Minutes: Eighteenth Meeting of the Alaska Scientific Review Group

8-9 November 2004
Anchorage, AK

This report summarizes the 18th meeting of the Alaska Scientific Review Group (SRG). This document is intended to summarize the main points of the discussion and does not attempt to repeat everything that was said during the meeting. The revised agenda is included as Appendix 1 and the list of SRG members and observers present is provided in Appendix 2.

1) Adoption of agenda

After some discussion, modifications to the agenda were made so that the U.S. Fish and Wildlife Service's presentations would occur at 2pm on 8 November, and so that the serious injury discussion would occur prior to some SRG members' departures in the early afternoon of 9 November.

2) Adoption of minutes from November 2003 meeting

Hills asked whether there were any final comments on the minutes from the March meeting. One SRG member indicated that the header for item 10) in the November 2004 meeting should be made to more clearly describe the section. Otherwise, there were no recommended changes.

3) Administration

Travel: Angliss indicated the previous issue of failure to get prompt reimbursement for travel should have been solved, and reminded SRG members to turn in their vouchers promptly after a trip.

SRG membership: Angliss indicated this was added to the agenda because for the past few meetings the SRG members have been interested in discussing membership. Hills indicated that the SRG had questioned in recent meetings whether it would be helpful to have a representative from the Alaska Department of Fish and Game on the SRG.

Angliss pointed out that typically, the SRG adds new people to the group because they have identified is a lack of expertise on a particular topic. Adding an individual solely because they are a representative of a group opens the door to other groups asking to have a representative on the SRG. Lowry stated that Bob Small, in addition to being a representative of the ADF&G, has specific expertise that could be helpful to the SRG.

Tom Eagle indicated a NOAA staff attorney advised that the process for appointing a SRG member next time is likely to change. For the last appointments, members were simply appointed. However, next time appointments are made, the agency may follow the procedures adopted in the initial formation of the SRGs and solicit nominations from state and local governments, and the U.S. Fish and Wildlife Service, who they would like to see added to the group.

The SRG agreed to revisit membership later in the meeting.

Meeting frequency: Angliss proposed to reduce the Alaska SRG meeting frequency from two meetings to one meeting per year for the following reasons:

- Logistic problems with an early November date. Preparing SARs in September and October for an early November SRG meeting is problematic for a number of reasons. NMML staff return from conducting field work in August, and have at most 6-8 weeks to pull together information for the SARs. The September/October time period is also at the end of one government fiscal year and the beginning of the next fiscal year, and both Angliss and the NMML program leaders are busy with end-of-year closeout and new-year planning and budgeting exercises.
- Improve SRG member attendance. When two meetings are held per year, there is typically one well-attended meeting and another meeting that many SRG members miss. However, when there is only one meeting per year, most members try very hard to fit that meeting into their schedule.
- Improve chances that very recent information can be incorporated into the SARs. Sometimes, it may be important to include new information from the summer field season into that year's SARs. This information is almost never available in September or October, but is sometimes available by December or January.
- Some past SRG meetings have been "too short" and comments have been made about lack of enthusiasm (opt for one long meeting instead of two short meetings). A 3-day meeting, held once per year, will allow for both review of the content of the SARs and a more in-depth review of a topic of the SRG's choice. Combining these tasks seems to be more fulfilling for the group.

After some discussion, the SRG agreed that holding one meeting per year is acceptable. This will also be easier due to everyone's increasing commitments to other meetings. It was suggested that the next SRG meeting be held either immediately before or after the Alaska marine science meeting in Anchorage in 2006.

4) Overview of NMML's 2004 research and outlook for 2005

John Bengtson, director of the National Marine Mammal Laboratory (NMML), provided a brief overview of NMML's research in 2004 and the budget news to date for 2005.

Research updates

Alaska Ecosystem Program (AEP): Tom Gelatt has recently replaced Tom Loughlin as the Alaska Ecosystem Program leader. Steller sea lion counts conducted by the AEP in 2004 indicate that the sea lion numbers have increased in 2004 relative to 2002; staff are hopeful that this may be the end of the Steller sea lion decline and the start of stock recovery. Northern fur seals on the Pribilof Islands have continued to decline, and now show a ~6% annual decline since 1998. The 2004 pup counts are comparable to those made in 1918. Recent publications by AEP staff include a Zeppelin et al paper on forage species and a publication on northern fur seal interactions with oceanographic features in the Bering Sea (Robson et al 2004).

Polar Ecosystem Program (PEP): Peter Boveng recently replaced John Bengtson as the new Polar Ecosystem Program leader. In 2004, program staff conducted aerial surveys for harbor seals in the Aleutian Islands. Although preliminary results are still forthcoming, counts seem to be lower relative to the last survey. Program staff are conducting research on the best way to count harbor seals on glacial ice haulout sites, which are difficult to count yet make up a significant component of the harbor seal population. A study on disturbance by cruise ships in Yakutat was continued in 2004. Results to date indicate that seals go in the water when approached within 500m or less. The Minerals Management Service (MMS) is currently providing funds to the PEP to conduct research on the seasonal movements, habitat use, and haulout behavior of harbor seals in Cook Inlet in order to provide data for MMS oil spill event models. Some line transect surveys of ice seals have occurred in recent years, and NMML staff recently participated in a project to tag bearded seals in fall of 2004.

Cetacean Assessment and Ecology Program (CAEP): The SPLASH humpback whale survey and killer whale surveys occurred in the central and western Gulf of Alaska, the eastern Aleutian Islands, and the Bering Sea. During these survey, some time was dedicated to finding North Pacific right whales in the southeastern Bering Sea, and as a result of this effort, satellite tags were placed on two right whales. A few weeks after tagging, the locations of these tagged whales were communicated to staff of the Southwest Fisheries Science Center (SWFSC), who were conducting surveys nearby. This enabled the SWFSC staff to locate and biopsy up to 23 North Pacific right whales in the southern Bering Sea. Aerial surveys were flown in order to monitor the size of the Cook Inlet beluga population.

California Current Ecosystem Program: In 2004, this program evaluated the first 3 years of Steller sea lion branding data for rookeries in Oregon and California. Staff have recently determined that the growth of the California sea lion population appears to have been limited by hookworm infestation. In addition, northern fur seal pup mortality on San Miguel Island increased dramatically (50%) this year due to hookworms. Efforts for 2005 will include an expansion of the hookworm study, including a complete genetic analysis of hookworms to determine whether cross-infection between California sea lions and northern fur seals has occurred. In addition, winter satellite tracking of northern fur seals will be initiated.

NMML budget news

Bengtson reported that the Senate mark looks "good" for NMFS and that the House mark looks "not so good", and that in-house planning was going forward assuming the Senate mark would hold. Bengtson reminded the SRG that, until a budget is passed, all the funding levels discussed are hypothetical. A summary of the funding in the FY05 Senate mark relevant to the National Marine Mammal Laboratory is provided in Table 1.

Wynne questioned whether the "lumping" of the pinniped species under a single line item is meant to encourage NMFS to look at pinnipeds from an ecosystem perspective. Bengtson indicated that his impression is that the funding was lumped for administrative purposes.

Bob Small (Alaska Department of Fish and Game; ADF&G) indicated that there was report language indicating that Congress expects NMFS to be take a lead role in coordinating cooperative work on pinnipeds in Alaska. Bengtson responded that this might be an expectation, and that until the language is passed by Congress and final, it is too soon to interpret the meaning of any report language.

Table 1: Funding levels relevant to NMFS included in the Senate mark and the omnibus spending bill. At the time of the SRG meeting, the values in the Senate mark were the most current; the omnibus spending bill was passed during the development of these minutes, so the table has been updated to reflect both levels.

Budget line	**Funding level – Senate mark**	**Omnibus spending bill**
MMPA activities	\$8M	\$7.9M
Marine mammal initiative	\$12M	\$10M
Emergency health/stranding response	*\$4M*	
Permits office	*\$1M*	
Marine mammals and turtles (ESA)	\$23.6M	
Cook Inlet beluga (AKR)	\$200K	Same
Right whales (NE)	\$12M	
Bowhead whales (combination of lines)	\$1.6M	Same
Steller sea lions (ESA)	\$800K	Same
Alaska seals and sea lions (Steller sea lions, harbor seals, northern fur seals, spotted seals, bearded seals, ringed seals, and ribbon seals)	\$8.5M	Same
California sea lions/protected species management	\$800K	\$750K

Much of the funding in the Senate mark under "MMPA Activities", "Marine mammal initiative", and "Marine mammals and turtles" represents base funding being "returned" to NMFS in 2005 after unintentional reduction of NMFS protected resources base funds in 2004. However, given what is known so far, the 2005 Senate mark does represent a slight increase over funding levels in 2003. These "extra" funds will be allocated using a national process where researchers compete for funds via the preparation of brief research proposals that would be reviewed and prioritized by a national panel of NMFS staff.

Hills asked about the progress towards developing the Stock Assessment Improvement Plan for marine mammals. Eagle responded that the plan has just been completed, is now being published as a technical memorandum, and will soon be publicly available. Eagle or Angliss will provide a link to the report once it is available[1].

4) North Pacific Research Board update

John Gauvin provided a brief update on the future research direction of the North Pacific Research Board (NPRB). The NPRB appears to be emphasizing collection of ecosystem management data over fishery management issues. A recent reviews of the NPRB program will likely support the change in focus to baseline ecosystem monitoring data collection.

[1] This report can be downloaded from: http://www.nmfs.noaa.gov/pr/pdfs/sars/improvement_plan.pdf

5) Updates from the last SRG meeting

The following updates were presented on "loose ends" from the last AK SRG meeting in November 2003:

- At the last meeting, a brief summary of the GAMMS II meeting was provided by Kelly and Straley. Angliss indicated that the report of the meeting was not finished. However, Eagle has used initial meeting minutes to develop draft updated PBR guidelines that will be put out for public review and comment within the next few months[2]. Eagle indicated that the GAMMS II meeting did not result in any major changes to the PBR guidelines, but made some important clarifications regarding existing practices. Hills indicated that one important outcome of the GAMMS II meeting was the agreement that setting the PBR level to "undefined" when there is a declining population and no evidence of human-related mortality would be helpful.
- Updating the ZMRG language in the SARs is not needed because the final ZMRG definition was the same as the proposed, so the language would be identical.
- At the GAMMS II workshop, the SAR authors proposed a joint meeting to share ideas and identify inconsistencies between regions. Angliss indicated that this was a great concept, but has not yet come to pass.
- At the last SRG meeting, there was mention of some constituent interest in transferring management authority for ice seals from NMFS to the USFWS. Brix stated that at the recent meeting of the Marine Mammal Commission, Charlie Johnson made a presentation that the Nanuuq Commission's perspective is that the management of ice seals should be moved to the FWS. Brix further indicted that NMFS has recently met with the ice seal community to develop a draft co-management agreement. Lowry added that the Marine Mammal Commission's position, which was reiterated at the recent meeting, is that ice seal research and management should remain with NMFS.

6) Summary of new information on harbor seal abundance, trends, and human-related mortality levels

Angliss introduced this topic by reminding the SRG that at a previous meeting the SRG members had requested that a summary of new information on harbor seal abundance, trends, and human-related mortality levels be provided to the AK SRG. The SRG made this request of the agency in order to determine whether there have been any major changes in this information since the harbor seal SARs were last updated. Thus, the SRG could determine whether there were critical conservation issues that should be identified while awaiting the updates of the harbor seal SARs. The white paper provided by NMFS that provides updates on harbor seal abundance, trends, and human-related mortality levels is included in Appendix 3. A summary of the key parameters is provided in Table 2.

[2] Updates to the PBR guidelines were made available to the public via [70 FR 35397, 20 June 2005]

Table 2: Summary of information on abundance, trends, fishery mortality, and subsistence harvest for harbor seals of Alaska based on the stock structure as currently defined. "Old" information is the information currently included in the SARs, which was last updated in 19xx. "New" information is that compiled by NMFS in 2004 for this meeting (see Appendix 3).

Stock	Old/new	Abundance (CV)	Trend	Fishery Mortality	Subsistence Harvest
SE Alaska	Old	37,450 (0.073)	⇧ in most areas, ⇩ in Glacier Bay	31.3	1,749
	New	112,391 (0.0xx)	⇧ in most areas, ⇩ in Glacier Bay	31.3	1,345
Gulf of Alaska/ Aleutian Islands	Old	29,175 (0.052)	⇩ at Tugidak until mid-90s, then ⇧; ⇩ in PWS	35.1	791
	New	45,975 (0.0xx)	Recent ⇧ in PWS; likely ⇩ in the Aleutians	34.5	773
Bering Sea	Old	13,110 (0.062)	Stable from 1990-96	30.8	161
	New	21,651 (0.0xx)		27.8	253

Small indicated that new information shows that there was a recent increase in harbor seal counts in Prince William Sound in 2004; this is the first documented increase in this area in many years.

