

**MEETING OF THE PACIFIC SCIENTIFIC REVIEW GROUP
HAWAII NATIONAL MARINE SANCTUARY OFFICE, MAUI, HI
5-6 DECEMBER 1999**

The tenth meeting of the Pacific Scientific Review Group (SRG) was held at the Hawaii National Marine Sanctuary Office, Maui, HI from 5 to 6 December 1999. All Pacific SRG members were in attendance with the exception of Robin Brown. Susan Chivers and Jay Barlow served as rapporteurs. Michael Scott served as the new chairman of the SRG. The SRG members and other participants are listed in Appendix 1, review documents are listed in Appendix 2, and the agenda of the meeting is in Appendix 3.

General Comments

The SRG discussed whether to have one or two meetings per year. The group scheduled the next meeting for next fall (tentatively scheduled to be in Oregon). In addition, an email discussion would be held, in approximately six months, to determine whether an additional meeting would be needed to deal with interim issues.

Hawaiian Monk Seals

Jason Baker (NMFS) reviewed monk seal population assessments. The population estimate is 1300 to 1400 seals. Overall the numbers appear stable since 1993. However, future declines are expected at French Frigate Shoals due to the dearth of recruitment for many years and the consequent age-structure effects. The western islands populations show signs of recovery, with record numbers of pups recorded in 1998. Issues to be dealt with in order to enhance recovery of the populations include male seal aggression (impacts primarily French Frigate Shoals, Laysan and Lisianski), shark predation (perhaps mitigate with shark removals, although no one has studied the sharks), marine debris, and food resource problems.

Mary Donahue (NMFS) reviewed the multi-agency program directed at cleaning up derelict fishing gear which is a known to cause entanglement mortalities of monk seals, turtles and other marine vertebrates. For example, 23 monk seal entanglements were recorded in 1999. Most entanglements have been recorded on French Frigate Shoals, Laysan and Lisianski. In 1999, the cleanup effort was focused on the high-risk entanglement areas and removed 25 tons of gear from these areas (of the estimated 6,000 tons present within monk seal habitat). A tremendous effort and continued monitoring of these sites could help to quantify accumulation rates for fishing gear. The group recommended continued funding of the removal/monitoring effort because marine debris is a known and significant cause of monk seal mortality. There was consensus that the removal effort was important, as was identification of the sources of fishing gear and monitoring the accumulation rates of gear.

Harbor porpoises

Susan Chivers presented an update of the population structure analyses. The data set for the study area (Monterey Bay, CA to British Columbia) is considered complete at this stage of analyses with 263 specimens processed for control region and/or alleles for 10 microsatellite loci. All neighboring sampling locales show statistically significant differences ($p < 0.001$). Samples collected just north and south of the mouth of the San Francisco Bay and the Russian

River were pooled because of the proximity of the sampling areas and relatively uniform population densities observed on aerial surveys and low sample size. Analyses of the microsatellite data revealed that there was likely male-mediated dispersal between sampling locales. This conclusion was drawn from the results that showed neighboring sampling locales were not statistically distinguishable but more distant ones were. Thus, males were likely moving between sampling locales but not throughout the study. The locations sampled in California correspond to areas of high porpoise density, and there are areas of low porpoise density between each area. The authors proposal to draw new stock boundaries between sampling locales, through areas of low porpoise density.

Paul Wade reviewed the results of the August 1999 boat survey of the US waters around the San Juan Islands, WA. They used 3 observers in a 24-ft NOAA boat to conduct the surveys, which they now consider a reasonable and economical way to conduct a survey of this region. The population abundance estimate from this survey was 6,404 (CV = 38.5%) which compares to the August 1991 survey estimate from Calambokidis *et al.*, of 3,647 (CV = 39.8%).

Brad Hanson summarized the tracking data collected from a female harbor porpoise captured just north of the San Juan Islands. The porpoise was instrumented with a satellite and VHF tag on 16 June 1998 and tracked through early January 1999. More than 70 relocations of the animal using the VHF tag confirmed satellite locations. This animal remained in a relatively small geographic area over this 7-month period, alternating between two distinct high-usage areas. There are no plans to pursue additional harbor porpoise tracking at this point because of the difficulty of catching them.

