MEETING OF THE PACIFIC SCIENTIFIC REVIEW GROUP
NATIONAL MARINE MAMMAL LAB, SEATTLE, WA
6-8 MAY 1997

The fifth meeting of the Pacific Scientific Review Group (SRG) was held at the National Marine Mammal Lab (NMML) in Seattle, Washington on 6-8 May 1997. All current Pacific SRG members were in attendance with the exception of John Heyning and Kathy Ralls (who reviewed the group's report and provided comments by mail). Also participating were Jay Barlow and Susan Chivers from the NMFS Southwest Fisheries Science Center in La Jolla, Paul Wade of the NMFS Office of Protected Resources (Seattle), Bob DeLong, Pat Gearin, Scott Hill, Jeff Laake of NMML, Carl Benz of the US Fish and Wildlife Service, Joe Scordino of the NMFS NW Regional Office, and Chuck Janisse of the Federated Independent Seafood Harvesters. Susan Chivers and Michael Scott served as rapporteurs. Participants and observers are listed in Appendix 1, background documents provided to the groups are listed in Appendix 2, and the agenda of the meeting is in Appendix 3. The main objectives of this meeting were to review the new Stock Assessment Reports (SARs) and to meet jointly with the Alaska SRG to discuss stocks that occur in both regions. The Pacific SRG met independently on May 6 and 8, and jointly with the Alaska SRG on May 7.

Robin Brown is the new chairperson of the Pacific SRG. During his absence during the first day, Steve Jeffries served as acting chairperson. Former chairperson John Heyning was unable to attend due to ongoing field work in reproductive biology.

SAR REVIEW TIMETABLE

Jay Barlow reported that the SAR review is behind schedule. The current timetable is to have all comments by the end of May, have SARs modified by the end of June, and finalized by mid-July. Jay Barlow stated that NMFS would respond to all public comment on the current SAR's by July and copies of those comments would be distributed to SRG members. Shortly thereafter, new abundance estimates will be available, and new SARs drafted to include them. The current abundance estimation methods have been previously reviewed and the SRG will not hold a meeting to review these methods prior to writing of the next generation of SARs.

The intended schedule is to have draft SAR's done by NMFS and sent out to SRG's by late September. These drafts should be reviewed and commented on at fall SRG meetings (by late October). SAR's should go out for public review from January 1 through March 31. A second SRG meeting could be scheduled in May for brief review of SAR's with new public comments, and other agenda items. Robin Brown reported that the Alaska and Atlantic SRG's are proposing to review SAR's in a new fashion in order to avoid having to cover each SAR at every meeting, and thus open up more time

for discussion of other issues. Alaska SRG proposes a three-year cycle for non-strategic stocks and an annual review for all strategic stocks. They have divided their stocks into three categories: A) species of special concern and those for which significant new data is expected will be reviewed in the Fall of 1997; B) species that fall into a second level of priority or those for which new information may be two years out (Fall 1998); C) all others (Fall 1999). Via e-mail exchanges this summer, the Pacific SRG may propose a similar routine to begin at the fall 1997 meeting.

TAKE REDUCTION TEAM

Chuck Janisse reviewed the activities of the Take Reduction Team for the CA drift net fishery. Initially, seven stocks were considered strategic because takes were above PBR: sperm whales, Baird's beaked whales, humpback whales, pilot whales, mesopolodont whales, Cuvier's beaked whales, and pygmy sperm whales. Now, the human-caused mortalities for last three of these stocks are below PBR, while minke whales have been added to the list of strategic stocks (preliminary abundance estimates indicate that it will likely be above PBR in the near future). The Take Reduction Plan has been submitted to the Secretary of Commerce. The Plan consists of four elements: 1) testing whether pingers can help reduce mortality, 2) conducting skipper workshops to improve fisherman performance in reducing marine mammal bycatch, 3) setting a minimum depth of 6 fathoms for the top of the nets, and 4) capping the number of permits for the CA and OR fisheries. The Team will meet again this month.

One concern expressed was that the deadlines for meeting the PBR goal may be too short, given the length of time required for research. In the case of sperm whales (the abundance and PBR of which may be underestimated), the fishery may have to take stricter measures to reduce mortality, without being able to assess the results of the ongoing pinger experiment and the ship survey for sperm whales. Given the effort involved in undertaking these studies, the SRG recommended that sufficient time should be allowed for analyses to be completed before extreme management measures are taken.

ZERO MORTALITY RATE GOAL

Paul Wade reported that an assessment of ZMRG is required for the 1998 Progress Report to Congress. It will likely continue to be defined as 10% of PBR, with perhaps some flexibility for endangered species.

Doug DeMaster reported that a workshop was held to discuss the problems of defining and incorporating serious injuries into the PBR process. The final report will be available in about a month.

REVIEW OF NMFS RESEARCH

Bob DeLong, Jeff Laake, and Jay Barlow reviewed the NMFS research programs related to Pacific marine mammal stocks. NMML has funding to conduct a harbor porpoise aerial survey along the outer coasts of BC, WA, and OR in August-September; this will be in conjunction with an aerial survey for this species by SWFSC in CA (both studies are funded). Using existing resources, NMML will survey N. fur seals on San Miguel Island, conduct a pinger experiment for harbor porpoise off the WA Olympic Peninsula, and has proposed a cooperative harbor seal pup survey in WA and OR to be conducted jointly with Oregon and Washington Departments of Fish and Wildlife. NMML will construct a rough correction factor for CA sea lions based on existing data, but a more precise correction will be only available given necessary funding to complete several more years of resighting work and a more-complete analysis of sea lion vital rates.

The SWFSC is currently conducting a survey for sperm whales in the northeastern Pacific, has funding to conduct an aerial survey of harbor porpoise in California to monitor trends in abundance, conduct aerial surveys in the CA Channel Islands for California sea lions and N. elephant seals, and has contracted John Calambokidas to estimate the abundances of blue and humpback whales for the Pacific coast and of humpback whales for the entire Pacific basin. The SWFSC has proposed to conduct a survey of Hawaiian marine mammals, a survey of vaquitas in the Gulf of California, and to continue research on sperm whale diving behavior.

Jay Barlow reviewed the ORCAWALE surveys for cetaceans conducted in 1996 within 300 nmi of the coasts of CA, OR, and WA. Preliminary results suggest little change in abundance estimates. Two changes in stock status may result. Minke whales may shift from strategic to non-strategic, and Cuvier's beaked whales may become strategic.

REVIEW OF THE PINNIPED-SALMONID REPORT

Joe Scordino reviewed the report of the Working Group on Pinniped-Salmonid Interactions. The report is undergoing public comment until 26 June 1997, and then will go to the Secretary of Commerce, and then to Congress. The Working Group produced four recommendations.

1) Site-specific management for individual animal removal. This would give the authority to state or federal officials to lethally remove individual animals that are impacting the runs of threatened or endangered populations. For runs of special

concern of non-endangered populations, lethal removal could be authorized if non-lethal means were not available or feasible (for example, a seal in a fish ladder). For situations in which pinnipeds are impeding human activities (for example, hauling out on docks and threatening humans, or stealing the catch from sportfishing boats), lethal removal would only be used as a last resort. Again, only state or federal officials would be authorized to take these animals.

2) Develop safe and effective deterrents as an alternative to lethal removal.

3) Reinstate a limited authority for fishermen to kill California sea lions and harbor seals that interfere with their fishing operations. Only regulated fisheries of demonstrated concern would be granted this authority.

