

**MEETING OF THE PACIFIC SCIENTIFIC REVIEW GROUP
PACIFIC WHALE CENTER, KAA NAPALI, HI
4-6 APRIL 1995**

The third meeting of the Pacific Scientific Review Group (SRG) was held at the Whale Center of the Pacific in Kaanapali, Hawaii on 4-6 April 1995. All current Pacific SRG members were in attendance in addition to Carl Benz from the U.S. Fish and Wildlife Service, Jay Barlow and Joyce Sisson from the National Marine Fisheries Service (NMFS) Southwest Fisheries Science Center (SWFSC) in La Jolla, Bill Gilmartin from the NMFS SWFSC in Honolulu, Gene Nitta from the NMFS Southwest Region in Honolulu, and Ed Shallenberger who participated as an invited expert on Hawaiian fisheries and marine mammals. Other observers included, Susan Bemrose, curator for the Whale Center of the Pacific, Allen Tom from the Humpback Whale National Marine Sanctuary Program, and Kathy Smith from the U.S. Fish and Wildlife Service in Hawaii. Joyce Sisson and Michael Scott served as rapporteurs. Pacific SRG members, invited participants, and observers are listed in Appendix 1. Background documents were provided to the group during the meeting, and are listed in Appendix 2. The agenda for the third meeting is in Appendix 3. Appendix 4 provides a summary table for the data used for the Pacific region Stock Assessment Reports (SARs). The group agreed that this meeting would be open to the public.

**GENERAL COMMENTS ON THE POTENTIAL BIOLOGICAL REMOVAL (PBR)
GUIDELINES**

The Pacific SRG was generally satisfied with the revised PBR guidelines. Jay Barlow updated the SRG on recent developments in the PBR process. He indicated that the PBR guidelines and SARs had not been completely finalized, but were unlikely to be modified greatly from the current versions. There have been disagreements within NMFS about the small-stock concept, but, barring new information, this concept will continue to be used. The PBR guidelines will be re-examined in a workshop this summer, with particular emphasis on defining stocks. The SRG recommended that representatives of the SRG attend this workshop (at least two representatives with expertise in cetaceans and pinnipeds).

NMFS is planning to establish a Take Reduction Team for the California driftnet fishery. The group recommended that future SARs contain a section documenting the activities of Take Reduction Teams or, in the case of endangered species, ESA Recovery Teams. NMFS did not establish a take reduction team for the central California harbor porpoise, a stock that the Pacific SRG has recommended be classified as strategic, because the fishing effort for the fishery that had previously been responsible for incidentally taking this stock has already been restricted. The group agreed with this decision, with the recommendation for continued research to determine whether the population is actually declining and if so, to determine the cause.

The Pacific SRG noted the need for more interaction among all three SRGs to promote consistency. It would be appropriate for the NMFS liaison to deal directly with SRGs to accomplish this. For example, in order to maintain consistency among the different SRGs in selecting values for the recovery factor, the NMFS liaison should provide a list of non-default values used by NMFS or the SRGs, and the rationale behind these decisions. The Pacific SRG also requested that they be provided with Stock Assessment Reports for all stocks, not just the ones for the Pacific Region, so that the SRG can review stocks that are of interest. For example, the group wanted the opportunity to review Hawaiian humpback whales that are currently being reviewed by the Alaska SRG. Jay Barlow said he would distribute the Stock Assessment Reports from the other regions to the Pacific SRG members.

During the group's discussion of declining populations and endangered species, concern was expressed on how the ESA status of a species would be incorporated into the PBR calculation. A species listed as endangered under the Endangered Species Act (ESA) would warrant a default value of 0.1 for the Recovery Factor, but the group noted that because the ESA process can be slow, there may be a considerable lag time before a species is listed. Another concern was that the legislative fate of the ESA is currently uncertain, and future reliance on ESA listings for the PBR process may be problematic. It was suggested that the PBR guidelines contain comparable criteria to those of the ESA so that a Recovery Factor of 0.1 could be justified even in the absence of an official ESA listing. In previous discussions, it had also been decided that a Take Reduction Team would not be necessary for endangered species because its efforts would duplicate those of an ESA Recovery Team. It was pointed out, however, that not all endangered species have Recovery Teams and that it shouldn't automatically be assumed that one is in place and active.

DEFAULT VALUES OF R_{max} FOR DECLINING POPULATIONS

This issue of using different default values for R_{max} in cases of declining populations to achieve a more conservative PBR originated during discussion of the Hawaiian monk seal. This species is listed as endangered, its population size is small, and the numbers continue to decline in the absence of an obvious cause. Yet, it is under these situations, a population size presumed to be low relative to carrying capacity, that theoretically, R_{max} should be attained. This contradiction led to a discussion of whether the default value for R_{max} in such cases should be changed to zero.

