ADF&G/NMFS retrospective approach, where the former seeks out every animal harvested at one quarter the cost of the latter which only yields fragmentary data. Further, Lowry asked which represented better science: extrapolation based on the memory of surveyed hunters or real time counting and sampling in the villages where harvesting is based. AKSRG members agreed that better options

than the current retrospective approach should be considered. DeMaster added that the survey approach tends to yield the same answers each year as hunters often report that the current year's harvest was the same as last year's.

Carl Hild asked if implementation of a program based on the USFWS model was independent of, or complementary to, establishing a plan under the cooperative agreement. Payne answered that this was yet to be determined because the Alaska Native Organization partners needed to be included in the discussion of how the program would be implemented. DeMaster and John Bengtson (NMML) emphasized that where cooperative agreements are already in place, NMFS was committed to working with ANOs and could not unilaterally approach USFWS. However, Lowry and others pointed out that the USFWS option does not necessarily represent an independent approach, rather, it could be the mechanism for achieving harvest monitoring adopted by all parties under a cooperative agreement. The group generally agreed that NMFS should initiate a dialog with the ANOs on ways to incorporate the USFWS's approach as the co-management planning continues.

Bengtson suggested that a proposal based on the USFWS approach could be developed and given to the ANOs for consideration. Wynne concurred with this idea and asked if the AKSRG could assist the process by endorsing NMFS's plan. In reply, DeMaster said that an AKSRG recommendation would be helpful, although NMFS is in an awkward position, trying to develop a plan without any information on funding beyond the next six months. Lowry suggested that what may be lacking is an organized package from NMFS that spells out a plan. The AKSRG would like to know what NMFS expects to go forward with, and given agreement with that approach, the AKSRG could then help with an endorsement. Ultimately, the AKSRG agreed to formulate a recommendation that the USFWS approach be considered, but with appropriate caveats emphasizing that the work be done with ANOs.

10.0 Discussion of research plans and research needs

The AKSRG discussed research plans and research needs for harbor seals; no other species were addressed under this topic.

Payne described an effort coordinated by Kaja Brix (NMFS Alaska Regional Office) to develop a 5 - 10 year research plan for harbor seals. Participants involved with the development of this plan also include Bengtson (NMML), Barb Taylor (SWFSC) and Bob Small (ADF&G). The goal is to produce a document (potentially available for AKSRG review in the fall) that resembles a recovery plan, except that there will be no recovery goal and research rather than management needs will be emphasized. The focus of the plan would be to allow for the close coordination of research carried out by the ADF&G (currently funded by a Congressional earmark through NOAA) and NMML (base funded research program).

Considerable research work on harbor seals has been completed over the past three years, creating a challenge for the AKSRG to review it all and make recommendations accordingly. In particular, genetics work related to stock boundaries will require considerable attention. In early May, NMFS will hold a meeting to discuss the harbor seal research plan,

attention. In early May, NMFS will hold a meeting to discuss the harbor seal research plan, which should include ways to address the stock structure question. While genetics analyses currently being done at the SWFSC will be discussed, specific decisions on stock boundaries are not expected. Further, the SWFSC will have a report on a new method of analysis (i.e., the geographically constrained clustering approach) of harbor seal stock structure in Alaska available soon, where it is anticipated that a matrix of options will be presented, but no single option will be recommended. DeMaster noted that from the SWFSC researcher's perspective, the science center should provide guidance to the Alaska Region, but the actual recommendation regarding stock structure should be made by the Region, as it requires the incorporation of considerable policy.

Subsequent AKSRG discussion underscored the dilemma: the AKSRG wants specific stock split options to review in the fall, however, the availability of any options incorporating the genetics research is uncertain. The link between the genetics results and the AKSRG review of stock structure is a decision by NMFS on how to revise the stock structure. DeMaster indicated that the NMFS group meeting in May can discuss the information wanted by the AKSRG, but he could not predict at this time what will result. Payne added that any proposed changes to harbor seal stock boundaries would need to be discussed with the Alaska Native Harbor Seal Commission prior to any changes going forth. At the earliest, such discussions would take place in September. Even then, if decisions are made they would not be reflected in the 2001 SAR.

Given the poor prospects for new stock boundary information being available for the fall meeting, Lowry asked if the AKSRG wanted to postpone the scheduled review of the harbor seal SAR. The AKSRG decided to keep harbor seals on the agenda for now, see what information on stock structure, abundance and trends, and correction factors are reflected in the research plan, then discuss this subject again prior to the November meeting.

11.0 Preliminary review of Stock Assessment Reports to be revised in 2000

The AKSRG decided to add this topic to their spring agendas to identify the scope of work involved in each year's SAR review and to specify documents they would like to have well in advance of the fall meeting. NMFS will distribute the requested materials in a single mailing at the end of the summer. A complete listing of the SARs to be reviewed at the November 2000 meeting is contained in section 13.0.

11.1 Harbor seals

The AKSRG requested the following materials:

- a) reports, papers and analyses on stock boundaries
- b) NMFS recommendations for alternative options for stock boundary splits
- c) population assessment, trends and correction factor information
- d) Quinn/Adkison's analyses of methods for monitoring population trend

11.2 Killer whales

The review will mainly address updating population numbers and is expected to be fairly straight forward. A discussion on whether to recommend the management of AT1 pod as a separate stock, led by Matkin, will also be included.

11.3 ESA listed - Strategic Stocks

No specific materials or issues were identified for any of these stocks. An update on Steller sea lion/fisheries interactions was mentioned.

11.4 Minke whale

DeMaster suggested that the AKSRG work in combination with the Pacific SRG on minke whales. The IWC stock boundary report should also be reviewed.

12. Discussion and Recommendations

Prior to completing its list of recommendations, the AKSRG briefly returned to the issue of how to better respond to a stranding notification, emphasizing the need for better communication to increase the number of cases investigated. Wynne also suggested that ongoing efforts to improve the structure of the stranding database should improve the use of those data in mortality estimation. Mary Sternfeld (NMFS Alaska Regional Office) provided an overview of the stranding database.

Kelly noted that the formation of subgroups like the one on the Dall's porpoise correction factor can aid group discussion and provide more depth in the review of science. In general, it was agreed that this type of approach should be adopted in the future by the AKSRG.

The following specific recommendations were made:

1. The AKSRG recommends that NMFS AKR take actions to increase the effectiveness of the Alaska Region stranding network. In particular, increased effort should be made to provide timely notification to network participants when stranded animals have been reported in their area so that participants will have a chance to respond. This is important because: 1) stranding data are used to evaluate causes and levels of mortality in the SARs; 2) some opportunities to obtain data are being missed because people who could have responded were unaware; and 3) some participants may question the value of the stranding network if they are not contacted when a stranding event happens.
2. The AKSRG recommends that NMFS continue to develop and implement the program for monitoring subsistence take by Alaska Natives that was presented at the March 2000 meeting. The SRG continues to think that it is critical to continue monitoring the harvest, and conduct biosampling, of Steller sea lions and harbor seals, and to develop a similar program for

ice seals. The SRG recommends that NMFS work with Alaska Native organizations and the U.S. Fish and Wildlife Service to develop the most comprehensive and cost-effective program possible.

3. The AKSRG recommends that NMFS recognize in the SARs and elsewhere that the 1999 counts of beluga whales in Cook Inlet do not show that the decline in abundance of that stock has stopped or abated. The confidence intervals of the 1999 estimate overlap broadly with those from 1998, and a linear regression of the best estimates of population size shows a statistically significant decline over the period from 1994 through 1999.

4. The AKSRG commends the NMFS for progress made on improving monitoring programs for ringed seals conducted under Incidental Harassment Authorizations and Letters of Authorization. The SRG was glad to see that the locations of ringed seal structures in the area around the Northstar project had been mapped prior to initiation of construction activities. However, the Group was informed that because of problems with permits or coordination it was likely that there would be no followup studies of those structures. The AKSRG therefore recommends that NMFS do whatever is necessary to ensure that properly trained investigators conduct a study this spring to determine the fate of ringed seal structures at the Northstar project.

5. The AKSRG recommends that the FWS and USGS continue their joint efforts to evaluate and plan for a survey of the Pacific walrus population. In particular the SRG recommends that FWS and USGS conduct simulations to evaluate the likely precision of various survey options, and estimate the costs associated with the preferred options.

13.0 Next AKSRG meeting

The next meeting of the AKSRG is scheduled for 1-3 November 2000, in Juneau. The location is likely to be in the Federal Building. Given the number of topics on the agenda, the meeting will be scheduled to last 2.5 days.

Topics may include:

1. Harbor seal SAR review, with emphasis on new research results over the past 3 years
2. Killer whale SAR review
3. Minke whale SAR review
4. Ice seal SAR review
5. ESA listed species reviews
6. A general review of current concepts in stock boundary determination, based on a block of

papers on principles and techniques to be provided by DeMaster

7. Status update on the subsistence harvest issue
8. Status update on the Cook Inlet Observer Program
9. Review of the walrus survey report
9. Update on reauthorization of the MMPA

Appendix 1. List of AKSRG, NMFS, USFWS/USGS-BRD and other participants.

AKSRG

M. Adkison
C. Hild
S. Hills
C. Johnson
B. Kelly
M. Kookesh
D. Lloyd
L. Lowry (Chair)
B. Mathews
C. Matkin
J. Straley
K. Wynne

NMFS

R. Angliss
J. Bengtson
D. DeMaster
B. Fadely
R. Ferrero
A. Lopez
B. Mahoney
M. Payne
M. Sternfeld

USFWS/USGS-BRD

A. Doroff
J. Garlich-Miller
C. Jay
E. Knutsen
R. Meehan
W. Stephensen

Others

J. Coltrane (LGL)
B. Small (ADF&G)
M. Williams (LGL)

Appendix 2. Agenda for the eleventh meeting of the Alaska Scientific Review Group 29-30 March, 2000.