4) Identify information needs and conduct necessary research on these interactions.

1) Implementation of Site-specific Management for California Sea Lions and Pacific Harbor Seals

The Pacific SRG recognizes that there is evidence from at least two locations that demonstrates pinniped predation can have a significant affect on salmonid populations. A review of the information on this issue by several SRG members and others resulted in the conclusion that harbor seals and California sea lions could also have negative affects on salmonids in other areas under certain conditions. The general conditions under which such effects can occur include: situations where salmonid populations or individual runs are in a depleted or depressed state as a result of a variety of influences (over-fishing, habitat degradation, water diversion); situations where fish are concentrated as they move into estuaries or rivers, and where natural or artificial barriers impede migration (rapid, falls, dams, fish ladders); and situations where habitat alterations have reduced complexity, resulting in increased vulnerability to predation. Both adult fish returning to spawn and outmigrating smolts can be susceptible to predation in these situations.

The SRG recognizes that the current healthy status of Pacific harbor seals and California sea lions is a direct result of the success of the MMPA in providing protection to these populations over the past 25 years. It is neither stated nor implied here that these pinnipeds have been a cause of the recently observed declines in many stocks of salmonids in California, Oregon and Washington. Likewise, the NMFS Congressional Report on this issue makes no such conclusion or implication. The available information suggests the majority of the conflict situations where pinnipeds may be affecting salmonids are the result of learned behavior by a relatively small number of individuals. In light of the above, the SRG sees that a clear conflict exists between the need to protect and recover salmonid stocks, particularly those that are or may soon be listed under the ESA, and the need to insure continued health and stability of pinniped

populations under the MMPA. In response to these concerns, the NMFS Congressional Report proposes only limited removal of pinnipeds in situations where threatened and endangered or otherwise state-designated salmonid stocks are targeted by predators, generally at areas where successful migration is impeded under the conditions previously described. These actions would only be taken by authorized federal or state agents, and all takes would be incorporated into the existing PBR system for human-caused mortalities to insure that pinniped populations continue to achieve optimum levels. The NMFS report in no way proposes or supports the idea of reductions in pinniped populations, which has been a mischaracterization purported by some.

This issue involves both ESA-listed salmon and MMPA-protected pinnipeds, that resources from both fish and mammal programs should be directed at understanding and resolving these problems. Funding for studying this problem should not come disportionately out of marine mammal program funding; this is primarily a salmon population problem rather than a marine mammal population problem. However, it is recognized that sufficient resources will never be available to obtain definitive information in each and every conflict situation (just one such study has lasted more than 10 years and has cost an estimated $3 million). Because of this financial reality, because of the inherent variabilities and unknowns in salmonid stock-recruitment relationships, and because of the difficulty of collecting data in many predation situations, a precise and quantifiable estimate of the impact of pinniped predation on salmonids will not be obtained in every case. The current authority provided under Section 120 of the MMPA does not meet the need to address this situation. The SRG supports the Taskforce's recommendation to remove individual predators in situations such as those described above because it is a risk-averse course of action for protecting salmonid stocks and contributing to their recovery, while at the same time safeguarding pinniped populations.

2) Development of Safe, Effective Non-lethal Deterrents

Research on this issue has been undertaken in many areas by different researchers for many years without a major breakthrough. Clearly, these deterrents ultimately should be non-injurious to marine mammals, however testing of the deterrent capabilities of new technology should not be postponed indefinitely until the issue of safety to animals is resolved conclusively. Nor should testing and development of deterrents be prerequisite to the actions needed to protect other marine resources as described in the previous recommendation. Such testing of effectiveness and safety should be carried out simultaneously to avoid loss of time and work on deterrents that ultimately may not prove effective. A new, concerted effort in this area should be undertaken and supported by NMFS. The Pacific SRG endorses the need to develop non-lethal technologies that demonstrate promise of long-term effectiveness of deterring pinnipeds and other marine mammals in fishery interactions and other conflicts with human activities.

3) Selectively Reinstate Authority for the Intentional Lethal Taking of California Sea Lions and Pacific Harbor Seals by Commercial Fishermen to Protect Gear and Catch

The Pacific SRG recognized that this NMFS proposal does not apply to any threatened or endangered pinnipeds, and although fishermen would be trained or required to demonstrate the ability to distinguish between species, concern was expressed that some Steller sea lions could be killed as a result of this authority. NMFS stated that populations of California sea lions and harbor seals continued to increase during the previous period when fishermen were allowed to shoot animals to protect gear and catch. However, the SRG questioned the soundness of the presumption that shooting is a highly effective deterrent and that reinstatement of this authority could be inappropriate in light of restrictions on shooting in other areas and for other species. The Pacific SRG considers the act of granting authority for lethal taking to commercial fishermen to be primarily a policy issue rather than a scientific one. Because the principal role of the Scientific Review Groups is to provide NMFS with scientifically based advice, the Pacific SRG considers this issue out of its purview. Therefore, beyond the general observations made above, the SRG offers no policy guidance on this particular NMFS proposal.

4) Information Needs

A previous statement made by the Pacific SRG regarding information needs on this issue recommended that region-wide research be conducted, emphasizing pinniped food habits. While general food habits information is useful, the SRG encourages NMFS to focus more directly on specific pinniped-fishery conflict situations to improve our understanding of these problems and to identify ways to resolve such conflicts, including the development of new, non-lethal deterrents that have broad application.

The Pacific SRG supported the concept of site-specific management of pinnipeds outlined in the NMFS report. The SRG recognized that the existing provisions of Section 120 of the MMPA do not effectively address this issue.

The SRG supports the call for development of safe, effective non-lethal deterrents and recommends NMFS provide direction and financial resources to address this need.

The SRG supports the recommendations for research to address information needs, particularly those that focus on examinations of specific salmonid-pinniped conflict situations to gain greater understanding of significance of the problems and to develop new ways to resolve them.

REVIEW OF STOCK ASSESSMENT REPORTS

Hawaiian cetacean stocks: Due to lack of new data for virtually all the Hawaiian stocks, the SARs have not been revised and the SRG did not review them except for that for the

Hawaiian monk seal.

Jay Barlow summarized the research plans for the marine mammal surveys to be conducted around the Hawaiian Islands. The SWFSC proposes to use two ships to cover the US EEZ waters around the islands, but no funding has been obligated for the surveys. Aerial surveys could be conducted to survey the coastal areas that are too shallow for NMFS research vessels; Dr. J. Mobley's data also could be reviewed for coverage of these coastal waters.

The survey design was discussed briefly, as to the timing of the surveys (to accurately estimate seasonally migrating species) and the area (to best match that of the fisheries). The SRG requested the opportunity to review the survey design in more detail at a later stage.

Hawaiian monk seal: Bob DeLong reviewed some of the concerns of the Monk Seal Recovery Team. The largest population at French Frigate Shoals is still declining, there are concerns about declining environmental quality, concerns about monk seals consuming ciguetoxic fish, and concerns about the age structure of the population.

One recommendation that the SRG wished to add to that of the Recovery Team is to increase observer coverage of the longline fishery (currently at 4-5% due to funding problems).

Harbor porpoise - Inland WA stock: Jeff Laake reviewed new information available from 1991 and 1996 survey data. Resultant changes to the PBR were minor and were not incorporated in this round of SARs because there wouldn't be sufficient time for public comment. Effort in many of the Puget Sound fisheries that interact with harbor porpoises has changed from year to year as the abundance of the target fish stocks have fluctuated.

