

## Minutes: Sixth Meeting of the Alaska Scientific Review Group (21-23 October 1997)

### 1.1 Introduction

The sixth meeting of the Alaska Scientific Review Group (ASRG) was held at the NOAA Sand Point facility in Seattle, WA from 21-23 October 1997. The purposes of the meeting included: 1) initial review of revised 1997 Stock Assessment Reports (SAR) for NMFS strategic stocks; 2) initial review of revised 1997 Stock Assessment Report for sea otter; 3) in depth review of Alaska harbor seal stocks; 4) in depth review of Alaska killer whale stocks; and 5) additional discussion of issues related to the stock assessment process. Appendix 1 presents the list of participants, including participants invited to supplement the ASRG's expertise regarding harbor seal and killer whale biology. Appendix 2 presents the adopted agenda. Appendix 3 lists the background papers that were distributed or available during the meeting. The meeting was chaired by Lloyd Lowry. Doug DeMaster agreed to be the rapporteur.

### 1.2 Minutes from the May 1997 ASRG meeting (meeting number 5)

DeMaster reported that the Pacific SRG had recommended changing p. 2, par. 2, lines 4-6 to indicate that this point was only agreed to by the ASRG. He further noted that appendix 5 in the minutes contained a memorandum from Wade to the NMFS Office of Protected Resources (F/PR), whereas it should have contained the summarized comments from F/PR regarding the draft NMFS SARs (see appendix 5 in this document). It was recommended that both of these changes be made to the final minutes.

### 1.3 Procedural Issues

As has been the case for previous minutes for the ASRG, it was agreed that the minutes should primarily serve as a summary of agreements and recommendations and not a detailed transcript of what was said during the meeting. Further, it was agreed that, while major changes to the draft SARs would be discussed, minor changes or edits would be given directly to NMFS or FWS staff responsible for the drafts.

### 1.4 SRG Procedures

#### 1.4.1 Chair for 1997-1998

It was agreed that Lowry would continue as chair of the ASRG through final

recommendations regarding the revised SARs for 1997.

#### 1.4.2 Potential conflicts of interest

The issue was raised regarding the potential for, or the perception of, conflicts of interest for ASRG members. Such a situation may result when members are both making recommendations for specific research or management activities in Alaska and are directly involved in research or management activities. Lowry noted that to some extent such a situation was unavoidable because members of the ASRG were selected by NMFS and FWS because of their specific expertise. Carl Hild commented that the ASRG has no authority to make decisions that have financial implications, as the sole activity of the group was advisory in nature. It was agreed that, where appropriate, specific ASRG members could recuse themselves from particular issues and that such actions would be so noted in the minutes.

#### 1.4.3 Communications between NMFS and FWS and among SRGs

Hild suggested that, if possible, both Services should jointly publish the Federal Register (FR) notices that announce the availability of draft SARs and final SARs. He further recommended that the Services produce SARs for the three regions that include information on all marine mammal stocks in that region rather than separate SARs for FWS and NMFS. Gorbics responded that it was not the intention of FWS to annually update its status reports, but that all three status reports were revised in 1997 with the intention of updating the block of status reports for walrus, sea otters, and polar bears every three years. By doing this, FWS would only need to prepare FR notices for status reports every three years. DeMaster noted that as the list of stocks for which NMFS was responsible included several strategic stocks, which by law were to be reviewed annually, NMFS would very likely prepare annual FR notices for status reports.

Lowry reported that he had polled the ASRG, and members unanimously believed that there would not be sufficient time at this meeting to review all of the draft SARs prepared by FWS. He therefore recommended, and it was subsequently agreed, that at this meeting the draft status report for sea otters would be reviewed as previously scheduled, and that two working groups would be established to provide written comments to FWS on the SARs for walrus and polar bears. These two groups were composed of Hild, Caleb Pungowiyi, Brendan Kelly, and Sue Hills (lead) for walrus and Hild (lead), Lowry, Kelly, and Craig Matkin for polar bears. It

was agreed that comments would be sent to FWS by 14 November 1997.