After some discussion, the SRG members generally agreed that there have been no major changes in fishery mortality levels or subsistence harvest levels between the last SARs and current information.

The SRG asked about plans for updating the stock structure and other information in the harbor seal SARs. Angliss reiterated that NMFS is committed to working with their comanagement partners in the Alaska Native Harbor Seal Commission (ANHSC), and that the stock structure will be updated when there is a recommendation from the comanagement committee. The SRG questioned what action would be taken if there is no recommendation from the comanagement committee in the near future; Angliss responded that the SRG agreed that, based on the summary provided by NMFS, there are no major changes in fishery related mortality levels or subsistence harvest levels that would cause immediate concern for any of the currently defined stocks. Bengtson added that there have been two recent reviews of the science behind proposed changes in harbor seal stock structure; one by the Center for Independent Experts (CIE) and one by the American Institute of Biological Sciences (AIBS). The CIE review was supported by NMFS and the AIBS review was supported by both NMFS and the ANHCS, and both reviews were conducted in order to solicit outside, unbiased scientific opinion on the stock structure issue. Now that the reviews are done and will be made available to the public soon, the comanagement committee will need to continue discussions about stock boundaries.

Lowry noted that the PBR system was designed to manage incidental take in commercial fisheries, not subsistence harvest. Because of this fact, it is not clear why NMFS is delaying the redefinition of stocks because of a co-management issue.

Bengtson stated his opinion is that PBR levels are related to subsistence harvest levels, and because they are calculated, comparing any human-related take to the PBR level is probably unavoidable. Clearly, the current information on harbor seals says that the boundaries between the 3 stocks are not biologically meaningful. In addition, it is clear that new designation of stocks will have potential impacts on subsistence harvest. Instead of moving ahead to identify new stock boundaries unilaterally, NMFS is working with their Native partners. All parties agree that it's not a fast, efficient process because the discussion about the issue has to happen with a large community. Conducting the scientific reviews shows that NMFS and their Native partners are taking deliberate steps towards resolving the stock structure issue.

Bengtson added that the agency hopes to resume deliberations about stock structure soon. There is no concrete timeline for completion of this discussion about stock structure. However, if, for instance, the conversation hasn't resumed in 2 years, frustrations at the agency will be high.

Andersen noted that he disagreed with the suggestion that the Native community should not be at the table when resource management decisions are being made. With bowhead whales, Native Alaskans told scientists that there were more bowhead whales than were being counted, and the Native Alaskans were correct. It is not appropriate to say that science should move ahead without the Native Alaskan perspective.

Lowry reiterated that there was no implication that the Native community did not belong at the table, simply that PBR levels were not designed to apply to subsistence harvest levels. There is an impression within the broader scientific community that the Native community and NMFS may negotiate an agreement on stock structure that ignores available science, and that would not be helpful for harbor seal conservation.

Matkin questioned whether there is any traditional knowledge that says the proposed harbor seal stock structure is incorrect. Andersen responded that although people have a good understanding of seasonal animal movements, they have no understanding of genetics. Because of this, people can't rush into changing management without informing the hunters in the small communities.

Andersen pointed out that the current information suggests that there may be up to 12 separate genetic groups of harbor seals. The Alaska Native community is reluctant to call these "stocks" that can be managed, like the AT1 killer whale group of 8 animals was just called a "stock". If the stock is as small as 5 animals, how can that be feasibly managed? Furthermore, it is not really possible to manage the resource, only the resource user.

Matthews responded that one concern is that if the stocks are defined inappropriately and are too big, small populations of harbor seals could go extinct. Inappropriate definitions of stocks may cause us to miss the opportunity to reverse a decline of a local population.

Mathews provided the following brief summary of the AIBS review; overall, participants seemed to feel that the review went very well. A written review will be forthcoming. Highpoints of the review were identified as follows:

- at this time, the SWFSC has 880 genetics samples of harbor seals (covering 1% of the state's population), but the distribution of samples across the state is uneven
- the charge was not to look for evolutionary differences, but for demographic differences between groups that might signify stock separation. In these cases, the dynamics of group is driven from within, not by immigration/emigration.
- Analysis used both mtDNA and nuclear DNA, the boundary rank method, and animal movement information. Using these different sources of information, they see sub-population structure at the level of ~400km
- The estimates of dispersal are ~4.5 females/year; this is high on an evolutionary level, but not high if you're looking at whether one group is demographically isolated from other groups.
- If you use a hypothesis testing approach, you'd end up with fewer groups; in the analysis being used by SWFSC, you use the data to tell you if there is a difference between groups.
- The smallest group of animals the SWFSC considered was a 50km circle around each location of sample collection.
- There were a few surprising results: animals in Glacier Bay and Kamishak Bay are genetically close, but that could be a sample size issue.
- The review process was great; it was very helpful to have a team of people from the outside to evaluate the new boundary rank method.
- Overall, Mathews commended the group from the SWFSC; they did a great job at the workshop!

The SRG members discussed concerns about harbor seals in Glacier Bay. Mathews noted that the declines in harbor seals in Glacier Bay have continued, and distributed a draft of a new paper that will be published soon. Unfortunately, funding from the National Park Service (NPS) for harbor seal studies has been eliminated, so there is concern that monitoring of this population will stop. Funding from ADF&G, NMFS, or Alaska SeaLife Center would be helpful. The elimination of the funds for harbor seals was a result of broader budget cuts at the NPS and because remaining funds were being reallocated to park maintenance in lieu of research. Unless other funds are found, Glacier Bay will next be surveyed in 2007 when NMFS does range-wide surveys in northern Southeast Alaska. The ANHSC recently contracted the ADF&G to conduct a traditional ecological knowledge study in this area. Matkin commented that Dena Matkin has been seeing fewer killer whale kills of harbor seals, and more kills of harbor porpoise in this area in recent years.

Hills noted that at this time the SRG has not made any formal comments on the O'Corry-Crowe et al. report. The SRG should decide whether we want to comment on the report, endorse the concept of working through the comanagement process, and/or say something about the decline in Glacier Bay.

Matkin asked what the timeframe is for receiving comanagement recommendations. Kaja Brix responded that now that the independent reviews will be in hand soon, and the agency needs to

meet with the comanagers and jointly establish a timeline for making recommendations. Typically, the comanagers meet in early spring.

Gauvin noted it was interesting that genetics alone didn't drive the boundary information used to separate groups of harbor seals. Mathews responded that the genetic information was strongly corroborated with movement information and animal distribution. Gauvin stated that the subsistence hunters would be a great group to define boundaries between groups of seals because of their knowledge of animal movements.

In response to a question from Gauvin about using a hypothesis-testing approach for identifying stocks of harbor seals, Brix responded that the SWFSC tried this approach and found that the results were biased because hypothesis testing requires first identifying groups of seals to compare to each other. The boundary rank method avoids this problem completely. The SWFSC is now using a "weight of evidence" approach to identifying harbor seal stock boundaries: all parties can now look at maps with a variety of information (genetics, movements, distribution) and determine where it would be most sensible to draw boundaries

Andersen noted that he was involved with the harbor seal genetics issue early on; his impression was that the genetics would identify families of seals, and then that family would be designated as a stock. He pointed out that families are not communities; the latter is made of many families. He recommended looking at animals' movements, trends in abundance, and incorporate traditional ecological knowledge. He further stressed that the co-management committee should work within the comanagement process, be patient, and the committee will up with an answer that everyone can agree on.

Lowry pointed out that the last time harbor seal stock structure came up at an SRG meeting, the SRG recommended that NMFS should use the best available information to identify stocks. It is not clear whether the SRG can say much more than that. However, the SRG should point out that the clock is ticking and NMFS has a responsibility to correctly identify stocks. Matkin reiterated this statement.

Angliss indicated that once the CIE and AIBS reports are completed, they will be made publicly available. Lowry recommended that the SRG table the harbor seal stock structure issue until those reports are available.

After a brief discussion, the SRG recommended that the existing SARs be updated with the new information presented by Angliss on harbor seal abundance and mortality levels.

Small added that there is some new information on trends in the Aleutians; based on past information, they think that there is a 70-70% decline in the region west to Seguam Pass.

An SRG member questioned whether it would be helpful to review the interagency harbor seal research plan. Brix questioned whether there is a need for an overall program review for harbor seal research, and noted that the new harbor seal program coordinator is considering this action.

7) U.S. Fish and Wildlife Service stocks

Progress towards completing a range-wide survey of walrus

Marc Webber provided a summary of the progress made in 2004 towards conducting a range-wide walrus survey. In 2004, the USFWS:

- Made several thermal scanner upgrades that will provide better resolution, incorporate a different cooling system, and have better data storage. Due to these upgrades, thermal scanner flights can now be effectively conducted from 7000m. A 2nd lower-flying plane will be required to take aerial photographs.
- Collaborated with the Russians to learn about techniques they use to do thermal imaging of harp seals.

The following provides the timeline/plan for completing a walrus survey:

- 2002 – meet at Lake Baikal to discuss methods with Russian colleagues; conduct a thermal imagery pilot study
- 2003 – meet in Anchorage and Greensboro to further discuss methods; conduct a thermal imagery test survey, conduct transmitter tests on land
- 2004 – meet at Murmansk to discuss methods, coordination; test survey analysis, modify/upgrade thermal scanner, test transmitters on the ice
- Next steps -- need a Russia test survey, testing of the new scanner and survey design. Also need to develop and test the new revised satellite-linked transmitter.

Sometime in the next few years, these steps will result in attaining the long-term goal of achieving a joint US-Russia satellite tracking project, and concurrent US and Russia thermal imagery surveys.

Remotely deployed satellite tags for walrus

Chad Jay provided a summary of the USFWS' recent success in remotely deploying satellite tags on walrus. This method must be perfected because in order to correct for animals not captured in the thermal imagery system an estimate of the number of animals in the water must be determined. Initially, satellite tags were attached to walrus tusks, but this proved to be a time consuming method that involved sedating the animals. The USFWS started to use remotely-deployed tags in 2002; testing in 2002 and 2003 indicated that the tag retention time was too short. In 2004, the USFWS tried 3 different tag designs and different delivery systems, including both a crossbow and an airgun. The work benefited greatly from close collaboration with Mads Peter Heide-Jorgenson's tag engineers. There were some differences in tag retention between tags, but it is clear that the tagging efforts are on the right track.

In addition to collecting important information on tag retention, the satellite tags also collected some information on walrus behavior and movements. Tags were deployed in the Nunivak Island in the spring of 2004; tagged walrus moved from Nunivak to the Bering Strait within 4 weeks. During storm events, all tagged walrus were in the water. Both the wide movements and the influence of weather on the walrus behavior have implications for future aerial surveys.

Statistical design of the Pacific walrus survey

Mark Udevitz provided a summary of the procedure and statistical design of the Pacific walrus survey. The survey will be conducted during the spring. Satellite tags will be deployed throughout the study area. The study area will be partitioned into blocks, and a sample of transects will be flown in each block. In order to groundtruth the thermal imagery system, a sample of groups detected with the thermal system will also be photographed.

Population estimation will be accomplished using basic line transect methods. Expected regression parameters include the numbers of walruses per detected group, numbers of hauled-out walruses per block, and the total number of walruses per block. Based on a simulation of a survey that covers 930,000km^2 , in order to achieve an abundance estimate with a standard error of < 0.2, preliminary information indicates that they will need to have deployed satellite tags on 20 walrus per region, there should be photographs of 60 walrus groups, and 30% of the total available transects must be surveyed.

Update on Alaska sea otters

Doug Burn noted that the USFWS last published SARs for sea otters in August 2003. Since then, the Southeast Alaska stock has been surveyed; once the surveys were corrected for diving otters, the abundance estimate was ~9,000 animals. Because the previous surveys used different methods, it is not clear whether this represents an increase or decrease. However, there does not appear to be any evidence of range expansion in Southeast Alaska in the past decades. The areas around Yakutat will be surveyed in 2005.

The abundance of otters in the Kenai Fjords area has not changed much since 1989; the population appears to be relatively stable at approximately 25,000 otters.

The Southwest Alaska stock was proposed for listing as "threatened" under the ESA (69 FR 6600; 11 February 2004). There was a 6 month comment period, 6 public meetings, and 1 hearing; the USFWS received 7000 public comments but only 75 unique comments. The FWS is now preparing a final rule. Based on recent surveys, the southwest population has declined an additional 50-63% from 2001-2004. However, this decline is not consistent throughout the range; surveys of the Kodiak archipelago indicated that the area had not continued to decline in recent years. A cause of the decline has not been identified.