After lengthy discussion, the group was uncomfortable changing the default values for R_{max} to zero - it assumes we know that R_{max} is in fact zero (an assumption that would be difficult to accept for a population dynamicist) and it assumes that the population decline is not due to fishery or other direct human-caused mortality or a decline in carrying capacity (which could still be due to human causes). One suggestion was to model the effects of alternative R_{max} values for declining populations. Another was to simply set the PBR to zero in accord with ESA regulations. The group concluded that changes from the default

should be based on established criteria. In practice, however, these actions would not likely be very productive because the maximum sanction under the current PBR process is the formation of a Take Reduction Team - an action that would be unnecessary if an ESA Recovery Team is in place. It was also pointed out that the formation of a Take Reduction Team would not be justified assuming that fishery mortality is not preventing the population from attaining R_{max} .

EFFECTS ON PBR OF ENVIRONMENTAL PERTURBATIONS

In previous discussions of pinniped population trends, there was concern about large fluctuations in the PBR due to the effects of short-term environmental changes on abundance estimates (particularly those based on pup counts, distribution, and mortality). One example is the high pup mortality in Pacific coast pinnipeds that has occurred during El Niño events. For those stocks whose abundance estimates are based on pup counts, this can cause a dramatic reduction in the PBR, a reduction that may not be representative of the population as a whole. In this case, over-reacting to short-term events could unnecessarily trigger the formation of a Take Reduction Team.

The effects of longer-term, more-gradual environmental changes are perhaps a more important concern for the Pacific Region. Such environmental changes have been suggested as the cause for declines or changes in the distribution in the North Pacific of Hawaiian monk seals, Steller sea lions, California pilot whales, bottlenose dolphins, and harbor porpoise. A better understanding of these environmental changes is necessary.

HUMAN-CAUSED NON-FISHERY MORTALITY

The Pacific SRG discussed how to integrate non-fishery mortality due to pollution, ship strikes, habitat destruction and other human-related causes into the process of calculating PBRs. The group agreed that habitat issues should be addressed in the SARs when possible, particularly for strategic stocks and declining non-strategic stocks. The group could not agree on how to include such mortality; at the least, N_{min} would be reduced when appropriate (*e.g.*, when a population is affected by an oil spill). It was not agreed whether such mortality should be counted against PBR.

The importance of habitat protection for maintaining healthy populations is axiomatic, however, the effects of habitat destruction on populations can be difficult to quantify and factor into the PBR process. It was acknowledged that some potential habitat problems would not come under the jurisdiction of the NMFS or USFWS. The group discussed taking a single-species vs. an ecosystem approach to management. There were advantages expressed for both approaches, but the SRG believes that more research into the ecosystem is necessary, particularly when considering alternative fishing practices. Examples were cited that illustrated the unintentional effects that resulted when fishing practices were changed to

reduce mortality of marine mammals (*e.g.*, moving the California gillnet fishery offshore to reduce sea otter mortality resulted in increased harbor porpoise mortality, shifting to "dolphin-safe" tuna purse-seining methods resulted in high bycatches of other large marine vertebrates).

MULTI-SPECIES OR MULTI-STOCK MANAGEMENT

The group briefly reviewed the paper written by Taylor illustrating the risks inherent in lumping stocks too broadly (Taylor 1995). The group supported her approach which is consistent with the small-stock concept described in the Report of the PBR Workshop and the Revised Guidelines. The group realized that there are inconsistencies in applying this concept among the SRGs and NMFS Regions. The group suggested that a justification should be provided when adopting riskier management strategies.

The group discussed the risks inherent in lumping species or stocks in a single management unit. One problem for the Pacific SRG is lumping the mesoplodons into a single unit because of the difficulties of sighting and identifying these species by biologists aboard survey vessels and those monitoring marine mammal mortality aboard fishing vessels. Jay Barlow discussed the NMFS plans for a research cruise this year in the Gulf of California to develop abundance correction factors and increase the sample of sightings identified to species. The consensus of the SRG was that the NMFS research plan to deal with these problems was a good one.