Alaska Scientific Review Group Meeting 29-30 March, 2000
Room 135, Federal Building, Anchorage, AK

Major topics:

1. Final comments on 2000 SARs
2. Preliminary review of Stock Assessment Reports to be revised in 2000
3. Review USFWS/USGS-BRD plans for walrus population monitoring
4. Review draft NMFS strategy for monitoring Alaska Native subsistence harvests
5. Discussion of Rmax values for small cetaceans
6. Updates on Cook Inlet belugas and other issues

Materials needed: Background documents supplied by NMFS, USFWS/USGS-BRD

29 March 2000--Wednesday

8:30 am Introductory business

1. Introductions
2. Review and approve agenda
3. AKSRG Chair for 2000-2001
4. Other business (e.g., travel vouchers)

9:00 am Report on ringed seal LOAs and IHAs and monitoring programs

9:30 am Review USFWS/USGS-BRD plans for walrus population monitoring

12:15 pm Break for lunch

1:30 pm NMFS response to AKSRG fall letters

2:00 pm Final comments on 2000 SARs (harbor porpoise, Dall's porpoise, Pacific white-sided dolphin, gray whale)

1. Discussion of Rmax values for small cetaceans
2. Attraction factor for Dall's porpoise

3:30 pm Update on current issues

1. Cook Inlet beluga whales
2. Incidental take monitoring programs
3. North Pacific right whale research
4. Aleutian Island sea otter surveys
5. Others (e.g. southern resident killer whales)

5:00 pm Adjourn

30 March 2000--Thursday

8:30 am Review draft NMFS strategy for monitoring Alaska Native subsistence harvests

10:45 am Discussion of research plans and research needs

1. Harbor seals
2. Other species

12:15 pm Break for lunch

1:30 pm Preliminary review of Stock Assessment Reports to be revised in 2000
(harbor seals, killer whales, ESA species, ice seals?, minke whale?)

3:00 pm AKSRG discussion and recommendations

4:00 pm Topics for next meeting (Juneau, 1-2 November 2000)

5:00 pm Adjourn

Appendix 3. Background papers and AKSRG documents, and other documents distributed prior to, and during the meeting. Papers not cited here are contained in the appendices

Buckland, S.T. and B.J. Turnock. 1992. A robust line transect method. *Biometrics* 48, 901-909.

Buckland, S.T., K.L. Cattanach and R.C. Hobbs. 1995. Abundance estimates of Pacific white-sided dolphin, northern right whale dolphin, Dall's porpoise and northern fur seal in the North Pacific, 1987-1990. *In* J. Ito, W. Shaw, and R. L. Burgner (eds.), *Biology, distribution and stock assessment of species caught in the high seas driftnet fisheries in the North Pacific Ocean*, p. 387-407. *Int. North Pac. Fish. Comm. Bull.* 53.

DeMaster, D.P. 2000. Estimation of the maximum rate of per capita net production in marine mammal population populations: a case study for Dall's porpoise. NMFS/AFSC/NMML 7600 Sand Point Way, NE, Seattle WA 98115.

Ferrero, R.C. 1999. Minutes from the tenth meeting of the Alaska scientific review group (6-8 October, 1999). NOAA/NMFS/AFSC. 7600 Sand Point Way, NE, Seattle WA 98115. 42p.

Ferrero, R.C., D.P. DeMaster, P.S. Hill and M. Muto. In prep. Alaska marine mammal stock assessments 2000. NOAA/NMFS/AFSC. 7600 Sand Point Way, NE, Seattle WA 98115. 175 p.

O'Corry-Crowe, G., B. Taylor, R. Westlake, K. Martien, D. Campbell, M. DeAngelis and A. Dizon. 2000. Molecular genetic investigation of stock structure and dispersal patterns in Alaska harbor seals: summary of research objectives, findings, and schedules for Alaska SRG meeting, March 2000.

Stevensen, W.M., D.W. Cramer and D.M. Burn 1994. Review of the marine mammal marking, tagging and reporting program 1988-1992. MMS/FWS Region 7 Tech report MMM 94-1. 49 p.

Turnock, B.J. and T.J. Quinn II. 1991. The effect of responsive movement on abundance estimation using line transect sampling. *Biometrics* 47, 701-715.

Turnock, B.J., S.T. Buckland, and G.C. Boucher. 1995. Population abundance of Dall's porpoise (*Phocoenoides dalli*) in the western North Pacific Ocean. *Rep. Int. Whal. Commn* (Special Issue 16) p. 381-397.

Other documents

1. NMFS update on ringed seal LOA and IHA activities (**Appendix 4**)
2. USFWS summary of walrus co-management, research and monitoring activities (**Appendix 5**)
3. NMFS Alaska Region responses and supplementary information meeting (**Appendix 6**)
4. NMFS subsistence monitoring strategy for Alaska marine mammal stocks (**Appendix 7**)
3. USFWS Summary of the marking, tagging and reporting rule and other misc. documents
4. USFWS Marking, tagging, and reporting program taggers
5. USFWS Fact Sheet - hunting and use of walrus by Alaska natives (December 1999)
6. USFWS Fact Sheet - hunting and use of polar bear by Alaska natives (December 1999)
7. USFWS Fact Sheet - hunting and use of sea otter by Alaska natives (December 1999)
8. USFWS Numbers of polar bears, walrus and sea otter tagged, by location, by year
9. USFWS list of active registered agents/tanneries

Appendix 4. Presentation materials for NMFS update on ringed seal LOA and IHA activities.

Update on NMFS' actions regarding monitoring of industrial activities and issuance of Letters of Authorization to take marine mammals in the Beaufort Sea

Monitoring of on-ice industrial activities and authorization of takes: Recent history

- April 1999: AKSRG indicates concern about NMFS' authorization of on-ice industry activities with inadequate monitoring plans
- August 1999: NMML requests that F/PR allow us to review all IHAs/LOAs and monitoring plans related to oil/gas exploration and development in the Beaufort Sea
- October 1999: NMML convenes a workshop to discuss monitoring and research associated with on-ice industrial activities

On-Ice Monitoring and Research Workshop: October 1999

- Objectives:
 - review recent on-ice research & monitoring programs
 - identify data gaps
 - suggest improvements to short & long-term research that will assist in assessing the impacts of on-ice industrial activities on marine mammals
- Final report circulated February 2000

On-Ice Monitoring and Research Workshop: Recommendations

- Key recommendations re. what should be monitored
 - Location of the structures
 - Exposure of seals to activities/sound levels
 - Response of the seals to activities/sound levels (fate of structures, change in seal behavior)
- Key recommendations re. methods for monitoring
 - At this time, the best technique for locating seal structures during the winter is to use trained dogs. Other methods are ineffective.
 - Aerial surveys are effective in determining region-wide changes in distribution and density
 - An effective way to determine whether structures were impacted or abandoned would be to conduct a pre- and post-activity survey of an area.

Documents/decisions reviewed by NMML

- Between August 1999 and March 2000, NMML provided comments on the following documents:
 - Proposed rule to issue a LOA for the Northstar facility
 - 90-day report for Western Geophysical's open-water seismic exploration
 - Draft LOA for vibroseis surveys planned by Western Geophysical during February-March (large area, decided to confine surveys to grounded ice)
 - Draft monitoring plan to accompany Western Geophysical's on-ice seismic survey during winter/spring (small area, floating ice, near Cross Island)
 - Final rule to issue a LOA for the Northstar facility

LOA for Western Geophysical's on-ice seismic surveys in winter/spring 2000

- Mitigation
 - Conduct activities as far as possible from all structures
 - Prohibition on placing energy source on observed seal structures
 - Avoid areas where structures may occur if possible
 - If seismic work occurs on floating ice, must survey for seals prior to activity as per the monitoring requirements in order to avoid structures by a minimum of 150m to the maximum extent practical

LOA for Western Geophysical's on-ice seismic surveys in winter/spring 2000

- Monitoring
 - If seismic surveys are to be conducted on grounded ice, no mitigation or monitoring is required
 - One biologist must accompany each vibroseis unit to observe seals (this requirement was later waived for WG's shallow hazard seismic work)
 - (Condition 5d) Holder of LOA must do one of the following:
 - Use dogs to survey entire area for structures
 - Use dogs to survey a portion of the area for structures & extrapolate to determine the likely # of structures in the area
 - Place radio tags on seals prior to activity to monitor changes in behavior during industry activity
 - Measure acoustic properties of the seismic source
 - NMFS may waive the requirements under 5d under certain circumstances

Monitoring of oil/gas development in general:
What meetings and activities are on the horizon?

- Feb 2000: Initial Mitigation Meeting held in Seattle
- May or June 2000: Next peer review meeting for monitoring of open-water seismic exploration and of on-ice production
- Fall 2000: Peer review meeting of on-ice monitoring in 1999/2000; discuss monitoring plans for 2000/2001 season
- Upcoming. . . .
 - Open-water industry activity in 2000 (Western Geophysical, Phillips, ARCO, BPXA)
 - On-ice industry activity in 2000/2001 (BPXA, others?)

Monitoring of oil/gas development in general:
Coordination and funding needs

- Long-term monitoring of the impacts of exploration and development
 - There is an obvious increase in activity in the Beaufort Sea area
 - MMS currently initiating Lease Sale 176 in the Beaufort Sea; scoping for the DEIS was projected to begin in March 2000; final sale tentatively scheduled for 2002.
 - Clear need to coordinate with other agencies and organizations re. methods of and funding for monitoring of impacts on marine mammals (USFWS, MMS, State of Alaska – DOG & DWM, NOAA/NOS, North Slope Borough DWM)

Monitoring of oil/gas development in general:
Additional input from the SRG?!