The USFWS recently held a meeting in Seward with other sea otter researchers to discuss the monitoring of the sea otter population.

Eagle questioned whether critical habitat had been identified for sea otters. Burn responded that critical habitat had not yet been determined, and would probably be "undeterminable" at this time.

Bob Small noted that ADF&G surveys have seen many otters just to the south of Cook Inlet along the north shore of Shelikof Strait; the population in this area may be increasing.
Gauvin asked for clarification that all animals in the southeast population are reintroduced from other parts of Alaska. Burn replied that this was the case. Gauvin then asked how a reintroduced

population can be considered a distinct population segment (DPS). Burn responded that in order to be considered a DPS, the population has to be both discrete and significant. Despite the fact that there is genetic similarity between sea otters in the southeast and southwest of Alaska, the "discreteness" argument still stands.

Rosa Meehan indicated that the USFWS SARs will be updated in the next round. New draft SARs will be presented to the Alaska SRG at their FY06 meeting. Meehan stated that, in 2006, the USFWS would like to jointly publish the NMFS and FWS SARs. Eagle responded that this is a good idea, and that Meehan/Angliss should coordinate regarding timelines for completing draft and final documents.

7) Reviews of individual Stock Assessment Reports

Northern fur seals

Hills questioned the use of a 3 year moving average instead of the most recent survey year when calculating the minimum population abundance. Angliss indicated that this approach was used in the past and has been raised as a concern by the SRG at previous meetings. However, the approach in the SARs has been changed as of the draft 2005 SARs, and the most recent survey is now being used to calculate the minimum population abundance and the PBR level.

Gauvin pointed out that due to their small body size relative to the size of leading meshes in groundfish trawls, the chance that a fur seal would show up in the sampled catch of a groundfish tow seems low. Hence, catch may not be a good indicator of potential interaction with a trawl.

SRG members recommended that the table presenting the counts be modified to make it clear that some estimates include counts of some sites made in previous years. The SRG also recommended that the percent of observer coverage be included in the SAR, and that a statement indicating how observer coverage is measured (e.g., number of hauls observed, proportion of total weight of catch observed, etc.) be added to the SAR.

Some SRG members questioned whether it is appropriate to calculate a PBR level given that the population is declining and PBR levels were not designed for setting thresholds for management of declining species.

Donna Willoya (Alaska Sea Otter and Steller Sea Lion Commission) commented that the Zavadil et al. reports on the subsistence harvest should be cited separately in the northern fur seal SARs in lieu of using the Fall et al. reference. Combining the estimates is not appropriate because the methods used to collect the harvest data are different. Angliss thanked Willoya for the comment, and mentioned that NMFS had also received a public comment on this issue. She indicated that the SAR will be updated this year to reflect the Zavadil et al. information.

Steller sea lions, western stock

SRG members questioned why the SAR for the eastern Steller sea lion stock includes animals in Canada, but the SAR for the western Steller sea lion stock does not include Russia. One SRG member pointed out that recent genetic analyses by J. Bickham has identified an Asian stock of Steller sea lions; if this is accepted by NMFS, it would be a good argument for not adding Russian animals to the western Steller sea lion stock. Angliss indicated that she would ask NMML staff about the rationale for including Canada, but not Russia, in the existing SARs.

Mathews noted that the new Steller sea lion rookery at Graves Rocks outside Glacier Bay is being colonized by breeding females from the western stock. Lowry thinks this result is based on SWFSC genetics studies.

Barrett-Lennard commented that a PBR level should not be calculated for the western Steller sea lion stock because it is not possible to remove animals from that population and not cause a further decline. In addition, the cause of the decline is unknown. Angliss pointed out that if the PBR level is "undefined", then there is no threshold to which we can compare fishery take. Eagle added that, although we need the number for procedural reasons, we also know that in some cases the number has no biological meaning. Thus, one option would be to include a PBR level, then follow up with a statement that the number is not biologically meaningful.

The SRG suggested that PBR level of "undefined" might also be given to northern fur seals and perhaps harbor seals.

The SRG commented that the abundance for the two Steller sea lion stocks is calculated slightly differently in the two SARs, and asked that Angliss find out why this was the case.

Steller sea lions, eastern stock

Angliss asked where information could be found on the Grave's Rock rookery, and noted that this information was not included in the SARs at this time. An SRG member indicted that the information on the sea lions now using the rookery is new and unpublished.

The SRG noted that an important issue is how new rookeries should be added to both the surveys conducted by NMML and the SAR.

Spotted seals

The SRG recommended that subsistence harvest information should be collected in an organized way, and that NMFS should work with the ice seal working group to make this happen. Andersen commented that the ice seal working group is not getting organized as quickly as they should. At the last meeting, each region represented by the working group identified their priorities. The Bethel region has had trouble organizing.

Mike Simpkins (Marine Mammal Commission) asked whether there is any concern about the levels of harvest of ice seals, and questioned whether it would be possible to back calculate the population size that would have to be present before there was a problem with the level of harvest. Lowry responded that this calculation used to be included in the SARs, but was recently

removed. If the current ice seal abundances are as high as some previous investigators had estimated (e.g., Burns), there would be no problem with the current levels of harvest. Lowry stated that the SRG should consider sending NMFS a letter that identifies the needs for ice seal research and monitoring and that emphasizes the need to work with the ice seal committee.

Andersen stated that he feels strongly that the subsistence harvest monitoring efforts should be driven by the subsistence harvest community.

Simpkins noted that there were a few new abundance estimates for some ice seal species that should be added to the SARs. SRG members asked that a "habitat concerns" section be added to each ice seal SAR.

The SRG noted concern that the current draft SARs state that ice seals are not strategic essentially because NMFS lacks sufficient information to determine whether or not the species are strategic. Tom Eagle noted that in recent years, the Marine Mammal Commission's comments on the draft SARs suggested the same concern. It is not clear how NMFS should handle this problem. Some SRG members suggested that the following statement be struck from the SARs: "However due to a lack of information suggesting subsistence hunting is adversely affecting this stock and because of the minimal interactions between spotted seals and any U.S. commercial fishery, the Alaska stock of [insert ice seal species] is not classified as a strategic stock."

Anderson indicated that it might be possible to determine whether the harvest is having an impact on the stocks be measuring hunter effort. However, hunter effort goes up and down, so that might be a bad approach. He further noted that village elders have not noticed any changes in harvesting of ice seals; the harvest just depends on ice conditions and weather conditions, like it always has. He pointed out that different ice seal species are important to different villages, for different reasons.

Lowry asked what would be the first priority for research on ice seals. He indicated that Ross Schaeffer had stated clearly at a previous meeting that we need to know how many there are, what their reproductive rates are, and how many are being killed.

Mathews questioned whether of the four species of ice seals there one species that is likely to be more susceptible to climate change. Lowry noted that you could ask for people's opinions on this topic, but responses would not be based on evidence. Hypothetically, Lowry's opinion would be that ringed seals would be especially sensitive because they are evolved to live in and on ice year round. In contrast, spotted seals spend part of the time hauled out on land so may be a little more flexible.

Simpkins noted that we currently know nothing about stock structure of ice seals, and cannot assume that the ice seal populations are panmictic. Eagle followed with the observation that when additional research is conducted on the genetics of a marine mammal population, we almost always find structure at a scale below the full population.

Straley asked whether there is any data on Russian subsistence harvest or fishery take of ice seals. Lowry responded that ice seal subsistence harvest data was not provided at the recent US-Russia meeting. His impression is that the current harvest level is 1/10 or less of what it used to be.

Brix recommended that each SAR include a statement about what we do not know about a stock. Angliss indicated that this has been recommended in the past, and that it has not been implemented because it is reasonably straightforward to review the SARs and the summary tables and see what is not known. Wynne added that the SARs already do a good job of identifying where we don't have information in particular sections for each SAR. Eagle pointed out that the SARs are supposed to be summaries of the status of the stocks, and that it would be fair to charge the SRG with the task of identifying data gaps and research needs for each stock.

Hills questioned whether it would be useful for the SRG to make a concerted effort to identify data gaps at the next SRG meeting. Straley indicated that a discussion of data gaps for ice seals would be best accomplished if Lori Quakenbush and the ice seal working group were in attendance.

Gauvin noted some significant differences between stock assessments for marine mammals and those for fish stocks. From a "fisheries" perspective, the data on ice seals are so spotty that it would not be useful to put the information into an "assessment" (i.e., – the data are so poor that no "assessment" is really possible). Gauvin asked whether it was possible to not develop ice seal assessments until there is sufficient data to make it a useful document.

Barrett-Lennard asked whether the SARs have to be stand-alone documents. Given that there is much repetition in each of the ice seal SARs, it might be helpful to clump stocks for which little information is available. Simpkins responded that the 4 ice seal species are really quite different, and that lumping them into a species complex is not a good option.

The SRG had a general discussion about the issue of lack of funding for ice seals. Eagle noted that from a NMFS perspective, they have to ask whether ice seals are sufficiently important to divert funds away from other priorities, such as beluga whales or monk seals.

Andersen stated that the role of the ice seal working group is to identify the information needs for ice seals, not figure out how the information needs get funded. In addition, the Nanuuq Commission and the Eskimo Walrus Commission should be recognized for initiating work on the ice seal issues. The SRG is welcome to provide input on what the research needs are, and the ice seal working group should be allowed to do their business.

The SRG recommended that one sentence be added to the Status of Stocks section that indicates that no information on status is available, and that the ice seal working group is working to identify research priorities.

Bearded seals

The SRG had no specific comments on the bearded seal SAR.

Ringed seals

Simpkins indicated that the SAR should mention that shorefast ice is a really important habitat for ringed seals.

Ribbon seals

The SRG had no specific comments on the ribbon seal SAR.

Beluga whales – Beaufort stock

The SRG had no specific comments on the SAR for the Beaufort Sea stock of beluga whales.

Beluga whales – eastern Chukchi Sea stock

Lowry noted that he would distribute a series of papers on beluga whales for use in the SARs. Essentially, there is a very poor abundance estimate for this stock because the animals are very difficult to find. Because past aerial surveys have not provided good abundance estimates, it is very unlikely that there will be further aerial surveys. It might be useful to try genetic mark-recapture estimates instead.

The SRG recommended that, for each stock of belugas, the SAR should only reflect the most recent 5 years of harvest data.

Simpkins questioned whether there is concern that the recent harvest exceeded PBR levels. Lowry indicated that, because the harvest levels are variable, it is preferable to use a 5-year average for the subsistence take estimate. This variability happens because subsistence hunter success is very dependent on weather, animal availability, etc.

Beluga whale - eastern Bering Sea stock

Although beluga whales harvested by subsistence hunters are reported to the Alaska Beluga Whale Committee, knowledgeable SRG members were confident that not every beluga harvested in the eastern Bering Sea is reported. In addition, beluga whales in the eastern Bering Sea are being incidentally taken in commercial fisheries and some of those are reported as subsistence takes, but others may not be reported.

Beluga whales - Bristol Bay

The SRG had no specific comments on the SAR for the Bristol Bay stock of beluga whales.

Beluga whales – Cook Inlet

One SRG member questioned whether Cook Inlet beluga whales are the only beluga whales that strand en masse. Lowry responded that as far as is known is the case.

Barrett-Lennard pointed out that the PBR level is suspect for Cook Inlet beluga whales. The population abundance is clearly low, and there is no reason to think the population has increased. The agency is not using the most conservative recovery factor. It might be appropriate to call the PBR level undefined given the low abundance and lack of recovery.

Mathews and Lowry stated that this issue has come up at the SRG many times before, and that the SRG should reiterate that the recovery factor is wrong in a letter to NMFS.

One SRG member recommended that the habitat concerns section should identify specific projects that have the potential to impact Cook Inlet beluga whales in the "habitat concerns" section. Further, the SAR should indicate that a conservation plan is under development.

Brix announced that NMFS has decided to conduct an ESA status review for Cook Inlet beluga. There is no timeline for the task yet. The Alaska Region needs to identify the process, identify responsible parties, and will then come up with a timeline. The AKR decided to pursue the status review because NMFS now has 5 years of data in hand that shows lack of population recovery.

Danielle Savarese (Alaska Native Harbor Seal Commission) noted that there have been rumors of interest in harvesting beluga in Yakutat Bay.

Killer whales, northern resident stock

The SRG noted that the recovery factor for this stock was proposed as 0.4 and recommended that the recovery factor be listed as 0.5 instead due to listing under Canada's Species at Risk Act (SARA).

