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.

Major Division	***Minor Division***	***Number***	***Association Data***	***Genetics Data***	***Acoustic Data***
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 Rmax 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 Rmax 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(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 Nmin 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 Nmin 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 Nmin, 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

was further agreed that the draft status report for the central and western stocks of humpback whales in the North Pacific should be revised to reflect the following: 1) the distribution maps should include specific feeding areas in the North Pacific; 2) there has been little or no effort to photo-identify individual humpback whales in the western North Pacific or Bering Sea; and 3) some unknown fraction of animals from the wintering grounds in the western Pacific spend their summers feeding in areas typically utilized by animals from the central stock.

Brix noted that NMFS was planning a disentanglement workshop to develop recommendations for mitigating the entanglement of large whales (including humpback whales) in commercial fishing gear. Lowry and others noted that last year the ASRG had recommended that NMFS allow funding currently limited to actual disentanglement of large whales to include travel to disentangle large whales. It was agreed that a letter be sent to NMFS recommending this course of action be adopted as soon as possible.

4.7 North Pacific stock of right whale

Tynan summarized recent sightings information of right whales in the North Pacific. She noted that only 4 sightings were reported in a paper by Goddard et al. (In press) in the last 10 years in the Southeast Bering Sea. Those sightings occurred in water depths ranging from 50-100m. During the July-August 1997 MILLER FREEMAN cruise to the Southeast Bering Sea, Tynan reported two independent sightings of right whales during line transect surveys for cetaceans. She estimated that as many as 20 right whales may have been feeding in this area at this time. In addition to video-taping these animals for future photo-identification studies, six biopsy samples were collected. These samples were to be used to test the relatedness of these animals to right whales observed feeding in the summer in the Sea of Okhotsk. Finally, it was noted that the SWC in cooperation with NMML is intending to fly aerial surveys in the summer of 1998 to find and photograph (using a medium-format, reconnaissance camera) right whales in this area. If successful, the resulting photographs will be used to assess the size composition of the right whale population in the Southeast Bering Sea (e.g., what percent of the population is composed of calves), and whether or not the animals are sufficiently marked to use photo-identification techniques for individual recognition.

No comments were made regarding changes to the revised status report.

4.8 North Pacific stock of sperm whale

The lack of information on stock structure and abundance for this species was noted. Hill commented that in 1997 a pilot program was initiated that included a new form to the packet of existing forms for observers on commercial fishing vessels for the purpose of collecting better information on interactions between commercial long line vessels and sperm whales. To date, only five reports have been received from the observer program. All included descriptions of sperm whales in the immediate vicinity of actively fishing long line vessels. No animals were observed hooked with gear or tangled in line. Brix reported that in 1997 one vessel strike of a sperm whale was reported, but the extent of injuries could not be ascertained.

There were no specific recommended changes to the revised status report for this stock.

5. Alaska stocks of sea otter

Lowry distributed a copy of a letter from the Alaska Sea Otter Commission to the ASRG with specific recommendations for the ASRG (see appendix 4). The ASOC was concerned about the possibility of restrictions being placed on their hunting of sea otters in Alaska and that the ASRG was meeting at a time when Caleb Pungowiyi and Matt Kookesh could not participate. Further, they had presumed that the ASRG had authority to impose restrictions on the subsistence hunting of sea otters in Alaska.

There was agreement that the ASRG needed to respond in writing to the ASOC, and at a minimum the letter should clarify the role of the ASRG in advising the FWS regarding research and management issues related to sea otters in Alaska.

Regarding the status review for Alaskan sea otters, the ASRG discussed the genetics data and the stock identity report prepared by FWS and agreed that there are multiple stocks in Alaska. All ASRG members agreed that the southeast stock and the southcentral stock division is appropriate. Some ASRG members believed that the information on the stock boundary between the southcentral stock and the southwest stock was insufficient and recommended that additional genetics work be completed on the Kenai coast area to compare the genetic variability between the Kenai Coast, Prince William Sound and Kodiak.

Additional discussion focused on whether the population units established by the proposed stock boundaries were sufficiently small to adequately protect sea otters in Alaska. The ASRG approved splitting the recovery factor within the southwest stock to reflect the potential declines in part of the southwest stock (Aleutians).