He also outlined an alternative strategy for monitoring the status of this stock. He reviewed the characteristics of this stock that makes is difficult to monitor: it is a transboundary stock with little data available from the Canadian side, abundances are low and therefore mortalities are rare (making for expensive observer programs), many mortalities occur near the boundary between the inland and the coastal stocks. He suggested that, instead of having an expensive observer program, the stock could be monitored with regular abundance surveys to detect a trend. Before embarking on such a strategy, however, there would have to be agreement beforehand that a particular management action would be taken when a pre-determined abundance level had been reached. He also suggested the possibility of using "fuzzy boundaries" to incorporate the uncertainty that exists in the stock boundaries.

The SAR was reviewed and suggestions were made to reformat Table 1 to make

it clearer, and to include a map of the area and the numbered sub-areas in the Appendix. It was suggested that it be mentioned that fisheries are not monitored in British Columbia for harbor porpoise mortality, but the likelihood of such mortality be mentioned in the Other Mortality section. A recent article on marine mammal mortality in British Columbia published in Marine Mammal Science could be cited, however.

Harbor porpoise - Central CA stock: Doyle Hanan questioned the number of vessels listed as participating in the fisheries and will provide the relevant corrected numbers. The set net fishery in CA is currently classified as a Category-I fishery, but is proposed as a Category-II fishery for the 1998 List of Fisheries.

The SRG recommended that monitoring of abundance be continued. The current plans for providing updated abundance information for this stock are 1) finish analysis of the 1995 shipboard cruise data to estimate absolute abundance and 2) conduct an aerial survey in fall 1997 (funded) to continue monitoring trends in abundance.

Harbor porpoise - Northern CA stock: No changes and no public comment.

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Harbor porpoise - OR/WA coastal stock: Apparent discrepancies between the text and table were explained by Scott Hill, and he will clarify his treatment of the data. The text includes data for the entire fishery but the table includes data only for the portion of the fishery that operates within this stocks range.

This Recovery Factor currently used for this stock (0.5) could be changed. Because of the relatively high CV (0.50) due to annual variability, the Guidelines recommend decreasing the Recovery Factor to 0.48. Because of the high level of observer coverage (68-100%), however, the Guidelines would allow the Recovey Factor to be increased to a maximum of 0.75 for 100% observer coverage.

Dall's porpoise: Clarification was provided for the status of observers in the groundfish trawl fishery, which is a Category-III fishery. There is an observer program for the whiting fishery, however (add reference by Perez and Loughlin).

Pacific white-sided dolphin: Add old estimate of mortality to the table on page 65 re: groundfish trawl kills.

Risso's dolphin: No comments.

Bottlenose dolphin: A reference for morbillivirus as a cause for the Atlantic coast die-off should be listed (p. 72).

The boundary between coastal and offshore stocks should be better defined in the SAR (*i.e.*, the coastal stock is within 1 km of surf zone). The SRG also suggested

examining the LOF to make sure the table accurately reflects fishery activity and classifications.

Striped dolphin: No comments.

Short-beaked common dolphin: Include trends in abundance from the population off Baja California published by the IATTC. This may explain increases in the combined stocks of short-beaked and long-beaked common dolphins.

Long-beaked common dolphin: Same comment as above.

Northern right whale dolphin: No comments.

Killer whale - CA/OR/WA stock: Mention that although there is no information that mortality is occurring in the sablefish longline fishery (a Category-III fishery), a similar fishery in Alaska is known to have interactions with this species (entanglement and shootings).

Pilot Whale: Susan Chivers reviewed preliminary genetics data. Microsatellite data is in accord with the current southern boundary for the stock (Baja animals appear to be different than those from southern CA).

The SRG discussed it's previous recommendation to place observers aboard the squid purse-seine fishery. This fishery is now a Category-II fishery, but no proposals within NMFS have been made to fund an observer program. This fishery has increased greatly in the last 3 years due to the abundance in squid. Interactions with whales may be at a peak, however, because an El Niño is predicted next year.

Chuck Janisse said that some of the evidence suggested for this interaction, the cut flukes wounds found on stranded pilot whales, was more likely a result of the drift gill net fishery. The fine mesh of the purse seine shouldn't entangle the whales and the whales are typically rolled out of the net. The bullet wounds found on stranded whales may, however, be a result of this fishery, as gunfire is often heard in the vicinity of these boats and the whales are attracted to the squid and are found inside the seines. If so, this suggests that a recommendation for increased law enforcement would be appropriate, possibly with a biologist on board to observe any interactions.

Baird's beaked whale: The HSUS noted the mortality estimate (2.0) was just barely below the PBR (2.02) and that, because the two were essentially equivalent, the stock should be listed as strategic. It was argued in the meeting, however, that the PBR is calculated to be conservative and that this additional safety margin is not needed. It was also noted that when SWFSC dive-interval data are analyzed, the abundance estimate will be higher resulting in an even higher PBR.

Mesoplodont beaked whales: Jay Barlow followed up on the SRG's recommendation to use observer guesses as to species id in addition to firm ids to deal with the problem of prorating unidentified beaked whales. This has reduced the number of unidentified sightings markedly, but the majority of *Mesoplodon* sightings are only identified to genus..

The group discussed the public comments that objected to lumping all the Mesoplodonts into one stock. This approach is not a desirable one, but given the difficulty in identifying these species at sea, this approach best presents all the known data most efficiently. The SRG suggested including caveats expressing the potential problems that lumping can cause if fishery mortality is disproportionately affecting one species rather than being spread over all the species in this management unit.

Cuvier's beaked whale: No comments.

Pygmy sperm whale: No comments.

Dwarf sperm whale: No comments.

Killer whale - S. resident stock: A map and a table should be added to the SAR. This is a stock that previously had been reviewed by the Alaska SRG.

Sperm whale: This stock was discussed at length to determine whether it was justified to increase the Recovery Factor. There was general agreement that it could safely be raised, possibly to 0.3 at this time. However, at the next meeting, new data available from the ongoing surveys for estimating abundance and a divetime correction factor, along with the results of the pinger experiment will be available for review, and the group thought it appropriate to wait for action until our fall meeting. It would also give the group time to review the summaries by Barb Taylor and Frank Hester. The Pacific SRG also recognizes that there are a number of reasons why the current Nmin may underestimate actual population size (*e.g.*, the g_0 question, and no Oregon or Washington survey data available yet) and as a result, the true PBR could be higher than the current calculated value.

Humpback whale - CA/OR/WA/Mexico stock: Jay Barlow reviewed the status of abundance estimates for this stock. John Calambokidis will have new mark/recapture abundance estimates available for the next round of SARs. The mark/recapture estimates provide the most precise estimates, and estimates from all methods are similar. At the present time there is no way to estimate historical abundance because hunting began so long ago and continued for such a long time period. The SRG suggested that a statement be added that anthropogenic noise is likely to be an issue for all large whales.

Blue whale: Revise statement about approaching ZMRG to something like: To date, no blue whale mortality has been associated with California gill net fisheries, therefore it appears that the total fishery mortality rate is approaching zero mortality and serious injury rate.

Fin whale: Similar statement as above should be included.

Minke whale: The stock became strategic this year, but will likely become non-strategic after the results of the ORCAWALE survey are produced.

Sea otter: The group recommended that the sea otter SARs be included with all the others SARs and produced on the same timetable.