Killer whales, Alaska residents

Matkin noted that there may be some double counting between NGOS & NMFS in the abundance estimate for this stock. At this time, NGOS has documented 600 animals in the eastern Aleutians that may overlap with the 499 animals that NMML has documented. At some point, it will be necessary to reconcile resident photographs between NGOS and NMML. This is planned for winter of 2005. Instead of postponing the SAR, it would be best to add a disclaimer that overlap may exist and commit to update the SAR next year once the reconciliation has occurred.

Angliss indicated that new information on genetics indicates that the Alaska resident stock may actually consist of two stocks, but the information was insufficient to support another stock split for the 2005 draft SARs.

Matthews pointed out that the Zerbini et al. study clearly shows that the line transect approach underestimates the population size of killer whales and asked whether NMML will focus on photo-identification or line transect in future studies. Matkin responded that NMML has been conducting line transects for a variety of reasons, not just abundance of killer whales. Wade is

now focusing more on mark-recapture estimates using the photo-identification data. It is still important to use the Zerbini et al. reference in the SARs because it shows that all the methods used to estimate abundance are resulting in similar estimates.

Barrett-Lennard pointed out that Zerbini et al. uses two different methods for estimating group size: initial group size and post-encounter group size. Initial group size is used in the calculation for estimating the abundance of residents and post-encounter group size is used in the calculation for estimating the abundance of transients. The justification for choosing one approach over another was questionable. One approach is most conservative, the other approach is most accurate, but choosing between the two approaches based on which is most conservative is odd.

AT1 killer whale stock

Gauvin questioned why NOAA Fisheries would even identify such a small stock of killer whales. Angliss responded that a variety of information, including association patterns, genetics, and vocal repertoire clearly indicate that this group of animals fits the definition of a stock.

Killer whale, west coast transient

Straley noted that there is some significant data missing from this SAR. Dena Matkin provides their data to Graeme Ellis; Marilyn Dahlheim also has transient data. There is a need to reconcile the photographs between the two catalogs.

Humpback whales, western

Straley recommended that Angliss include the Witteveen et al paper on humpback whales in the Shumagin Islands area. Matkin questioned again why 10% should not be used as the Rmax. Straley responded that the SRG had recommended the 7% instead of 10% because it resulted from a study designed specifically to estimate rate of increase for the humpback population.

8) Alaska Marine Mammal Observer Program

Bridget Mansfield provided an overview of the Alaska Marine Mammal Observer Program. This program is currently funded at a level that allows an observer program to be implemented for one commercial fishery per year. To date, the AKR has implemented an observer program for the Cook Inlet set and drift gillnet fisheries, and has conducted one year of observations of the Kodiak salmon drift gillnet fishery. Because there are so many category II fisheries in Alaska, it will take a long time (> 20 years at current funding levels) to conduct an observer program on each of the fisheries.

In 2004, the AKR set up a new contract that will allow increased flexibility for future observer programs. The contract was awarded to Saltwater Inc. and MRag Americas. The contractors will handle the 2nd year of a 2-year observer program at Kodiak.

The first year of the Kodiak set gillnet fishery observer program (2002) was complicated by the fact that a portion of the fishery did not open. Because of this closure, the observer program

achieved 7% observer coverage in the open fishery. However, in 2005, the AKR expects to get ~3% observer coverage (observer coverage is measured as the percent of time that the nets were in the water and were being observed). In 2002, there were 2 observed harbor porpoise mortalities.

Mansfield stated that the AKR is interested in the SRG's opinion regarding the priority for the next observer program. Fisheries of concern include the Prince William Sound salmon drift gillnet, the Southeast Alaska salmon drift gillnet and purse seine fisheries, and the Yakutat salmon drift gillnet.

Wynne noted that the SRG had previously made a recommendation to observe the Cook Inlet, Kodiak and Southeast Alaska fisheries, and it is good to see that the AKR has followed this recommendation. The Bristol Bay drift gillnet fishery should also be observed, but based on a feasibility study done in 1993, Wynne found that it would be very hard to observe that fishery. Matkin asked what need would there be to have an observer program in Bristol Bay. Wynne indicated that there are documented takes of harbor seals, harbor porpoise, and beluga whales in that fishery. Mansfield added that there is also self-reported take information for that fishery that clearly indicates that mortalities occur incidental to the fishery. Andersen noted that the Alaska Board of Fisheries has recently made some major changes to the fishery in Bristol Bay that might have caused recent changes in the level of marine mammal take.

Mansfield noted that there will also be some logistical problems with observing fisheries in Southeast Alaska due to the large number of ports that vessels use. It seems likely that they may be able to observe both the Southeast Alaska salmon purse seine and gillnet fisheries in the same year.

Gauvin noted that because of the large number of pot gear interactions in Southeast Alaska, it would be interesting to get better information on entanglements of large whales in pot gear. Mansfield responded that using an observer to try to see entanglements in pot gear would be incredibly difficult because the fishing effort is very high and entanglement may occur when the vessel is not in the area where the gear is set. In addition, when entangled whales are seen it is difficult to determine if the pot gear was set for crab or shrimp, or is commercial or recreational.

One attendee commented that millions of dollars have been put into reducing North Atlantic right whale takes via Take Reduction Teams, and questioned whether there were any management recommendations from those efforts that could be implemented in Alaska. Straley noted that the gear modifications have not helped; Lowry commented that some of the gear modifications that would have helped have not been implemented.

Straley commented that vertical lines in the water are the most common source of entanglement of humpbacks; however, it is not possible to classify fisheries based on this information because we don't get enough information on takes in this kind of gear. Straley followed by indicating that the fisheries of concern are the gillnets in Yakutat and Southeast Alaska, and generally the presence of vertical lines in the water. Straley recommended that the agency not put resources towards observing purse seine fisheries.

Mansfield stated that the AKR has a contract with Brian Manly to determine the appropriate observer coverage levels for all Category II fisheries; this analysis should be available in June.

Matthews commented that Janet Doroughty is looking at scarring on humpback whales. Straley added that preliminary data show that ~58% of humpback whales have entanglement scars in SEAK, so it is clear that many animals have been entangled and have survived. Angliss indicated that the percent entangled does not provide an indication of the likelihood that an animal will survive a specific entanglement event, and that this type of analysis does not seem to be being pursued.

Gauvin questioned why the AKR was placing the observer in a skiff instead of in the fishing vessel for the Kodiak set gillnet observer program. He pointed out that, in a paper by Merkelin/Wynne, the fishermen were willing to take observers on their vessel and were willing to conduct "normal" operations, so it was not clear why the observer was on a nearby skiff in lieu of on the vessel. Mansfield replied that for the Kodiak fishery the fishing vessels are very small and they agreed with the fishing community that it would be better to observe from skiffs; the AKR wouldn't necessarily use remote skiffs when looking at another fishery. Gauvin also commented that it would be useful in general if the observers would make suggestions for how marine mammal takes could be reduced.

Matkin questioned whether the SRG should recommend pursuing an observer program for a fishery other than the SE AK salmon gillnet fishery. Lowry recommended observing the Bristol Bay salmon gillnet fishery; he indicated that his opinion is that there are harbor porpoise and beluga whale incidental takes in this fishery.

The SRG & attendees had a discussion about proactive management of fisheries to reduce marine mammal takes in lieu of implementing observer programs. Brix, Mansfield, and Eagle indicated support for the concept, but indicated that there is resistance to regulating fisheries unless there are data in hand to support the fact that the fishery is having a substantial impact on some marine mammal population. Observer programs are often the best way to get those data. Lowry commented that he liked the concept of being revolutionary and focusing on mitigation instead of observing kills, but this would essentially throw out the whole PBR scheme which is not necessarily a good thing to do.

Barrett-Lennard and other SRG members suggested ways of collecting better data on entanglement rates that NOAA Fisheries might pursue:

- Survey fisherman who are getting out of the industry to get a candid idea of take rates.
- In BC, if you lose your net due to an entanglement, you can make an insurance claim; thus, querying insurance companies may provide information on entanglement losses.
- Use information on take rates from government research fishing boats.
- Beach surveys have been used on the Atlantic coast to get an initial estimate of the number of marine mammals killed incidental to a fishery, and might be a very useful way of estimating bycatch rates in fisheries such as the Bristol Bay salmon gillnet fisheries. One SRG member pointed out that a carcass survey would likely find carcasses, but this would not necessarily help identify the responsible fishery.

Wynne asked why it is important to observe the salmon fishery in Yakutat Bay. Brix responded that there is a decline in harbor seals in Yakutat and the agency is interested in determining the cause of the decline.

Hills asked whether there were clear criteria for selecting which fishery should be observed after the Southeast gillnet fishery. Eagle/Mansfield indicated that the national observer program is working on a long-term plan for observing fisheries, but the plan is in draft form at present and it will be some time before the plan provides guidance.

Hills summarized the discussion as follows:

- If the observer program is to continue as it stands, it should observe the Southeast salmon gillnet fishery next, followed by the Yakutat salmon gillnet fishery
- Given that one of the major causes of problems with humpbacks is vertical lines in the water, NMFS should try to get a better handle on entanglement in vertical lines in some way other than observing pot fisheries.
- NMFS should look into using proactive means to reduce takes.

Barrett-Lennard indicated that entanglements are a rare event, and it might be helpful to close some areas to fishing during periods of peak animal abundance. Straley noted that, in New England, they've identified some areas where right whales occur frequently and these areas are subject to more stringent regulations. Angliss pointed out that the situation for North Atlantic right whales is particularly dire and that these management approaches might be more acceptable for North Atlantic right whales than for other marine mammal species. Gauvin commented that, when areas are closed, the effort simply moves elsewhere. However, Gauvin would prefer to use available resources to help solve a take problem than use the funds to confirm that a small take rate exists.

Saverese questioned whether fishermen have to mark their pot gear. Brix responded that technically buoys do have to be marked, but that this often doesn't happen.

Hills recommended that the AK observer program should be on the agenda for the next SRG meeting.

9) Report from the Serious Injury Subcommittee of the AK SRG

In 2003, in response to concerns the Alaska SRG had about how NMFS determined whether an injury to a whale should be considered "serious" or "not serious", a subcommittee of the Alaska SRG was formed to review a table of humpback whale injuries and assess whether each injury should be considered "serious". A report of this subcommittee was provided to NMFS and is attached as an appendix to these minutes. Wynne provided the following summary to the group.

The subcommittee consisted of five reviewers with over 100 years of expertise in studying large whales; some reviewers had specific training in disentanglement of large whales. The subcommittee progressed through three different collections of data: first, the subcommittee had the table of injuries provided in the SAR; second, the subcommittee was provided with a table from the AKR that provided additional information on many of the injuries; and third, the

subcommittee was provided with the original data reports on each injury. The subcommittee assessed whether each injury would likely result in the death of the animal using two sets of information: the basic information provided in the SAR and the original data sheets. For each assessment, each subcommittee member made an independent judgment about whether each injury would likely result in the death of the animal.

The lack of agreement about whether an injury would likely result in death was remarkable. In 86% of the cases, at least one member disagreed about the likely outcome of that injury. In addition, in 80% of the cases, at least one member of the subcommittee felt the outcome could not reasonably be determined.

The subcommittee identified the following details that would be necessary in order to determine the severity of an entanglement event:

- was the whale released completely?
- how much gear was left on the whale, what type of gear, and where was the gear located?
- what was the extent of injuries?
- what was the condition of the animal when it was last seen?
- what was the behavior of whale? was the whale's mobility impaired?

The subcommittee pointed out some problems with the concept of making a dichotomous decision that is restricted to "serious" and "not serious" injury. First, some animals have been severely injured, but not lethally injured, for example, gray whales that are missing their flukes. Second, a dichotomous decision implies a level of certainty that is not warranted given current knowledge of mortality rates.

The subcommittee identified the following sources of subjectivity:

- original input (observer subjectivity)
- distillation of original information into tables and reports
  -- there were some discrepancies between the SAR table and the information provided in the AKR table
  -- there were some discrepancies in the AKR table between "condition" and "outcome"
- subjectivity at the review level when determining whether a particular incident is "serious"

The subcommittee made the following recommendations:

1) minimize individual subjectivity by having standardized information recorded at the time of event
2) if a review panel or person is to base a decision about serious injury based on a table of information on entanglements, the table should include more information than provided in the SARs through the 2004 version; ideally, the raw data (incident reports) would be used instead of a summary to determine whether an injury was serious or not
3) establish better criteria for determining the likely outcome of an entanglement or collision
4) seek consensus of a group of experts on whether each incident is likely to lead to mortality

Finally, the subcommittee concluded that determining the probable outcome of a large whale entanglement/collision event will remain subjective until empirical data on mortality/survival-following-entanglement rates are reported and used to develop clear determination criteria.