RAPIDLY INCREASING PINNIPED POPULATIONS

In addition to acknowledging the serious problems of declining populations of certain marine mammal stocks (or stocks of unknown status) that may be aggravated by fishery takes, the Pacific SRG understands that other marine mammal stocks have been increasing at significant rates. Because of such population growth, several west coast pinniped stocks are increasingly involved in interactions with coastal marine and anadromous fish resources, marine fisheries and other human activities in the coastal environment. This has become particularly contentious because of the unknown amount of pinniped predation on threatened and endangered salmonids and increasing pinniped-fishery interactions. The group recognizes that an important by-product of this population growth and the increasing interactions is the growing negative attitude toward pinnipeds within coastal communities, primarily by those involved with sport and commercial fishing activities, which can result in the illegal mortalities of pinnipeds. The group also recognizes that potentially the goals of protecting marine mammals and protecting endangered fish species could come into conflict.

The 1994 amendments to the MMPA recognized these problems and attempted to address them, primarily under Section 120 of the amended law. Section 120 includes

provisions for a "California Sea Lions and Pacific Harbor Seals Investigation and Report" and a "Region-wide Pinniped-Fishery Interaction Study". The Pacific SRG Recommends that NMFS, in conjunction with the State marine resource management agencies, should actively pursue these tasks, placing particular emphasis on the region-wide pinniped-fishery interaction study.

It has come to the attention of the Pacific SRG that the California sea lion and harbor seal investigation recently begun by NMFS amounts to little more than a literature review of existing information on pinniped-fishery and fish resource interactions. This limited approach appears to be due to a lack of funding needed to adequately address this provision of the MMPA. It was brought to the attention of the Pacific SRG that funds originally identified for the task were diverted by NMFS to other issues. The Pacific SRG believes that the literature review currently underway is inadequate to address this issue of growing significance.

With respect to the region-wide pinniped-fishery interaction study, the Pacific SRG recommends that the NMFS secure necessary funding and initiate work on this MMPA provision. The Pacific SRG believes that the best solution to these problems, including the issue of protected species that prey on threatened or endangered fish stocks, is to address them directly through appropriately designed research programs aimed at providing new information on pinniped food habits in this region. This information should then be used to develop scientifically valid estimates of impacts that pinniped foraging may or may not have on various coastal marine and anadromous fish resources.

ZERO MORTALITY RATE GOAL

Jay Barlow presented the current definition of the ZMRG used by the NMFS. This definition is presented below, with changes suggested by the SRG indicated in boldface:

The Zero Mortality Rate Goal is achieved when the annual number of incidental mortalities and serious injuries in each fishery has been reduced to, or maintained at, insignificant levels approaching a zero mortality and serious injury rate. A fishery will have reached this goal when collectively with other fisheries it is responsible for the annual removal of (1) ten percent or less of any marine mammal stock's potential biological removal level, or (2) more than ten percent of any marine mammal stock's potential biological removal level, yet the fishery is responsible for the annual removal of one percent or less of that stock's potential biological level."

It was noted that this definition does not deal with the issue of technological feasibility. The SRG recognized the difficulties inherent in this definition, but could not offer a better alternative. Jay Barlow indicated that the other SRGs were at a similar impasse. The group recommended that an assessment of the performance of this definition of the ZMRG be included in the Commerce Secretary's third-year report to Congress.

CORRECTION FACTORS FOR ABUNDANCE ESTIMATES

Research into the diving behavior of deep-diving beaked whales will be conducted this year by the SWFSC in an attempt to develop correction factors for abundance estimates. Correction factors to convert pinniped pup counts into population estimates would require demographic information and modeling the proportion of pups as a function of population growth. Jay Barlow indicated that such a project would not likely have a high priority because the stocks of California sea lions and harbor seals of the Pacific region have fishery mortalities that are below both the PBR and ZMRG, despite the large underestimation of population size that this method produces.

STOCKS CROSSING INTERNATIONAL BOUNDARIES

The potential problem for managing stocks that cross international boundaries is that, while the population size may be apportioned between U.S. and non-U.S. waters, the mortality could be disproportionately higher outside the U.S. Without information on fisheries and marine mammal mortality from waters adjacent to the U.S., management decisions could be made that are not risk-averse. Clearly, better information exchange and cooperative management strategies with neighboring countries are needed to deal with this potential problem.

One example of a trans-border situation that could be co-managed bilaterally is the California and Mexican shark driftnet fisheries (140 boats in CA, about 60 in Mexico). Jay Barlow indicated that the mortality rates are thought to be comparable, but the species composition of the mortality in the Mexican fishery is unknown. Another example is the population of harbor porpoises that occurs near the Washington-British Columbian border, particularly for the Washington inland stock. More information about porpoise movements across the border and about Canadian gillnet fisheries is needed. Another example are populations that range offshore of the 200-mile U.S. EEZ, such as sperm whales. In order to include portions of the population outside U.S. waters, surveys would be required in the offshore areas to estimate population size, and information on movements and migrations would be required to determine the portion of the population that enters U.S. waters. Until more information is available, the PBR should remain as it is.