- Is this the direction that the SRG had hoped NMFS would go?
- Would you like to see us change our approach?
- How would you like to be included in the future?

INDUSTRY MONITORING ACTIONS REVIEWED BY NMML

NMML routinely reviews and comments on reports provided by the oil and gas industry on the impacts of their operations on marine mammals, but has not routinely reviewed NMFS documents pertaining to regulations, Incidental Harassment Authorizations, or Letters of Authorization until recently. Specifically, on August 9, 1999, NMML made a formal request to F/PR that we be given the opportunity to review all NMFS documents pertaining to oil and gas exploration and production in the Beaufort Sea prior to agency action or release to the public. F/PR agreed that this review would be beneficial, and has provided NMML with the opportunity to review and comment on the documents listed below. NMML provides comments to F/PR (and simultaneously to the AKR); F/PR has the final responsibility for deciding whether to include NMML's input. F/PR has incorporated most of the comments made by NMML or has provided justifications for those situations in which our comments have not been incorporated.

The following is a list of the documents that NMML has reviewed since August 1999.

ITEM	DATE RECEIVED	DATE DELIVERED	MAJOR COMMENTS FROM NMML
Draft proposed Northstar rule		9/3/99	<ul style="list-style-type: none"> - the draft proposed Northstar rule questioned where dogs should be used as a monitoring tool. NMML recommended that this be struck & that the decision be left up to the on-ice workshop scheduled for Oct 1999 - various edits in text
Marine mammal and acoustic monitoring of Western Geophysical's Open-Water seismic program in the Alaskan Beaufort Sea, 1999: 90-day report	12/1/99	1/20/00	<ul style="list-style-type: none"> - final report should discuss the implications of the small sample size (65 seals) in 1999 with respect to the fact that there was no significant difference in sighting rates with distance from the airgun operations (power analysis) - some minor inaccuracies in ringed seal population #s - two methods were used to estimate the distance from the ship to seal sightings – visual estimates & estimates using reticled binoculars. It appears that data collected using both methods has been pooled – recommend that the data be analyzed separately

ITEM	DATE RECEIVED	DATE DELIVERED	MAJOR COMMENTS FROM NMML
Draft LOA for vibroseis surveys planned by Western Geo during Feb-May 2000	1/6/00	1/11/00, follow up on 1/13/00	<p>Final LOA includes:</p> <ul style="list-style-type: none"> - monitoring should be required any time the vibroseis operations occur on floating ice - requirement that the applicant must either 1) survey the entire area using dogs, 2) use dogs to survey a portion of the area, then extrapolate to estimate takes, or 3) radiotag seals to determine the behavior before, during, and after the vibroseis surveys - requirement that monitoring using dogs be waived only if the applicant describes, in detail what efforts have been made to attempt to conduct the monitoring, why the monitoring is not practicable, and what the applicant will do in the future to ensure that seismic operations will be accompanied by appropriate monitoring plans. - requirement that acoustic measurements to be taken in order to reliably predict sound levels at various distances from the source

ITEM	DATE RECEIVED	DATE DELIVERED	MAJOR COMMENTS FROM NMML
<p>Draft monitoring plan to accompany Western Geophysical's LOA application for an on-ice shallow hazard seismic (air gun) survey in the Alaskan Beaufort Sea during winter-spring, 2000</p>	<p>2/8/00</p>	<p>2/14/00</p>	<p>COMMENTS ON DRAFT MONITORING PLAN</p> <ul style="list-style-type: none"> - recommended that monitoring plan be revised to indicate that the ice will be surveyed unless it is grounded (instead of being surveyed if the ice is grounded or if the ice is over less than 5ft of water) (<u>NOTE</u> – this was changed in early March after a conversation with J. Richardson: apparently, during the time when vibroseis operations occur, the ice is 5-6 feet thick, and is thus always grounded in water less than 5ft deep; Angliss indicated that if there was substantial published information to this effect, then it would be reasonable to use the 5ft bathymetric contour as a proxy for "grounded ice" and monitoring would only be required when vibroseis operations are beyond the 5ft depth contour; this should be revisited at a future on-ice monitoring workshop) - the draft monitoring plan did not include collection of acoustics information; recommended that this be included as per the requirements of the LOA <p>CONTENT OF DRAFT FINAL MONITORING PLAN</p> <ul style="list-style-type: none"> - use dogs to locate all structures in the area prior to activity (vehicles along the transit route will avoid structures by at least 50m; will attempt to avoid throughout the area of - assess fate of seal structures several days after the activity ceases (locate seal structures by using GPS & stakes) - test Ground Penetrating Radar for use in finding seal structures - collect acoustic measurements to determine source levels/attenuation
<p>Draft final Northstar rule</p>	<p>2/15/00</p>	<p>2/22/00</p>	<ul style="list-style-type: none"> - the draft final Northstar rule indicated that no monitoring of construction activities would be required if construction occurred prior to mid-March. NMML recommended that monitoring (using dogs) occur whenever construction occurs until NMFS is comfortable that sufficient data have been gathered to support the assertion that winter construction has a negligible impact on ringed seals - various edits in text (incorrect bowhead population size, some editorial changes)

Appendix 5. Presentation materials from the USFWS summary of walrus co-management and research/monitoring activities.

Pacific Walrus

Co-management with Alaska Natives:

Co-management of walrus stock in Alaska have been carried out through annual Cooperative Agreements between the Service and the Eskimo Walrus Commission. The Cooperative Agreements incorporate specific project plans, and outline how the funds will be used. Project plans include operating the commission, networking with village hunters, conducting biological and contaminant monitoring, and promoting sustainable harvest and conservation actions.

Specific accomplishments for walrus conservation include: a bilateral walrus harvest monitoring workshop; meetings with Chukotka Natives for the development of a Native to Native agreement on walrus conservation; a walrus harvest monitoring project in Russia; development of Native self-regulation policies concerning walrus utilization; and an internship program providing the opportunity for Native students to participate in walrus management and research activities.

In 1995, the Service entered into a cooperative management agreement with the Qayassik Walrus Commission, the Eskimo Walrus Commission, and the Alaska Department of Fish and Game to monitor a limited subsistence hunt on Round Island, Walrus Islands State Game Sanctuary, Bristol Bay, Alaska. The signatories feel that this agreement is consistent with the conservation of the walrus population, the protection of Round Island as a walrus haulout and State Game Sanctuary, the terms of the Marine Mammal Protection Act, and the customary and traditional uses of walrus by the people of the Bristol Bay region.

Research and monitoring activities:

Bristol Bay Walrus Haulouts

Each summer, Bristol Bay provides critical feeding and resting habitat for a large number of male Pacific walrus. From May through October, walrus congregate in the bay and rest at terrestrial haulout sites at Round Island, Cape Peirce, Cape Newenham, and at Cape Seniavin. Monitoring these haulouts provides a cost-effective source of information on trends in the number of male walrus utilizing the Bristol Bay region. Monitoring efforts are expected to provide information on haulout patterns and trends in local habitat use. In addition to recording the number of animals using the haulouts, staff record and report any incidences of human caused disturbances. These monitoring programs have contributed to specific regulations such as fishing closure zones to protect walrus at these critical sites.

In 1999, all four Bristol Bay haulouts were monitored by Service employees, interns, and volunteers. Round Island was monitored from May 17 through August 10. Monitors reported a high average count of 4,186 walrus on July eight. Cape Pierce was monitored from May 29 through October eight. Monitors reported a high average count of 2,263 walrus on August eight. Cape Newenham was monitored from June 24 to July 20. Monitors reported a high average count of three walrus on July 10. Cape Seniavin was monitored from June 28 through July 20. Monitors reported a high average count of 1,556 on July 5. The 1999 monitoring season marked

the second year of the Bristol Bay Native Association Youth Student Internship Program. This is a cooperative program between BBNA and the Service, in which an Alaskan Native undergraduate participates in all phases of the field work at Cape Seniavin, data management, and report generation. The haulout at Cape Seniavin does not have the protection that the haulouts at Round Island and on the Togiak National Wildlife Refuge have. Haulout monitors at Cape Seniavin recorded 30 human caused disturbances during the 25 day field season. One of the more severe disturbances was caused by a small plane passing north to south within 400m of the haulout at an altitude of approximately 180' AGL. One hundred percent of the walrus on the beach oriented to the noise and 76% abandoned the haulout.

The Service plans to monitor all four haulouts in 2000 as well as continue the Bristol Bay Native Association Youth Student Internship Program. Activities at Cape Seniavin will focus on visitor education and disturbance reduction.

Walrus Harvest Monitoring Project

The Walrus Harvest Monitoring Project (WHMP) monitors the size and structure of the subsistence walrus harvest in the primary walrus hunting villages in Alaska. As reported in previous reports, Service and village technicians work together to collect information on the size and demographics of the spring harvest by conducting hunter interviews and obtaining biological samples. This information is used to assess the size and composition of the harvest and to study aspects of walrus population dynamics and life history. Samples collected through the WHMP include teeth for age determination, adult female reproductive tracts to determine reproductive status, and occasional anomalous tissues which are used to identify specific pathologies.

In 1999, a total of 2,195 harvested Pacific walrus were recorded through the WHMP at the Native villages of Little Diomedé, Gambell, Savoonga, and Wales. This was the largest harvest recorded by WHMP monitors in the past 15 years. The monitored harvest consisted of: 1,685 adults, 78 subadults, 19 yearlings, 408 calves, and 5 animals of unknown age class. Of the non-calf walrus taken where sex was identified, 1,312 (73.6%) were females and 471 (26.4%) were males (2.8:1 F:M ratio).