Eagle noted that he hears the group identify several problems with the current process:

1) a consistent format for reporting entanglements would be helpful
2) compiling data available and see if you can get anything out of the information
3) the agency developed guidelines a long time ago, but an official definition of serious injury was delayed; this is now causing problems for the SARs
4) if there is a whale entangled, what is the probability that you're going to see it in the first case?

Angliss noted that she offered to make funds available to support an analysis in 2004 if information in hand could be used to determine the probability of mortality of an entangled animal. Straley talked to New England large whale researchers and they said that the outcome of an entanglement cannot yet be predicted using their data. Although scarring studies have been done, there are no attempts to predict the likelihood of mortality using the photo-identification data.

A few suggestions were made in order to improve the data collected on entangled whales. Lowry commented that one approach could be to tag the whales that are entangled to find out if they die in the near future. Wynne suggested that samples of the gear be collected to help confirm the type of gear. Matthews suggested that every effort be made to get photographs of the whale, the gear, flukes, etc. Straley suggested that a logbook of forms be provided so people record entanglement information in a structured, consistent manner. Mansfield asked about the source of most entanglement reports; Brix indicated that most reports were called in by recreational boaters. Because of this, it is not clear that using agency resources to create a logbook would be helpful.

Several members of the SRG were supportive of assigning probabilities of mortality (e.g. a 50% chance it will die) to each injury in lieu of making a dichotomous decision about whether an injury is serious or not. Angliss indicated discomfort with this approach because it is not consistent with the statute, which requires that a "serious"/"not serious" call be made and because there are no data available to validate a probabilistic approach.

Hills summarized that there are four main issues that must be addressed:

- Data gathering: what information should be collected in order to make the serious/not serious call more accurate?
- Criteria for "serious injury": what criteria should be used to determine the severity of an injury?
- Categorization scheme: should a dichotomous scheme (serious/not serious) or probabilistic scheme be used?
- How should this information be incorporated in the SARs: what information should be presented in the SARs and how should the information be used in management of fisheries?

10) List of Fisheries

Angliss provided a brief presentation on the planned changes to the List of Fisheries (LOF) which are likely to be proposed in December 2004. The LOF is published annually, and categorizes all U.S. commercial fisheries into Categories I, II, or III based on their level of incidental serious injury/mortality of marine mammals. Fisheries placed into Category I or II must carry an observer if requested by NMFS and must register with NMFS (although this is typically via existing fishing licensing/permitting system), and a Take Reduction Team may be convened to develop a plan to reduce the marine mammal incidental takes in the fishery.

Until recently, the commercial fisheries in Alaska were defined by geographic area and target species complex (e.g. Bering Sea/Aleutian Islands groundfish trawl), despite the fact that gear is used in different seasons and different ways to target different species. Recently, in response to a public comment on the 2003 List of Fisheries, NMFS redefined the Alaska fisheries to specify target species (Table 3) and to better determine what component of the fishery is responsible for incidental mortalities or serious injuries of marine mammals.

Table 3: Old and new definitions of Alaska groundfish and shellfish fisheries in the List of Fisheries.

Old fishery: BS/AI groundfish trawl	**Old fishery: GOA groundfish longline**
New fisheries:	**New fisheries:**
• BS/AI pollock trawl	• GOA sablefish hook & line
• BS/AI Pacific cod trawl	• GOA Pacific cod hook & line
• BS/AI flatfish trawl	• GOA flatfish hook & line
• BS/AI Atka mackerel trawl	• GOA rockfish hook & line
Old fishery: GOA groundfish trawl	**Old fishery: GOA finfish pot**
New fisheries:	**New fisheries:**
• GOA pollock trawl	• Aleutian Is sablefish pot
• GOA Pacific cod trawl	• Bering Sea sablefish pot
• GOA rockfish trawl	• BS/AI Pacific cod pot
• GOA other trawl	• GOA Pacific cod pot
Old fishery: BS/AI groundfish longline	**Old fishery: AK crustacean pot**
New fisheries:	**New fisheries:**
• BS/AI sablefish hook & line	• SE shrimp pot
• BS/AI Pacific cod hook & line	• SE crab pot
• BS/AI turbot hook & line	• GOA crab pot
• BS/AI halibut hook & line	• BS crab pot
• BS/AI rockfish hook & line	

The fisheries as defined using the "old" system of geography and target species complex were all in Category III in the List of Fisheries, although data indicated that some fisheries fit the definition of Category II. Based on initial data analysis using the new fishery definitions, many of the fisheries in Table xx have marine mammal serious injury/mortality levels that are not sufficient to justify a change in category. However, the BS/AI turbot hook and line, BS/AI pollock trawl, and BS/AI flatfish trawl have levels of serious injury and mortality of a few stocks

of marine mammals that are sufficiently high that the fisheries to fit the definition of Category II. At the time of the SRG meeting, Angliss anticipated that this proposed change would go forward in the proposed List of Fisheries for 2005.

The pot fisheries of Alaska also fit the definition of Category II based on serious injury/mortality levels of humpback whales. However, the majority of the entanglement records supporting this change are serious injuries, not mortalities. Because the Alaska SRG has indicated concern about the guidelines for determining serious injury, because these guidelines are likely to change in the near future, and because it is not known which pot fisheries are causing the entanglements, the agency is likely to not go forward with a proposed change in category for these fisheries in the 2005 proposed LOF.

Barrett-Lennard suggested that there should be acknowledgement that all fisheries that use vertical lines pose entanglement risk to whales and all of these fisheries should have to incorporate gear modifications.

The SRG members had questions about how observer coverage is calculated in groundfish fisheries and how target species is determined. Angliss was not sure at the time, as she had just received the report from the analyst immediately before the SRG meeting[3].

Lowry commented that he supported the concept of separating the fisheries by target species.

Gauvin and Hills indicated that the fishing community is concerned that NMFS is double-counting takes of killer whales from different stocks because we do not know the stock identification of a killer whale taken in a fishery. Angliss responded that the agency is not counting a single animal two times, instead, NMFS assesses the impact of a mortality if the mortality was from one stock or another stock. The SRG recommended that NMFS get as many genetics samples as possible from marine mammals that come up in fishing nets to ensure that we can better assign takes to the correct stock. Angliss indicated that genetic analyses for some of the animals taken in the fisheries was under way, and may be available in 2005.

11) Schedule for next meeting

Angliss proposed that the Alaska SRG modify it's schedule from two meetings per year, to one meeting per year. This was proposed for the following reasons:

- NMFS has significant logistic problems with meeting in November because SAR preparation and meeting preparation overlaps with the change from one fiscal year to another. This period is typically a very busy time for the NMFS staff who prepare the SARs.
- SRG members have increasingly busy schedules, and one meeting/year is easier to attend than two meetings/year.

[3] Observer effort is calculated as the percent of observed biomass. Target species is determined by using the Alaska Region's Catch Accounting System; a full description of the logic rules used to determine target species is found in Perez (2005; in prep – made available to SRG members electronically after the SRG meeting).

- Having one meeting per year in the early spring (e.g. February), will greatly improve the chance that research results from the previous field season can be incorporated in the SARs.
- Some past SRG meetings have been "too short", and comments have been made about the lack of enthusiasm at some meetings.

The SRG agreed that they should switch to meeting once per year in the spring in lieu of twice per year.

The SRG noted that there were some SARs that were not distributed for comment prior to this meeting, and other SARs which were distributed but still require updates. These SARs will still have to be addressed early in 2005 prior to publication as a draft document. Angliss recommended that the SARs be finished, distributed to the SRG, and discussed during a conference call in spring 2005. The SRG agreed that this was a reasonable approach, and suggested that, since most SRG members would be in Anchorage for the 2006 Alaska Marine Science Meeting, that might be a good time to hold a SRG meeting.

In addition to discussing final changes to the draft SARs for 2005, the SRG members identified the following issues that might require discussion:

- update on the ice seal comanagement meeting scheduled for early 2005
- additional information on how the agency will approach the serious injury issue
- additional information about an observer program plan

12) Membership

Angliss asked whether there needed to be follow up on the membership issue. The SRG noted that they had decided at a previous meeting that SRG members who have been on the group since it's inception should be offered a chance to step down, and recommended that Angliss send letters. If current members elect to leave, the SRG will then consider whether there are gaps in expertise that need to be filled.

13) Assignments and products

Hills identified the following assignments:

- Matkin and Barrett-Lennard would provide further assistance with the killer whale SARs
- The existing serious injury subcommittee would recommend a new approach to defining serious injury that would be probabilistic instead of dichotomous
- Anderson and Lowry would draft a letter on ice seals to send to NMFS
- The SRG would draft a letter to the FWS to commend them on their walrus research
- The SRG would draft a letter to NMFS with a series of recommendations, including
  -- Harbor seal stock structure should be updated based on scientific evidence; urge that the existing harbor seal stocks be updated with new information and a timeline be identified for when the new stocks will be identified; harbor seals in Glacier Bay are in a severe decline and NMFS should support research on these animals.
  -- NMFS should reconsider whether the 4.5 expansion factor is appropriate for northern fur seals.

-- More specific information on habitat concerns/implications of development should be added to the Cook Inlet beluga SAR.
-- The AKR should develop a long term plan for their observer program.
-- NMFS should collect better information from marine mammals killed incidental to commercial fisheries so that marine mammals can be assigned to the appropriate stock.
-- NMFS should convene a meeting to review and revise the serious injury guidelines.
-- NMFS should clarify that it is inappropriate to have a PBR level for any declining stock.

The SRG requested that links for the Marine Mammal Stock Assessment Improvement Plan, the harbor seal genetics reviews, and the Perez (2004) technical memoranda be provided. In addition, Hills requested that Angliss provide copies of the last few letters sent to NMFS by the Alaska SRG.

14) Appendices

Appendix 1: Agenda

DRAFT AGENDA – Alaska SRG Meeting

8-9 November 2004
Anchorage, Alaska

1) Adoption of agenda

2) Adoption of minutes from November 2003 meeting

3) Administration
Travel
Membership

4) Introductions

5) Update on NMML research funding in FY04 and plans for FY05

6) FWS walrus updates
-- Satellite tag design (Jay)
-- Effort calculations (Udevitz)
-- US/Russia collaborations (Webber)

7) Harbor seal update
Summary of abundance, trends in abundance, and mortality levels
Discussion about SRG's comments on O'Corry Crowe et al admin report:
http://swfsc.nmfs.noaa.gov/prd/genetics/harborseal.htm
Status of peer review of harbor seal genetics studies

8) SAR updates for NMFS species in 2005 (given that many of these were reviewed in depth in 2004, few new updates were added for 2005, and we only have a 2-day meeting, I'd recommend focusing the verbal discussion on those stocks identified with an * and limiting comments on other SARs to written comments)

*Steller sea lion, western
*Steller sea lion, eastern
*Northern fur seal
* Spotted seal, AK
* Bearded seal, AK
* Ringed seal, AK
* Ribbon seal, AK
* Beluga whale, Cook Inlet
* Beluga whale, Beaufort Sea
* Beluga whale, eastern Chukchi Sea
* Beluga whale, Bristol Bay

* Killer whale, ENP northern resident (likely separated into new stocks; schedule for Nov 9)
* Killer whale, ENP transient (likely separated into new stocks; schedule for Nov 9)
Sperm whale, North Pacific
* Gray whale, ENP
Fin whale
Humpback whale, both stocks
Bowhead whale
North Pacific right whale
Blue whale

9) Alaska observer program update (schedule for Nov 9)

10) Update on serious injury determinations and definitions

Appendix 2: Attendees

SRG members

Name	
Ralph Anderson	
Lance Barrett-Lennard	
John Gauvin	
Sue Hills	(chair)
Charlie Johnson	
Lloyd Lowry	
Craig Matkin	
Beth Matthews	
Jan Straley	
Robyn Angliss	(executive secretary)

Non-members

Name	**Affiliation**	**Email**
John Bengtson	NMFS, NMML	John.l.bengtson@noaa.gov
Kaja Brix	NMFS, AKR	Kaja.brix@noaa.gov
Doug Burn	USFWS, Marine Mammals Management	
Tom Eagle	NMFS, F/PR	
Tony Fischbach	USGS – Alaska Science Center	
Charlie Hamilton	USFWS – Marine Mammals Management	
Rosa Meehan	USFWS – Marine Mammals Management	
Monica Riedel	ANHSC	monicariedel@gci.net
Danielle Savarese	ANHCS	Danielle.savarese@harborsealcommission.org
Mike Simpkins	U.S. Marine Mammal Commission	msimpkins@mmc.gov
Bob Small	ADF&G	Bob_small@fishgame.state.ak.us
Rex Snyder		Rex.snyder@nanuuq.info
Mark Udevitz	USGS – Alaska Science Center	
Marc Webber	USFWS, Marine Mammals Management	Marc_webber@fws.gov
Donna Willoya	ASOSSLC	Dwilloya@gci.net