Regarding communications between the Pacific SRG and the ASRG, Scott Hill reported on the recent meeting of the Pacific SRG, which he had attended. He reported that the Pacific SRG considered joint meetings with the ASRG valuable and recommended they take place on the order of once every 2-3 years. They also were pleased to receive the draft revised SARs for shared stocks prior to their recent meeting. Regarding needed research, the Pacific SRG recommended that additional biopsy samples from sperm whales and harbor porpoise were needed to resolve extant issues of stock structure for these species. Kaja Brix (Alaska Regional Office (AKR)-NMFS) commented that, as available, the AKR does send tissue samples to the Southwest Fisheries Science Center (SWC) on a routine basis. Finally, Hill reported that the Pacific SRG had discussed reauthorization of the Marine Mammal Protection Act (MMPA), which needs to be reauthorized by 30 September 1998. One member had agreed to draft a working paper concerning the 1994 amendments to the MMPA and how well they have worked (or failed to have worked) towards achieving the goals of the MMPA.

After some discussion, the ASRG agreed to exchange draft agendas prior to meetings of the two SRGs. Based on the listed agenda items, either SRG could recommend that 1 or 2 of its members participate in the meetings of the other SRG. Finally, it was agreed that minutes from the ASRG would be sent to the chair of the Pacific SRG. It was assumed that a similar arrangement would be agreeable to the Pacific SRG.

## 2. Review of Alaska harbor seal stocks

Lowry asked Peter Olesiuk (Dept. of Fisheries and Oceans, Canada) to summarize the management of harbor seals in British Columbia. Olesiuk noted that fisheries information was summarized by areas referred to as statistical units (of which there are 29). He added, however, that harbor seal-fishery interactions were not summarized by statistical unit and that reliable estimates of total human-related mortality were not available. Regarding stock structure, Olesiuk commented that DFO considered harbor seals in BC to constitute a single stock due to the continuous distribution.

Lowry then asked Robin Westlake (Aquatic Farms, HI) to summarize her work on using

mtDNA to infer stock structure in harbor seals in Alaska. Westlake concluded that the available genetic evidence supported the following: 1) harbor seals that frequent the Pribilof Islands were genetically distinct (and therefore demographically isolated) from harbor seals from the rest of Alaska; 2) the smallest probability of genetic exchange between two putative stocks of harbor seals in Alaska was achieved with a boundary drawn between Kodiak Island and the Kenai Peninsula; 3) harbor seals from the southern portion of SE Alaska were genetically distinct from harbor seals from the Gulf of Alaska and westward; and 4) the pattern of genetic characteristics of harbor seals in the central Gulf of Alaska in the 1970s was similar to that observed in the 1990s. Westlake added that additional analyses were planned in FY98 including the analysis of nucleic markers and the use of individual based models (IBMs) to ascertain the degree to which low levels of exchange between putative stocks would confound the analysis of genetic markers.

Several ASRG members questioned certain aspects of the particular statistical approach reported. First, an adjustment for multiple comparisons was not incorporated into the statistical test. Second, the merit of selecting a boundary line for putative stocks by maximizing the value of the test statistic for genetic distinctness was questioned.

Lowry then summarized the results of recent satellite tagging of harbor seals in Alaska, where 27, 49, and 21 animals had been tagged in Southeast Alaska, Prince William Sound, and Kodiak, respectively. For the most part, tagged animals tended to stay in the locality in which they had been tagged. Exceptions to this generalization were noted, which mostly involved juvenile animals.

Recent survey results were then presented. Withrow indicated that the 1996 survey results would likely produce abundance estimates that were larger than previous estimates. He noted that to some extent this could be related to the improved average sighting conditions in 1996 relative to other years. Several ASRG members noted that using correction factors (CF) which had been collected simultaneously with the surveys would have avoided such problems. Withrow responded that it was not logistically possible, given the available support, to conduct all of the surveys in such a manner. After some discussion, there was general agreement that at a minimum correction factors designed for specific applications (e.g., substrate- and season-specific correction factors) should be matched with the appropriate count data.

Regarding changes to the draft status report, it was recommended that the section on trends in abundance should be modified to reflect information available in Small et al. (1997). As for stock structure, the ASRG concluded that the available data are insufficient to define separate biological stocks of harbor seals in Alaska, but that NMFS's recognition of three management units for harbor seals in Alaska at this time is a reasonable approach for dealing with regional management concerns. It was also recognized that as more information from genetic sampling and tagging become available the current definition of stock boundaries is likely to change.