In early 2000, a study plan was approved to continue monitoring the spring walrus harvest in these four Native Alaskan villages and to expand this program into the village of Shishmaref. These five villages are currently responsible for approximately 65-90% of the reported annual Alaskan walrus harvest each year.

Walrus harvest Monitoring in Chukotka

In 1999, the Service, the Eskimo Walrus Commission (EWC), and the Alaska Department of Fish and Game sponsored a pilot walrus harvest monitoring project in Chukotka, Russia. The project was designed to collect walrus harvest information from the 6 primary walrus hunting villages in Chukotka utilizing a network of local Native harvest monitors. Russian collaborators in the project included Chukotka TNIRO, the Naukan Native Corporation, and the Eskimo Society of Chukotka.

In May, Russian harvest monitors traveled to Gambell, Alaska to observe and participate in U.S.

walrus harvest monitoring training. At the training session, the harvest monitors were provided with data forms and field equipment necessary to carry out harvest monitoring activities in their villages. Between May and October 1999 a total of 891 walrus were recorded by Russian harvest monitors in the villages of New Chaplino, Siriniki, Enmelen, Lorino, Uelen, and Inchoun. The American side and the Russian side have proposed exchanging their respective harvest monitoring reports in March, 2000.

Population Status and Trend

Between 1975 and 1990, the United States and Russia conducted joint aerial surveys at 5 year intervals to monitor the size and trend of the walrus population. Population estimates ranged from approximately 2-300,000 animals, however variability in these estimates preclude conclusions concerning trend. Range-wide surveys were suspended in 1995 due to unresolved methodological problems and budget cut backs in both nations. Future work to evaluate the size and trend of the Pacific walrus population is considered a high priority by both Russian and American Scientists.

The lack of precision and reliability in the fall surveys conducted in the past has prompted us to revisit the question of how best to obtain point estimates and track trends in walrus abundance. Questions about the best time and place to survey, and the development of new aerial and satellite photography techniques all need to be examined. The most efficient way to examine this complex issue will be to gather together experts in a workshop to design the best possible walrus census methodology given current technology, and to discuss how best to track trends at haulouts and to look at productivity and survivorship through ice edge surveys and harvest information. Workshop participants will include U.S. and Russian experts in marine mammals and survey design. The walrus population census workshop is scheduled for March 27- 28/2000.

Walrus Productivity and Survivorship

Over the past few years there has been a growing body of evidence that changes in the walrus population are occurring. Many subsistence hunters throughout Alaska have reported that they are seeing fewer numbers of newborn calves in recent years. The traditional knowledge supplied by these hunters is consistent with recent reports from scientists who have been surveying the ice pack in the Chukchi Sea between Alaska and Russia to assess the age and sex composition of walrus herds. In 1998 and 1999, shipboard surveys of the pack ice in the Chukchi and Bering Seas were used to visually sample the age-sex composition of free-ranging walrus herds in order to investigate productivity and juvenile survival rates. Preliminary results of the shipboard surveys indicate that the number of calves, 1 year-olds, 2 year-olds and 3 year olds per 100 adult females was lower than expected, suggesting that productivity and/or juvenile survival among Pacific walruses has been low for at least the past five years.

The cause of the suppressed productivity and/or juvenile survival rates of Pacific walruses is unknown, but warrants further investigation. The Service has contacted the U.S. Coast Guard Arctic Icebreaker Committee to express interest in performing ice-edge walrus surveys in the years 2000 and 2001. Information on ice conditions and distribution of walrus herds may also

be useful for planning future large scale population surveys.

Appendix 6. NMFS Alaska regional office responses and supplementary information for the 11th
AKSRG meeting

Recommendation: NMFS should develop and implement a standardized system for recording marine mammal serious injuries and mortalities that result from all types of human interactions (e.g., takes resulting from commercial fisheries, scientific research projects, subsistence fishing, hatchery structures, etc.). This system should establish standard and consistent definitions for the types of human interactions and effects of takes that should be used in all observer programs, databases, and reports.

Response: The Alaska Region Protected Resources Division (PRD) agrees that this concept is a good one, and attempted to develop precisely such an integrated system in 1995. This "Marine Mammal Injury and Mortality System" (MMIMS) attempted to combine all mortality data collected or received by NMFS from fishery observer programs, fisher logbook or self-report programs, stranding reports, subsistence harvest monitoring programs, and other sources into a single query-able database. After considerable effort from a contractor and PRD staff, this attempt failed primarily because the data were too disparate between, and within, monitoring programs. Additionally, it was found difficult to manipulate data within a singular data type for the purposes of database standardization. Because the individual programs had to make decisions regarding their data (*i.e.*, expansion of observed to total kills in an observer program), this resulted in the database developers having to make too many qualitative decisions or data interpretations, creating the real risk of introducing errors or bias into the database. The developers also found difficulties in handling incomplete data, or converting data fields into a form accessible via query engines. Thus, though the concept was a good one, developing a single system to accommodate such a database was problematic. The best that could have resulted was determined to be a system containing many unique data types, which essentially was what existed at the beginning of the exercise. Based on that finding, PRD abandoned MMIMS development after about two years of effort.

Because the wide variety of programs utilized to assess mortality and serious injury of marine mammals derive from a combination of science center, regional and national programs, and because many programs are not implemented by NMFS, each program needs to retain the flexibility to create data collection systems and definitions specific to their own needs. For example, it would be inappropriate to require data takers of these programs (*e.g.*, fisheries observers) to decide what may constitute a serious injury, which is subject to interpretation. In the case of fisheries observers however, it is appropriate to specify the type of data to be collected that will allow interpretation by managers. As another example, strandings reports are often made by the public based on a single observation that do not provide much detail, and this is unlikely to change regardless of what standards may be developed. What would be useful however, and likely achievable within the next year at PRD, is the creation of a metadatabase that creates an index of what data exist, what they include, who is responsible for them, and how they can be queried or obtained. This metadatabase would create an index of mortality and serious injury that is not otherwise currently available from any single NMFS source.

Update of Cook Inlet Marine Mammal Observer Program

This program began observation of the two Cook Inlet Category II fisheries (salmon drift and Upper and Lower Cook Inlet set gill net) in 1999 (Figure 1). Observers were deployed on the first drift gill net opening of June 28. Limited set gill net fisheries had been operating in the Upper Cook Inlet since June 7, but observers were not placed until June 27. Thus, fishing effort associated with approximately 239 of 11,300 deliveries was unobserved during this period. Observers were placed on drift vessels during each of the 8 regular and 9 corridor-only fishing periods, and during emergency order extended fishing periods. For the drift gill net fishery, 141 net-days (in which a net is fished at least 6 hours in a 24 hour period) were observed of a target 180 net-days coverage, and 256 net-days were observed of a target 300 net-days coverage for the set gill net fishery. In the drift fishery, observations were made of 744 sets and/or hauls of 102 unique permits for a total of 845 hours observation time. Among the set fishery, 1450 observations were made of soaks and/or hauls of 275 unique permits totaling 1545 hours of observation time.

Marine mammals (of any type) were observed within 300 m of a net by observers 43 times (about 6% of the observations) during drift gill net sets, and 107 times (about 7% of the observations) during set gill net sets. Of these, only three sightings were of beluga whales, each from set gill net locations in Upper Cook Inlet (Figure 2). A total of 739 interactions (defined as animals observed within 10 m of a gill net) were observed, the majority of which involved marine birds (629). Beluga whales were not observed to interact with a net in the drift (35 individual marine mammals observed) or set (78 individual marine mammals observed) fisheries. Harbor seals were the most commonly observed marine mammal interacting with gill nets (79), followed by sea otters (15), harbor porpoise (7), Steller sea lions (4), fur seals (2) and unidentified marine mammals (6). As reported at the 10th AKSRG meeting, the only three observed marine mammal entanglements were one event with two harbor porpoises, and a second event of one harbor porpoise, all entangled and released uninjured from drift gill nets.

Because the contract is already in place, the year 2000 observer program will begin early enough to observe the June chinook salmon set gill net fisheries. Observers will begin training in May and June at the Observer Training Center in Anchorage. Based on the 1999 experience, minor changes are being made to data collection forms, and more observers and boats will be added. Five additional observers will be hired, bringing the total to 5 lead observers and 25 observers, and at least one additional vessel will be chartered (for a total of three skiff/research vessels). Once the budget estimate is completed for 2000, PRD will be developing a request for proposals to observe at least the Kodiak set gill net fishery in 2001, and determine whether sufficient funds exist to include Yakutat set gill net fisheries.

