MARINE MAMMAL COMMISSION
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BETHESDA, MD 20814

12 October 2007

Mr. David Cottingham
Chief, Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3226

Dear Mr. Cottingham:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the draft 2007 stock assessment reports (SARs) for marine mammals. The Marine Mammal Commission commends the Service for its continued efforts to improve assessment surveys and estimates of population abundance, growth rate, and human-related mortality. The Service has made such advances despite the limitations imposed by the available data and the resources for collecting data.

The quantity and quality of data on fishery-related mortality continue to be inadequate for a number of marine mammal stocks. Several ecological regions and stocks remain difficult and/or costly to survey and therefore abundance and population trends for some stocks are still poorly known. The continuing lack of data for Arctic and Bering Sea species, particularly ice-breeding seals, is especially noteworthy because major population changes are expected to occur as a result of global climate change. And although survey methods have improved, we believe they could be improved further by the use of acoustic, tagging, and genetics tools to complement standard survey methods. These emerging capabilities will help overcome current limitations by reducing the cost of surveys while expanding coverage. Use of these new survey tools will also improve the statistical confidence in the survey data and, by extension, the statistical power of the analytic approaches used to derive stock size, trends, and efficacy of take reduction actions.

The Marine Mammal Commission looks forward to working with the National Marine Fisheries Service to achieve the marine mammal stock assessment, recovery, and zero mortality rate goals set for the Service by Congress. We would be pleased to discuss with you strategies for enhancing stock assessment efforts and for securing adequate funding for those efforts.

## RECOMMENDATIONS

To further improve overall stock assessment efforts, the Marine Mammal Commission recommends that the National Marine Fisheries Service—

- follow up on a recent National Marine Fisheries Service workshop to incorporate passive acoustics into survey methods;

- work with federal and state fisheries management agencies and industry to develop a funding strategy to support stronger observer programs for collecting data on incidental mortality and serious injury, including training and other support for stranding response teams that would lead to greater certainty about the causes of strandings and unusual mortality events;
- work with co-management partners to establish biologically meaningful stock boundaries for harbor seals in Alaska and, if continued co-management negotiations are required, incorporate in the 2008 SARs biologically meaningful boundaries for prospective harbor seal stocks in Alaska;
- build on recent advances in tag technology to pursue the kinds of large-scale use of tags exemplified by the Tagging of Pacific Pelagics program to better understand aspects of population dynamics that surveys alone cannot reveal;
- reconvene or initiate take reduction teams to address fishery interactions with the Gulf of Maine harbor porpoise stock and the Hawaii false killer whale stock;
- adjust stock assessment guidelines to ensure that methods for identifying strategic stocks are consistent in the different regions of the country;
- seek to develop a more effective means of assessing transboundary stocks and the effects of human activities on them at the planned joint meeting of the Service's scientific review groups; and
- develop a consistent process for incorporating non-fishery sources of mortality (e.g. manmade noise, harmful algal blooms) in the SARs.

**RATIONALE**

We offer the following rationale for our recommendations.

**Unavailable or outdated data**

In recent years, the Service has improved stock assessments by providing new information for a number of marine mammal stocks. Nevertheless, much work remains to fully implement the stock assessment approach established in the Marine Mammal Protection Act. Currently more than 45 stocks cannot be adequately assessed because of insufficient data on stock status and trends, mortality, or both. It is difficult to know the exact number of species or populations in this situation because the Service's regions use different approaches to determining when available data are sufficient to calculate the potential biological removal (PBR) level and estimate mortality. For example, one region might consider available data to be insufficient and report PBR as "not available," while another region might consider the same data to be sufficient and report a PBR value. A number of species, such as ice seals, beaked whales, and pelagic dolphins, could be at risk because of insufficient data on population size, population trend, mortality, etc.

Stock assessment is a challenge, particularly in remote areas such as the Pacific islands and northern Alaska where logistical demands and the natural history of the animals (e.g., ice-breeding seals and deep-diving pelagic species) make study difficult. The Commission is especially concerned that several stocks of ice-breeding seals in Alaska have not been surveyed within the last eight years,

thereby increasing the uncertainty surrounding their assessment and the possibility that significant changes in status will go undetected. As these shortcomings have persisted for some years, a review would be appropriate to consider the obstacles to completing stock assessments, assign priorities, and identify resources needed for a comprehensive stock assessment effort. The Service's 2004 technical memorandum entitled "A requirements plan for improving the understanding of the status of U.S. protected marine species" might provide a useful starting point for such a review.