Regarding the estimation of Nmin, the ASRG recommended using the uncorrected count of animals at the surface because an estimate of the variance associated with a correction factor was not available. Adkison noted his concern that in some areas the removal rate of otters was approximately 10% of the best estimate of abundance. After some discussion, it was agreed that such a rate of removal was reasonable, given that several populations of sea otters had been observed to increase at rates in excess of 20% per year.

6. Update on FWS marine mammal management and research activities

6.1 Comanagement with Alaska Natives

It was noted that an "umbrella agreement" among IPCOMM, FWS, USGS, and NMFS had been finalized in August 1997. Further, regarding species of concern to the FWS, it was recognized that most of the funding set aside in FY97 to support the comanagement process was used to support three commissions dealing with the polar bear, walrus, and sea otter. Gorbics commented that in FY97 the following activities were undertaken regarding sea otters: 1) a survey to gather traditional Native knowledge; 2) expansion of carcass surveys in the vicinity of Cordova and Sand Point; and 3) expansion of efforts to train Alaska Native residents to necropsy stranded sea otters. Gorbics added that in FY98, efforts would be made to focus comanagement support for specific projects.

6.2 Subsistence harvest monitoring

There was no discussion on this topic.

6.3 Population assessment

The following research activities will likely be undertaken in FY98: 1) polar bear surveys to determine abundance in western Alaska (i.e., the eastern Chukchi Sea), 2) surveys to determine the abundance of sea otters, either in Southeast Alaska or the central Aleutians, and 3) surveys to

determine the abundance of walrus in Bristol Bay. In addition, it was noted that the USGS was hosting a workshop on methods for determining the abundance of species such as the sea otter, walrus, and polar bear in Seattle, WA from 25-28 February 1998.

7. Update on NMFS Marine Mammal Assessment Program

7.1 Information on the distribution of commercial fisheries in Alaska

Lowry asked Wynne to lead the discussion of this topic. Wynne noted that while state fisheries use district maps for summarizing fishing effort and landings data, no such maps exist for federal fisheries. Wynne recommended that maps showing the distribution of federally managed fisheries should be compiled by NMFS and noted that Hill had made considerable progress on such a project already. Several ASRG members noted that Lowell Fritz (AKC-NMFS) had prepared maps of essential fish habitat for many species of commercially important fish and that these maps could form the basis of developing a set of maps to describe the specific area fished by a given federally-managed, commercial fishery in Alaska. After some discussion, it was noted that there was insufficient time to adequately discuss this recommendation and that this issue should be designated as one of the key issues at the next meeting of the ASRG.

On a related topic, John Gauvin challenged the notion that commercial fishermen will necessarily under-report incidental mortalities of marine mammals. He specifically recommended, and it was adopted by the ASRG, that the language in the draft NMFS SARs be changed where it references Credle et al. (1994) as support for under-reporting in general. It was noted that while this report referenced a particular study comparing logbook data and observer data prior to 1994, it was not sufficient to generalize as to the behavior of fishermen in recent years in all commercial fisheries in Alaska. Further, it was recommended that NMFS undertake a systematic evaluation of the extent to which self-reporting by fishermen under the new system may be negatively biased. Such a study should be done on a fishery-specific basis. It was also agreed that this issue of bias in self-reporting by commercial fishermen would be included as a major topic at the next meeting of the ASRG. To this end, a subgroup was established of Wynne, Matkin, and Gauvin to develop a background document or email discussion, using particular case studies as a way to proceed towards resolving this issue. DeMaster agreed to approach Vicky Cornish (F/PR-NMFS) regarding the analysis of self-reports of incidental marine mammal mortality submitted to NMFS.

7.2 Subsistence harvest monitoring

DeMaster noted that NMFS had not yet finalized its decision on whether to extend the contract for reporting on subsistence harvest levels for harbor seals and Steller sea lions in Alaska. Lowry commented that, in general, the numbers were relatively constant from year to year and added that perhaps annual monitoring was not necessary. Kelly commented that the ADFG system for collecting subsistence harvest data was good and should be continued. After some discussion, a recommendation was agreed that NMFS should continue to monitor subsistence harvests and that the transition from monitoring programs prior to comanagement agreements and after should be smooth. It was further agreed that this was an appropriate topic for an in depth discussion at the next meeting of the ASRG.