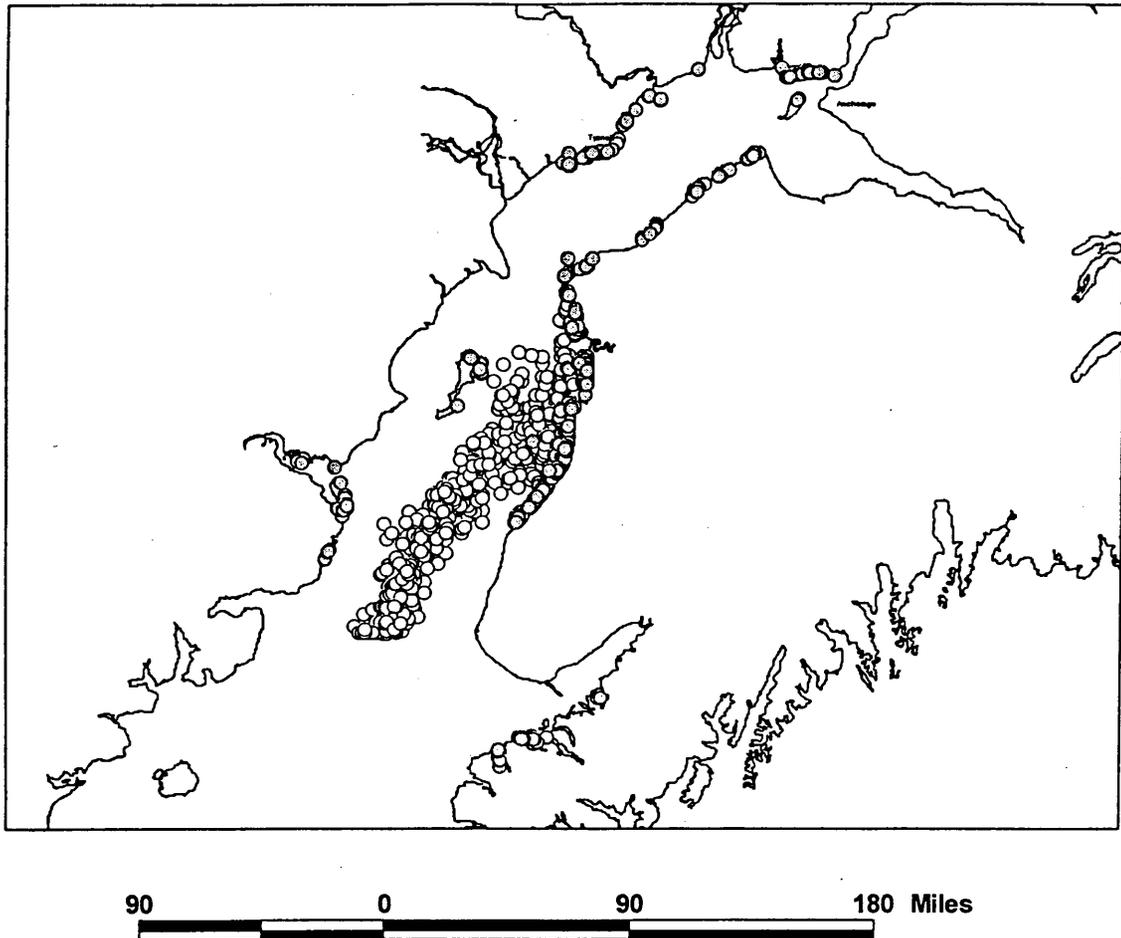


Figure 1. Locations of 2,194 set, soak and/or haul observations among Cook Inlet salmon drift (○) and set (filled circles) gill net fisheries by observers during the 1999 season.

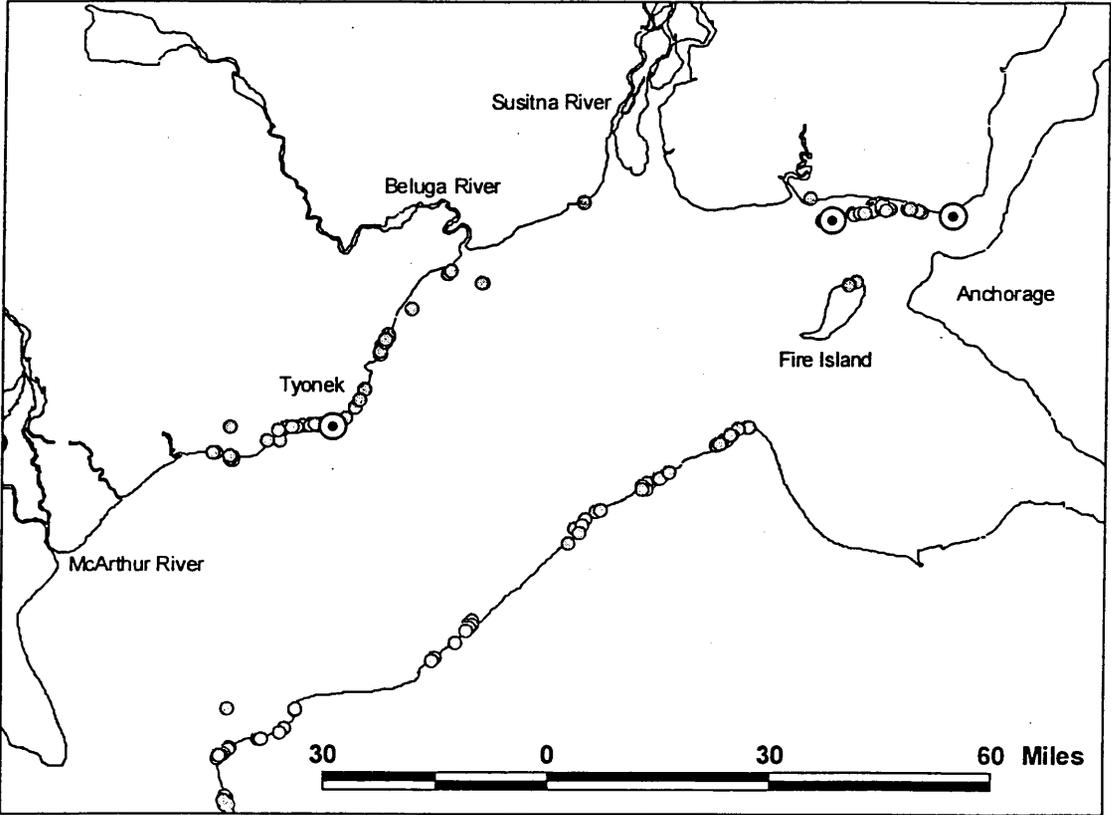


Figure 2. Locations of salmon set gill net observations (circles) and beluga whale sightings made by program observers during net observations (circled dots) during the 1999 fishery in Upper Cook Inlet, Alaska.

Alaska Harbor Seal Research Plan for NOAA-funded Research

Overview

A consolidated plan for NOAA-funded harbor seal research is currently being drafted by NMFS Alaska Region, the National Marine Mammal Laboratory, the Alaska Department of Fish and Game, and the Southwest Fisheries Science Center. The intent of this Plan is to improve priority setting, planning, and coordination of the research efforts conducted or supported by these entities. The Plan will provide a foundation for formalizing a process for evaluation, modification and development of NOAA-funded research. The goal of this process, and the Plan, is to ensure that research efforts satisfy management needs directed at conservation of harbor seals in Alaska.

The Plan contains the following research categories: Abundance and Trend Estimation; Habitat Characterization; Health and Condition; Food Habits; Life History and General Biology; Vital Rates; Human Interactions; and Stock Identification. Specific projects within these categories are presented with some detail, including Objectives, Justification, Methods, Products, and Time line. Projects contained in the initial draft are those currently underway as well as several that have been identified as important to develop, but are as yet unfunded. The Plan is intended to be an evolving document that will reflect priorities for NOAA-funded harbor seal research in Alaska, and which will provide the basis for an annual evaluation of current and future research. An annual evaluation of the Plan by the groups noted above will also provide the opportunity for improved dialogue and enhanced integration of research efforts.

The Alaska Harbor Seal Research Plan will be provided to the SRG in advance of its November 2000 meeting.

Appendix 7. NMFS report on subsistence monitoring strategy for Alaska marine mammal stocks

REPORT TO THE ALASKA SCIENTIFIC REVIEW GROUP:***Draft*****Subsistence Harvest Monitoring Strategy for Alaskan Marine Mammal Stocks**

Protected Resources Division
Alaska Regional Office
National Marine Fisheries Service
Juneau, Alaska

National Marine Mammal Laboratory
Alaska Fisheries Science Center
National Marine Fisheries Service
Seattle, Washington

March, 2000

Background

The Marine Mammal Protection Act (MMPA, as amended in 1994) provides a specific exemption from take prohibitions for Alaska Natives taking marine mammals for subsistence purposes or for creating and selling authentic native articles of handicraft or clothing, so long as the taking does not occur in a wasteful manner. Section 117 of the MMPA (16 U.S.C. 1386) mandates estimation of the total annual human-caused mortality and serious injury to a stock, and comparison of that estimate to the potential biological removal level (PBR). The stock assessment process was not intended by the Congress to examine taking for subsistence use (House Report 103-349). Rather, if the mean annual levels of human-caused mortality and serious injury to a stock equals or exceeds PBR, then a take reduction plan directing conservation measures towards the commercial fisheries must be created within 6 months for strategic stocks interacting with Category I or II fisheries, and within 11 months for non-strategic stocks interacting with Category I fisheries.

Of the 32 marine mammal stocks recognized and managed by NMFS, 16 are utilized for subsistence or handicraft purposes by Alaska Natives, and of those, five (bowhead whales, Cook Inlet beluga whales, northern fur seals, eastern and western stocks of Steller sea lions) are classified as strategic (Table 1). An additional three non-strategic stocks (Eastern Chukchi and Bering Sea beluga whale, Gulf of Alaska harbor seal) have mean total annual human-related mortality levels near their respective stock PBR levels (Table 1). This breakdown may change as stock definitions and population abundance estimates are refined.

Bowhead whale harvest quotas are set by the International Whaling Commission, and managed within the U.S. under a cooperative agreement between the Alaska Eskimo Whaling Commission (AEWC) and the National Oceanic and Atmospheric Administration (NOAA) under the authority of the Whaling Convention Act of 1949 (16 U.S.C. §§916-916I, as amended 1970 and 1979). Northern fur seal harvests were originally regulated under the Fur Seal Act of 1966. Since fur seals also fall under the MMPA, NMFS subsequently consolidated the provisions of these two laws into regulations promulgated under the MMPA (50 CFR part 216). Thus, the remaining stocks for which a harvest plan must be developed are the western Alaska population of beluga whales (Beaufort Sea, Eastern Bering Sea, Eastern Chukchi Sea, and Bristol Bay stocks), Cook Inlet beluga whales, Steller sea lion (western and eastern stocks), harbor seals (Bering Sea, Gulf

of Alaska, and Southeast Alaska stocks), and the ice seals (ringed, spotted, bearded, and ribbon seals).