A variety of emerging technologies could be of considerable use to the Service in achieving these difficult goals. The Service has already had some success with passive acoustic detection in surveys conducted by the Northeast, Southeast, and Southwest Fisheries Science Centers. This technology is advancing rapidly and offers many opportunities. The 2006 NOAA National Passive Acoustics Workshop: Developing a Strategic Program Plan for NOAA's Passive Acoustics Ocean Observing System (PAOOS) is a good start (http://www.nefsc.noaa.gov/nefsc/publications/tm/tmspo76.pdf), and this may be a case where added investment now will save the Service money in the long run while greatly expanding the quantity and quality of survey data. For that reason, the Marine Mammal Commission recommends that the Service follow up on the PAOOS workshop to incorporate, where appropriate, passive acoustics into survey methods.

Stock assessment efforts also are incomplete due, in part, to insufficient observer coverage for a number of fisheries. In the absence of adequate observer coverage, mortality estimates may be unavailable, imprecise (coefficients of variation > 0.3), or inaccurate. In a 26 September 2005 letter to the Service, the Commission recommended that the Service review current levels of observer effort, set appropriate coverage standards, and implement the changes needed to achieve those standards. In a subsequent letter dated 25 January 2006, the Commission stated its view that at least partial funding for observer programs should be provided by the fishing industry, which bears a responsibility for demonstrating that its activities do not adversely affect marine mammals and other non-target species. In view of the lack of persistent funding for observer programs, the Marine Mammal Commission repeats its 2005 and 2006 recommendations that the Service work with federal and state fisheries management agencies and the industry to develop a funding strategy that will support stronger observer programs for collecting data on incidental mortality and serious injury. To identify the cause of such mortality and injury, which is necessary to guide remedial actions, assessment efforts also should include training and resources for stranding response teams.

Stock assessment efforts often fall short because stock structure is not well understood. In recent years, the Service has made substantial progress in elucidating stock structure based on studies of genetics and movement patterns throughout the range of a species. Because of the importance of this information, we believe that the Service should allocate more resources to ensure the collection and archiving of tissue samples, maintain current genetic assay capabilities, and advance the science of population genetics analysis. This type of research is providing new insights into demography and ecology and is essential to understanding the functioning of natural ecosystems. The Service's work in this area is commendable and should be continued.

When significant stock structure is revealed through scientific studies, it should be incorporated into the management framework established by the Marine Mammal Protection Act.

Harbor seals in Alaska are an example where such information has not been so incorporated. The best scientific evidence available, provided by Service scientists, indicates that harbor seals in Alaska comprise at least 12 stocks, but most of these have yet to be recognized by the Service and its co-management partners, and SARs continue to be produced using a three-stock approach that is known to be incorrect. In previous letters, the Commission recommended that the Service proceed expeditiously to establish biologically meaningful stock boundaries for harbor seals in Alaska. The Commission is concerned that ongoing co-management negotiations will continue to delay the establishment of biologically meaningful stocks and stock boundaries to the possible detriment of some stocks. The Service's "Guidelines for Preparing Stock Assessment Reports" provide the option of including "prospective stocks" within the SARs, along with a description of the evidence for the new stocks, PBR calculations for each prospective stock, and estimates of human-caused mortality and serious injury by source. Publishing prospective stocks of harbor seals in Alaska would provide an opportunity for the public to review their status and comment on the proposed stock structure and boundaries. The Marine Mammal Commission reiterates its earlier recommendation that the Service and its co-management partners establish biologically meaningful stock boundaries for harbor seals in Alaska and, if continued co-management negotiations are required, incorporate in the 2008 SARs biologically meaningful boundaries for prospective harbor seal stocks in Alaska.

Stock assessments also are compromised by insufficient information on the distribution and habitat-use patterns of marine mammal populations. Improved tag technology and safety (i.e., reduced impact on tagged animals) along with reduced per unit costs have made it possible to tag a sufficient number of individuals within some populations to determine home ranges, migratory patterns, critical habitats for feeding and breeding, and interactions with fisheries or other human activities. Additionally, many of the new tag designs record ocean data useful for modeling the underlying ocean and climate processes affecting the species of interest. The Commission believes that continued or increased investment in the development of technologies and methods (including efforts to reduce any risks to tagged animals) will improve in the Service's ability to determine stock status and trends—and, by extension, PBR—with greater confidence and lower overall cost than is obtainable by current survey practices. As an aid to both stock assessment and assessment of changes in habitat use, the Marine Mammal Commission recommends that the Service build on recent advances in tag technology to pursue the kinds of large-scale use of tags exemplified by the Tagging of Pacific Pelagics program to better understand marine mammal habitat-use patterns in all seasons, identify areas of critical habitat or other "hotspots" for intensive study, and better understand likely scenarios of fishery interactions or other interactions with human activities.