Gauvin commented that a new source of funding may be available for activities related to Alaskan marine resource management in 1998 and beyond. This would be derived from a new program of the Alaska Revenue Department, where tax credits would be authorized on a per company basis. Additional details of this program will be provided to the ASRG by Gauvin at the next meeting of the ASRG.

7.3 Comanagement with Alaska Natives

Brix reported that NMFS has signed a umbrella agreement in August 1997 with IPCOM, FWS, and USGS regarding the process of developing comanagement agreements for marine mammals in Alaska. It was noted that two separate funding panels would be established (one of Native and FWS membership, and one of Native and NMFS membership) to make recommendations regarding the allocation of funding for proposals developed by Alaska Native Organizations for the comanagement of marine mammals in Alaska. Gorbics reported that FWS expected to have available $500,000 in FY98 for such projects, while Brix reported that NMFS had requested such funding through the budget process, but that a final funding amount was still being negotiated by Congress.

7.4 Status of research and management activities in Alaska

DeMaster summarized a preliminary recommendation from a working group to F/PR regarding projects to fund in FY98 (see appendix 5). He noted that changes were likely to be made in the final spending plan prior to approval. After some discussion, the ASRG

recommended that NMML make available to it the 2-3 page proposals that NMML submitted for funding in FY98. DeMaster agreed to make such a request to his Director, and if approved, mail out the packet of proposals with the finalized minutes for this meeting of the ASRG. It was agreed that comments on these proposals or other possible research or management needs would be prepared by the ASRG and provided to the AKR and AKC prior to the next round of proposal submissions in August 1998 and future proposal submissions.

8. Summary ASRG recommendations

The following recommendations were adopted by the ASRG.

1) FWS should finalize its report on the 1994 survey for sea otters in the vicinity of Kodiak Island and in general should discontinue the practice of using the stock assessment report as the initial source for a particular piece of information. Further, a letter will be drafted from the ASRG (with Kelly taking the lead) to FWS reiterating the ASRG recommendation to only include information in the stock assessment reports, for which at least a draft report is available detailing the methods and analyses used to generate the data in question. It was agreed that at the next meeting, the ASRG should conduct a review of how consistent it had been in reviewing the NMFS status reports with regard to this recommendation.

2) FWS should finalize a decision regarding the merits of a range wide survey for walrus and report this decision to the ASRG. Gorbics agreed to summarize past ASRG recommendations concerning walrus surveys by the next meeting.

3) NMFS should expand its efforts to collect tissue samples from harbor seals for use in genetic analyses. Barb Taylor (SWFSC) should be invited to participate at the next meeting of the ASRG to present a summary of her recent work on population genetics, as it relates to harbor seals.

4) Both NMFS and FWS should consider mechanisms for managing marine mammal populations at the "small area" level, without having to make changes in the MMPA during the next reauthorization process in FY98. One approach would be to calculate a PBR-type number for subareas within the distribution of a stock.

5) Both NMFS and FWS should consider mechanisms by which stock assessment reports for all species of marine mammals in Alaska could be jointly published in a single report or compendium.

9. Schedule for finalizing the 1997 Stock Assessment Reports

DeMaster said that he anticipated a Federal Register notice announcing the availability of draft stock assessment reports for 1997 by NMFS by late December 1997. If true, the 90 day public comment period would not be over until late March 1998. He recommended that the next meeting of the ASRG should not be convened any earlier than mid-April 1998. After incorporating comments from the general public (including various commissions in Alaska) and additional comments from the ASRG, the 1997 SAR would likely be finalized sometime between July and September 1998.

10. Schedule and topics for the next meeting of the ASRG

The next meeting of the ASRG was scheduled for 2-4 June 1998 and will be held in Juneau. As last year, DeMaster agreed to provide the ASRG with a summary of public comments on the status reports for Alaskan species. The following topics will be discussed in detail at the next meeting: 1) distribution maps for federally- and state-managed commercial fisheries; 2) the accuracy of self-reporting by fishermen for estimating incidental mortality of marine mammals; 3) comments to NMML and AKR staff regarding proposals for research and management activities in FY99; 4) evaluation of FWS recommendations pertaining to range-wide surveys for walrus; 5) possible approaches to the use of small area management units in managing marine mammal populations under the existing MMPA; and 6) possible changes in the three year schedule for reviewing stocks by the ASRG.