Information could be gained on non-U.S. fisheries and marine mammal populations through cooperative research and co-management. Telemetry research could be conducted to determine the extent of cross-boundary movements. It is important that the SRGs treat transboundary populations consistently. For example, the Pacific and Alaska SRGs should develop a common strategy for dealing with species that range in Washington, British Columbia, and Alaska waters. Surveys to estimate populations in international waters of the North Pacific would not likely be cost-effective, but opportunistic survey legs through the area could be conducted if NOAA vessels on the West coast were transiting to Hawaii.

HAWAIIAN MARINE MAMMAL STOCKS

The recent status of Hawaiian stocks of marine mammals was reviewed by Gene Nitta and Bill Gilmartin of the NMFS; the last review of marine mammals was published by Ed Shallenberger who, as an invited expert at this meeting, also provided the perspective of the commercial fishermen. The 1981 Shallenberger status review of marine mammals and the Nitta and Henderson (1993) review of Hawaiian fisheries served as background documents. The main fisheries are a handline fishery, a longline fishery, a nearshore set-net fishery, and a lobster-trap fishery.

The only major change to the fisheries review of Nitta and Henderson is that the lobster fishery in the NW Hawaiian Islands has been closed this year. The only known incidental fishery mortalities that have occurred recently were to a bottlenose dolphin calf and a spinner dolphin that entangled in set-nets. Monk seals are known to have been injured by long-line and other hook-and-line gear. The set nets are used in a partially commercial, partially subsistence coastal fishery. These nets are usually short, and set from the shoreline (usually to soak overnight). Legally, the nets can not soak longer than 12 hours, but law enforcement for such a widespread, but small-scale fishery is problematic. These near-shore set-net fisheries are not regulated by the federal government and are the responsibility of the state. NMFS observers have been placed aboard bottomfish boats for the past 3 years, and are currently being placed aboard longline boats.

Sightings data for the islands are known to be biased because more sightings are made on the leeward sides of the islands where the sea state is more conducive to small-boat operations and for making sightings. Very little information is available for the windward sides and the channels between the islands, and the NW Hawaiian Islands. The ATOC surveys around the main islands are in their second year, but reports of the surveys are not yet available. The Pacific SRG agreed that these data may provide useful baseline information on the composition and distribution of cetacean stocks in Hawaiian waters. Most of the other studies in the islands are focused on humpback whales. It was suggested that fall would be the best time to comprehensively survey the islands because of the increased likelihood of finding better sighting conditions on the windward sides.

Review by Stock for Hawaiian Marine Mammals

Blainville's Beaked Whale - A few have been sighted; no known fishery interactions.

Cuvier's Beaked Whale - A few have been sighted and one stranded; no known fishery interactions.

Blue Whales - Blue whale sounds have been recorded by the Navy, but none have been sighted.

Bottlenose Dolphins - This species has been shot at while interacting with the handline and troll fisheries. The dolphins raid the catch and may cause injury to the fishermen if a hooked line is pulled suddenly by a dolphin while the fisherman is attempted to haul in the line. Shallenberger noted that the level of frustration of the fishermen is high, and that,

although the dolphins are shot at, they are apparently difficult to hit due to learned avoidance behavior. One dolphin calf also was caught in a coastal gillnet.

Bryde's Whale - Occasionally seen, but no known fishery interaction.

Kogiids - *K. simus* is more common than *K. breviceps*, and strandings of the former have occurred. No known fishery interaction.

False Killer Whales - Fishery interaction similar to that of bottlenose dolphins are probable, and one instance of shooting is known, but the species is not as common as the bottlenose dolphins.

Fin Whales - No known fishery interaction.

Monk Seals - The longline fishery is restricted from setting within 50 nm of seal haul outs, and within 100 nm corridors connecting the islands. Fishery interactions are still possible. They are known to take bycatch from bottomfish boats (including ciguetoxic fish) and may become hooked. One was also killed in a coastal gillnet in 1976.

Killer Whales - Rarely seen, one instance of raiding a line reported.

Melon-headed Whale - Mainly offshore, no fishery interactions known.

Short-fin Pilot Whale - Commonly sighted, they may raid longlines sometimes, probably attracted to squid.

Pygmy Killer Whale - Occasionally sighted inshore, they may raid fishing lines at night.