Carl Benz reviewed the possible mortality of sea otters in finfish traps. This is a relatively new fishery, and anecdotal evidence suggests that sea otters are getting caught in these traps. The question is whether such evidence is sufficient to categorize the fishery as Category II. The SRG recommended that the FWS directly participate in the Section 118 process with NMFS. It also recommended monitoring potential mortality in cooperation with CA Fish and Game Dept. The SRG will receive an update at it's next meeting.

California sea lion: Bob DeLong summarized the NMFS research objectives and activities. There's been a decade-long research program at San Miguel Island in which each cohort has been branded and tagged. 500 pups/cohort have been branded and now resights have provided good information on survival rates. These data will be used to provide a correction factor for the abundance estimate.

The SRG discussed the transboundary stock issue with Mexico and Canada. Aerial photogrammetric surveys have been conducted for getting counts from haulout sites in Mexico, but there are no mortality estimates for the Mexican population. Discussions are ongoing about cooperative research with Mexico that may allow such estimates to be obtained The SRG recommends that a statement be included in the SAR to reflect the possibility that many CA sea lions that breed in Mexico (particularly on the Pacific coast of Baja California) may occur in US waters during much of the non-breeding season.

The SRG discussed how to incorporate shooting mortalities into the PBR. At the least, documented cases of prosecution for shooting can be attributed to the appropriate fishery and added to the number of mortalities listed under Other Mortality. It is difficult to estimate, however, the total number of shooting mortalities because of poor data quality.

The SRG discussed the HSUS objection to including the sea lion impact on salmon as the only habitat quality issue. The NMFS will respond to this directly with HSUS.

The SRG recommended that the number of years for averaging mortality be truncated to 2 years because some California fisheries have been eliminated as a result of Proposition 132. The group also recommended changing question marks in the table to "N/A" because the fisheries have been operating under two different regimes due to the change in CA law. The SRG asked Barlow to re-examine the existing data to develop a kill/set estimate for the area where the fishery still operates, and to apply this rate to the current fishing effort in an attempt to present a "possible" take rate by the current fishery.

Harbor seal: Based on recent analyses by Doyle Hanan, the group recommended that the current correction factor for the number of seals not hauled out be changed from 1.2 to 1.3. Hanan will be continuing to refine this analysis.

Bob DeLong reported that the rate of increase has fallen for the OR/WA stock from 7% during 1978-1992 to 2% during 1993-1996. NMML has been calculating natality rates, but hasn't calculated survivorship rates yet. Along with Steve Jeffries, the lab is screening the population for brucella. Some positive screens has led to concern by the Dept. of Agriculture about transmission to swine from fish products.

Joe Scordino noted that there is an overlap between incidental takes in tribal fisheries that are retained for consumption and directed takes, and that this should be clarified in the SAR. It was suggested that the SARs also mention for harbor seals and CA sea lions that tribal regulations have been issued for the take of these species. Joe Scordino agreed to draft a paragraph to this effect for inclusion in the SAR's for harbor seals and California sea lions.

Northern fur seal - San Miguel Island stock: Bob DeLong discussed the difficulty of identifying the stock of the seals caught in California fisheries because many are likely to be from the Alaskan stock. NMML could produce less-biased population estimates by incorporating counts of males. The group suggested that the Table be updated to account for changes in the fisheries caused by Proposition 132 in CA (*e.g.*, the angel shark fishery is now gone). Previous bycatch/effort ratios from the past could be used to estimate mortality for fisheries with no current data.

Northern elephant seal: The estimate for population could also be improved by incorporating counts of males. It was suggested that the SAR should include as a habitat issue the increasing interactions with humans as haulout sites expand

Guadalupe fur seal: Only minor editorial comments.

GENERAL COMMENTS

There was a general discussion about how many years should be included in an average of mortality estimates. The general consensus was that it needed to be case specific to account for changing activities of the fishery and data collection. The advantage of averaging is that it increases the precision of estimates, but including too many years in the average may not accurately reflect what is currently going on in the fishery. Paul Wade stated that the SAR guidelines state that mortality estimates should be averaged to achieve a CV of <30% but suggests a maximum of 5 years for calculating that average. Any deviations from the guidelines (*e.g.*, for changes in fishing activity, effort, area closures) need to be noted in the SARs.

The SRG recommends that the collection of skin samples for genetically confirming species identification, particularly for beaked whales, be emphasized in all observer programs. The SWFSC genetics database has type sequences for all species in the Pacific region except *Mesoplodon ginkgodens*. The importance of accurate species id for mortality estimates should be stressed.

Paul Wade indicated that the recurring phrase about implementing regulations for Section 118 will be deleted. This phrase has to do with the List of Fisheries, but is inappropriate to include in the SARs.

The SRG discussed the appropriateness of including fisheries with zero mortalities for a particular stock in the SAR Tables. One argument for deleting such fisheries is that it suggests a "guilt by association," that is, one expects mortality in the fishery just because it is in the same list as a fishery that does take a particular stock. Others argued that these fisheries should be listed in the Table for completeness and that the zero mortalities are a vindication for the fishery. The group recommended that 1) the fisheries should not be listed with only question marks for the columns (Minke whales, Table 1, p. 150), 2) the Table caption be revised so it is clear that not all the fisheries listed are assumed to have mortality for the particular stock, and 3) that a consistent policy of including or omitting such fisheries in the Incidental Mortality Tables be adopted.

It was also recommended that the column in Table 1 labeled "Current Estimated # of Vessels" be deleted because often it is inappropriately linked with mortality data from other years. If this column is kept, it should be clear that the number of boats listed corresponds to the years that the mortality listed occurred.

The SRG would like to receive copies of the NMFS responses to the public comments by the HSUS, CMC, and MMC.

REVIEW OF ACTIONS TAKEN ON PREVIOUS SRG RECOMMENDATIONS

The SRG reviewed NMFS activities in response to a list of the previous major recommendations listed in the report of the 3rd meeting of the SRG and reviewed at the 4th meeting.

First Priority

The Pacific SRG recommends that a Take Reduction Team be formed to evaluate the drift net fishery for shark and swordfish off California. This fishery is involved with all the species in which the PBR is exceeded except two (California sea otters and Hawaiian monk seals), which already have recovery teams under the ESA. Because this one fishery is involved with so many stocks, the SRG recommends that one take team for the fishery be established, rather than separate ones for each stock.

A Take Team was formed and a mortality reduction plan submitted for public comment.

The Pacific SRG recommends conducting a comprehensive survey of the Hawaiian archipelago to fill the large gap in our knowledge about the abundance and status of Hawaiian cetacean stocks. Examining any survey data from the ATOC experiments may provide additional information for these assessments. Although fishery mortality has not been estimated, available information suggests that instituting observer programs to estimate mortalities would be problematic because of the small-scale nature of the local fisheries. The problem of dolphins that may be shot at to discourage them from stealing fish from fishing lines was thought to be a law enforcement and education issue rather than one requiring an observer program.

A NMFS survey of Hawaiian is being planned for 1998.

The Pacific SRG recommends that monitoring of the central California harbor porpoise stock be continued. Although the almost total closure of the coastal set-net fishery has apparently reduced mortality, recent data by the NMFS suggest that the population still may be declining at a rate of 9-10% per year. Monitoring of this stock should continue to determine whether it is truly declining, and whether the decline is due to environmental or human-caused factors, and to document the population growth rate in the wake of fishery mortalities and population decline.