11. Other business

DeMaster agreed to distribute a draft copy of the meeting minutes within 4 weeks. Comments should be returned to DeMaster within 2 weeks of receipt. A final set of minutes will be distributed by early January. In addition, DeMaster agreed to distribute revised minutes for the last meeting of the ASRG.

There was general agreement that the participation of the non-ASRG scientists who work

on harbor seals and killer whales greatly enhanced the quality of the discussions on these species. The ASRG thanked NMFS for its willingness to cover the travel costs of these individuals and the Canadian scientists for their willingness to participate in the meeting. At the next meeting of the ASRG, it was agreed that Gauvin would take the lead in developing a list of potential fishermen who would be willing to participate in part or all of the June 1998 meeting.

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Appendix 1. Final Agenda

Alaska Scientific Review Group Meeting

21-23 October 1997
National Marine Mammal Laboratory, Building 4
7600 Sand Point Way, NE
Seattle, WA

Purpose:

1. Initial review of revised 1997 Stock Assessment Reports for NMFS strategic stocks
2. Initial review of revised 1997 Stock Assessment Reports for FWS species
3. In depth review of Alaska harbor seal stocks
4. In depth review of Alaska killer whale stocks
5. Discussion of issues related to the stock assessment process

Materials needed:

1. Draft 1997 Stock Assessment Reports (NMFS and FWS)
2. Background documents on harbor seals, killer whales, sea otters, and strategic stocks

21 October 1997--Tuesday

8:00 am Introductory business

A. Introductions
B. Review and approve agenda
C. Minutes from May 1997 ASRG meeting
D. SRG procedures
    1. Chair for 1997-1998
    2. Potential conflicts of interest
    3. Communications with NMFS and FWS, and among SRGs
E. Other business (e.g., travel vouchers)

8:45 am Review of Alaska harbor seal stocks

12:00 pm Break for lunch

1:15 pm Review of Alaska killer whale stocks

3:30 pm Begin review of draft 1997 NMFS SARs for strategic stocks

1. Steller sea lion
2. Northern fur seal

22 October 1997--Wednesday

8:30 am Continue review of draft 1997 NMFS SARs for strategic stocks

1. Beluga, Cook Inlet
2. Bowhead whale
3. Fin whale
4. Humpback whale
5. Right whale
6. Sperm whale

12:00 pm Break for lunch

1:15 pm Complete review of draft 1997 NMFS SARs

2:30 pm Review of draft 1997 sea otter SAR

4:30 pm Update on FWS marine mammal management and research activities

1. Co-management with Alaska Natives
2. Subsistence harvest monitoring
3. Population assessments

23 October 1997-Thursday

8:30 am Update on NMFS Marine Mammal Assessment Program activities

A. Management

1. Incidental take monitoring programs
2. Subsistence harvest monitoring
3. Co-management with Alaska Natives

B. Research
   1. Population assessments
   2. Other

10:00 am SRG recommendations
   A. 1997 Stock Assessment Reports
   B. Management actions
   C. Research

11:15 am Schedule for finalization of 1997 Stock Assessment Reports

11:30 am Next SRG meeting
   A. Time and place
   B. Topics

12:00 pm Adjourn

Appendix 2. List of participants

ASRG members- Adkison, Gauvin, Hild, Hills, Kelly, Kookesh (absent), Lloyd (absent), Lowry, Mathews, Matkin, Pungowiyi (absent), Straley, and Wynne.

NMFS staff- Baker, Dahlheim, DeMaster, Hill, Loughlin, Mizroch, Rugh, Sease, Withrow, and York.

FWS staff- Carol Gorbics.

USGS staff- Jim Bodkin.

Other invited participants- Nancy Black, Lance Barrett-Lennard, Graeme Ellis, Peter Olesiuk, Cyndy Tynan, and Robin Westlake.

Appendix 3. List of background documents distributed prior to and during the meeting.