Karin Forney reviewed the Monterey Bay set gillnet fishery. An observer program was initiated in April 1999 because strandings of harbor porpoise and seabirds had increased in this area and because fishing effort in the inner, southern portion of the Bay was found to be twice that of early 1990s. There was no observer program for this fishery from 1995 through 1998, so Forney explored several different methods for estimating mortality for these years based on prior (1987-94) and subsequent (April through September 1999) observer data (PSRG-3 and PSRG-5). In summary, the mortality estimate using method B results in an estimate of 41 while methods C, D and E all result in a mortality estimate greater than PBR (42 animals, see PSRG-3, Table 3). The consensus of the SRG was that the harbor porpoise mortality in Monterey Bay alone is greater than the PBR for the entire central California stock, and that this stock should therefore be considered strategic.

At a November 1999 skipper workshop sponsored by the Southwest Region, most fishermen appeared convinced that they would have to use pingers on the nets to reduce bycatch if they wanted to avoid a Take Reduction Team (TRT) process. There is an awareness, however, that, even if the harbor porpoise problem can be solved, the fishery may be vulnerable to closure or restrictions as a result of sea otter and common murre takes. The observer program is planned to continue even if pingers are used voluntarily. Concern was expressed about the widespread use of pingers in a National Marine Sanctuary where the noise pollution could affect the habitat usage of harbor porpoise and many other marine mammals. The SRG recommended that studies be done to estimate the likely size and location of zones that would be affected by pinger noise.

Review of Harbor Porpoise SARs

Central California Harbor Porpoises.

Changes to the SAR included (a) a section added with the latest molecular genetic analyses of stock structure which acknowledges that stock structure changes may be warranted next year; (b) a note that stranding data indicate additional 1998 fishery mortality of unknown magnitude and origin in San Francisco Bay and near Bodega Bay; and (c) a range of mortality estimates for the set gillnet fishery (PSRG-3). The SRG recommended that the methods section regarding the 1986-95 abundance trends be made clearer. The stock should be given strategic status.

Northern California Harbor Porpoises.

Changes included (a) adding preliminary stock structure information based on molecular genetic analyses; (b) expanding the section on proportion of animals that may be missed because they are in deeper waters; and (c) adding the data on one observed mortality in the Klamath River Tribal fishery.

Oregon/Washington Coast Harbor Porpoises.

No SRG comments.

Inland Washington Harbor Porpoises.

SRG members suggested removal of the section in parentheses listed under “1)” in paragraph 2 of the Status of Stocks section.

Sperm whales

Barb Taylor summarized her analyses of the sperm whale group-size estimation data collected on cruises in 1997 and 1998 (PSRG-10). The general conclusion was that group size for sperm whales is underestimated and is largely a function of the time spent with the sighting. Several lines of evidence pointed to about a 50% underestimate of sperm whale abundance when based on 10-minute observations but no apparent bias when estimates were based on 90-minute observations. Before this information can be applied to abundance estimates from the ORCAWALE survey, additional research is needed to estimate the bias for a broader range of observation times and actual observation times would have to be estimated for each sperm whale sighting on the ORCAWALE survey. Application of the group-size correction factor to the data used for abundance estimation would have more affect on the estimates than would the currently used correction factor for animals missed on the trackline.

Sarah Mesnick reviewed analyses of population stock structure using molecular genetics (PSRG-9). The biggest challenge to analyzing samples collected from sperm whales is the relatedness of individuals in a group. Analyses of three mass strandings in Tasmania revealed that first-order relations were rare, second-order relations were more common, but there were many unrelated individuals in a group. For analyses of population structure, the inclusion of specimens in the data set was restricted to individuals with relatedness coefficients of less than 0.25. In the eastern Pacific, there were statistically significant differences in both mtDNA and microsatellite DNA between Washington/Oregon/California coastal samples and the samples collected further offshore. There were also significant differences in microsatellite DNA between the samples from Washington/Oregon/California and the Gulf of California.