Appendix 3: Summary of abundance and human-related mortality information for Alaska harbor seals

SUMMARY OF INFORMATION ON ALASKA HARBOR SEAL ABUNDANCE, TRENDS, AND HUMAN-RELATED MORTALITY LEVELS

STATEWIDE ABUNDANCE

The National Marine Mammal Laboratory (Alaska Fisheries Science Center) conducted aerial surveys of harbor seals across the entire range of harbor seals in Alaska. Each of five survey regions was surveyed between 1996 - 2000, with one region surveyed per year. To derive an accurate estimate of population size from these surveys, a method was developed to address the influence of external conditions on the number of seals hauled out on shore, and counted, during the surveys. Many factors influence the propensity of seals to haul out, including tides, weather, time of day, and date in the seals' annual life history cycle. A statistical model defining the relationship between these factors and the number of seals hauled out was developed for each survey region. Based on those models, the survey counts for each year were adjusted to the number of seals that would have been ashore during a hypothetical survey conducted under ideal conditions for hauling out (Boveng et al. 2003). In a separate analysis of marked seals, a similar statistical model was used to estimate the proportion of seals that were hauled out under those ideal conditions (Simpkins et al. 2003). The results from these two analyses were combined for each region to estimate the population size of harbor seals in Alaska (Table 1). The current statewide population estimate for Alaskan harbor seals is 180,017. This estimate, however, is believed to be low because it is based on incomplete coverage of terrestrial sites in Prince William Sound and of glacial sites in the Gulf of Alaska and the Southeast Alaska regions. These problems have been addressed in the current survey (2001-2005). Prince William Sound was surveyed completely in 2001, and new methods have been developed and used for surveying glacial sites in 2001 - 2002. Analyses are currently underway, and a manuscript describing the regional and statewide population estimates is in preparation; the analytical methods have been described in the two referenced papers and have been presented at the 14th Biennial Conference on the Biology of Marine Mammals.

Table 1: Provisional regional and statewide population estimates for Alaskan harbor seals (subject to revision as part of analyses that are currently underway).

Survey Region	**Survey Year**	**Updated population estimate**	**Abundance estimate included in 1998 SARs**
SE Alaska, southern part	1998	79,937	37,450 (0.073) Based on 1993 surveys
SE Alaska, northern part	1997	32,454	
Gulf of Alaska	1996	35,982	29,175 (0.052) Based on a 1994 count for the Aleutians and a 1996 survey for the Gulf of Alaska
Aleutians	1999	9,993	
Bristol Bay (Bering Sea stock)	2000	21,651	13,110 (0.062) Based on 1995 surveys
Total		180,017	79,735

INFORMATION ON TRENDS IN ABUNDANCE AND HUMAN-RELATED MORTALITY LEVELS

SOUTHEAST ALASKA STOCK

Trend in abundance

Information on trends in abundance are available for harbor seal trend sites near Ketchikan, Sitka, and in Glacier Bay. Based on counts near Ketchikan between 1983-98, abundance has increased 7.4% (95% CI: 6.1-8.7; significant; Small et al. 2003). Counts near Sitka failed to show a significant trend either between 1984-2001 or 1995-01 (Small et al. 2003). Information from Glacier Bay indicates a sharp overall decline of 25-48% in harbor seal abundance from 1992-98 (Mathews and Pendleton 2000; find current reference).

Annual human-caused mortality and serious injury

Fisheries information

While there are many fisheries that overlap with the range of the Southeast Alaska stock of harbor seals, few of these fisheries are observed, and the few observed fisheries are observed at a very low rate of coverage. The previous SAR reported that there was one serious injury or mortality of a harbor seal incidental to the Gulf of Alaska groundfish longline between 1990-96, resulting in a total estimated take of 20, and an average estimated take of 4 animals per year: no serious injuries or mortalities occurred in this fishery between 1999-03. Levels of self-reported serious injuries and mortalities were at least 3.75/year for the southeast Alaska salmon drift gillnet and at least 27.5/year for the Yakutat salmon set gillnet. The total minimum annual incidental mortality rate for the Southeast Alaska harbor seal stock is at least 31.3/year.

Table 2: Summary of incidental mortality and serious injury of harbor seals (Bering Sea stock) due to commercial fisheries from 1990-03 and calculation of the minimum annual mortality rates.

Fishery name	Years	Data type	Level of observer coverage	Observed mortality	Estimated mortality	Mean annual mortality
Southeast Alaska salmon drift gillnet	1990-2003	Self reports		8, 1, 4, 2 1994-2003: n/a	n/a	[≥ 3.75]
Yakutat salmon set gillnet	1990-2003	Self reports		0, 18, 31, 61 1994-2003: n/a	n/a	[≥ 27.5]
Minimum total annual mortality						31.25

Subsistence harvest information

The Alaska Native subsistence harvest of harbor seals has been estimated by the Alaska Native Harbor Seal Commission (ANHSC) and the Alaska Department of Fish and Game (ADFG). The previous SAR reported that the estimated average harvest of the Southeast Alaska stock of harbor seals for 1994-1996 was 1,749 animals per year (including struck and lost). Recent information from the ANHSC and ADFG indicates the average harvest level from 1998-02, including struck and lost, was 1,345 harbor seals per year

Other mortality

The previous SAR noted that illegal intentional killing of harbor seals is known to occur, although the magnitude is unknown; no reference was provided for this statement. The Alaska Region stranding records from 1998-2002 document up to 5 reports of stranded harbor seals found shot. Because intentional shooting of marine mammals is illegal except for subsistence purposes, these harbor seals are assumed to be subsistence animals that were "struck and lost" and reported in the subsistence harvest section of this document. There have been no successful prosecutions of individuals shooting at or wounding harbor seals in Alaska for the past 5 years (double check with F/EN).

The Alaska Region stranding records document one Southeast Alaska harbor seal was killed by a collision between 1998-2003. One Southeast Alaska harbor seal was entangled in a hatchery seine net and released without injury.

GULF OF ALASKA STOCK

Trend in abundance

There are trend counts available from two areas inhabitated by the Gulf of Alaska stock of harbor seals: Kodiak and Prince William Sound. Trend counts from Kodiak documented a significant increase of 6.6%/year (95% CI: 5.3-8.0; Small et al 2003) over the period 1993-01, which was the first documented increase in harbor seals in the Gulf of Alaska. Harbor seals on Tugidak Island (SW of Kodiak) had declined 21%/year from 1976-78, and 7%/year from 1978-98 (Pitcher 1990). Frost et al. (1999) reported a 63% in Prince William Sound from 1984-97; more recent information on trends in this area is not available.

Annual human-caused mortality and serious injury

Fisheries information

While there are many fisheries that overlap with the range of the Southeast Alaska stock of harbor seals, few of these fisheries are observed. The previous SAR reported that there were infrequent serious injuries and mortalities of harbor seals incidental to the Gulf of Alaska groundfish trawl fishery and the Gulf of Alaska finfish pot fishery between 1990-96. These fisheries did not incur any serious injuries or mortalities of harbor seals from 1999-03. Old observer data for the Alaska Peninsula/Aleutian Islands salmon drift gillet documented no mortalities of harbor seals; the Prince William Sound salmon drift gillnet observer program in 1990-91 resulted in an average serious injury and mortality level of 24/year. Self-reported

serious injuries and mortalities occurred in several gillnet and one purse seine fishery from1990-94; no additional reports have been received since 1995.

Two fisheries that occur within the range of harbor seals have been observed recently: the Kodiak drift gillnet fishery and the Cook Inlet set and drift gillnet fishery. No harbor seals were documented as seriously injured or killed in either fishery. At this time, the best estimate of mortality incidental to commercial fishing is 34.5.

Table 3: Summary of incidental mortality and serious injury of harbor seals (Bering Sea stock) due to commercial fisheries from 1990-03 and calculation of the minimum annual mortality rates.

Fishery name	**Years**	**Data type**	**Level of observer coverage**	**Observed mortality**	**Estimated mortality**	**Mean annual mortality**
Prince William Sound salmon drift gillnet	90-91	Obs data	4-5%	2, 1	36, 12	24 (CV = 0.50)
Alaska Peninsula/Aleutian Islands salmon drift gillnet	90	obs data	4%	0	0	0
Cook Inlet salmon set gillnet		Obs data		0	0	0
Cook Inlet salmon drift gillnet		Obs data		0	0	0
Prince William Sound salmon set gillnet	90-96	self reports	n/a	0, 0, 0, 1 1995-03: n/a		≥ 0.25
Kodiak salmon set gillnet	90-96	self reports	n/a	3, 0, 0, 0 1995-03: n/a		≥ 0.75
Alaska salmon purse seine (except for Southeast)	90-96	self reports	n/a	0, 0, 0, 2 1995-03: n/a		≥ 0.5
Alaska Peninsula/Aleutian Is salmon drift	90-96	self reports	n/a	9, 2, 12, 5 1995-03: n/a		≥ 7.0

gillnet						
Unknown Gulf of Alaska fishery	1992-96	Stranding data	n/a	0, 0, 0, 0, 1		≥ 0.2
Minimum total annual mortality						32.7

Subsistence harvest information

The Alaska Native subsistence harvest of harbor seals was estimated by the Alaska Department of Fish and Game. The previous SAR reported that the estimated average harvest of the Gulf of Alaska stock of harbor seals for 1994-1996 was 791 animals per year (including struck and lost). Recent information from the ADF&G indicates the average harvest level from 1998-02, including struck and lost, was 773 harbor seals per year

Other mortality

The previous SAR noted that illegal intentional killing of harbor seals is known to occur, although the magnitude is unknown; no reference was provided for this statement. The Alaska Region stranding records from 1998-2002 document up to 3 reports of stranded harbor seals found shot in the Gulf of Alaska. Because intentional shooting of marine mammals is illegal except for subsistence purposes, these harbor seals are assumed to be subsistence animals that were "struck and lost" and reported in the subsistence harvest section of this document. There have been no successful prosecutions of individuals shooting at or wounding harbor seals in Alaska for the past 5 years (double check with F/EN).

The Alaska Region stranding records document one Gulf of Alaska harbor seal was killed by a collision, and one was killed by massive blunt trauma between 1998-2003.

BERING SEA STOCK

Trend in abundance

Trend counts have been conducted in Bristol Bay only between 1998-01. During this period, counts indicated a non-significant trend of -1.3% (95% CI: -5.9-3.3; Small et al. 2003). Calculation trends in abundance in this area is somewhat problematic due to the presence of a sympatric species, spotted seals, which may overlap the range of harbor seals but cannot be identified as a different species by aerial surveys.

Annual human-caused mortality and serious injury

Fisheries information

The previous SAR for harbor seals indicated that there were three observed commercial fisheries that operated within the range of the Bering Sea stock of harbor seals. As of 2003, changes in how fisheries are defined in the List of Fisheries has resulted in separating these fisheries into XX fisheries based on both gear type and target species. This change does not represent a change in fishing effort, but provides managers with better information on the component of each fishery that is responsible for the incidental serious injury or mortality of marine mammal stocks in Alaska.

The previous SAR for the Bering Sea stock documented mortalities of harbor seals in the Bering Sea/Aleutian Island groundfish trawl, the Bering Sea/Aleutian Island groundfish longline, and the Bering Sea/Aleutian Island finfish pot fisheries. The minimum total annual mortality level due to incidental mortality and serious injury in commercial fisheries for the period 1990-96 was estimated at 30.75.

Observer programs in several fisheries have documented mortalities or serious injuries in the Bering Sea/Aleutian Islands flatfish trawl, the Bering Sea/Aleutian Islands pollock trawl, and the Bering Sea/Aleutian Islands Pacific cod trawl (Table 2). Over the last 5 years, there were no observed serious injuries or mortalities of harbor seals in any Bering Sea/Aleutian Islands groundfish longline fisheries, or any Bering Sea/Aleutian Islands finfish pot fisheries. Additional self-reported information from the early 1990s indicates that the level of serious injury and mortality for the Bristol Bay drift gillnet fishery greatly exceeded the level of mortality in the more offshore, observed fisheries. The minimum total annual level of incidental mortality and serious injury for the period 1999-2003 was 27.78.