### 3. Review of Alaska killer whale stocks

Lowry asked Lance Barrett-Lennard to summarize his recent work on the genetics of killer whales in the Northeast Pacific. Barrett-Lennard noted that his analysis was based on analysis of 240 biopsy samples. In general, the pattern of genetic diversity indicated that animals referred to as residents and transients were genetically distinct and that animals referred to as the offshore type were more closely related to resident than transient animals. Graeme Ellis (DFO, Canada) pointed out that from his experience the social structure of resident and transients was quite different and the observed pattern of distinct haplotypes in each group was reasonable. Barrett-Lennard added that the diet of residents and transients was also quite distinct. However, it was also noted that at least two of the inferences from the genetic analysis were inconsistent with information on patterns of association (based on photo-identification) and underwater vocalizations. That is, one pod of resident killer whales typically found in Prince William Sound, Alaska (AD pod/clan) was genetically similar to animals referred to as southern (Puget Sound/British Columbia) residents, while another pod of resident killer whales typically from Prince William Sound, Alaska (AB pod/clan) was genetically similar to animals from the group referred to as northern (Puget Sound/British Columbia) residents.

Regarding the abundance of killer whales from northern Puget Sound to Alaska, the following table was presented by Barrett-Lennard, Matkin, and Ellis.

Table 1. Summary of abundance of killer whales in the eastern Northeast Pacific.

<i>Major Division</i>	<i>Minor Division</i>	<i>Number</i>	<i>Association Data</i>	<i>Genetics Data</i>	<i>Acoustic Data</i>
Resident	North	642	yes	no	no
	South	96	yes	no	yes
	Offshore	200	yes	yes	??
Transient	GOA	17	yes	yes	yes
	BC/Mainland	170	yes	yes	yes
	AT1	10	yes	yes	yes
Subtotal		1135			
Unclassified	W AK-res.	174			
	W AK-trans	53			
Total		1362			

Nancy Black (Moss Landing Marine Lab, CA) and Marilyn Dahlheim (Alaska Fisheries Science Center (AKC)-NMFS) commented that 105 individual killer whales photo-identified in waters off central California were linked by association to the BC/mainland transients. They further noted that a separate pod of killer whales that were photo-identified in the waters of the southern California bight were not associated with animals seen off central California. Dahlheim added that her catalog of killer whales from western Alaska included 289 animals, but given the lack of known associations of all of these animals, it was not possible to classify them as transient, resident, or offshore animals at this time. Dahlheim reported that on-going studies to match killer whales that interact with fisheries in the Southeast Bering Sea and killer whales in the western Alaska catalog were also underway and that a few matches had been made. Finally, Cyndy Tynan (University of Washington) commented that she was in the process of producing an estimate of abundance for killer whales in the Southeast Bering Sea based on sighting data collected from a cruise in July-August of 1997. This estimate should be available by early next spring.

It was clear that it was not possible at this time to determine reliable stock boundaries and

abundance estimates for stocks of killer whales in the Northeast Pacific that would be consistent with all of the available data. Further, the existing stock border in Washington should in particular be revised. For example, it was suggested that an offshore stock of killer whales should be established that would include animals of this type from California waters north to waters off British Columbia. However, it was agreed that such proposals would need to be discussed with the members of the Pacific SRG. Hill asked the ASRG for their recommendations regarding stock structure in the draft revised SAR for the Pacific and Alaska regions (i.e., northern resident, northern transient, southern resident, and CA/OR/WA [excluding Puget Sound]). After some discussion, it was recommended that the offshore group of killer whales be considered a new stock, as they were genetically distinct from resident and transient animals and had not been observed to associate with transients or residents in BC or Alaska. It was further recommended that the abundance estimates presented by Barrett-Lennard et al. should be used in the draft SAR, after consultation with Black and Dahlheim regarding possible additions. Finally, it was agreed that a stock assessment report for the offshore stock would not be produced until the 1998 revisions of the SAR and would have to be coordinated with the SWC and the Pacific SRG.