Review of Sperm Whale SAR

Discussion centered on the use of 2- or 5-year averages of entanglement rates for sperm whales. The consensus of the group was that a 2-year average, using only 1997 and 1998 data, would be most appropriate because that would most accurately reflect entanglement rates after the changes in the fishery imposed by the Take Reduction Plan, although the data are inconclusive about whether pingers affect sperm whale entanglement rates. The group agreed the same 2-year mortality averaging should be applied consistently in estimating annual mortality for all species incidentally taken in the California drift gillnet fishery.

Killer Whales

Ken Balcomb presented an overview of the recent concern about the southern resident population. This population has been monitored since 1970, and data collected for the past 6 years indicate a decline in numbers. A petition to list the southern resident population of killer whales has been submitted to the state, but the state has no authority to enforce marine mammal regulations. PSRG documents 7, 11, 12 and 13 present background information about killer whales.

David Bain summarized data indicating that 10% of the population is missing and presumed dead and that recruitment has been low over the past few years (PSRG 7). Bain requested the SRG's input in evaluating and prioritizing research topics to determine the cause of the decline. The SRG discussed a variety of research topics, including demographic stochasticity, pollutants, monitoring off-season distribution, calculating the inbreeding coefficients from nuclear DNA, stable isotope studies of trophic relationships, correlations with food availability, and examining skin samples for evidence of stress response.

Paul Wade presented the results of his analyses to investigate whether the observed decline in the southern resident population is within the range of variation that might be expected by chance. Examination of the data for various sex and age classes showed that survival was quite variable, and there have been several instances since 1970 when survival was low. In the last 2 years, more older males have died than would be expected, and in 4 of the past 5 years young adult males had a lowered survival rates. Fecundity has also been quite variable, and the resultant population effects were also quite variable.

[Information was brought to the attention of the SRG after the meeting that Puget Sound southern resident killer whales from the K and L pods had been recently sighted in Monterey Bay.]

Review of Killer Whale SARs

Eastern North Pacific Transient Killer Whales

1. Change the PBR section to be consistent with the other SARs (*i.e.*, p. 123).
2. Use only the data averaged over 2 years: 1997 and 1998 to calculate drift gillnet mortality for all stocks.
3. Change "mean annual mortality" to "mean annual takes" in Table 1.
4. Remove the observer program total line from Table 1.

Eastern North Pacific Offshore Killer Whales

See comment 2 above.

Eastern North Pacific Southern Resident Killer Whales

On page 128, move the sentence beginning “The population peaked at 99 whales...” to the Population Size section, because using 96 in one section and 99 in another is confusing. See comments 1,3, and 4 above.

Hawaiian Cetaceans

Daniele Feinholz reviewed her cetacean sightings data and analyses to date for aerial surveys concentrated around Oahu, HI between the 50-m and 500-m depth contours. Surveys were flown regularly between July 1998 and September 1999. Sightings of mysticetes included humpback whales during the December through April season and one sighting of a fin whale. There were 19 species of odontocete identified. Although the frequency of occurrence varies seasonally, the total sightings were comprised of 30% *Globicephala macrorhynchus*, 19% *Stenella longirostris* (this percentage is likely an underestimate because the favored coastal habitat of this species is poorly covered by these surveys due to FAA regulations), 11% *Tursiops truncatus*, 6% *Stenella attenuata*, 4% *Pseudorca crassidens*, 2% *Mesoplodon* spp., 2% *Steno bredanensis*, and the remainder included only occasionally seen species. Seasonal differences in animal density and herd size were recorded around the islands. However species richness was approximately equivalent between areas. There are plans to examine the spatial distribution of sightings relative to habitat around the islands using a GIS framework. Abundance estimates from these data are not yet available and thus have not been incorporated in the SARs.

Joe Mobley summarized the results of their aerial surveys and presented estimates of population abundance for humpback whales and twelve other Hawaiian odontocetes (PSRG-2). Aerial surveys of the main Hawaiian Islands started in 1993 and were initially focused on surveying for humpback whales during their breeding season. The surveys were expanded to include all primary islands in the chain in 1998. Fifteen (15) species of cetaceans have been seen on the surveys and population abundance estimates were made for 13 species (see Table 3). The aircraft used for these surveys did not have direct downward visibility and a 200-m wide trackline strip was not covered. One of the challenges and uncertainties in analyzing data from these surveys is in estimating the probability of detecting a cetacean at the closest distance that could be seen. Partial funding for this project is available for surveys in winter 2000. These data have been incorporated in the most recent versions of the SARs.