Pygmy Sperm Whale - More commonly sighted than pygmy killer whales, some stranding data available.

Risso's Dolphins - Not commonly sighted, some strandings. No fishery interactions known.

Rough-toothed Dolphins - Similar interactions as the bottlenose dolphins, although unlikely to encounter coastal gillnets because of their offshore distribution.

Sperm Whales - Common off NW Hawaii, particularly in the channels. No fishery interactions known; one instance of swallowing fishing gear reported.

Spinner Dolphins - Common along the coast, resting inshore during the day and feeding offshore at night. One gillnet mortality is known, and anecdotal accounts suggest that there have likely been others.

Spotted Dolphins - Commonly sighted, but no fishery interactions known.

Striped Dolphins - Known to have stranded, but not sighted.

Based on this review, the following species are likely to interact with fisheries through incidental mortality in gill nets or direct takes by shooting in line fisheries:

Bottlenose Dolphins

False Killer Whales

Pilot Whales

Pygmy Killer Whales

Rough-toothed Dolphins

Spinner Dolphins

In addition to the research recommended by the Pacific SRG listed in the Recommendations Section, studies were suggested in the following areas for Hawaiian marine mammal stocks:

- 1) Determining whether the populations of spotted, spinner, and bottlenose dolphins were resident to particular islands, or are more wide-ranging.
- 2) Conducting another fisherman survey, similar to the Kuljis (1984) study, to qualitatively estimate the extent of interactions.
- 3) Using photo-identification studies of local bottlenose dolphin to provide evidence of shooting attempts, and to calculate population estimates and trends that may suggest if shootings are having significant effects on the population.

It was noted that there were no simple solutions to these fishery interaction problems because the fisheries are often small scale and difficult to monitor.

PRIORITIZATION OF STRATEGIC STOCKS

The group categorized the strategic stocks of the Pacific region into two priority levels. The criteria for the prioritization was based on the degree of interaction with fisheries, the potential risk to the population from human or natural threats, and the available knowledge on the status of the stock. It was also noted whether the need for each of the Priority-1 stocks was for a Take Reduction Team or research or both.

PRIORITY-1 STOCKS

Baird's Beaked Whale - Take Reduction Team for the driftnet fishery, research into abundance.

Mesoplodonts - Take Reduction Team for the driftnet fishery, research into abundance and species identification.

Cuvier's Beaked Whale - Take Reduction Team for the driftnet fishery, research into abundance.

Harbor porpoise (Central CA) - A Take Reduction Team is probably not warranted given the low gillnet fishing effort, but research is needed on stock structure and to determine whether the population is continuing to decline and, if so, what are the reasons for the decline.

Hawaiian Monk Seal - A Take Reduction Team would not be necessary because of the existence of the ESA Recovery Team; research should be continued into monitoring population sizes and determining the reasons for the decline in population size.

Humpback Whales (CA) - Take Reduction Team for the driftnet fishery, research into abundance trends.

Pilot Whales (CA, OR, WA) - Monitoring squid fishery with observer program, research into whether human and/or natural causes were responsible for the virtual disappearance of these whales from the Southern California Bight.

Kogiids (CA) - Take Reduction Team for the driftnet fishery, research into abundance and species identification.

Sperm Whale (CA) - Take Reduction Team for the driftnet fishery, research into abundance trends.

Sea Otters (CA) - A Take Reduction Team would not be necessary because of the existence of the ESA Recovery Team, research into abundance trends and distribution changes.

Harbor Porpoise (WA inland) - While this stock is not yet considered strategic, it should have a high priority for research into stock structure and movements (both movements across the border and movements across the putative stock boundary at Cape Flattery). Because the issues of Treaty Rights and trans-boundary research and management are involved with this stock, this stock is an important test case for the PBR process in this region. It was also suggested that stranding data from British Columbia collected by Robin Baird be examined.

PRIORITY-2 STOCKS

Blue Whales (HI)

Blue Whales (CA)

Fin Whales (HI)

Fin Whales (CA)

Sei Whale (CA)

Sperm Whale (HI)

Guadelupe Fur Seal

Northern Fur Seal (San Miguel I.)

It was apparent that a Take Reduction Team for the California driftnet fishery would be effectively monitoring and attempting to reduce the mortality of most of the Priority-1 stocks. It was also thought that a comprehensive survey of Hawaiian waters would provide a better inventory of species present and would allow a reassessment of the number of stocks in the region. There was a question whether the San Miguel population of the northern fur seal should be considered depleted under the MMPA even though the species is depleted in the rest of its range.