Monitoring Plan Development

An overall framework for a monitoring plan was developed by considering existing legal requirements and agency policies, and examination of individual stock/species perspectives. Each species/stock potential harvest monitoring program was evaluated combining scientific, management, and logistical criteria. Particular attention was paid to whether annual versus rotational monitoring would be more appropriate. Three scenarios involving temporal and/or spatial (geographic) rotations were considered: 1) all harvest monitoring performed in alternating years or periodically (temporal rotation); 2) some harvest monitoring performed in all years (geographic rotation); and 3) all harvest monitoring performed in all years.

Subsistence harvests during the past 10 years have been monitored with a variety of methods by different groups (see individual stock reviews, below) that were considered in the overall plan development. These included, for example, direct reporting (*e.g.* bowhead whales by the AEWC, and beluga whales by the Alaska Beluga Whale Committee), retrospective surveys (as performed by ADFG for harbor seal and sea lion harvest monitoring), or direct counts by a federal observer (as required for northern fur seal harvest monitoring). Another monitoring option may be to adopt harvest sealing/tagging regulations requiring hunters to submit tissue samples from harvested marine mammals, as has been in place for sea otters, polar bears and walrus since 1988. Authority to establish such programs exists under section 109(i) of the MMPA, but to date NMFS has only promulgated regulations for beluga whale harvests in Cook Inlet. Should this approach be deemed useful, close coordination for implementation would occur with co-management partners.

Following the negotiation of the "Memorandum of Agreement for Negotiation of Marine Mammal Protection Act Section 119 Agreements", signed by NMFS, U.S. Fish and Wildlife Service (FWS), U.S. Geological Survey, and the Indigenous Peoples Council of Marine Mammals (IPCoMM) in 1997, NMFS operational policy has been to incorporate the responsibility for harvest monitoring into co-management agreements negotiated with Alaska Native organizations (ANO's; tribes or tribally-authorized Native marine mammal commissions). This follows on the precedents set by the AEWC and the Alaska Beluga Whale Committee (ABWC) in taking an active role in collecting harvest data, and thus gaining greater input into decision making processes effecting subsistence harvests. Other parties (*e.g.*, ADFG Subsistence Division) may still do harvest monitoring, if determined to be the most appropriate approach by NMFS and the partner ANO.

Scientific considerations- All techniques currently utilized to monitor subsistence harvests presume to enumerate the complete annual harvest. Thus, there are no coefficients of variation (CV) of the harvest estimates to incorporate into a rotational plan based on comparisons with abundance estimate CV's, such as was suggested by Wade (1999) for abundance survey and observer program rotational scheduling.

Management considerations- In some instances (e.g. for stocks that have uncertain boundaries) where annual monitoring might not occur, monitoring the harvest in the entire State in alternate years would likely yield more useful information than only monitoring part of the State every year. This would avoid confounding spatial effects with interannual variation in harvests. For stocks that are strategic, or that have a high degree of interaction with commercial fisheries, annual monitoring programs would best satisfy management needs. From a programmatic sense, having an uninterrupted presence in the villages and among the hunters may be more important than scientific concerns.

Logistical considerations- Depending upon the methodology chosen to monitor a harvest, there may not be meaningful cost savings associated with adopting a rotational program. This is largely dependent upon the type of infrastructure necessary to support harvest monitoring. For retrospective monitoring designs, the cost savings of not covering portions of the State within a given year are small compared to the cost of maintaining the infrastructure to perform the program.

Individual species/stock harvest monitoring accounts

Bowhead whale

Historical Perspective

Between 1981 and 2000, the harvest management and enforcement of the bowhead whale hunt has occurred under a Cooperative Agreement (CA) between the Alaska Eskimo Whaling Commission (AEWC) and the National Oceanic and Atmospheric Administration. This CA requires the AEWC to monitor this hunt and report on all whales struck by registered crews. The AEWC does so effectively, providing interim harvest information to the Anchorage office of NMFS, as well as synoptic reports of each season's spring and fall harvests. The reported information includes the community of the crew, the date of the strike, struck and loss figures, the sex and length of the whale, the general location of the strike, and other information/observations of each strike.

This information is initially the responsibility of the successful whaling captain, who completes a harvest report for the AEWC. The AEWC then compiles data from the harvest and forwards this information to NOAA/NMFS. A NOAA Award grant (\$400K in FY99, \$370K in FY00) is annually provided to the AEWC for costs associated with the administration of the CA. Approximately 50% of these funds are used for scientific research and harvest monitoring. These funds are appropriated by Congress as a direct budget line-item to be passed through NOAA to the AEWC.

Future Strategy

The current CA with AEWC will expire on December 31, 2002. NMFS believes this program has provided an accurate and efficient means of collecting these data. No changes in the reporting system are anticipated at this time.

Western Alaska beluga whales

Historical Perspective

During the past 10 years, ABWC has collected information on the four western Alaska stocks: Beaufort Sea, eastern Chukchi Sea, eastern Bering Sea and Bristol Bay. This information includes: landed, struck and lost whales, color (gray vs white), sex, skin tissues (genetics), harvest method, harvest season and behavior. ABWC has collected harvest information at their annual meetings from beluga whale hunters who represent their village and through formal telephone interviews with hunters who cannot attend the meetings as early as 1988. The number of villages represented at the annual meetings and in the harvest estimates has increased from 11 villages in 1992 to 20 villages in 1997 and 1998.

Costs associated with the 1992-99 ABWC harvest data collection were part of their total award grant from NMFS, which was \$195.2K in FY99 and \$208K in FY00. These funds were appropriated by Congress as a direct budget line-item to be passed through NOAA to the ABWC. No changes in the monitoring program are anticipated at this time.

Cook Inlet beluga whales

Historical Perspective

A variety of harvest monitoring methods have been used for this stock, and that is likely reflected in the large interannual variation seen in the estimates. Initial monitoring was conducted informally during 1985-1987 by the Department of Fish and Game (ADFG). During 1987-1990, ADFG collected harvest information through formal telephone interviews with some hunters. Four households were surveyed in 1987; 5 households were surveyed in 1988; 9 households were surveyed in 1989; 5 households were surveyed in 1990. In 1991, no hunters were surveyed. For the 1992 harvest information, ADFG conducted retrospective surveys in 1993 with 8 households. In 1993, they interviewed 16 households. Harvest estimates for 1995-96 were compiled by the Cook Inlet Marine Mammal Council (CIMMC). Estimates for 1994, 1997, and 1998 were compiled at the annual Alaska Beluga Whale Committee meetings and by hunters working with NMFS. In 1999, hunters voluntarily did not hunt, and the Steven's rider (Public Law 106-31) prohibited hunting outside of a co-management agreement until October 2000.

Costs associated with the 1985-90 ADFG monitoring are unknown to NMFS. In 1995, CIMMC was subcontracted by ADFG to report on the CI beluga harvest from January through June 1995 and collected \$7,988 (from a \$9,488 contract). CIMMC was contracted by NMFS to report on the beluga harvest from July 1 through December 30, 1995 and received \$5,000. CIMMC received \$4,300 from NMFS and \$2,000 from ABWC to collect harvest information in 1996. CIMMC was given \$3,000 for information on the 1997 harvest estimates. To compile 1998 harvest data, CIMMC was given \$3,300 in 1999, though no report was received by NMFS. Estimates of annual harvest mortality for 1997 and 1998 were compiled by NMFS, and were based on reports from individual hunters.

Future Strategy

Harvests and monitoring will be conducted through co-management agreements, stipulating specific hunting guidelines and reporting requirements. For 2000, NMFS is proposing to promulgate these hunting requirements as regulations if the stock is designated as depleted.

Current regulations require Alaskan Natives harvesting beluga whales in Cook Inlet to submit the left lower jaw from harvested whales to NMFS and complete a report (64 FR 53269). Costs for this program are estimated at about \$20,000.

Northern fur seals

Historical Perspective

In 1966 the Fur Seal Act was enacted to directly manage the fur seal harvest and administrate the Pribilof Islands. Since fur seals also fell under the authority of the MMPA, NMFS consolidated the provisions of these two laws into harvest regulations promulgated under the MMPA (50 CFR part 216 subpart F), which have been in effect since 1986. The regulations require that every third year, beginning in 1994, NMFS shall assess the number of seals required to satisfy the subsistence requirements of St. Paul and St. George Islands. This has been accomplished with input from the tribal governments. The regulations also stipulate how the harvest is to be monitored by NMFS representatives. The annual costs associated with this program are about \$15K.

Future Strategy

Completion of the co-management agreement with the Tribal Government of St. Paul will provide for an input of a co-management council in making recommendations regarding the harvest, and may eventually become the primary mechanism for setting take ranges, and making changes or improvements to the harvest. There may also be a potential for more cost sharing.

Steller sea lions

Historical Perspective

Since 1992, information on the subsistence harvest of Steller sea lions in Alaska has been gathered and summarized using household surveys conducted by the Subsistence Division of ADFG. The information collected has included number of Steller sea lions taken by household, community, and season, as well as information on the size and sex of the animals taken and whether they were actually collected or struck and lost. In addition to the surveys, some additional information has been gathered based on tissue samples collected from harvested animals (e.g., stomachs and stomach contents for foraging studies by A. Springer). The Division has contracted survey workers in each of the communities of interest, and conducted surveys annually. The surveys conducted for years 1992 to 1998 were conducted by the Subsistence Division of ADFG, under contract to NMFS. The cost for the contracts to ADFG Subsistence Division ranged from \$214K to \$383K per year (total cost for a combined contract to monitor harbor seals and Steller sea lions). The difference in cost was affected by the inclusion of additional research such as tissue biosampling, interviews with expert hunters, one or two survey rounds, and development and distribution of information and educational materials.