Hannah Bernard reviewed cetacean sightings made on weekly trips between Maui and Lanai from 1995 through 1997 (Sighting data have been collected through 1999.). The non-*Megaptera novaengliae* sightings were 63% *Tursiops truncatus*, 10% *Stenella attenuata*, 21% *S. longirostris*, and 1% *Pseudorca crassidens*. The remaining 5% of sightings were unidentified to species. Of note are the numerous sightings of *T. truncatus* sightings which have not been recorded on the Mobley *et al.* aerial surveys in this area.

Robin Baird summarized the results of boat surveys conducted from 13 January through 24 November 1999. The objective of the surveys was to collect data to estimate population abundance, document movement patterns (photo id and VHF tracking) and collect data pertinent

to stock structure for all of the frequently occurring species. To date, skin samples for genetic analyses of stock structure have only been collected from suction cups applied to animals for tracking and 6 animals have been tagged: 3 *Stenella attenuata*, 2 *Pseudorca crassidens* and 1 *S. longirostris*. Baird, however, is no longer associated with Pacific Whale Foundation and funding for his continued work is not currently available.

Mark Lammers presented his study of spinner dolphins around Oahu. His work has primarily focused on acoustic detection and analyses to examine the behavior and distribution of spinner dolphin as they relate to the growing dolphin-watching industry.

Other local studies of small cetaceans include photo id of spinner dolphins on the Big Island by Jan and Ania Ostman-Lind, on Oahu by Suchi Psarkos, and on Midway by Susan Reed and of pilot whales by Dan McSweeney and Jon Stern on the Big Island. On Maui, Hannah Bernard is working on collecting distribution data and Robin Baird is pursuing the collection of data on distribution, movements and stock structure. No one has been working on Kawai since Sal Cerchio's work ended in 1993.

Hawaii Longline Fishery

The SRG reviewed information on marine mammal takes in the HI longline fishery and focused particularly on the injuries sustained by animals that were hooked but released alive and whether these animals were determined to be "seriously injured." A serious injury has been defined by the MMPA as "any injury that will likely result in mortality." There were several cases in which the observer could not determine whether a small cetacean had ingested a hook (and thus likely to result in mortality) or had just had been hooked in the mouth (an injury with a more-ambiguous prognosis). These injuries were determined to be serious injuries, however, based on the following guidelines from the Report of the Serious Injury Workshop (Angliss and DeMaster 1998):

"For longline fisheries, all animals should be considered seriously injured that are cut free and trail gear, where the gear is internally hooked (e.g., in the mouth throat, or lips)..."(p. 28; see also p. 36).

Discussion then focussed on the status of Hawaiian false killer whales. Two animals caught inside the U.S. EEZ surrounding Hawaii were released alive after ingesting a hook or being hooked in the mouth. Both were released trailing monofilament line. Based on the above guidelines, these animals were considered by the SRG to be seriously injured. This determination would result in an estimated fishery take of 9 whales, exceeding the PBR (0.8) by about tenfold. This would result in the stock being considered strategic.

The SRG notes some cautions about this recommendation. If the animals were only hooked in the mouth, then it is possible that some proportion of the animals would survive. If only 10% of the estimated serious injuries actually died, however, the mortality would still exceed PBR. Also, the abundance estimate for the stock is for only that portion within 25 miles of the islands, and not the entire U.S. EEZ. Thus, abundance, and the PBR, are underestimated to an unknown amount. A comprehensive survey of the Hawaiian archipelago, as has been recommended by the SRG since April, 1995, would be required to obtain better estimates.

The SRG recommended in April, 1998 that the Hawaii longline fishery be recategorized as a Category II fishery. To date, NMFS has not implemented this recommendation. If NMFS determines that Hawaii false killer whales are indeed a strategic stock due to fishery mortality exceeding PBR, then the fishery could be recategorized as Category I. The California-based longline fishery was also recommended by the SRG to be recategorized as Category II to be consistent with other longline fisheries.