Monitoring of the central California stock has continued, and an aerial survey is funded for 1997.

The Pacific SRG recommends that the stock structure of West Coast harbor porpoise be studied in greater detail. This species appears to be particularly vulnerable to interactions with fisheries.

Samples are being collected and analyzed by the NMFS. Preliminary results were presented by NMFS to the SRG. Samples from some poorly represented geographic areas are still needed.

The Pacific SRG recommends research into developing correction factors to obtain better population estimates for both cetaceans and pinnipeds. For deep-diving cetaceans, such as ziphiid and kogiid whales, research should be conducted into devising correction factors for submerged animals during surveys. For pinnipeds that are counted while hauled out on land, more stock-specific correction factors for estimating the proportion at sea are needed. Demographic models could be developed to estimate the total minimum population size from pup counts.

Field studies have collected significant new data for deep-diving cetaceans and harbor seals. Some correction factors have been incorporated into the current SARs, others will be used in future SARs.

The Pacific SRG strongly supports the role of a NMFS liaison to promote consistency among the SRGs. The group notes the lack of consistency among SRGs for such issues as defining stocks and in the criteria for adopting recovery factors. The group recommends that the NMFS liaison distribute a list of stocks for which non-default values in the PBR calculations have been used, and the rationale for those deviations, to provide guidance and promote consistency among the groups in dealing with diverse management situations. The SRG recommends increased communication among the SRGS and within NMFS to maintain consistent application of the PBR concept, and increased cooperation with international, state, and other agencies to promote co-management plans.

Paul Wade of the Office of Protected Resources has been serving as a liaison between the different SRGs, which has better informed the SRGs and helped promote consistency among the groups. It is expected that NMFS will continue to fill this need. The Pacific SRG intends to support this exchange of information by encouraging member attendance at other SRG meetings (*e.g.*, joint Alaska-Pacific meeting and Robin Brown's attendance of Atlantic SRG meeting in May 1997; the Atlantic SRG has proposed sending a member to the Fall 1997 Pacific and/or Alaska meeting).

The Pacific SRG recognizes the problems of increasing pinniped populations in some areas, particularly where pinniped predation on threatened and endangered salmonid species may be an issue. The literature review being conducted by the Pinniped-Fishery Interaction Task Force was not thought to be sufficient for answering the critical fisheries-interaction questions for California sea lions and harbor seals along the Northwest Pacific coast, and the SRG recommends region-wide research be conducted, particularly into the food habits of these species.

A report of the Working Group has been finalized and is currently out for public

review. Comments by the Pacific SRG are included in this report. The final report and its recommendations will be sent to the Secretary of Commerce and then to Congress.

Second Priority

The SRG recognizes the problems inherent in defining ZMRG, and the group could not provide a viable alternative. The group recommends that the NMFS assess the performance of the ZMRG guidelines in its third-year report to Congress.

GAMMS workshop dealt with this issue and NMFS is considering a final position.

The SRG recommends that the use of fishermen logbook data for monitoring marine mammal mortality be discontinued. Such data are not reliable and the program is a drain of resources from more effective programs.

The logbook data program has been replaced with a postcard reporting system.

The Pacific SRG recommends research into non-fishery human-caused mortality. Specifically, how to quantify such mortality, and how to incorporate this mortality into the PBR process. Such research should be given a higher priority as the fishery mortality approaches the PBR.

No progress has been made on this. Paul Wade suggested a more specific recommendation could be made to encourage further research.

It is unknown whether the virtual disappearance of pilot whales from the California coast is a natural phenomena due perhaps to changing environmental conditions or due to fishery interactions. Research into the current distribution and migration patterns on an opportunistic basis may shed light on these questions. Broad-scale ecosystem studies may suggest reasons for these changes, as well as recent changes in the distribution and abundance of other pinniped and cetacean species in the North Pacific.

No progress has been made on this item.

The Pacific SRG recommends monitoring the west coast squid purse-seine fishery with an observer program because of the lack of current information about marine mammal mortalities in this fishery and the previous interactions thought to occur with the southern California pilot whale population that has since declined in the area.

This fishery has been reclassified as Category II, but funding has not been proposed by NMFS for an observer program.

PROPOSED TOPICS FOR NEXT MEETING'S DISCUSSION

The list of research recommendations will be updated at the fall SRG 1997 meeting and new SARs will be reviewed. It was also proposed to discuss the following topics at the next meeting:

- Sperm whales and the circumstances under which it was justifiable to increase Recovery factors.
- Results of the CA drift net pinger experiment.
- The effects of rare takes on PBR.
- International cooperation on issues of transboundary stocks.
- NMFS review of objectives, need, costs/benefits of Hawaiian cetacean surveys (as stated in these minutes, no funding has been obligated for the Hawaiian cetacean surveys as yet).
- Question of whether surveys over multiple years should be lumped (to get increased precision of a single estimate) or separated to better track trends in abundance.
- Update from USFWS (Carl Benz) on contacts/discussions with NMFS regarding fishery categorization, spring/fall 1997 sea otter survey results, and reports of potential fish-trap mortality.

Appendix 1

Scientific Review Group - Pacific Region

Hannah J. Bernard
Hawaii Wildlife Fund

Robin Brown
Oregon Department of Fish and Wildlife, Marine Region

Mark Fraker
Terramar Environmental Research

Doyle A. Hanan
California Department of Fish and Game, Marine Resources Division

John Heyning (unable to attend)
Associate Curator of Mammals, Section of Mammals, Natural History Museum of Los Angeles County

Steve Jeffries
Washington Department of Fish and Wildlife, Marine Mammal Investigations

Katherine Ralls (unable to attend)
Department of Zoological Research, National Zoological Park, Smithsonian Institution

Michael Scott
Inter-American Tropical Tuna Commission

Terry E. Wright
Manager of Enhancement Services, Northwest Indian Fisheries Commission

Invited Participants and Observers:

Jay Barlow
NMFS Southwest Fisheries Science Center

Carl Benz
US Fish and Wildlife Service

Susan Chivers
NMFS Southwest Fisheries Science Center

Bob DeLong
National Marine Mammal Laboratory

Pat Gearin
National Marine Mammal Laboratory

Scott Hill
National Marine Mammal Laboratory

Chuck Janisse
Federated Independent Seafood Harvesters

Jeff Laake
National Marine Mammal Laboratory

Joe Scordino
NMFS NW Regional Office

Paul Wade

Appendix 2

BACKGROUND DOCUMENTS

1) Public Comments on Draft Stock Assessments

Letter dated 4/21/97 from Center for Marine Conservation with comments on the Alaska, Atlantic and Pacific SARs.

Letter dated 4/21/97 from Human Society of the United States with comments on the Alaska, Atlantic and Pacific SARs.

Letter dated 4/21/97 from Marine Mammal Commission (includes comments on the revised PBR guidelines and on the Alaska SARs only. Comments on the Pacific and Atlantic SARs are anticipated in the ìnear futureî.

Letter dated 5/5/97 from the Office of Protected Resources.

2) P. Wade. Calculating limits to the human-caused mortality of cetaceans and pinnipeds.

3) N. Black, A. Schulman-Janiger, R. Ternullo, and M. Guerrero-Ruiz. 1996. (Draft final contract report) A Killer Whale Catalog for California and Western Mexico (text and tables only)

4) J. Barlow and S. Sexton. 1996. The effect of diving and searching behavior on the probability of detecting track-line groups, g0, of long-diving whales during line-transect surveys. SWFSC Admin. Report LJ-96-14. 21pp. (Final version of report reviewed at last SRG meeting).