Future Strategy

The household survey method for collecting information on subsistence harvesting has been questioned. The questions raised have pertained to whether surveys conducted up to a year after the harvest effort are subject to errors or bias that could result from the natural waning of memory over time. Critics of the method have urged real-time surveys or harvesting monitoring methods

that provide more confidence in the survey results. Tagging of harvested animals or collection of tissues (e.g., jawbone) have been suggested as more reliable methods of harvest monitoring.

Therefore, the following changes are suggested for monitoring of subsistence harvest levels of Steller sea lions. First, annual real-time monitoring of Steller sea lions will be used in the five or six communities where approximately 80% of the sea lion harvest occurs (St. Paul Island, St. George Island, Tatitlek, Atka, Old Harbor, and Unalaska). This monitoring will be conducted annually and will include either tagging or collection of a tissue sample to verify each harvest. The monitoring will be conducted using a community-based conservation officer (or similar responsible official) sponsored by an Alaska Native organization (Tribes or Native Marine Mammal Commissions). Second, all communities will be surveyed on a biennial basis to compare between survey methods and real-time methods, and to assess harvest levels for the remaining communities where about 20% of the subsistence harvesting occurs. These surveys will be conducted in conjunction with similar surveys for harbor seal harvests. This new approach will provide 1) more timely (and presumably more accurate) harvest records in the locations where most of the harvesting occurs, 2) a basis for comparing real-time results with results from annual surveys, and 3) biennial coverage of harvesting in communities where relatively little harvesting occurs.

The primary information required includes numbers taken, numbers struck and lost, size (adult, juvenile, pup) and sex of each animal taken and (where possible) of animals struck and lost, by year and location. For real-time monitoring, secondary information that should be added to the monitoring effort when possible includes tissue samples (canine tooth for aging, and stomach contents). Tertiary information would include tissue samples or animal measurements requested by researchers for specific studies.

The estimated cost of harvest monitoring using the above strategy is \$100K for years with real-time monitoring only, and \$225K for years with both real-time monitoring and survey assessment.

Harbor Seals

Historical Perspective

Harbor seals are harvested throughout Alaska from southeast Alaska to the Aleutian Islands and north to Bristol Bay. Subsistence harvest data have been collected annually since 1992 (current data available for 1992-98) by ADFG Subsistence Division under contract from NMFS. Information was collected through systematic interviews of hunters by local researchers in 62 communities across the state. Respondents were asked to recall information about the harvest of seals by their household during the previous year. Local researchers recorded animals reported killed or struck and lost by surveyed hunters. The take rates reported by surveyed hunters were extrapolated to unsurveyed hunters by community to provide regional estimates, with confidence ranges, of the take by community, geographic area and stock. Data include total take (including the number struck and lost and harvested), age and sex of harvested animals, size, season of harvest, and geographic distribution.

The cost for the contracts to ADFG Subsistence Division ranged from \$214K to \$383K per year (total cost for a combined contract to monitor harbor seals and Steller sea lions). The difference in cost was affected by the inclusion of additional research such as tissue biosampling, interviews with expert hunters, one or two survey rounds, and development and distribution of information and educational materials.

Future Strategy

NMFS recently (April 1999) signed a co-management agreement with the Alaska Native Harbor Seal Commission (ANHSC). The co-management agreement specifies that an Annual Action Plan will be jointly developed between the ANHSC and NMFS and will include means for accurately monitoring the number of harbor seals harvested, the age and sex composition of the harvest and the condition of animals harvested. NMFS and the ANHSC are presently planning a co-management workshop (for September 2000), which includes a component for developing a sound and cost effective harvest monitoring program.

Ideally, the ANHSC, as a representative hunter body, would be directly involved in the collection of harvest data. ADFG Subsistence Division developed a proposed strategy by which responsibilities for harvest monitoring would be transitioned from the Subsistence Division to the ANHSC. The harvest assessment program will be conducted by ADFG in partnership with ANHSC as the transition evolves over three years.

Minimum information requirements may include such items as annual harvest estimates including total takes and struck and lost; age and sex structure of the harvest; and condition of the animals, by season and community. Ideally, the connections of the ANHSC to the hunters should allow for the collection of exact numbers rather than harvest estimates. The ANHSC has developed a fairly extensive biosampling program to collect tissue samples from subsistence harvested animals. Expansion of the biosampling program may allow future integration of the harvest assessment and tissue collection programs. This integration could provide precise harvest numbers as well as tissues for accurate estimation of age and sex structure of the harvest. Until that time the proposed strategy is to continue the annual harvest survey conducted by ADFG, with responsibility shared by the ANHSC.

The cost estimate for future harbor seal harvest data collection is \$200-300K.

Ice Seals

Historical Perspective

Harvest monitoring of ice seals (ringed, bearded, spotted, and ribbon seals) has been undertaken sporadically throughout the seals' range by a variety of means. The North Slope Borough, Department of Wildlife Management, has been conducting household interviews concerning subsistence harvests of ice seals over the past several years. These interviews were carried out as part of a monitoring effort of all species harvested for subsistence. The villages of Pt. Hope, Pt. Lay, Wainwright, Barrow, Nuitsuq, and Kaktovik were included in these surveys. A similar program was undertaken by the Alaska Department of Fish and Game (ADFG) Subsistence Division under contract to NMFS from 1996-1998 in the Norton Sound-Bering Strait region, north of Cape Newenham. Systematic interviews with hunters and users of marine mammals were conducted in six communities

for the first harvest year: Brevig Mission, Gambell, Golovin, Savoonga, Shaktoolik, and Stebbins. Three communities were surveyed in harvest years 1997 and 1998: Emmonak, Hooper Bay, and Quinhagak. Respondents were asked to recall information about the harvest of seals by their household during the previous year. Local researchers recorded actual animals reported killed or struck and lost by surveyed hunters. Actual takes by surveyed hunters were expanded to unsurveyed hunters by community to provide regional estimates, with confidence ranges, of the take by community, geographic area and stock. Data collected included number of animals harvested by species, plus struck and lost; age and sex of the harvest; by season for each community surveyed. The annual cost for the contracts to ADFG Subsistence Division ranged from \$102 - \$235K. During the past two years, the National Marine Mammal Laboratory (NMML) has been working cooperatively with ADFG, the Nanuuq Commission, and the Eskimo Walrus Commission (in association with Kawerak) to collect harvest information and specimen material from ice seal subsistence harvests. Those efforts focused on the area from Norton Sound to Kivalina (including St. Lawrence Island), and included both retrospective household interviews to determine the levels and species composition of harvests, as well as the collection of specimen material (e.g., jaws, reproductive tracts, stomach contents) for life history and ecological studies.

Future strategy

Several options exist for continuing and enhancing harvest monitoring of ice seals in the future. Although there is an interest by both federal, state, and Alaska Native organizations to conduct harvest monitoring activities, funding limitations have prevented the establishment of any long-term program. At present, neither NMML nor the NMFS Alaska Region have funds available in FY2001 or beyond to support ice seal harvest monitoring. NMFS plans to continue its dialog with groups representing or serving Alaska Native hunters (e.g., Nanuuq Commission, Eskimo Walrus Commission, North Slope Borough Dept. of Wildlife Management) to determine what the scope and cost of an effective harvest monitoring program might be. Another possibility that is being discussed with the Fish and Wildlife Service (FWS) may be to utilize the system of "sealers" and "taggers" that the FWS has in place in western and northern Alaska communities to monitor polar bear and walrus subsistence harvests. Many of the hunters who hunt polar bear and walrus in these communities are also the same hunters who harvest ice seals. Although NMFS does not have regulations requiring the sealing and tagging of ice seals, it may be possible to utilize FWS's network of personnel in villages to collect data on ice seal subsistence harvests.

Discussion

Based primarily on management and logistic criteria, and in the absence of overriding statistical needs, the proposed NMFS harvest monitoring strategy is to aim for annual harvest monitoring where co-management agreements are in place. Annual review and discussions regarding direction for the stock-specific monitoring programs would take place within the co-management committees constructed within the co-management agreements. For stocks or areas for which agreements have yet to be negotiated, monitoring will be implemented on a case-specific basis pending availability of funds.

Current FY00 funding for these programs consists of direct Congressional appropriations, base funds to AKR, or other sources of annual funding. An estimated \$500-700 K additional annual funding will be required to implement the proposed monitoring plan (Table 2). The minimum estimate would

provide coverage of total harvest and numbers struck and lost, and the upper range accommodates collection and analysis of skin (for sex determination) and teeth (for age determination) samples. These additional costs would have been covered under a NMFS FY01 Recover Protected Species (RPS) funding initiative, but it was not included in the Department of Commerce budget request. An initiative to meet these and other co-management funding needs is currently being developed for the FY02 RPS funding initiative process.

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- Stephensen, W.M., D.W. Cramer and D.M. Burn. 1994. Review of marine mammal marking, tagging, and reporting program, 1988-1992. USFWS Tech. Rep. MMM 94-1. 49 pp.
- Wade, P. R. 1999. Determining the optimum interval for abundance surveys. Pages 53-66 in G. W. Garner, *et al.*, (eds.), Marine mammal survey and assessment methods. A.A. Balkema, Rotterdam; Brookfield.