Review of Hawaiian Marine Mammal SARs

Karin Forney provided a summary of changes and information on cetacean-fishery interactions in Hawaii (PSRG-4 and -5). Changes in the SARs include i) new abundance estimates for the following nearshore main Island species: *Tursiops truncatus*, *Stenella longirostris*, *S. attenuata*, *S. coeruleoalba*, *Globicephala macrorhynchus*, *Steno bredenensis*, *Pseudorca crassidens*, *Ziphius cavirostris*, *Mesoplodon densirostris* and *Physeter macrocephalus*, ii) PBRs calculated for 9 more stocks; iii) some new large whale acoustic information, iv) the inclusion of a stranded *T. truncatus* entangled in fishing gear as a mortality in the SAR, and v) the addition of our current knowledge of HI marine mammal-fishery interactions. The SRG recommended that the Hawaiian false killer whale be considered a strategic stock because the estimated number of seriously injured animals due to the fishery exceeds PBR.

NMFS Protected Resources Funding Process

Each SRG was invited to send an observer to the September 1999 meeting to discuss funding of NMFS proposals for marine mammal research. The invitation arrived too late for the SRGs to send representatives. There was a discussion of whether the SRG's recommendations might have a higher likelihood of being funded if they sent a representative. It was pointed out that the ranking of most of the proposals occurs before this meeting, but that rankings of borderline proposals were adjusted at the meeting. The primary benefit of SRG attendance would be in better understanding the process, but there might be some (small) opportunity to influence the outcome. The SRG would welcome another invitation to attend next year, but requested that the invitation be delivered earlier.

Review of the California Drift Gillnet Fishery

Chuck Janisse reviewed developments in the CA/OR drift gillnet fishery. Pinger compliance is still an issue, particularly in rough sea states. An experiment is being conducted this year to determine whether lead-line pingers could be eliminated (moved to the floatline) to make pingers easier to deploy (and therefore improve compliance). Data from this experiment will be reviewed at the Take Reduction Team meeting in May or June 2000. Janisse described a new pinger that is being developed by SonaTech that will be an improvement over available designs because it can be left on the net for an entire season. Barlow provided a synopsis of the May-Nov 1999 observed mortalities in the driftnet fishery; mortality rates appear to be low (only 5 delphinids and 4 pinnipeds). [One unidentified baleanopterid was observed taken after the SRG meeting.]

Topics Proposed for Next Meeting

- 1) Sea otter research and management issues,

- 2) MMPA reauthorization,
- 3) Review progress by the Working Group on Recovery Factors,
- 4) Aerial survey of harbor seals
- 5) Harbor porpoise trend analysis for Northern and Central CA stocks
- 6) Pinger experiments

The SRG will review the following SARs at the Fall 2000 meeting:

- 1) stocks whose status has changed,
- 2) a revised sperm whale SAR with new abundance estimates that incorporate adjustments for biased group-size estimates,
- 3) revised harbor porpoise SARs that incorporate new stock boundaries based on the genetics and density data,
- 4) a revised sea otter SAR,
- 5) revised humpback whale SARs,
- 6) Southern resident killer whale SAR,
- 7) CA harbor seals

Review of Previous Research and Management Recommendations

Sperm whales continue to be a major management and research concern because the current mortality in the CA drift-net fishery exceeds PBR, while the PBR may be overly conservative due to multiple negative biases in the abundance estimates. Despite the intensive sperm whale research efforts conducted by NMFS in recent years, more research is needed to:

- 1) improve sperm whale group size estimates from past and future surveys;
- 2) determine stock structure and boundaries by:
 - a) increasing tissue sample collection for genetic analysis (particularly in the waters off California, Oregon, and Washington and in the Gulf of Alaska) and intensify efforts to acquire genetic samples from formalin-preserved specimens;
 - b) expanding future surveys offshore and northward through the Gulf of Alaska;
 - c) examining movements via telemetry studies.

The SWFSC has found that group size estimates are biased low, but more analyses will be needed to apply a correction factor to the ORCAWALE survey because the calibration factor is dependent on observation duration. Genetic analyses have shown that sperm whales off the CA/OR/WA coast are different from those in the Gulf of California and those offshore to the west. An offshore survey was completed in 1997 and reported to the SRG in 1998.