Regarding the estimate of  $R_{max}$  in the draft SAR, Olesiuk commented that he considered the observed rate of increase of northern residents (i.e., 2.6% per year) to be a more reliable estimate of  $R_{max}$  than the 4% default figure used in the SAR. He further noted that the lack of any consistent pattern in the residuals of a plot of  $\log(\text{numbers})$  versus year was consistent with a population growing at its maximum rate of increase. DeMaster commented that, while he agreed with Olesiuk's interpretation to some extent, an analysis of the statistical power of such an approach had been published using gray whale count data (Butterworth 1991) and indicated that such tests were not found to produce reliable results. Further, DeMaster commented that the status of the northern resident population relative to carrying capacity was thought to be sufficiently high that the currently observed rate of increase should be less than the maximum rate of increase for this population. There was no consensus on this point by the ASRG.

Regarding the allocation of known interactions with commercial fisheries that led to a mortality of a killer whale, it was recommended that where genetic information or other information was available to assign a particular animal to a particular stock this should be done. In the absence of such information, killer whale mortalities that could not be identified to stock

should be assigned to each of the stocks, as was done in Hill et al. (1997), as this approach was acceptably conservative.

#### 4. Review of NMFS strategic stocks

##### 4.1 Northern fur seal

Lowry asked Jason Baker (AKC-NMFS) to summarize efforts to evaluate the reliability of the currently used multiplier for converting number of pups to number of animals in the population. Baker reported that more recent estimates of juvenile survival from the late 1980s were similar to the rates reported in Lander (1981). Further, given that there were no new data on reproduction, the multiplier reported in Lander (1981), which accounted for the cessation of the harvest of subadult male fur seals, was appropriate for use in the current SAR. Based on this discussion, the ASRG recommended that the text of the status report for northern fur seals be revised to delete the statement that the estimate of abundance was conservative because of the likely negative bias in the multiplier. It was noted that the estimate of abundance was conservative because pup production from Bogoslof Island (5,096 pups counted during the most recent census in 1997) was not included. The ASRG recommended including the 1997 Bogoslof count data in the revised SAR for 1997. In addition, Ann York (AKC-NMFS) commented that the correction factor derived by Lander (1981) was likely conservative to some small degree because of their assumption that the population was stable, when at present the population seems to be slowly increasing. After some discussion, the ASRG recommended that a default value of 0.2 for the CV of abundance be used in estimating  $N_{min}$  in the absence of a reliable estimate of coefficient of variation (CV) for the multiplier.

##### 4.2 Steller sea lion (western and eastern stocks)

Regarding the status review for the western stock, it was recommended that the 1996 count data be included in the appropriate portions of the revised text (e.g., abundance, minimum abundance, and trends in abundance). Tom Loughlin (AKC-NMFS) presented the summary of recent information for Steller sea lions and noted that both the total count and the count from the index area (i.e., Kenai to Kiska) had declined between 1994 and 1996 by 7.1% and 4.6%, respectively. After some discussion, it was agreed that the estimate of  $N_{min}$  in the revised status report was sufficiently conservative.



Brix reported to the ASRG that the available data on subsistence hunting mortality for 1996 for the western stock of Steller sea lions was not considered reliable by NMFS at this time. Brendan Kelly commented that he and others have questioned the reliability of the contracted information on subsistence mortality for this species in general. He noted for example, that some of the Native subsistence hunters were uncertain as to whether the hunting of Steller sea lions in Alaska was legal. It was further noted that some of the Native hunters who had not previously hunted Steller sea lions were now hunting them because they incorrectly considered the PBR level to be a recommended quota level. There was general agreement that NMFS needed to provide additional information to the Alaska Native community regarding the status of Steller sea lions in Alaska and the legality of subsistence hunting. The ASRG recommended that NMFS focus additional efforts on improving the reliability of estimates of subsistence-related mortality.

There was no consensus among the ASRG members regarding the most appropriate value for RF for the western stock. Some members believed that a value of 0.1 was most appropriate because the stock has continued to decline and is currently listed as endangered. Others believed that the current value of 0.15 is adequately conservative because of the large number of animals in this stock relative to other populations classified as endangered.

Regarding the eastern stock of Steller sea lions, as noted previously, there was agreement to include the 1996 census information in the revised status report for this stock. Hill noted that while count data were available for estimating trends in abundance for this stock from Alaska in 1996, comparable data were not available from California, Oregon, and British Columbia. Loughlin commented that a complete census was planned for Alaska in 1998; Olesiuk commented that a companion survey was planned for British Columbia in 1998. Sease added that he believed that there were count data available from California and Oregon rookeries from 1996 and agreed to attempt to make those data available to the ASRG.