Table 4: Summary of incidental mortality and serious injury of harbor seals (Bering Sea stock) due to commercial fisheries from 1990-03 and calculation of the minimum annual mortality rates.

Fishery name	**Years**	**Data type**	**Level of observer coverage**	**Observed mortality**	**Estimated mortality**	**Mean annual mortality**
BSAI flatfish trawl	1999 2000 2001 2002 2003	Obs	62.2	0 1 0 0 0	0 1 0 0 0	0.26 (0.20 - 0.51)
BSAI pollock trawl	1999 2000 2001 2002 2003	Obs	78.9	1 0 0 0 0	2 0 0 0 0	0.37 (0.20 - 0.86)
BSAI Pacific cod trawl	1999 2000 2001 2002 2003	Obs	44.5	0 0 0 0 1	0 0 0 0 2	0.40 (0.20 - 0.95)
Bristol Bay salmon drift gillnet	1990-2003	Self reports		38, 23, 2, 42 1994-2003: n/a	n/a	[≥ 26.25]
Bristol Bay salmon set gillnet	1990-2003	Self reports		0, 0, 1, 1 1994-2003:n/a	n/a	[≥ 0.5]
Minimum total annual mortality						27.8

Subsistence harvest information

The Alaska Native subsistence harvest of harbor seals was estimated by the Alaska Department of Fish and Game. The previous SAR reported that the estimated average harvest of the Bering Sea stock of harbor seals for 1994-1996 was 161 animals per year (including struck and lost). Recent information from the ADF&G indicates the average harvest level from 1998-02, including struck and lost, was 253 animals per year

Other mortality

The previous SAR noted that illegal intentional killing of harbor seals is known to occur, although the magnitude is unknown; no reference was provided for this statement. The Alaska Region stranding records from 1998-2002 document 2-3 reports of stranded harbor seals found shot in Bristol Bay. Because intentional shooting of marine mammals is illegal except for subsistence purposes, these harbor seals are assumed to be subsistence animals that were "struck and lost" and reported in the subsistence harvest section of this document. There have been no successful prosecutions of individuals shooting at or wounding harbor seals in Alaska for the past 5 years (double check with F/EN).

References

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Simpkins, M. A., D. E. Withrow, J. C. Cesarone and P. L. Boveng. 2003. Stability in the proportion of harbor seals hauled out under locally ideal conditions. Marine Mammal Science 19(4):791-805.

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Appendix 4: Report of the subcommittee on serious injuries to large whales

Report from the Serious Injury Subcommittee of the Alaska Scientific Review Group

Kate Wynne, Jan Straley, Craig Matkin, Lloyd Lowry, and Sue Hills
March 2003

Background

The Alaska Scientific Review Group (AKSRG) was asked by National Marine Fisheries Service (NMFS) staff to review a table of humpback whale entanglements planned for inclusion in the 2004 Alaska Stock Assessment Report ("SAR Table"). For each event, the group was asked to determine those events that would result in "Serious Injury or Death" and those that would not. No category was provided for outcomes that "Cannot Be Determined" and no place was provided to list "Criteria Used" in making the determination. Divergent responses were submitted which raised issues for discussion at the November 2003 meeting. SRG members raised concerns that, while dichotomous outcome determinations (Will *vs* Won't Die) are ideally suited for MMPA implementation, they were difficult to make based on the data provided. Several sources of uncertainty and interpretational discrepancies were discussed that led to differences among SRG responses. Given the management implications of this ambiguity, the ASRG suggested that the definition and determination of lethal entanglement should be a NMFS priority, warranting a joint discussion among SRGs and formal advice to NMFS.

To address this issue, AKSRG formed a subcommittee to provide more detailed response to NMFS regarding "Serious Injury" determinations. The subcommittee included five experienced Alaskan marine mammalogists (the authors), three of whom have received NMFS training in whale disentanglement assessment and response. The subcommittee agreed to reassess the outcome of humpback whale entanglement events in the "SAR Table" and identify the criteria they used to determine which events likely represented lethal interactions. For each entanglement, subcommittee members listed the anticipated outcome in three categories (Will Likely Die, Won't Likely Die, or Could Not Be Determined) and often listed criteria used to make their determination.

While doing this, the subcommittee encountered inconsistencies in information provided in the SAR Table that could alter their outcome determinations. The subcommittee requested clarification from NMFS staff and received a more detailed NMFS database ("Table 14") plus a sample of an original incident report. To evaluate how influential this additional information was on outcome determinations, three subcommittee members completed the exercise twice, once using information from the "SAR Table" and a second time with additional information provided in "Table 14".

Results

Committee members reviewed 46 events involving humpback whale entanglement or collision with vessels. Members independently assessed whether the event would likely result in the whale's death or if inadequate information was provided upon which to base an assessment. These assessments were then compiled into a

single table with committee member initials used to denote individual determinations (Table 1).

At least one member disagreed about the outcome of a whale entanglement or collision in 38 of 46 (82.6%) cases presented. Of the 8 (17.4%) entanglement events on which the committee agreed, two were cases where the whale “Will Likely Die”, five were cases where the whale “Won’t Likely Die”, and the outcome of one case “Could Not Be Determined”. In 15 (32.6%) cases, there were directly opposing opinions about how lethal the interaction was; in 12 (80%) of these cases, this involved a sole dissenting opinion (which was cast by each member at least once).

In 37 of 46 (80.4%) events, at least one subcommittee member felt the outcome could not be determined from the information provided. In 10 (21.7%) events, three members agreed that not enough information was provided from which to determine the outcome of the interaction.

Additional information on entanglement circumstances was provided for some but not all events in ‘Table 14’. Three subcommittee members provided “before and after” determinations of likely event outcome. If their response changed with added information, a superscript was used to denote their determination made before (1) and after (2) reviewing additional information (Table 1). Additional information led to changes in the outcome determination made by this subgroup in some but not all cases and the direction of change was inconsistent. With additional information, the outcome was changed to “Will Likely Die” ten times, “Won’t Likely Die” thirteen times, and “Can’t Tell” thirteen times (Table 2).

Committee members commented that their inability to determine an event’s outcome was most often due to a lack of details in the summaries provided. In particular, the group repeatedly cited the following details as critical for determining event severity but often found lacking in the details provided:

Was the whale released completely?
How much gear was left on whale, type, and where?
What was extent of injuries? Condition of animal when last seen?
What was behavior of whale: was mobility impaired?

Discussion

Procedural use of the phrase “Serious Injury or Death” by NMFS to describe a probable lethal outcome led to early confusion and ambiguity. For many events, members believed it reasonable to assume and report that the whale could have been injured but perhaps not lethally. To clarify the fact that a “Serious Injury” is to be considered lethal under current MMPA guidelines, the subcommittee suggested the categories be more simply and directly titled “Will Likely Die” and “Won’t Likely Die”. Although making such dichotomous outcome determinations may be desirable in mortality studies, it implies a certainty not warranted given current knowledge of mortality rates due to entanglement. It also precludes acknowledgement that an interaction may have resulted in sublethal injury to the whale.

Complete agreement by this group of marine mammalogists regarding the anticipated outcome of entanglement or collision occurred in less than 18% of the cases presented. Comments made by committee members indicated their difficulties making

objective outcome determinations were due to insufficient information and/or sources of subjectivity. In more than 80% of cases, at least one member believed the information provided was inadequate to determine the likely outcome of the incident. Three sources of subjectivity identified by subcommittee members are listed below with suggestions for their minimization.

Source 1: Original Input.

Event descriptions and the anticipated outcome or perceived degree of severity are subjectively reported by initial observers. This can be minimized to a degree by standardizing the initial recording of observations on forms that incorporate criteria for defining lethal interactions. However, the original observer's interpretations are still subjective and may differ from secondary interpretations. For example, even being on site at event #200127 which involved entanglement of a mother and large calf, subcommittee member K.W. felt she could not determine the likelihood of it being a lethal entanglement. During post-event review however, subcommittee member J.S. counted it as two mortalities.

Source 2: Distillation of original information into tables and reports

Significant differences were found in the details and descriptions of the same event when presented in the SAR Table and Table 14. In a few extreme cases, the fact that the whale was "*found dead"* or was "*thought to have died*" was stated in one table but not the other. In many cases, the information provided in the "Condition" category contradicted information provided in the "Outcome" category. As a consequence, with additional information, as many determinations were changed to the "Can't Be Determined" as to "Will Likely Die" or Won't Likely Die" categories (Table 2).

Basing determination of entanglement event outcome on data in original reports rather than summary tables would help minimize this source of subjectivity. Ideally the information provided will include full descriptions of the gear and nature of entanglement/collision, completeness of gear removal, type and location of gear remaining on whale, and mobility/behavior/injuries of the whale following release/collision.

Source 3: Subjectivity at Reviewer Level when determining outcome

No clear criteria have been developed by NMFS for determining how lethal an interaction is likely to be. Lacking this information, outcome determinations in this exercise often reflected personal opinions of the reviewer. For example, if inadequate information was provided to determine outcome, some reviewers "erred on conservative side" and assumed the whale died even while acknowledging such information was not provided. In some cases, individual reviewers made assumptions and interpretations regarding the outcome expected when a whale is struck by a certain size vessel moving at a certain speed, how likely a line is to be shed by a whale or a hindrance, etc. For a few events, one subcommittee member had 'inside information' about an event that was not presented in the NMFS data; their determination often contradicted the rest of the subcommittee based on outcome facts that weren't (but should have been) in reports. Two members generally assumed that a whale still entangled when last seen (regardless of where or how) would likely die while others did not make this assumption.

The subcommittee identified two ways to minimize this source of subjectivity. Foremost is establishment of criteria for determining the likely outcome of an entanglement or collision. The committee encourages NMFS to synthesize existing

empirical data that may be used to estimate the rate of survival or mortality resulting from certain entanglement circumstances. For instance, through repeated observation of known individual Atlantic humpbacks, the number of animals subsequently dying or seen free of gear following documented entanglements may be estimated. (e.g. Center for Coastal Studies data).

Secondly, subcommittee members thought events should be reviewed and their probable outcomes determined by a group of experts, knowledgeable about regional fishing gear and whale behavior, rather than by an individual. Seeking the consensus a group of experts regarding the probable outcome of entanglement events could help override individual subjectivity.

CONCLUSIONS

This exercise demonstrated that determining the probable outcome of whale entanglement or collision is currently highly subjective. In this exercise, five 'experts' did not agree 83% of time. One significant source of difficulty was traced to the loss or absence of necessary information in distilled and summarized event reports. However, the committee noted that even original reports and supplemental details still often lacked the information needed to reasonably determine an entanglement/collision event's outcome. The committee concludes that determining the probable outcome of a large whale entanglement/collision event will remain subjective until empirical data on mortality/survival-following-entanglement rates are reported and used to develop clear determination criteria.

Table 1. ASRG Subcommittee SERIOUS INJURY Retest. Outcome determination made by C= Craig Matkin, J= Jan Straley, L= Lloyd Lowry, S= Sue Hills, K= Kate Wynne. Superscripts indicate a change in determination before (1) and after (2) receiving additional information.