The Pacific SRG recommended conducting a comprehensive survey of the Hawaiian archipelago as there are known marine mammal-fishery interactions and yet little or no information about the abundance and status of Hawaiian cetacean stocks. Because Congress has mandated that intensive dolphin surveys be conducted in the eastern tropical Pacific during 1998-2000, neither NOAA ship time, funding for suitable charter vessels, nor SWFSC personnel has been available to conduct surveys in Hawaii. At the conclusion of the eastern tropical Pacific surveys, the SRG recommends that:

- 1) adequate funding and ship time be allocated for a survey to fill the large gap in our knowledge of Hawaiian cetaceans.

In addition, the SRG recommended that smaller-scale research projects be initiated to assist in monitoring dolphin mortality and trends in abundance, such as:

- 2) Support a more-comprehensive marine mammal stranding program to collect life history and pathology data, and evidence of fisheries interactions.
- 3) Conduct photo-identification and biopsy studies of cetaceans to monitor abundance using mark-resight methods, to acquire genetic samples, and to monitor evidence of gunshots or fishery interactions.
- 4) Conduct radio- or satellite-tracking studies of cetaceans to determine home ranges and to infer population structure.
- 5) Update assessments of fisheries interactions with marine mammals. This could be aided by coordination with the monk seal program to obtain observer mortality data from domestic and foreign fisheries operating near Hawaii.

Comprehensive surveys of the Hawaiian archipelago have been delayed until at least the year 2001. Daniela Feinholz reported on NMFS-funded aerial surveys of Hawaiian cetaceans around Oahu in 1998-99. Aerial survey data collected by Joe Mobley have been used to calculate nearshore abundance estimates that were incorporated into the 2000 SARs. Independent researchers (Robin Baird, Hannah Bernard, and Marc Lammers) have initiated photo-identification studies on nearshore Hawaiian cetaceans. Robin Baird has also conducted short-term radiotracking studies of spotted and spinner dolphins and false killer whales.

Observer data from the Hawaiian longline fishery indicate that there is more than a remote likelihood of serious injury and mortality (Category III) for cetaceans in this fishery. The SRG recommended that:

- 1) mortality estimates for the entire fleet be extrapolated from the observed entanglement and mortality;
- 2) this estimated fishery mortality data be incorporated into the next SAR revisions;
- 3) this Hawaiian fishery, and the California offshore longline fishery that uses the same fishing methods and sometimes shares the same fishing grounds, be reclassified as Category-II fisheries.

The mortality estimates were calculated and incorporated into the 2000 SARs. The fishery has yet to be recategorized.

The stock structure and status of harbor porpoise stocks in Washington and Oregon remains unclear. Stock structure and monitoring research on these stocks should continue and stock boundaries should be re-evaluated and presented to the Pacific SRG at its Fall 1999 meeting. Continued satellite tracking and genetic sampling of harbor porpoises could help determine stock structure.

Genetics sampling has elucidated the stock structure of harbor porpoises. These analyses will be used to revise the stock structure for the 2001 SARs

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 (possibly by the squid purse-seine fishery). Because the California Dept. of Fish and Game plans to institute a new research program on market squid, it would be useful for researchers aboard squid purse seiners to document any incidental or directed mortality that may be occurring. Research into the current distribution and migration patterns may shed light on these questions. Satellite-tracking of pilot whales that are captured and released from purse-seine nets could be attempted on an opportunistic basis.

There were inadequate funds to implement the market squid research program.

The SRG recommends that the USFWS update and finalize its Stock Assessment Report on sea otters so that the SRG can meet its responsibility to review annually the Stock Assessment Reports of strategic stocks.

The last SAR on sea otters reviewed by the SRG was a draft version updated in 1997.

RESEARCH AND MANAGEMENT RECOMMENDATIONS

Pacific Scientific Review Group – December, 1999

Sperm whales continue to be a major management and research concern because the current mortality in the CA drift-net fishery exceeds PBR. Despite the intensive sperm whale research efforts conducted by NMFS in recent years, more research is needed to:

- 1) Apply the sperm whale group size correction factor to the abundance estimates from the ORCAWALE surveys and include these revised abundance estimates in the 2001 SARs;
- 2) Determine stock structure and boundaries by:
 - a) increasing tissue sample collection (particularly in the waters of California, Oregon, Washington and the Gulf of Alaska) and effort devoted to genetic analysis of these samples;
 - b) intensifying efforts to acquire genetic samples from formalin-preserved specimens;
 - c) expanding future surveys offshore and northward through the Gulf of Alaska.