Olesiuk also noted that the multiplier used to account for the proportion of the population that were pups of the year in the revised SAR was not appropriate for application to counts of animals from British Columbia. He recommended several alternative approaches. It was recommended by the ASRG that the estimate of abundance for British Columbia be revised based on discussions with Loughlin, Sease, and Olesiuk. There was agreement to keep the RF for this

stock at 0.75.

#### 4.3 Cook Inlet stock of beluga whale

Dave Rugh (AKC-NMFS) presented a summary of a recent analysis of two decades of surveys for beluga whales in Cook Inlet. He noted that while the index count was relatively constant (at least through 1996), the distribution of animals (i.e., occupied range) in the Inlet was dramatically less in June and July in the 1990s relative to the 1970s. He also noted that the most recent count in 1997 was the lowest indexed count reported to date. DeMaster added that the current population was thought to include between 700 and 1,000 animals and that the estimated level of take in 1996 of approximately 75-150 animals would cause the population to decline by approximately 50% within the next 6-10 years.

Hild noted that several of the active beluga whale hunters lived in Anchorage, but were not from any of the local tribes. Because of this situation, comanagement agreements that required the application of village or tribal law to succeed might not prove successful in this area. Lowry asked to what population size would NMFS let this population decline prior to imposing restrictions on Native subsistence hunters. Brix responded that NMFS was hopeful regarding the efforts of comanagement agreements to resolve this issue prior to this population becoming depleted, as defined by the Marine Mammal Protection Act. She added that the recent efforts of the Cook Inlet Marine Mammal Council to limit the number of beluga whales taken per hunter to three, while not entirely successful, were encouraging. DeMaster noted that as the recent index counts typically ranged between 275 and 325 animals, index counts of below 150 would likely be required to support a proposal to list this stock as depleted under the MMPA. He added that were this stock shown to be declining or thought to be declining, based on a time series of indexed counts and due to its relative small size, the agency could propose to list this stock as endangered or threatened under the Endangered Species Act. Several ASRG members commented that this stock had been classified as a candidate species for listing under the ESA for several years.

It was also noted that the reliability of the estimate for subsistence-related mortality was difficult to evaluate because of the unknown rate of struck and lost and because of the problem of under-reporting. Brix noted that the AKR planned to continue annual monitoring of the number

of landed beluga whales in Cook Inlet. DeMaster commented that NMFS had tentatively approved support for a type of mark-recapture estimate of the number of whales landed based on an initial set of tissue samples from the hunters and a second set of tissue samples collected from the store in Anchorage that sells beluga muktuk. In this case the identification of individuals would be based on genetic analyses. This study would hopefully get underway in 1998, but would require cooperation from the Native subsistence hunters and the owner of the store. Such support would be requested by NMFS through the Cook Inlet Marine Mammal Council. After some discussion, the ASRG recommended that NMFS expand its efforts to monitor beluga whale strandings in Cook Inlet to determine what percent of these stranded animals died due to subsistence hunting. One approach would be to conduct aerial surveys in traditional hunting areas at extreme low tides and, upon finding a stranded animal, land the plane and perform field necropsies.

Lowry noted that at previous meetings the ASRG had recommended that NMFS not allow the sale of muktuk in the vicinity of Anchorage, which would require NMFS changing the current classification of Anchorage as an Alaska Native village. DeMaster responded that the AKR and the AKC had raised this issue with the NOAA General Counsel (GC) in Juneau. The response of the Juneau office of the GC was that such an action was not legally justifiable and they would not recommend NMFS undertake such an action at this time. Based on this discussion, the ASRG recommended that NMFS immediately initiate efforts to promulgate regulations to allow NMFS to require Native subsistence hunters to report all takes of beluga whales in Cook Inlet. It was noted that Congress required the FWS to develop similar regulations for the "sealing" of walrus, sea otters, and polar bears taken by Alaskan Native subsistence hunters. Given the level of concern by the ASRG for this stock, it was agreed that the Chair would draft a letter immediately after the meeting recommending that NMFS initiate efforts needed to implement this recommendation by the spring of 1998.

#### 4.4 Bering-Chukchi-Beaufort Sea stock of bowhead whale

DeMaster noted that the 1996 harvest data provided by the Alaska Eskimo Whaling Commission to NOAA were included in the text of the revised status report. No other comments were made regarding the draft stock assessment report.