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Appendix 4. Copy of a letter from the ASOC to the ASRG.

THE ALASKA SEA OTTER COMMISSION

MEMORANDUM

October 22, 1997

TO: The Alaska Scientific Review Group through Carl Hild

FROM: Kimberly Williams, Executive Director

RE: Sea Otter Stock Assessment

The Alaska Sea Otter Commission took up the draft sea otter stock assessment for 1997 and passed the attached resolution 97-01. The Commissioner's believe it is premature to split the Alaska sea otter population into three separate stocks. They are committed through co-management to cooperate and work the US Fish and Wildlife Service to gather information regarding stock separation.

We request the Alaska Scientific Review Group take a similar position regarding stock separation.

P.O. Box 241146
Anchorage, AK 99524
907/274-9799 Phone
907/274-9022 FAX

Preserving the balance for Alaska Native people and the northern sea otter.

THE ALASKA SEA OTTER COMMISSION

RESOLUTION 97 - 01

P.O. Box 241146
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WHEREAS, the stock assessment review process was established primarily to monitor and manage for the incidental take of marine mammals in commercial fisheries;

WHEREAS, incidental take is not an issue with sea otters;

WHEREAS, the legislative history of the Marine Mammal Protection Act re-authorization amendment on the potential biological removal (pbr) and stock assessment clearly indicate that it was not the intent of the amendment to inadvertantly create management of subsistence harvest of marine mammals;

WHEREAS, sea otter conservation is not an issue or a focus of the stock assessment review (sar);

WHEREAS, the proposed stock separation as proposed by the US Fish and Wildlife Service in 1997 is based primarily on geographic separation and genetics which has not yet been reviewed and accepted by the scientific community at large;

WHEREAS, the proposed stock separation has not been reviewed and accepted by tribal bodies in the affected regions;

WHEREAS, the mandate of the Marine Mammal Protection Act for stock assessment review and update creates an unnecessary financial burden, even though, there is no commercial fishery interaction is hand;

WHEREAS, the Alaska Sea Otter Commission has six regional management plans established to monitor sea otter population and the subsistence harvest in coastal regions of Alaska;

WHEREAS, the Alaska Sea Otter Commission has focused energy and resources for the development of local management plans.

NOW THEREFORE BE IT RESOLVED, by the Commissioners of the Alaska Sea Otter Commission request the US Fish and Wildlife Service and the Alaska Scientific Review Group postpone the proposed stock separation process until adequate scientific and tribal review supports such action;

BE IT FURTHER RESOLVED, the US Fish and Wildlife Service and the Alaska Sea Otter Commission work cooperatively through the co-management

Preserving the balance for Alaska Native people and the northern sea otter.

process to seek funding and labor to conduct surveys with hunters along the affected areas where the two borders are proposed;

BE IT FURTHER RESOLVED, the US Fish and Wildlife Service and the Alaska Sea Otter Commission work cooperatively through the co-management process to seek funding and labor to conduct morphology, contaminants, nuclear deoxyribonucleic acid, and population response analysis in the affected areas,

FINALLY BE IT RESOLVED, an amended draft stock assessment with the additional information for sea otters be sent out for review under the normal guidelines as established in the Marine Mammal Protection Act.

PASSED THIS 21ST DAY OF OCTOBER, 1997.

Chair, Margaret Roberts

Attested:

Secretary, Patrick Norman

Appendix 5. Comments from F/PR2 staff on the draft 1996 Alaska Stock Assessment Reports