The Pacific SRG recommends conducting a comprehensive survey of the Hawaiian archipelago as there are known marine mammal-fishery interactions and yet little or no information about the abundance and status of Hawaiian cetacean stocks. Because Congress has mandated that intensive dolphin surveys be conducted in the eastern tropical Pacific during 1998-2000, neither NOAA ship time, funding for suitable charter vessels, nor SWFSC personnel have been available to conduct surveys in Hawaii. At the conclusion of the eastern tropical Pacific surveys, the SRG recommends that:

- 1) Adequate funding and ship time be allocated for a survey to fill the large gap in our knowledge of Hawaiian cetaceans.

In addition, the SRG recommends that smaller-scale research projects be initiated to assist in monitoring dolphin mortality and trends in abundance, such as:

- 2) Devote more personnel and resources to develop a comprehensive marine mammal stranding program to collect life history, stock structure, and pathology data, and evidence of fisheries interactions. Including trained local marine mammalogists in such a network should be adopted as has been effective in other successful stranding programs.
- 3) Conduct photo-identification and biopsy studies of cetaceans to estimate population abundance using mark-resight methods, to acquire genetic samples, and to monitor evidence of gunshots or fishery interactions.
- 4) Conduct radio- or satellite-tracking studies of cetaceans to determine home ranges and to infer population structure.
- 5) Update assessments of fisheries interactions with marine mammals. This could be aided by coordination with the monk seal program to obtain observer mortality data from domestic and foreign fisheries operating near Hawaii.
- 6) Investigate the potential harmful effects on spinner dolphins caused by the increase in tourboat and human swimmer interactions.

Observer data from the Hawaiian longline fishery indicate that there is more than a remote likelihood of serious injury and mortality (Category III) for cetaceans in this fishery. Previously, the SRG has recommended that this fishery be recategorized as Category II because observer data that indicated serious injuries have occurred to marine mammals that were hooked and released trailing gear. Data now indicate that the estimated serious injuries of Hawaiian stock of false killer whales caused by this fishery exceeds PBR and that the fishery could be recategorized as Category I. The California offshore longline fishery uses the same fishing methods and sometimes shares the same fishing grounds, and should also be reclassified at least as Category II to be consistent with other longline fisheries.

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 (possibly by the squid purse-seine fishery). The SRG recommends that research be undertaken on fishery takes, current distribution, and migration patterns. Satellite-tracking of pilot whales that are captured and released from purse-seine nets should be attempted on an opportunistic basis.

The SRG recommends that the USFWS update and finalize its Stock Assessment Report on sea otters so that the SRG can meet its responsibility under the MMPA to review annually the Stock Assessment Reports of strategic stocks.

The SRG recommends continued study of the recruitment of marine debris into the reefs and waters surrounding monk seal rookeries, and continued removal of the debris to reduce the risk of monk seal entanglement.

The SRG recommends that the stock boundaries for Pacific Coast harbor porpoise be revised for the 2001 SARs. These revisions should be based on current genetics data, along with information on harbor porpoise densities, research survey strata, and fisheries information.

The SRG recommends that the Central California harbor porpoise be considered a strategic stock. The SRG also recommends continuation of the observer program of the Monterey Bay shark/halibut gillnet fishery. In light of plans to start a voluntary pinger program by the fishery, this should be done as part of an experimental design to determine the effects on harbor porpoises and other marine life that inhabit Monterey Bay.

The SRG recommends that the Working Group on Recovery Factors should prepare guidelines for alternative Recovery Factors to the defaults for endangered species, and that these guidelines be adopted in the 2001 SARs.