Table 1. Population estimates, survey intervals and estimates of mean annual human-related mortality and serious injury for marine mammal stocks managed by NMFS and harvested for subsistence use in Alaska¹ (strategic stocks italicized).

Stock	Population		Abundance survey period	Population Trend	Subsistence Harvest	Harvest Survey Period	Fishery and other mortality	Minimum Total Mortality	PBR	ME:PBR	Comments
	Abundance ²	8,200									
<i>Bowhead whale</i>		8,200	Annual	+3.2%	49	Annual	0	49	77	64%	Harvest set by IWC, managed by agreement with AEWC.
<i>Beluga whale</i>											
Beaufort Sea	39,258		Periodic	stable/incr	184	Annual	0	184	649	28%	US harvest reported by ABWC, Canadian by FIMC.
East Chukchi Sea	3,710		Periodic	likely not decl	68	Annual	0	68	74	92%	Harvests reported by ABWC.
East Bering Sea	7,986		Periodic	likely not decl	121	Annual	1	122	129	95%	Harvests reported by ABWC.
Bristol Bay	1,555		Periodic	stable	19	Annual	1	20	26	77%	Harvests reported by ABWC.
<i>Cook Inlet</i>	357		Annual	decline	0 ³	Annual	0	0	2.7	0%	Harvests to be conducted under agreement with CIMMC.
<i>Northern fur seal</i>	1,002,516		Biannual	stable	1708	Annual	16	1708	18,244	9%	Harvests set and monitored under Fur Seal Act/MMPA.
Steller sea lion											
<i>Western</i>	39,031		Biannual	decline	254 ⁴	TBD ⁷	30	284	234	121% ⁴	St. Paul harvest to be monitored under agreement with TGSNP.
<i>Eastern</i>	30,403		Biannual	stable/incr?	0 ⁵	TBD ⁷	16	16	1368	1%	
Harbor seal											
Bering Sea	13,312			decl/stable?	170 ⁶	TBD ⁷	31	192	379	53%	
Gulf of Alaska	29,175			uncertain	800 ⁶	TBD ⁷	36	827	868	96%	
Southeastern	37,450			incr/decr	1686 ⁶	TBD ⁷	36	1785	2114	81%	
Ice seals											
Ringed seal	44,360		none	n/a	Est>2000	TBD	0.6	>2000	n/a	n/a	
Spotted seal	Est: 59,214		none	n/a	244	TBD	1.5	246	n/a	n/a	
Bearded seal	n/a		none	n/a	Est>700	TBD	2	>702	n/a	n/a	
Ribbon seal	Est: 90,000		none	n/a	Est<100	TBD	0.2	<100	n/a	n/a	

¹Estimates of population abundance, trends, and mortality were taken from draft 2000 Stock Assessment Reports (Ferrero *et al.* 2000) unless noted otherwise.

²N_{min} except for ice seals.

³No harvest was allowed in 1999 under Public Law 106-31. In 1998, the reported total number taken was 42.

⁴Estimate from 1994-98, calculated from ADFG (1999). Estimate using 1996-98 only is 171, giving an ME:PBR of 86%.

⁵Estimate from 1995-97. 1998 harvest was 8 sea lions.

⁶Calculated for 1994-98, from ADFG (1999).

⁷TBD = to be developed. Formerly estimated annually during 1992-98.

Table 2. Proposed subsistence harvest monitoring plan for stocks managed by the National Marine Fisheries Service (strategic stocks italicized).

Stock	ANO ¹ or Partner	Co-management Agreement?	Geographic Scope ⁴	Method	Existing Funding FY00 (\$K)	Additional funding for proposed plan (\$K)
<i>Bowhead whale</i>	AEWC	Yes		Permit reports	370 ⁵	0
Beluga whale						
Western Alaska population					208 ⁵	0
Beaufort Sea	ABWC	Yes		Hunter reports		
East Chukchi Sea	ABWC	Yes		Hunter reports		
East Bering Sea	ABWC	Yes		Hunter reports		
Bristol Bay	ABWC	Yes		Hunter reports		
<i>Cook Inlet</i>	CIMMC	Yes ²	Cook Inlet waters	Permit reports	3.3	20 ⁷
<i>Northern fur seal</i>	TGSNP	Yes ³	St. Paul Island	Federal observer	84 ⁶	0
Steller sea lion						
<i>Western</i>	TGSNP	Yes ³	St. Paul Island	Hunter reports	84 ⁶	100-225
	TASSC/ADFG	No	Kodiak Island/PWS	Hunter reports/ Retrospective		0
	AEB/AMMC	No	Aleutian Islands	Hunter reports/ Retrospective		
<i>Eastern</i>	TASSC/ADFG	No	Southeast Alaska	Hunter reports/ Retrospective		
Harbor seal						
Bering Sea	ANHSC/ADFG	Yes				200-300
Gulf of Alaska	ANHSC/ADFG	Yes				
Southeastern	ANHSC/ADFG	Yes				
Ice seals						
Ringed seal		No		Hunter reports	0	<200
Spotted seal		No		Hunter reports	0	
Bearded seal		No		Hunter reports	0	
Ribbon seal		No		Hunter reports	0	

¹ ABWC=Alaska Beluga Whale Committee; ADFG=Alaska Department of Fish and Game Division of Subsistence; AEB= Aleutians East Borough; AEWC=Alaska Eskimo Whaling Commission; AMMC=Aleutian Marine Mammal Commission; ANHSC=Alaska Native Harbor Seal Commission; ANO=Alaska Native organization; CIMMC=Cook Inlet Marine Mammal Commission; TGSNP=Tribal Government of St. Paul; TASSC=The Alaska Sea Otter and Steller Sea Lion Commission.

²Year 2000 agreement in NMFS/NOAA/DOC clearance process.

³In NMFS/NOAA/DOC clearance process.

⁴If other than range-wide.

⁵Congressional pass-through.

⁶Both fur seal and Steller sea lion co-management activities were supported under a single \$84K award. A portion of this was directed towards monitoring costs.

⁷Reflects laboratory analysis costs. Additional funds for monitoring acquired through base increase to NOAA Enforcement Division.

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ALASKA REGIONAL SCIENTIFIC REVIEW GROUP

SRG members: Milo Adkison, John Gauvin, Carl Hild, Sue Hills, Charlie Johnson, Brendan Kelly, Matt Kookesh, Denby Lloyd, Lloyd Lowry, Beth Mathews, Craig Matkin, Jan Straley, and Kate Wynne

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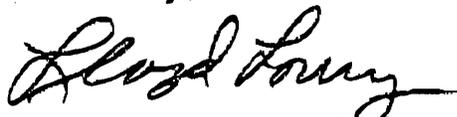
April 15, 2000

Ms. Penelope Dalton
Assistant Administrator for Fisheries
National Marine Fisheries Service
1315 East-West Highway, 13th Floor
Silver Spring, Maryland 20910

Dear Ms. Dalton:

The Alaska Regional Scientific Review Group (SRG) just completed a meeting that was held in Anchorage on March 29-30, 2000. A full description of our discussions will be available in the minutes from the meeting that are now being prepared. Attached for your information are the major recommendations that were made by the SRG. Feel free to contact me if you have any questions or need any more information.

Sincerely,



Lloyd F. Lowry, Chairman

cc: Alaska Scientific Review Group Members
Jim Balsiger, NMFS AFSC
Steve Pennoyer, NMFS AKR
Donna Wieting, NMFS F/PR
Doug DeMaster, NMFS NMML

Penny Dalton

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April 15, 2000

ALASKA REGIONAL SCIENTIFIC REVIEW GROUP RECOMMENDATIONS
FROM MARCH 29-30, 2000 MEETING

1. The AKSRG recommends that NMFS AKR take actions to increase the effectiveness of the Alaska Region stranding network. In particular, increased effort should be made to provide timely notification to network participants when stranded animals have been reported in their area so that participants will have a chance to respond. This is important because: 1) stranding data are used to evaluate causes and levels of mortality in the SARs; 2) some opportunities to obtain data are being missed because people who could have responded were unaware; and 3) some participants may question the value of the stranding network if they are not contacted when a stranding event happens.
2. The AKSRG recommends that NMFS continue to develop and implement the program for monitoring subsistence take by Alaska Natives that was presented at the March 2000 meeting. The SRG continues to think that it is critical to continue monitoring the harvest, and conduct biosampling, of Steller sea lions and harbor seals, and to develop a similar program for ice seals. The SRG recommends that NMFS work with Alaska Native organizations and the U.S. Fish and Wildlife Service to develop the most comprehensive and cost-effective program possible.
3. The AKSRG recommends that NMFS recognize in the SARs and elsewhere that the 1999 counts of beluga whales in Cook Inlet do not show that the decline in abundance of that stock has stopped or abated. The confidence intervals of the 1999 estimate overlap broadly with those from 1998, and a linear regression of the best estimates of population size shows a statistically significant decline over the period from 1994 through 1999.
4. The AKSRG commends the NMFS for progress made on improving monitoring programs for ringed seals conducted under Incidental Harassment Authorizations and Letters of Authorization. The SRG was glad to see that the locations of ringed seal structures in the area around the Northstar project had been mapped prior to initiation of construction activities. However, the Group was informed that because of problems with permits or coordination it was likely that there would be no followup studies of those structures. The AKSRG therefore recommends that NMFS do whatever is necessary to ensure that properly trained investigators conduct a study this spring to determine the fate of ringed seal structures at the Northstar project.

Penny Dalton

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April 15, 2000

5. The AKSRG recommends that the FWS and USGS continue their joint efforts to evaluate and plan for a survey of the Pacific walrus population. In particular the SRG recommends that FWS and USGS conduct simulations to evaluate the likely precision of various survey options, and estimate the costs associated with the preferred options.