Alaska draft Stock Assessment Reports

General comments:
In general, refering to the SRG meeting minutes is a useful way to document statements made by the SRG, but such references can be slightly mis-leading when they appear to provide a pointer to the evidence that justifies the statement, much like a usual reference to a peer-review journal article. However, several times in this case the SRG minutes simple repeated verbatim the same sentence given in the SAR, with no further explanation. Again, it is useful to document such conclusions, but it should be done in a way that does not imply that further justification can be found in the minutes when none is there. Furthermore, when a conclusion is made with no justification or explanation, the basis for such conclusions is thus not discoverable, in the sense that a novel reader of the SARs cannot find a statement explaining the basis for certain conclusions. As an example, this happens several times in the Beluga SARs in reference to Nmin and to whether the stock is stable. Rather than stating "The Alaska SRG concluded the abundance estimate was conservative (DeMaster 1996)", which some might read to imply that an explanation exists in DeMaster (1996), it would be preferable to make a statement more like this: "After reviewing the information in reference X [or raw data Y, which is then provided in the SAR] the Alaska SRG concluded for reasons A, B, and C that the abundance estimates was conservative (DeMaster 1996)". This provides a pointer to the information on which the decision was based for the reader. If these are scientifically based conclusions, then the scientific justification should be able to be included in the SAR, especially given that these sections are often only one ore two sentences as currently written, so there is plenty of room for a few more sentences of explanation. If no explanation is written down, in the future it would be preferable for the statement to read more like "The Alaska SRG recommended that the abundance estimate be used for Nmin (DeMaster 1996). "Concluded" implies a decision was made after a discussion -- if such was the case then the nature of the discussion could be provided to inform others as to the reasoning.

Appendices 2 and 3: Alaska commercial fisheries information: These appendices are terrific. If available, it would be preferable to list the number of participants for 1995, and the number of participants & # of active permits for 1994, so the most current information on the total number of participants is provided.

Steller sea lions
For both stocks, the two corrections factors amount to a multiplier of 1.71 that is applied to the non-pup count to estimate total abundance. This is used with no CV, but such a multiplier is unlikely to be known exactly. This is contrary to the PBR guidelines. Assuming a positive CV based on comparisons to similar studies would be more reasonable than assuming it to the CV to be 0.0. The SARs refer to DeMaster 1996, where it is concluded by the SRG that the existing correction factor would be conservative because the fraction of pups in the population now is smaller. At first glance such reasoning may sound reasonable, but in our opinion it does not necessarily stand up to closer scrutiny.

Both correction factors derive from Loughlin et al. 1992, and are based on concurrent counts of pups (6871) and non-pups (18,066), and on the 4.5 times pups life-table multiplication factor of Calkins and Pitcher (1983). The factors come from:

1.331 = [(4.5*6871)-6871] / 18,066

2.63 = 18,066/6,871

1/ 2.63 = 6,871/18,066 = 0.38

Total correction = 1.331+0.38=1.71 = {[(4.5*6,871)-6,871] / 18,066} + (6,871/18,066)

Now, if pups are a smaller fraction of the population, then the 4.5 multiplier would need to be a larger number to correctly go from pups to total population size. However, at the same time under this scenario, if the non-pup count was still 18,066 for example, then less than 6,871 pups would be counted as pups are a smaller fraction of the population. Reducing the number 6,871 to a lower number lowers both individual correction factors, and thus the total correction factor will be smaller. For example, if the number of pups was only 6000, with non-pups still 18,066, then the correction factors would be 1.16 and 0.33 for a total =1.49, a 13% reduction. Therefore, the 4.5 number would increase, but the rest of the equation would decrease, and it is impossible (for us) to predict exactly whether the correction factor should be higher or lower if currently pups are a smaller fraction of the population than when the study was done. Therefore, the conclusion that the point estimate of abundance is conservative does not appear to be justified using this reasoning. Furthermore, this type of reasoning ignores possible variance in the estimate of 4.5.

If the proportion of non-pups hauled out at the time of the counts has not changed over time, then actually the correction factor for multiplying non-pups to get total population size should be smaller, as there is the same correction for non-pups that are not counted, and the correction factor for adding in pups based on a count of non-pups should be smaller as pups are a smaller fraction of the total population. Therefore, the 1.71 total multiplier should be smaller as 1.331 is assumed to be the same and the 0.38 will be smaller. In conclusion, it cannot be reasoned that 1.71 is a conservative correction factor now because it was calculated at a time when pups represented a greater fraction of the population. Furthermore, this type of reasoning where a CV of 0.0 (which is not conservative) is "traded" for another conservative factor is hard to follow, as there is no natural link between them and there is thus no reason they should exactly balance each other. Therefore, it is suggested that an appropriate CV be assumed for the corrections factors and used in estimating Nmin. It is also recommended that some consideration be given to the appropriateness of those correction factors given the apparent smaller fraction of pups in the population currently. If 1994 counts of pups and non-pups from the same areas are available, perhaps these numbers could be plugged into the same equations as a check.