Appendix 1

Attendees at the 10th Meeting of the Pacific Scientific Review Group

Scientific Review Group - Pacific Region

Hannah Bernard

Hawaii Wildlife Fund

Robin Brown (not attending)

Oregon Department of Fish and Wildlife, Marine Region

Mark Fraker

Terramar Environmental Research

Doyle Hanan

California Department of Fish and Game

John Heyning

Natural History Museum of Los Angeles County

Chuck Janisse

Federated Independent Seafood Harvesters

Steve Jeffries

Washington Department of Fish and Wildlife, Marine Mammal Investigations

Katherine Ralls

Department of Zoological Research, National Zoological Park, Smithsonian Institution

Michael Scott

Inter-American Tropical Tuna Commission

Terry Wright

Manager of Enhancement Services, Northwest Indian Fisheries Commission

Invited Participants and Observers:

NMFS Southwest Fisheries Science Center

Jay Barlow

Bob Brownell

Barbara Taylor

Andrew Dizon

Susan Chivers

Sarah Mesnick

Karin Forney

Jason Baker

Mary Donahue

National Marine Mammal Laboratory

Marcia Muto

Brad Hanson

Bob DeLong

Paul Wade

University of Hawaii

Jo Mobley

Daniella Feinholz

Pacific Whale Foundation

Robin Baird

Sascha Hooker

Annie Gorgone

Allan Ligon

Center for Whale Research

Ken Balcomb

Six Flags Marine World

David Bain

Pacific Biological Station (Nanaimo, Canada)

Peter Olesiuk

University of Alaska Southeast; Alaska SRG

Jan Straley

Appendix 2

Pacific Scientific Review Group Meeting Documents 5-6 December 1999

PSRG-1 U.S. Pacific Marine Mammal Stock Assessments: 2000 (Forney et al.)

PSRG-2 Distribution and abundance of odontocete species in Hawaiian waters: preliminary results of 1993-98 aerial surveys. (Mobley et al.)

PSRG-3 Monterey Bay halibut set gillnet summary (Forney)

PSRG-4 Estimates of marine mammal takes in the Hawaiian longline fishery (Kleiber)

PSRG-5 Summary of cetacean interactions with the Hawaiian longline fishery (Forney)

PSRG-6 Unfunded FY-00 F/PR proposals (Barlow)

PSRG-7 Population trends of southern resident killer whales (*Orcinus orca*) from 1960-99 (Bain and Balcomb)

PSRG-8 Potential fishery conflicts involving sea otters (*Enhydra lutris*) in Washington state waters (Gerber and VanBlaricom)

PSRG-9 Genetic relatedness within groups and the definition of sperm whale stock boundaries from the coastal waters off California, Oregon, and Washington (Mesnick et al.)

PSRG-10 Estimation of sperm whale group size (Taylor)

PSRG-11 Status of killer whales in Canada.

PSRG-12 High PCB concentration in free-ranging Pacific killer whales, *Orcinus orca*: effects of age, sex and dietary preference.

PSRG-13 Orca Survey 1976-99 (Center for Whale Research)

Appendix 3

Agenda of the Pacific Scientific Review Group Meeting Hawaii National Marine Sanctuary Office, Maui, HI 5-6 December 1999

5 December 1999

General Topics

Decide on whether to cut back to one meeting per year

Monk Seals (Jason Baker)

Marine Debris Program (Mary Donahue)

Review monk seal SAR

Hawaii Aerial Survey Results (Daniela Feinholz, Joe Mobley)

Harbor Porpoises

Stock structure (Susan Chivers)

San Juan Islands survey (Paul Wade)

California Set Gillnet Fishery (Karin Forney)

Review harbor porpoise SARs

Sperm Whales

Herd size analysis (Barb Taylor)

Stock structure (Sarah Mesnick)

Review sperm whale SAR

Southern Resident Killer Whales

Trends in abundance and survivorship (Ken Balcomb, David Bain, Paul Wade)

6 December 1999

Southern Resident Killer Whales

Comments on research priorities

Review killer whale SARs

Hawaiian Cetaceans

Review of previous recommendations

Small cetacean studies (Hannah Bernard, Robin Baird, Marc Lammers)

HI longline fishery mortality data (Karin Forney)

Review Hawaiian cetacean SARs

Review of RPS Funding Decisions for FY2000 (Jay Barlow)

Review of California Driftnet Fishery (Chuck Janisse)

SAR reviews

Recommendations

Topics for next meeting