DISCUSSION OF TREATY RIGHTS

Terry Wright reviewed the issue of Northwest Indian Treaty Rights and marine mammal management. There are about 20 tribes in the area and 5 different treaties that are in effect. The Makah treaty, for example, specifically mentions whaling and sealing rights. At the time of the treaty (1855), the Makahs were active in commercial whaling and sealing, serving as harpooners on whaling ships because of the experience gained in their traditional hunting. Because of the specific hunting rights detailed in the treaty and their participation in commercial whaling at the time the treaty was signed, the Makahs claim that their rights include both subsistence and commercial hunting of marine mammals. The traditional hunting grounds for the Makah and other tribes included the entire Washington coast out to about 150 miles.

The Makah intend to harvest gray whales (starting in 1996), harbor seals (5 already taken), California sea lions, minke whales, small cetaceans such as harbor porpoise and

Dall's porpoise, and, potentially in the future, sea otters. The Makah are planning to operate a processing plant so as to sell to markets outside the U.S. The Makah have started discussions with Japan and Norway about selling their whale products to both countries. The plant could be used to process the catches of other tribes as well. The Makah and other tribes intend to reduce local populations of harbor seals to one-half to one-third of current population levels to about the 1980 levels within 5 years. There would be no limit placed on catches of California sea lions because it is believed that the sea lions are very abundant, not resident and only transit through the area.

Wright suggested that the main issue for the Pacific SRG will be to establish a co-management plan involving the tribal representatives, state and federal agencies which would be in place rather than that of a Take Reduction Team. The tribes have enforcement and management responsibilities as part of this co-management scheme.

FUTURE ROLE OF THE SRG

The group discussed the long-term goals of the SRG and how the group could be most effective in meeting their MMPA mandate. The following activities were suggested as being appropriate for meeting these goals.

- 1) Continue reviewing stock assessment reports, focusing particularly in the priority stocks identified above. Such reviews would be made at least annually.
- 2) Continue providing a prioritization of stocks to the NMFS.
- 3) Sending representatives of the SRG to meetings on the PBR concept. It was suggested that at least two members, an expert on pinnipeds and an expert on cetaceans, be present at such meetings.
- 4) Sending a representative to the annual program reviews of the NW and SW Fisheries Science Centers.
- 5) Monitor implementation of SRG suggestions made to the NMFS.
- 6) Monitor implementation of the Zero Mortality Rate Goal definition and the success of fisheries in meeting this goal.

PACIFIC SCIENTIFIC REVIEW GROUP RECOMMENDATIONS

The Pacific SRG identified the high-priority actions needed, and ranked them as either first or second priority. Order of listing within these two categories is not an indication of higher or lower priority.

FIRST PRIORITY

The Pacific SRG recommends that a Take Reduction Team be formed to evaluate the driftnet 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.

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.

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.

The Pacific SRG recommends that monitoring of the central California harbor porpoise stock be continued. Although the almost total closure of the coastal drift-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.

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.

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.

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.

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.

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 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.

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.

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.

ADJOURNMENT

The Chairman thanked, on behalf of the SRG, the efforts of SRG member Hannah Bernard in making arrangements for the meeting and the kind hospitality of Susan Bemrose and the Whale Center of the Pacific for hosting the meeting. The meeting was adjourned at 1225 h.

Scientific Review Group - Pacific Region

Hannah J. Bernard

Ocean Mammal Institute, Co-Director

Robin Brown

Oregon Department of Fish and Wildlife, Marine Region

Mark Fraker

Wildlife Biologist

Doyle A. Hanan

California Department of Fish and Game, Marine Resources Division

John Heyning, Ph. D.

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 Ph.D.

Department of Zoological Research, National Zoological Park, Smithsonian Institution

Michael Scott, Ph. D.

Inter-American Tropical Tuna Commission

Terry E. Wright

Manager of Enhancement Services, Northwest Indian Fisheries Commission

Invited Participants and Observers:

Ed Shallenberger

Fishery Biologist and Commercial Fisherman

Gene Nitta

NMFS Southwest Region - Honolulu

Bill Gilmartin

NMFS Southwest Fisheries Science Center - Honolulu

Jay Barlow, Ph. D.