Steller sea lion eastern stock

Abundance and mortality from B.C. should be included in the estimate of PBR and total human-caused mortality. The Alaska SRG agreed with this conclusion (DeMaster 1996, pg 7), but it was not implemented in the draft SAR. It is difficult to know exactly how to handle this stock. Clearly it is true that the pbr guidelines state that if the stock is thought to be non-migratory, that the abundance just in U.S. waters should be used. However, the reasoning behind this advice was based on thinking about a single border, such as U.S./Mexico, or Atlantic U.S./Canada. It was not invisioned that a stock would jump across B.C. in using abundance estimates. Because the SAR specifically states that the animals are thought to be non-migratory, this implies that animals are not likely to swim from Southeast Alaska to California to support potential fisheries takes there. Therefore, if B.C. is going to be excluded on the basis of animals not moving, then the logical conclusion would be to form separate management units for California and/or Oregon, and for S.E. Alaska. The different population trends (e.g., decline in California) provides some evidence that the sub-pops are not demographically linked. It is recognized that there may be no burning management issues that would be affected by this, and it is also recognized that issues regarding Stellers are often controversial and contentious. Nonetheless, it seems that either B.C. animals should be included in both abundance and mortality, as recommended by the AK SRG, or that S.E. Alaska should be broken into a separate management unit from California and Oregon.

Fur seal

The 4.475 multiplication factor has no CV estimated for it, so many of the same arguements apply here. An assumption should be made for the CV that is greater than the current assumption that the CV=0.0.

Killer whale, eastern North Pacific northern resident

Page 65: Include data from 1995 in Table 15.

Harbor porpoise, Bering Sea stock; Harbor seals, Gulf of Alaska stock

According to the draft SARs, Bering Sea harbor porpoise are killed in the AK Peninsula/Aleutian Islands salmon drift & set gillnet fishery, but Gulf of Alaska harbor seals are taken in the same fishery. Is this because the harbor porpoise takes occur in a different place than the harbor seal takes or should the AK Peninsula/Aleutian Islands drift & set gillnet fishery be taking from the Bering Sea harbor seal stock?

Harbor porpoise Gulf of Alaska stock

If the CV for the entire survey area estimate is 0.187, then why is the CV for just one of three areas smaller at 0.134? Usually, a sub-set of the data will result in a higher CV. Was the 0.134 calculated assuming 0.187 for each separate piece, and then pooling those variances? If so, this is not appropriate, and the 0.187 value should be used with the estimate of 2,741. Perhaps an explanation of where the 0.134 came from will make it clear. It should be understood that 0.187 is likely an underestimate of the actual variance, so using 0.187 is not completely appropriate, but is better than 0.134.

Beluga stocks

For several beluga stocks, correction factors have been used without CVs, which was specifically recommended against by the participants of the GAMMS workshop. It would be more reasonable to assume a positive value for the CV (perhaps based on CVs of similar kinds of correction factors) than to assume the value of 0.0 for the CV.

Regarding the stability of populations, it is a bit of a problem that no guidance or criteria have been provided for what represents a "stable" population. Clearly, the standard of statistical significance (i.e., not rejecting a null of no trend with data which have acceptable power to detect a trend) has not been used in the draft SARs, but this is not contrary the guidelines because no criteria is in the guidelines. However, given that there is no specific criteria for what represents stability, it makes it doubly important that the reasoning and evidence used to make the conclusion of stability be written down and explained in the SARs, as this point alone results in a doubling of the PBR. Most of the beluga SARs have handled this point in a single sentence, which seems inadequate.

Beaufort stock

Regarding stability, the SAR refers to DeMaster 1995, which refers to a Harwood et al, which can be assumed is the 1996 CJFAS 53:2262-2273 publication. Suggest updating the reference and summarizing the information, to explain basis for conclusion stock is stable or increasing.