5) J. Barlow and T. Gerrodette. 1996. Abundance of cetaceans in California waters based on 1991 and 1993 ship surveys. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-233. 15pp. (Final version of report reviewed as last SRG meeting).

6) Memoranda from Jay Barlow (dated 10/3/97 and 4/24/97) dealing with the handling of sightings of unidentified beaked whales and unidentified small whales in estimating the abundance of beaked whales.

7) J. Barlow. 1996 ORCAWALE Survey Summary: Abstract, tables, and figures summarizing very preliminary results from the 1996 ship survey that included CA, OR,

and WA.

8) D. DeMaster. Summary of public comments regarding Pacific SARs.

9) B. Taylor. What we do and don't know about sperm whales in the eastern temperate Pacific: a summary for the Pacific and Alaska SRGs.

10) C. Benz. Reported mortalities of southern sea otters in coastal finfish traps.

11) R. Westlake, W. Perryman, and K. Ono. 1997. Comparison of vertical aerial photographic and ground censuses of Steller sea lions at Ano Nuevo Island, July 1990-1993. Marine Mammal Science 13(2):207-218.

12) Oral presentation of preliminary results from 1996 pinger experiment in the Pacific drift net fishery. (Prepared by Fred Julian).

13) National Marine Mammal Laboratory. California Current ecosystem Program.

14) J. Laake. Stock assessment for harbor porpoise in Washington/Oregon.

15) F. Hester. 1996. A review of the Northwest Pacific cetacean population biological removal and mortality estimates.

16) National Marine Fisheries Service. 1997. Impacts of California sea lions and Pacific harbor seals on salmonids and on the coastal ecosystems of Washington, Oregon, and California. NOAA Tech. Memo. NMFS-NWFSC-28.

17) National Marine Fisheries Service. 1997. Draft Report to Congress: Results of discussions between National Marine Fisheries Service and Pacific States Marine Fisheries Commission on behalf of the states of Washington, Oregon, and California regarding recommendations for addressing the impacts of California sea lions and Pacific harbor seals on salmonids and West Coast ecosystems.

Appendix 3

Agenda for the Fifth Pacific SRG Meeting
National Marine Mammal Lab, Seattle, WA
6-8 May 1997

Tuesday, 6 May

- Convene meeting and discuss agenda
- Review of Stock Assessment Reports Revision Process
- Review of Stock Assessment Reports

Wednesday, 7 May

- Continue review of Stock Assessment Reports
- Joint Meeting with Alaska SRG
  - Review of Shared Stocks - Alaska and Pacific Regions
  - Review of Pinger Experiments
  - Alaska Subsistence Hunting and Co-Management
  - NMFS Report on Marine Mammal Serious Injury Definition
  - California Drift net Fishery Take Reduction Team
- Continue Pacific SRG review of Stock Assessment Reports

Thursday, 8 May

- Complete Review of Stock Assessment Reports
- Review of Take Reduction Team Process
- Sea Otter Mortalitites in Coastal Fish Traps
- Review of Report on Pinniped-Salmonid Interactions
- Indian Tribal Rights Issues
- Review Progress on Previous SRG Recommendations
- New Recommendations
- Topics for Next Meeting
- Adjourn

JOINT MEETING OF THE PACIFIC AND ALASKA SCIENTIFIC REVIEW GROUPS
NATIONAL MARINE MAMMAL LAB, SEATTLE, WA
6-8 MAY 1997

It was agreed that the following topics would be discussed in the joint session: 1) Philosophy in reviewing the SARs, 2) status of shared stocks (gray whale, killer whale, humpback whale, Steller sea lion, harbor seal, harbor porpoise, and others), 3) pinger experiments in WA, 4) pinniped-salmonid interactions in WA and OR, and 5) issues related to subsistence and co-management in AK. The joint meeting was chaired by Lloyd Lowry. Doug DeMaster served as rapporteur.

DEFINITION OF STOCKS

It was noted that in the GAMMS report (Wade and Angliss 1997) the definition of a stock was revised relative to the initial PBR workshop report (Barlow et al. 1995). It was further noted that stocks were equated with management units, where management units were ideally composed of demographically isolated populations. However, it was recognized that lacking sufficient data and because of the goal to manage in a risk adverse manner stocks were not always biologically (*i.e.*, genetically) distinct. Lowry commented that 60% of the discussions of the ASRG involved stock issues, where some members of the group tended to be "splitters" while others were "lumpers." Michael Scott responded that most of the PSRG members were comfortable with the concept of management units that did not necessarily represent biologically distinct populations. As an example, it was noted that the California-Oregon border was the current stock boundary for stocks of harbor seals and harbor porpoise, although no one suspected that this geographic landmark had any specific biological significance. Doyle Hanan commented that one potential problem with using management units that did not represent biologically distinct stocks was that the resulting PBRs were necessarily smaller than the PBRs that would result from defining stocks as biologically distinct units, which has the potential to disadvantage fisheries. Chuck Janisse added that defining stocks was a dynamic process that should be driven by data, not speculation. Hannah Bernard responded that the NMFS approach was conservative by design and in the absence of better information on movement patterns and genetic diversity was appropriate. Scott added that for some stocks (*e.g.*, beaked whales) management units were units greater than biologically distinct populations, as several species were pooled into a single stock. This was done because of the inability of researchers to identify beaked whales to species during surveys, thereby making species specific abundance estimates impossible.

There was no general agreement among participants as to what constitutes a stock. However, it was recognized that 1) where possible, stock designations should be based on data, 2) lacking sufficient biological data to define stock structure, stock

designations should not be arbitrary, but should be based on international boundaries or the distribution of fisheries, and 3) in general, state borders should not be used as stock boundaries unless additional information supported such a decision. [Comment by Pacific SRG: The Pacific SRG members do not support the third point listed above. Lacking biological information, using state boundaries as management unit boundaries can be a reasonable thing to do because states can have different fisheries and different management agencies and policies.]

REVIEW OF SHARED STOCKS

Gray whale; A recommendation was adopted that for all of the "shared" stocks both the ASRG and PSRG would review the status report. At this time, the term, "shared stocks," refers to the following species: gray whale, humpback whale, killer whale, Steller sea lion, harbor seal, and harbor porpoise. For example, draft status reports of shared stocks prepared by the Alaska Fisheries Science Center (AFSC) staff should be sent to the Chair (or a designated person) of the PSRG for distribution and vice versa. It was also agreed that the AFSC would continue to take the lead in preparing status reports for this species.

Killer whale: Jay Barlow noted that in Barlow *et al*. (1995) it was assumed that there was only one stock of killer whales along the west coast and it contained approximately 700 individuals, based on line transect, vessel surveys. Subsequent to that report, a catalog of killer whale photographs for photo-identification has been completed. The analysis of the new data indicates that there may be as many as four distinct stocks of killer whales off the west coast (e.g., transients, residents, offshore animals, LA pod), where animals from some of these putative stocks should be included in the population estimates of stocks from Alaskan waters (e.g., transients). Barlow noted that such efforts were beyond the scope of changes that could be incorporated into the current revisions of the SAR, but that these new findings would be incorporated into next yearís revision of the SAR.