#### 4.5 Northeast Pacific stock of fin whale

DeMaster noted that the National Marine Mammal Laboratory (NMML) in cooperation with the F/PR was in the process of preparing updated ESA status reviews for five species of large whales (blue, fin, humpback, right, and sperm whale). As possible, this information would be included in the draft stock assessment report for fin whales and other species of endangered whales. DeMaster added that the proposal for funding to support biopsy studies on fin whales in the vicinity of Kodiak Island was not supported by NMFS in FY98. Tynan reported observing 33 fin whales during her recent cruise on the MILLER FREEMAN, and, if possible, would estimate a density for fin whales in the Southeast Bering Sea by next spring. Finally, it was noted that NMFS is supporting a three-year study to estimate species-specific densities for cetaceans within portions of the US EEZ of Alaska. In 1997, surveys were conducted in Southeast Alaska. In 1998 and 1999 surveys will be flown in the Gulf of Alaska, and along the Aleutians and Bristol Bay, respectively. Sightings and resulting density estimates will be included in subsequent revisions to the draft status reports for the various species of large whales.

Wynne recommended, and it was subsequently adopted by the ASRG, that NMML compile all of the fin whale sightings and other data from the 1991-1993 harbor porpoise surveys, the 1997 cetacean survey, the Platforms of Opportunity database for marine mammal sightings in Alaska, and the IWC Discovery Tagging program. Sally Mizroch (AKC-NMFS) agreed to prepare a report for the ASRG by September 1998.

#### 4.6 Humpback whale (western and central North Pacific stocks)

Jan Straley summarized the new information for this species. She noted that a multi-authored report contracted by NMFS to Cascadia Research Collective to estimate abundance of humpback whales in the North Pacific was available as a draft report (note: subsequent to the ASRG meeting, this report has been finalized). In this report (Calambokidas et al. 1997), the number of humpback whales in the central stock was estimated to be approximately 4,000 animals. This estimate was based on the application of mark-recapture techniques to photographs taken between the years 1991 and 1993. While Straley (a co-author on the paper) considered the estimate acceptable, she noted the following potential sources of bias were not taken into account: 1) the database was a compilation of 16 independent research groups and was not collected for the purposes of meeting the assumptions required in mark-recapture models; 2) the

ratio of males to females on the wintering grounds was assumed to be 3 males to 1 female, whereas this ratio is not well known; and 3) the social structure (i.e., lack of independence of sightings).

After some discussion, the ASRG recommended that the estimate of 4,000 animals be used in the revised status report as the best estimate of abundance for the central stock of humpback whales. However, there was not agreement as to whether a valid estimate of current rate of increase could be derived by comparing the previous estimate of abundance for this stock reported in Hill et al. (1997) with the estimate from Calambokidas et al. (1997). Further, there was considerable discussion on whether humpback whales in Alaska should be managed (i.e., PBRs established) based on their distribution on the summer feeding grounds and not on their distribution during the winter. The ASRG recommended that at present the section on abundance for this stock should be expanded to include available estimates of abundance for the following feeding areas: Bering Sea, Kodiak, Prince William Sound, and Southeast Alaska. It was recognized that the sum of the estimates of abundance for the summer feeding grounds would be less than 4,000 animals.

Regarding the estimate of abundance reported in Calambokidas et al. (1997) for the western stock of North Pacific humpback whale, Straley noted that the estimate of approximately 400 animals was negatively biased. This was because the mark-recapture estimate of abundance was based on limited sightings on the wintering grounds and did not include any photo-identification information from the summer feeding area for this stock in the Bering Sea and the North Pacific (west of Kodiak Island). Mizroch noted that while this estimate could serve as a conservative estimate of  $N_{min}$ , photo-identification studies for the Bering Sea and western North Pacific were needed prior to generating an unbiased estimate of abundance for this stock.

Matches of animals reported on the wintering grounds with animals on the feeding grounds indicated some exchange between the animals from the western stock (as currently defined) and the central stock. Therefore, it was not clear whether mortalities observed in Southeast Alaska were actually from the central stock or from the western stock. The ASRG suggested that fishing-related mortality could be handled as was done for killer whales in the absence of tissue samples which could be used to genetically identify the appropriate stock. It