Eastern Chukchi sea stock

Regarding Nmin, the use of a point estimate of abundance is specifically recommended against by the GAMMS workshop (see PBR guidelines pg 71), and it was agreed that a point estimate of an incomplete survey could not be assumed to be a good minimum estimate for the entire stock. Doing so fails to satisfy the mandate that there be reasonable assurance that the stock size is that great. From the SAR, it appears that the incomplete survey is the sole justification for using the point estimate. Given that it was recommended against, a strong argument should be presented for going contrary to the guidelines. The areas not surveyed where belugas are known to occur should be described and listed. The only one mentioned in the Population Size section is Kotzebue Sound. However, Frost and Lowry (1990) described a decline in sightings and harvests in Kotzebue Sound, and describe a survey in 1987 that sighted 51 animals. So these 51 sightings, perhaps extrapolated to 150, provide the basis for making the point estimate Nmin. If the true CV of the corrected abundance estimate was 0.3 (a typical number), Nmin would be 2,897, which is 813 less than the point estimate of 3,710. Therefore, in such a case, a maximum of 150 animals has been used as justification for increasing Nmin by 813. Far better would be to make a reasonable estimate of Nmin for Kasegaluk from the 3,710 estimate, making some assumption about the expected CV for the correction factors, such as by comparison to other correction factors which have estimated CVs. Then any information about minimum numbers in other areas, such as Kotezbue Sound, could be provided and added in to the total. This would be a clearer and more defensible method for calculating Nmin for this stock.

Regarding stability, the Frost *et al.* 1993 paper does make the conclusion that the number of whales has been relatively constant. However, given the importance of this conclusion (it doubles the PBR), at least a sentence or two more providing the information upon which this is based would be helpful.

Norton Sound stock

Regarding Nmin, there is no statement in DeMaster (1996) supporting the SAR statement. What can be found in DeMaster (1996) is this: "The ASRG recommended that the variance associated with the line transect should be incorporated in the estimate of Nmin." (Pg 14). Incorporating the variance is a different statement than what appears in the SAR, which is a statement saying that the .26 CV from the survey is a reasonable approximation of the total CV. Regarding this point specifically, if the 0.26 is a good CV for the survey's uncorrected estimate, how can it be a reasonable approximation of the total variance when it is known that the correction factors will make the variance larger? Additional estimated correction factors will increase the CV, so clearly the total CV should be larger than 0.26. Regarding stability, it might be clearer to state something along the lines of "...given that the abundance was estimated at 2,095 in 1992 and at 2,583 in 1995, the survey data indicate..." As far as can be determined from reading the SAR, this provides a clear statement for the basis of the conclusion that the stock is stable.

Bristol Bay stock

Regarding Nmin, again it would be more realistic to assume a CV using any similar type of correction factor study as a guideline, as recommended by the GAMMS workshop. The reference to the estimate of Nmin being preliminary should be dropped, as this qualifier has not been used for the other cases where the CV is not known, and it adds nothing here as the PBR based on that estimate is not preliminary in any sense, because it is published and is being used. The estimate may have been preliminary in the 1995 SARs, but it is still being used here in these SARs, so one can conclude that it is no longer preliminary. The current calculation assumes the CV is zero, meaning that the correction factor of greater than 3 (using both corrections) is known exactly. This seems unlikely given past experiences with the calculation of correction factors. This therefore represents a point estimate of abundance, not Nmin, and it has not been calculated in accordance with the PBR guidelines or the intent of the MMPA, which mandates reasonable assurance that the population is at least that size or greater. Regarding stability, Frost and Lowry (1990) do conclude the population is likely stable, but again it would be more informative if some of the information from Frost and Lowry was brought directly into the SAR. Without a clear criteria for what stability is, it is important that the specific basis for such a conclusion be provided for each stock considered stable.

Cook Inlet stock.

Regarding Nmin, the statement in the SAR is not explained any better by looking at DeMaster (1996), as it contains the same conclusion with no explanation. In other words, the minutes document that the ASRG concluded the estimates was conservative, but there is no information provided on how this conclusion was made. Unless some information is provided as an

explanation, the sentence should be modified to read "The Alaska SRG recommended (DeMaster 1996) that the population estimate of 981 can serve as an estimate of minimum population size." The final clause "because it is a conservative estimate of abundance" adds nothing here without some explanation or justification and implies a scientific conclusion was reached after considering relevant information. Regarding stability, the level of information provided here is good, and it would be useful to add this level of information to the other beluga SARs.