Craig Matkin presented a brief summary of the work that he and his colleagues at the University of British Columbia and the Department of Fisheries and Oceans had completed regarding the genetic stock structure of killer whales in the eastern North Pacific. He noted that prior to this and other genetic studies, the photo-identification studies indicated little mixing among resident, transient, and offshore groups. However, based on sequencing of mt DNA, as many as eight distinct groupings of killers have been identified from British Columbia and Alaska, which indicates that the stock structure of killer whales in this area is more complicated than previously thought: 1) northern residents, 2) PWS residents-group 1, 3) PWS residents-group 2, 4) British Columbia, southern residents, 5) offshore animals, 6) AT1 transients in PWS, 7) British Columbia transients, and 8) Gulf of Alaska transients (e.g., PWS westward). It

was further noted that among these eight groupings, transients were more closely related to each other than resident and offshore animals. Given the preliminary nature of these findings (e.g., nuclear DNA analyses have not yet been completed) and the relatively small sample sizes used, Matkin recommended and it was agreed that the existing stock structures reported in the Pacific and Alaska SARs for killer whales be maintained at this time, but consideration of changing the stock structure be made during the next round of revisions.

Barlow commented that the complicated stock structure of these animals would make classification of animals seen during vessel surveys very difficult. There was general agreement with this conclusion. Further, it was recommended that the best way to proceed was to undertake a detailed cross matching of all catalogs with the goal of deriving minimum estimates of abundance for each stock of killer whale in the Pacific and Alaska Regions. It was noted that a large fraction of the animals from the west coast currently are not included in any catalogs. Barlow recommended that mark-recapture techniques also be considered in estimating abundance for putative stocks based on data collected during the ongoing photo-identification studies.

After some discussion, it was recommended that a subcommittee with members from both SRGs would be created to discuss killer whale status specifically. Members included: ASRG- Mathews, Matkin, and Straley; PSRG- Heyning; others- Barlow, DeMaster, and Gorbics. Communication among the group would likely have to take place through email or conference calls. One of the primary objectives of the group would be to determine the spatial distribution of animals from each of the putative stocks.

Steller sea lion - Eastern stock: There was agreement that the AFSC should take the lead on the status report for this stock. After some discussion, it was recommended that estimates of abundance and human-related removals from British Columbia should be included in the status report and in classifying the stock as to being strategic or not. Some members noted that there was evidence of demographic independence between the SE Alaska population (*i.e.*, increasing population) and the population of Steller sea lions in California (*i.e.*, decreasing population), which suggested these populations should be managed as separate stocks. Others noted that the population in Oregon was demographically similar to the SE Alaska population. It was recommended that additional genetic information from animals from British Columbia and the west coast of the US was needed, but that until such data were available, the currently recognized stock structure should be maintained.

Humpback whale: Jan Straley and Barlow presented an overview of the status of humpback whales in the North Pacific. The stock structure of humpback whales in the eastern North Pacific is unclear. The currently recognized stock structure indicates that the animals in the central North Pacific are from a separate stock than are animals from the eastern North Pacific and that animals from the eastern North Pacific should be

separated into two stocks (Mexico mainland-California stock and Mexico offshore islands and ìunknown feeding groundsî stock). Barlow reported that the results of a three-year study by Cascadia Inc. should be available shortly (July 1997) and would likely indicate that the number of animals in the North Pacific (i.e., all stocks) is in excess of 6000 animals. Further, given the study is based on mark-resight information from a three-year period (1991-1993), the results should provide information that can be used to test the current stock structure model. There was some discussion as to whether animals that winter near and around islands off the coast of Baja should be afforded stock specific status, but it was agreed that changes in the current stock structure should only be made after the release of the three-year study.

Harbor porpoise: Susan Chivers presented an overview of the available genetics data on stock structure of harbor porpoise. She noted that the material she was presenting would be available shortly (summer 1997) as a SWFSC report. [Addition by Susan Chivers: Rosel *et al.* (1995) stated that they could not reject the null hypothesis of no population structure using their mtDNA data set. Hoever, in their discussion they suggest that there may be concordance in the composition of the clades, and thus careful consideration should be given to identifying management units for this population.]

The results of a similar study (Chivers *et al*., In prep.) using mtDNA and a larger sample than used in the Rosel et al. study supported the conclusions of Rosel et al. A subsequent study using nuclear DNA (Chivers *et al*., In prep.) concluded that there was more structure than previously suspected within the harbor porpoise population along the west coast. For example, animals from central California were significantly different from all other population centers, except for Oregon. Further, animals taken from the Spike Rock area (Washington coast) were significantly different from all other population centers except from inland waters of Washington and British Columbia. Chivers concluded that while the results to date support the establishment of different stocks along the west coast of North America and Alaska, more samples are needed from animals from the San Juans, coastal Washington (*e.g*., Spike Rocks area), British Columbia, SE Alaska, Bristol Bay, and the Aleutians. A recommendation was agreed that the significant differences found in genetic diversity from animals that were continuously distributed along the west coast of North America and Alaska supported the establishments of stocks within this species.

Jeff Laake noted that the use of density gradients to identify stock boundaries was generally not valid and that genetic studies or mark-recapture studies were much preferred. He added that given the cost of conducting observer programs of sufficient effort to provide reliable estimates of mortality in relatively small areas that alternate methods to assess the status of harbor porpoise stocks should be considered. He suggested that monitoring trends in abundance for some of the stocks of harbor porpoise in Washington state waters might be cost effective. There was some

discussion as to whether such an approach would satisfy the legal mandates for classifying a stock as strategic. It was agreed to address this issue at a subsequent meeting of the PSRG.

Harbor seal: Tom Loughlin presented an overview of the stock structure of harbor seals based primarily on genetic information (*i.e.*, mtDNA analysis). This information is based on a preliminary report by Robin Westlake and Greg O'Corry-Crowe (SWFSC), where the report should be available by the summer of 1997. Loughlin noted that while harbor seals in Alaska, British Columbia, and the west coast of the US are continuously distributed, the Bering Sea population of harbor seals was genetically distinct from animals from the Gulf of Alaska and SE Alaska. Further, animals from the central portion of SE Alaska were genetically distinct from their nearest neighbors in the southernmost area of SE Alaska. Barlow noted that a recent publication in Marine Mammal Science (Lamont *et al.*, 1996) reported that significant genetic diversity between harbor seals from California and Washington.

A recommendation was agreed that until additional information on genetic diversity based on nuclear DNA the existing stock structure suggested in the Pacific and Alaska SARs should be maintained. Further, it was noted that given the DNA results there must be remarkably little movement of animals between subareas. However, it was also noted that while the currently available genetic information indicated that at least three stocks of harbor seals should be recognized in Alaska, the current boundaries are not consistent with these data. It was noted that additional tissue samples are needed from the following areas: 1) western Aleutians, 2) SE Alaska, and 3) British Columbia. In addition, Andrew Trites commented that a recent Masters Thesis by T. Burg also addressed the issue of genetic diversity in harbor seals in the North Pacific and that Burgís findings should be integrated into any final conclusions that are drawn regarding stock structure.

Other species: Three other species of cetaceans were briefly discussed: 1) sperm whale, 2) fin whale, and 3) Pacific white sided dolphin. Regarding sperm whales, Barlow noted that recent work by Barb Taylor (SWFSC) indicated that the conventional wisdom on stock structure of sperm whales in the North Pacific (*i.e.*, similar to humpback whales with an eastern and western population, where within a population animals migrate north in the summer and south in the winter) is likely incorrect (see appendix 3). Rather, animals in the northern North Pacific may summer in waters off Alaska and winter in the waters off Japan and China. Further, a separate stock may spend the winter months off California and summer in areas as yet unknown. In addition, given the large number of whales taken during the period of commercial whaling (over 250,000 in the eastern North Pacific) and the relatively low rate of sightings during a recent vessel survey in the waters between the continental U.S. and Hawaii, the current population of sperm whales in the North Pacific is much lower than commonly thought.