NMFS Southwest Fisheries Science Center - La Jolla

Joyce Sisson

NMFS Southwest Fisheries Science Center - La Jolla

Carl Benz

US Fish and Wildlife Service, Assistant Field Supervisor, Listing and Recovery

Susan Bemrose

Curator, Whale Center of the Pacific

Allen Tom

Humpback Whale National Marine Sanctuary

Kathy Smith

USFWS National Wildlife Refuge Hawaii

LIST OF DOCUMENTS

- Barlow, J. 1994. The abundance of cetaceans in California waters. Part I: Ship surveys in summer and fall of 1991. Fishery Bulletin Vol. 93:1-14.
- Barlow, J., R.W. Baird, J.E. Heyning, K. Wynne, A.M. Manville, II, L.F. Lowry, D. Hanan, J. Sease, and V.N. Burkanov. 1994. A review of cetacean and pinniped mortality in coastal fisheries along the west coast of the USA and Canada and the east coast of the Russian Federation. Rep. Int. Whal. Commn (Special Issue 15): 405-526.
- Forney, K.A. 1994. Trends in harbor porpoise (*Phocoena phocoena*) abundance off California, 1986-1993. Fishery Bulletin (In Press).
- Forney, K.A., J. Barlow, and J.V. Carretta. 1994. The abundance of cetaceans in California waters. Part II: Aerial surveys in winter and spring of 1991 and 1992. Fishery Bulletin Vol. 93:15-26.
- Kuljis, B.A. 1983. Porpoise/fisheries interactions within the Hawaiian Islands. NMFS SWFSC Administrative Report H-83-19C.
- Nitta, E.T. and J.R. Henderson. 1993. A review of interactions between Hawaii's fisheries and protected species. Marine Fisheries Review Vol 55(2):83-92.
- O'Shea, T.J. and R.L. Brownell, Jr. 1994. Organochlorine and metal contaminants in baleen whales: a review and evaluation of conservation implications. The Science of the Total Environment Vol. 154:179-200.
- Shallenberger, E.W. 1981. The status of Hawaiian cetaceans. Final Report to the Marine Mammal Commission, Contract MM7AC028. NTIS Report No. MMC-77/23.
- Taylor, B. 1995. Defining "populations" to meet management objectives for marine mammals. NOAA NMFS SWFSC Administrative Report LJ-95-03.

Agenda
Pacific Region Scientific Review Group
4-6 April 1995
Maui, Hawaii

Tuesday, 4 April

Morning

- ▶ Pacific Region Stock Assessment Reports
- ▶ Declining Populations and Lowering Default Values of R_{max}
- ▶ Effect on PBR of Large Scale Ecological Perturbations and Resulting Population Fluctuations
- ▶ Non-Fishery Human-Related Harm to Populations (e.g., Pollution, habitat degradation)

Afternoon

- ▶ Multi stock/Species Management Units
- ▶ Criteria for Setting Recovery Factors
- ▶ Rapidly Increasing Pinniped Populations
- ▶ Definition of Zero Mortality Rate Goal
- ▶ Correction Factors for Abundance Estimates (i.e., Proportions of Hauled Out Pinnipeds and Cetacean Dive Intervals)

Wednesday, 5 April

Morning

- ▶ Problems Assessing Populations that Cross Borders
- ▶ Closed SRG Session

Afternoon

- ▶ Review of Hawaiian Stocks and Fisheries

Thursday, 6 April

Morning

- ▶ Priority Stocks and Research Needs
- ▶ Treaty Rights of Northwest Coast Tribes
- ▶ Long-term role of SRGs
- ▶ Conclude Discussions and General Recommendations