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
1996	"Hawaiian waters"	Released alive	Disentangled from non-fishing gear		C K J	L	
1996	Oahu, HI	Injured; status unknown	Ship strike	J		C K L	J: SHIP => BIG= DEAD
1996	Oahu, HI	Injured; status unknown	Partial disentanglement from Hawaiian crab fishery gear; some gear around pectoral fin and mouth still attached	C K		L J	
8/2/96	Sand Point, AK 96025	Entangled; status unknown	Released from fishing gear, but appeared injured; thought to have died Gear consistent with salmon set net fishing (before net is set); see detailed for further details on release and condition of whale.	C K^1 J S^1	S^2	K^2 L	TEXT: "THOUGHT TO HAVE DIED"
8/17/96	Juneau TEMP96a	Injured	Eggers reported to Heard that he witnessed "a humpback blow very close to [Heard's] boat on [the] port side. Immediately [the boat] went airborne (the entire boat was out of the water with a foot or better of air). " Heard reported that the collision occurred in his 26' I/O fiberglass vessel at 23 mph while traveling between Amalga Harbor and PR area. A "sudden and violent impact occurred"; neither the person at the helm nor a another party who'd been looking directly ahead of the boat saw anything before the impact. There was no damage to the hull, engine or outdrive although superficial damage is noted.	S L	J K^1	C K^2	J: HAD INSIDE INFO ON CONDITION
9/2/96	Sitka 96032	Entangled	Sitka Sentinel article reports extensive salmon gillnet entanglement (scars criss-crossing back noted) with partial release (40 ft. of net left trailing from area behind dorsal fin to tail). Believed to be resighted the next day, temporarily stranded on a shoal, then seen later with injuries [witnesses, article assumed these caused by net vs. shoal]. Article available.	S C K L	J		J: KNEW WHALE RELEASED ITSELF FROM GEAR
9/24/96	Chatham Strait 96040	Entangled	Sharpe via Jorgensen reported most gear cut away and remaining line should not hinder whale. Video made. Unless video depicts, gear type and WOW details not available.		S C K L J		

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
1996	Alitak Beach, Kodiak Island, AK	Released alive	Released from commercial purse seine net		C K J	L	
1997	Island of Hawaii	Released alive	Alaska crab pot floats removed by U.S. Coast Guard		J	C K L	
1997	Shelter Island	Alive	Collision with skiff		C K L J		SKIFF
6/29/97	Bering Straits 1997063	Entangled	USCG observed netting wrapped around ~mid-section of body including flippers, orange buoy(s) trailing. Two hand drawn illustrations available, only one buoy common to both sightings.	C K L J S K			ORIG NOTES SAY "DEAD"
7/3/97	Peril Straits, AK 97030	Injured	As reported in Sitka Sentinel: entangled in line between shrimp pot buoy and the pot, appeared the buoy was preventing animal from diving but not from swimming; buoy was being 'towed at slow pace about 100 ft behind the whale; a second line from the buoy become tangled in the outboard of the skiff attempting to disentangle the whale...'the whale took off, spinning the [Boston] Whaler around and pulling it backward and down, until the stern of the boast and the motor were completely under water...the boat swamped and flipped...one person left hanging on the hull of the boat reported 'there were two tugs and the line snapped, as the whale attempted another dive'...another observer reported that '[the whale] seemed better off after that'. The buoy was retrieved. Unknown if/how much gear remained.	C		K L J S	
7/12/97	Juneau 97032	Injured, status unknown	As reported in the Juneau Empire: 16' skiff with engine turned off was turned over by surfacing whale, destroying the engine and causing $10,000 in loss (gear and damages).		K J S	C L	J: "SKIFFS TYPICALLY CAUSE MINIMAL DAMAGE TO WHALE"
7/13/97	Shelter Island 97031	Injured	Tail stock showing flesh injury from crab pot line and buoy. No further details on tangle available.	S^2	C K J S^1	L	OLD INJURY?
9/15/97	Admiralty Island 97051	Alive; entangled	Free swimming animal reported to be entangled in line and a 2ft. buoy. No further details on tangle available.	C S^2 J		K L S^1	
1998	Maalaea Bay, Lanai	Alive; entangled	Disentangled from gear, but some line still attached	C		K L J	

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
1998	Jakolof Bay	Alive	Disentangled from personal use pot gear		C K J	L	
7/18/98	Sitka, AK 98037	Alive; entangled	Lawrie reported thick green net (fishery cbd) around head and flippers -not impeding progress (animal keeping up with others). No further details available.	C J^2 S	J^1 K	L	J/K: 'NOT IMPEDING PROGRESS
7/28/98	Petersburg 1998055	Alive; entangled	Whale trailing possible king crab buoy and line, attached to tail; surfaced a under boat, shifting boat (tangle AND collision); disentangled except for a loop of line around fluke.		J^1 K S	C L J^2	
7/31/98	Ketchikan, AK 1998057	Entangled	Salmon purse seiner reported 'whale tore through net, went down and was not seen again"; dead floater seen in area 8/5/98 assumed to be same whale. Floater not seen again.	C L S J		K	K; DOES'T ASSUME IT DIED / WAS SAME FLOATER
8/11/98	Juneau, AK 1998060	Injured	Whale surfaced under and between hulls of forward idle-ing whale-watch catamaran; reported to be "glancing blow"; whale seen to blow and fluke with no apparent injury nor were injured whales sighted in area.		C K L J S		
8/22/98	Juneau, AK 1998063	Entangled, alive	No further information available. Report not confirmed.	J^2		C K L S J^1	J:"PRESUMED DEAD DUE TO NO INFORMATION"
8/23/98	Wrangell, AK 1998065	Entangled, alive	Crab buoy/line. Fadely reported via Nelson "buoy line wrapped on facial barnacles, trailing line, buoy was at dorsal fin area; whale could not submerge; buoy and line easily removed with boat hook."	J^1	C K^1 J^2 S^2	K^2 S^1 L	
9/17/98	Homer, AK 1998072	Alive; entangled	USCG Reported via Matkin: Subsistence/personal tanner crab pot line and buoy wrapped 3-4 times around the tail stock, over the fluke and probably also around one foreflipper, the pot end of the line was draped over the fluke and the whale seemed semi-immobilized; float retrieved; several inch deep scars apparent.	L J^1 S^1	S^2	C K J^2	

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
9/24/98	Juneau, AK 1998074	Injured	ENF/CG investigated. Report via Brix of "24' whale watch boat traveling at 15-18 knts ran up on the dorsal surface of animal behind blowhole, tipped the boat; whale dove and hit the kicker(knocked loose) & port side bow(cracked hull). Other animals in the group came to injured whale, circled it & swam off together. Animals were observed for a while by other charter boats who observed no change in behavior or apparent injuries."	L	C K^1 S J^1	K^2 J^2	
10/10/98	Sitka, AK 1998075	Entangled, alive	100# Pot, red line, buoy; Sitka news reported line gear around whale through mouth, around one flipper and tail stock (pot on tail stock line); released except for line in mouth	C J^2 S	K	L J^1	NEW TEXT
10/15/98	Ketchikan 1998077	Entangled, alive	Witness, nk via NMFS reported entanglement involved 30 fa of line, 2 buoys (possibly shrimp pot gear); freely swimming animal	C J^2 S	K^1	K^2 L J^1	
1/6/1999	Hawaii	Entanglement	Similar to tangles seen in Sitka 1998 and June 1999 (no match possible, per Straley). Photos show line just behind blowhole, snug once (unless this is actual a white scar) and then crossing over whale a bit further down but before dorsal fin, then connecting to a single float (cylindrical, orange and white (foam?)) lying on water behind whale around about 3/4 of body length.	C L J		K S	
6/9/99	Sitka 1999056	Entangled, alive	S. Neimi (NMFS OLE) reported line and buoy wrapped around whale starting near the pec fins; a bright orange buoy without visible markings was closer to tail (about 3/4 distance from front of animal); little or nothing dragging. Large whale was having no problems diving, breathing, or swimming. NMFS had difficultly keeping up while Spirit of Endeavor reported whale to be traveling at 2 knots (Endeavor also reported seeing 3 buoys). An attempt to relocate whale on the 11th for disentanglement was not successful.	C J	K^1 S	K^2 L	
6/26/99	Resurrection Bay 1999139	Alive, status unknown	ADN article reported that couple hooked a humpback on halibut hook (100#); fisher cut line.		C K L S J^2	J^1	
7/7/99	Sitka 1999136	Alive	73' wooden sailboat at anchor stuck by whale causing 5' hole in hull. No witness, baleen left at site	S	J^2 K^2	C K^1 L J^1	$J^{2:}$ HAD MORE INFO ON INCIDENT

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
9/6/99	Sisters Island 1999133	Alive, status unknown	Lobed reported via Brix that "whale surfaced underneath sailboat and brought tail down on the forward deck & damaged hardware topside & put some spider cracks in fiberglass. Boat started to take on water~ 1"(?)/min. Vessel underway (power) when incident occurred. Boat taken to Hoonah where leakage stopped. No apparent injuries to whale."		C K L S J		J: HAD MORE INFO ON INCIDENT
10/1999	Prince of Wales Island 1999122	Entangled "RELEASED" IN T.14	Pot gear, fishery cbd; Brix reported (via Freitag, via fisher) "Fisher on site when MN got caught on line of his pot gear. Freitag relayed via USCG for fisher to apply pressure/ drag [?] gear to tire whale...fisher cut buoy free from whale's mouth. Whale swam off apparently ok."		C K L S	J	OUTCOME=RELEASED IN TABLE 14
1999	Homer 1999113	Entangled	Personal use crab pot gear; USCG news reported a "crab pot buoy close to the tail with a line trailing down in the water...the crew cut the line leading to the submerged crab pot releasing tension on the line around the fluke of the whale...the rest of the buoy and line on the whale came free after we cut the trap line."		C K L J S		NOTES SAY 'HEALTHY';GOOD AMT OF INFO
7/8/00	Lynn Canal 2000085	Entangled, released alive, status unknown	Seine gear completely entangling whale reported via Enfs, no further information available.	C J^2 S^2		K L J^1 S^1	TEXT DIFFERS: NOT RELEASED ALIVE
10/16/00	Uyak Bay 2000130	Entangled, released alive	Some line removed, but gear remained. Wynne reported that gear on with knot on underside of whale; "could not fully extend head or flukes because they were bound together."	C K L J S			
11/2/99	Metlakatla 1999124	Injury; status unknown	Anon. via Brix reported "Pleasure craft-bayliner- struck a humpback whale while underway near Metlakatla. Skin left on bow of vessel." Skin not collected, no further details available.		K^1 J^1 S^1	C K^2 L J^2 S^2	$J^{1:}$ SMALL VESSELS=> MINIMAL DAMAGE
12/4/00	Skagway 2000131	Entangled, released alive	Shrimp pot gear released REMOVED except for single buoy. Straley and Gabriele report "tight wrap of line around whale's head (just above it's pectoral fin, on it's right-hand side. A second set of 4 buoys (some of which fisher added when he saw entangled whale) was trailing behind the whale on a 50 ft piece of ~1/2" leaded polypropylene line."	C	J S^2	K L S^1	OUCOME= RELEASED J WAS THERE AND HAD MORE INFO

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
1/28/01	Kauai, Hawaii 200102	Entanglement, Injured	NMFS-MN-01-02-EA; crab line and buoy removed. No details on tangle available.		K[1] S[2]	C K[2] L J S[1]	
5/28/01	Resurrection Bay 200124	Entangled, released alive	Mns0101; Mixed gear described as "a single loop through mouth with several ropes connecting to 3 orange buoys, a crab pot, 2 foam floats, 30# anchor, chain, ball of fishing line" by Aderholt as quoted by Little in AND.		C K[2] J[2] S[2]	K[1] L J[1] S[1]	NEW INFO: "LEFT W/PERHAPS 10FT OF ROPE IN ITS MOUTH"
6/15/01	Kodiak 200127	Entangled	Disentanglement attempted but not successful; Fishery cbd (subsistence crab or shrimp possible). Wynne reported Mother and calf towing a single small orange buoy ~35'-30' behind and between them, two lines across the calf's rostrum just forward of the blowhole; line visible across adult's back.	C J S		K L	
6/19/01	Dixon Entrance 200112	Possibly injured	USCG reported Naushon traveling 12kts when "whale surfaced approximately 10 ft in front of cutter. Cutter immediately backed down and then came to all stop as the whale dived under the cutter. After a couple of minutes the lookout sighted the whale off the starboard quarter. The whale surfaced and then dived again. Personnel in forward berthing reported hearing a thump just prior to the cutter backing down. No unusual vibrations were detected when testing propulsion nor was there any blood in the water. No indications of whale strike above the waterline were evident....There were no whale sightings in the vicinity prior to the encounter."	J[2]	C K L S J[1]		J:"ERR ON CONSERVATIVE SIDE"
8/7/01	Sitka 2000147	Entangled	Green net, fishery cbd, reported to be seen on top of rostrum	C		K L J S	
8/13/01	Hoonah Sound 2000148	Entangled, released alive	Shrimp pot gear; Brix recorded 'wounds on dorsal ridge and tail stock from line'; also that whale had been' tethered by the right side of mouth, with free end (which has been attached to buoy) exiting the left side of it's mouth with about 40 -50ft of nylon floating line; anchored to pot gear'	S	J K[2]	C K[1] L	K: 'INFO SAYS WHALE RELEASED"

Year	Area	Condition	Description	Will Likely Die	Not likely to Die	Could Not be Determined	Criteria
9/19/01	Lynn Canal 2000 162	Entangled, release alive, status unknown	Shrimp pot gear wrapped on tail according to T- with Chilkat Crusies via Enfs	J[2]		C K L S J[1]	
10/30/01	Sitka 2001 127	Entangled, release alive, status unknown	Longline, no further information provided by Anon boater via FWS			C K L S J	WRONG INFO; LAST SEEN SWIMMING W/GEAR

Table 2. Changes in outcome determination based on additional information.

Number of Times	Will Die	Won't Die	Can'tTell
Votes changed INTO this column w/more info	10	13	13
Votes changed OUT OF this column w/more info	5	14	17
Opposite direction of change by two+ members	0	1	3