Regarding fin whales, it was noted that the current structure for fin whales identifies three separate stocks: 1) Hawaii, 2) Alaska, and 3) CA/OR/WA. It was noted that if the migratory pattern of fin whales is similar to most other baleen whales the Alaska stock and the Hawaii stock could possibly be combined into a single stock. However, Wynne noted that fin whales are seen year round in the vicinity of Kodiak Island, which might indicate the current stock structure is more appropriate. Finally, Barlow recommended and it was generally agreed that a review of the original Discovery Tag data for fin whales be reviewed prior to changing the existing stock structure for fin whales.

Barlow noted that in California, Pacific white-sided dolphins were observed year round within 5 miles of the coast, and were not typically pelagic. DeMaster commented that based on the results of the high seas drift net research program an offshore stock existed in the North Pacific, and that this may be another species of small cetacean that had both an offshore and coastal form. Mark Fraker noted that around Vancouver Island, Pacific white-sided dolphins had been observed frequently over the last 10 years, but prior to that were relatively rare. Matkin and Straley noted that sightings of this species in SE and PWS Alaska had also increased in recent years.

REVIEW OF PINGER EXPERIMENTS

Barlow and Laake summarized the results of pinger experiments in 1996, where 10 Khz pingers had been tested as to their efficacy in reducing entanglement of cetaceans in gill net fisheries. Barlow reported that in later half of 1996, a pinger experiment had been conducted on the drift gill net fishery, a fishery which targets sharks and swordfish. The results indicated that the pingers had reduced the entanglement of cetaceans in nets by 75%, with only a slight (non-significant) reduction in the catch rate of swordfish. Janisse commented that some of the fishermen believed that the pingers attracted (at least initially) swordfish to a net. Barlow commented that there were plans in place to implement a 100% pingered net policy during the 1997 fishing season.

Laake summarized the results of a pinger experiment in 1996, where 3 kHz pingers (spaced 10m apart) had been tested to reduce the entanglement of harbor porpoise in a native set net fishery for salmon off the coast of Washington (i.e., Spike Rocks area). The results indicated that there was a 90% reduction in harbor porpoise entanglement in pingered nets. Further, a behavioral study of harbor porpoise was performed around pingered and control nets. The results indicated that harbor porpoise generally stay 150m away from a pingered net. Laake added that in 1997, plans were underway to repeat the experiment for a 6-week period to evaluate whether habituation to the sounds produced by the pingers would be a problem and to test whether the catch of herring in pingered nets was reduced relative to control nets. This

latter test would be used to infer why harbor porpoise were not approaching the pingered nets.

PINNIPED SALMONID INTERACTIONS

Jefferies and Brown summarized ongoing studies related to pinniped-salmonid interactions. It was noted that acoustic harassment devices had been employed at Ballard Locks to discourage California sea lion predation on winter-run steelhead, but the results to date were inconclusive due to the small number of returning steelhead. Further, it was noted that a draft document prepared by NMFS and the Pacific States Fisheries Commission was available for public comment. The recommendations of this group included: 1) implement site-specific management of California sea lions and Pacific harbor seals, 2) develop safe, effective non-lethal deterrents, 3) selectively reinstate authority for the intentional lethal taking of California sea lions and Pacific harbor seals by commercial fishermen to protect gear and catch, and 4) collect additional information needed to evaluate and monitor California sea lion and Pacific harbor seal impacts on salmonids and other components of the West Coast ecosystem. Finally, it was noted that research on west coast pinnipeds in 1997 would include surveys for harbor seals in WA and OR to determine abundance and trends in abundance, food habit studies of harbor seals on the Columbia River (and other sites as funding allows), and a continuation of the AHD study at Ballard Locks.

CO-MANAGEMENT OF MARINE MAMMALS IN ALASKA

Lowry summarized the issue for the group. He noted that Congress did not originally intend to use the PBR system for managing subsistence takes in Alaska; however, late in the reauthorization process language was added to the Marine Mammal Protection Act, which required the FWS and NMFS to include the number of animals killed by subsistence hunters in evaluating whether a stock was strategic. Further, Congressional intent regarding the management of species taken predominantly by native subsistence hunters was for the implementation of co-management agreements between Alaska Native Organizations and Federal managers for stocks such as beluga, ice seals, harbor seal, Steller sea lion, sea otter, walrus, and polar bear (note: a cooperative agreement had already been negotiated by NMFS and the Alaska Eskimo Whaling Commission for the management of bowhead hunting in Alaska).

There was a general discussion among participants as to whether the use of RF ís of 1.0 was appropriate (*e.g.*, belugas) and whether it was appropriate to classify a stock as non-strategic in the absence of a reliable estimate of Nmin, where the level of mortality due to subsistence hunting was substantial (*e.g.*, ice seals). Lowry noted that the Native community in Alaska was very concerned about the ramifications of

classifying all of the stocks of ice seals or belugas as strategic, when there was not evidence that the current level of take had caused these stocks to decline to levels less than their optimal sustainable population level. Barlow and others noted that the critical feature of the PBR process was to incorporate uncertainty in estimating safe levels of annual removals. Therefore, if the correction factors for sightability were conservative, while the RF was set at 1.0, there would be at least some assurance that stocks would remain at healthy levels. Scott recommended and it was generally agreed that where estimates of Nmin did not incorporate uncertainty or were not considered conservative, RF values should be less than 1.0. Lowry added that for all of the beluga stocks, surveys to estimate abundance were conducted approximately once every 3-5 years. Therefore, over time (*e.g.*, 10 - 20 years) an index of abundance could be used to estimate trends in abundance. In this situation, any problems regarding over harvesting should become evident over time. It was agreed that the key problem related to the PBR system was for ice seals (spotted, ribbon, ringed, and bearded), where reliable abundance estimates for each stock had never been made and substantial human-related mortality took place, and where none of these stocks had been classified as strategic in the past. A recommendation was agreed that abundance estimates for these stocks should be determined as soon as possible. DeMaster commented that ongoing studies by the ADFG and NMFS, supported by NMFS, and planned studies by NMFS and ADFG, supported by NMFS, would hopefully provide estimates of abundance for at least ringed and bearded seals over the next five years.

GENERAL COMMENTS

There was a brief discussion of research plans for 1997 by all participants. In addition, a recommendation was agreed where all members of both SRGs would receive copies of the NMFS workshop report on serious injury, as soon as it was available. Regarding the activities of the only Take Reduction Team for the CA/OR/WA drift net fishery (note: the only TRT for North Pacific fisheries), Janisse (a member of the TRT) commented that the TRT had made four recommendations: 1) conduct a pinger experiment (which was done), 2) implement a policy of hosting skipper workshops on marine mammal entanglement, 3) mandate a minimum depth of six fathoms for the top of the net, and 4) limit the number of permits in the fishery to the current number.

At this point, the joint session of the Pacific and Alaska SRGs was ended. It was agreed that the session had provided valuable insight into how the members of the other SRG formulated recommendations for NMFS and FWS. Future joint meetings were recommended on an as-needed basis.