Species	Stock	N	CV(N)	(L20%)	Rounded	Half	F	Estimated PBR	Estimated	Estimated	Estimated	Avg. kill	Strategic?
				Nmin	Nmin	Rmax			1991 kill	1992 kill	1993 kill	91-93	
California sea lion	U.S. Stock	171,000	N/A	84,195.0	84,195	0.06	1.0	5052.0	1915	3351	2073	2446	No
Pacific harbor seal	CA	34,554	0.062	32,798.1	32,798	0.06	1.0	1968.0	559	1136	480	725	No
Pacific harbor seal	OR to WA	29,939	0.066	28,322.3	28,322	0.06	0.5	850.0				231	No
Pacific harbor seal	WA Inland	13,833	0.069	13,053.1	13,053	0.06	1.0	783.0				14	No
Northern elephant seal	CA	73,500	N/A	42,000.0	42,000	0.042	1.0	1743.0	136	165	174	158	No
Northern fur seal	San Miguel	10,536	N/A	10,536.0	10,536	0.043	0.5	227.0				0	Strategic
Hawaiian monk seal	Hawaii	1,406	0.093	1,300.3	1,300	0.035	0.1	4.6				?	Strategic
Guadalupe fur seal	Mexico	6,443	N/A	3,028.0	3,028	0.069	0.5	104.0				0	Strategic
Harbor porpoise	Central CA	4,120	0.220	3,430.8	3,431	0.02	0.5	34.0	38	44	12	31	Strategic
Harbor porpoise	North CA	9,250	0.230	7,640.4	7,640	0.02	0.5	76.0	0	0	0	0	No
Harbor porpoise	OR/WA Coast	26,175	0.206	22,046.5	22,046	0.02	0.5	220.0	14			14	No
Harbor porpoise	WA Inland	3,352	0.270	2,681.0	2,681	0.02	0.5	27.0	15			15	No
Dall's porpoise	CA to WA	78,422	0.350	58,902.1	58,902	0.02	0.5	589.0	17	8	82	36	No
Pacific white-sided dolphin	CA to WA	121,693	0.480	82,938.6	82,939	0.02	0.5	829.0	42	23	18	28	No
Risso's dolphin	CA to WA	32,376	0.460	22,388.1	22,388	0.02	0.5	224.0	42	38	36	39	No
Coastal bottlenose dolphin	CA coastal	245	N/A	245.0	245	0.02	0.5	2.5	0	0	0	0	No*
Offshore bottlenose dolphin	CA to WA	2,382	0.360	1,775.4	1,775	0.02	0.5	18.0	0	23	0	8	No
Striped dolphin	CA to WA	19,008	0.410	13,639.4	13,639	0.02	0.5	136.0	0	0	0	0	No
Short-beaked common dolphin	CA to WA	225,821	0.280	179,184.7	179,185	0.02	0.5	1792.0	353	337	240	310	No
Long-beaked common dolphin	CA	9,472	0.680	5,636.4	5,636	0.02	0.5	56.0	20	19	13	17	No
Northern right whale dolphin	CA to WA	21,332	0.430	15,080.3	15,080	0.02	0.5	151.0	59	15	63	46	No
Killer whale	CA to WA Pac	307	1.200	138.6	139	0.02	0.5	1.4	0	0	0	0	No*
Short-finned pilot whale	CA to WA	N/A	N/A	N/A	N/A	0.02	0.5	N/A	0	8	100	36	Strategic
Baird's beaked whale	CA to WA	38	1.030	18.6	19	0.02	0.5	0.2	0	0	0	0	Strategic
Mesoplodon spp.	CA to WA	250	0.830	135.9	136	0.02	0.5	1.4	0	23	0	8	Strategic
Cuvier's beaked whale	CA to WA	1,621	0.820	886.2	886	0.02	0.5	8.9	0	45	27	24	Strategic
Pgymy sperm whale	CA to WA	870	0.800	481.2	481	0.02	0.5	4.8	0	8	9	6	Strategic
Dwarf sperm whale	CA to WA	N/A	N/A	N/A	N/A	0.02	0.5	N/A	0	0	0	0	No
Sperm whale	CA to WA	756	0.490	511.6	512	0.02	0.1	1.0	0	23	23	15	Strategic
Humpback whale	CA/Mexico	597	0.070	562.9	563	0.02	0.1	1.1				0.5	Strategic
Blue whale	CA/Mexico	2,134	0.269	1,708.6	1,709	0.02	0.1	3.4				1.0	Strategic
Fin whale	CA to WA	935	0.630	574.6	575	0.02	0.1	1.2				1.0	Strategic
Bryde's whale	ETP	13,000	0.200	11,163.3	11,163	0.02	0.5	112.0				0.0	No
Sei whale	E. N. Pacific	N/A	N/A	N/A	N/A	0.02	0.1	N/A				0.0	Strategic
Minke whale	CA to WA	526	0.970	265.0	265	0.02	0.5	2.7				0.4	No*

* The observed take of a single animal will result in the PBR being exceeded and 'strategic' status for the stock

** Out of 38 identified common dolphins, only 2 were longbeaked. Proportion of longbeaks therefore low, overall mortality likely <73

PACIFIC SCIENTIFIC REVIEW GROUP RECOMMENDATIONS

The Pacific SRG identified the high-priority actions needed, and ranked them as either first or second priority. Order of listing within these two categories is not an indication of higher or lower priority.

FIRST PRIORITY

The Pacific SRG recommends that a Take Reduction Team be formed to evaluate the driftnet 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.

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.

The Pacific SRG recommends that monitoring of the central California harbor porpoise stock be continued. Although the almost total closure of the coastal drift-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.

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.

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.

The Pacific SRG strongly supports the role of a NMFS liaison to promote consistency