**Take reduction teams for the Gulf of Maine harbor porpoise stock and Hawaii false killer whale stock**

According to the 2007 draft SARs, nine stocks are still experiencing rates of serious injury and mortality above PBR. These are the North Atlantic right whale; the California/Oregon/ Washington long-beaked common dolphin and short-finned pilot whale stocks; the Gulf of Maine humpback whale and harbor porpoise stocks; the Nova Scotia and eastern North Pacific sei whale stocks; the southern resident killer whale; and the false killer whale in Hawaii. Three additional stocks are experiencing serious injury and mortality rates that are very close to PBR. These are the

California/Oregon/Washington humpback whale, the Monterey Bay harbor porpoise, and the central North Pacific–Southeast Alaska feeding aggregation of humpback whales. Fishery interactions with several of these stocks are being addressed using take reduction teams and plans, including North Atlantic right whale and Gulf of Maine humpback whale stocks (Atlantic Large Whale Take Reduction Team), the California/Oregon/Washington long-beaked common dolphin and short-finned pilot whale stocks (Pacific Offshore Cetacean Take Reduction Team), and the Gulf of Maine harbor porpoise (Harbor Porpoise Take Reduction Team). All of the stocks of large whales and the southern resident killer whale stock are listed as endangered under the Endangered Species Act, and threats facing those stocks are addressed in the context of recovery plans. In previous letters, the Commission has noted with concern the increasing takes of Gulf of Maine harbor porpoises in the northeast sink gillnet fishery, and the serious injury and mortality rate of Gulf of Maine harbor porpoises now exceeds the PBR value. In response to increasing take levels, the Commission has recommended that the Service reconvene the Harbor Porpoise Take Reduction Team. Because the stock is shared with Canada, the reconvened team should include both U.S. and Canadian representatives so that all relevant fishing and other considerations are taken into account. In addition, the Commission has recommended that the Service convene a take reduction team to address takes of Hawaii false killer whales as this stock also appears to be experiencing excessive take levels. For these reasons, the Marine Mammal Commission reiterates its previous recommendations to reconvene and initiate, respectively, take reduction teams to address fishery interactions with the Gulf of Maine harbor porpoise stock and the Hawaii false killer whale stock.

**Classification of strategic stocks**

As mentioned earlier, inconsistencies in the classification of strategic stocks may result in additional risks to some stocks. To avoid that situation, the Marine Mammal Commission recommends that the National Marine Fisheries Service adjust stock assessment guidelines to ensure consistent methods for identifying strategic stocks. The Commission understands that the Service intends to convene a joint meeting of the regional scientific review groups in 2008, presumably to discuss stock assessment and management issues that are common to all groups, evaluate various approaches to addressing those issues, and develop consistent guidelines. That meeting also could provide an opportunity to address other regional inconsistencies, such as in the ways in which potential biological removal is handled for declining stocks (i.e., whether to estimate a value or report it as "undetermined," "undefined," or "not applicable") and the ways in which statistics are presented in summary reports (e.g., survey interval, last survey year, and coefficients of variation for mortality estimates). The Commission believes these are topics worthy of discussion and resolution at the upcoming meeting and looks forward to participating in that discussion.

**Transboundary stocks**

Many of the marine mammal stocks that occur within the U.S. Exclusive Economic Zone (EEZ) also range outside the EEZ and thus receive only partial survey and observer coverage by the Service. Some of these are subject to mortality in fisheries or other human activities outside U.S. waters. They include stocks in clear need of management attention, such as the eastern Pacific stock of northern fur seals, where the population continues to decline at an alarming rate (about 25

percent in the past decade alone) even though known mortality remains well below the calculated PBR level. Population estimates for other stocks, such as California/Oregon/Washington short-finned pilot whales and most Atlantic and Pacific pelagic dolphins, vary widely from survey to survey because of inter-annual variation in habitat use. For example, estimated abundance of Atlantic white-sided dolphins within U.S. waters ranged from 109,141 in August 2002 to 2,330 animals in June/July 2004. The current "best estimate" of the population size within U.S. waters (63,368) is based on an average of the estimates from August 2002 and August 2006 (17,594), which differ by almost an order of magnitude. The apparently dramatic variation in abundance of Atlantic white-sided dolphins in U.S. waters presents a considerable challenge to effective management, particularly in the absence of information regarding stock structure, movement patterns, and sources of mortality outside U.S. waters. It is not clear whether Atlantic white-sided dolphins should be considered (a) one large stock that is affected by fisheries in U.S., foreign, and international waters as the stock shifts its distribution seasonally and inter-annually, or (b) a group of smaller stocks that are susceptible to localized depletion as a result of fishery interactions. The current PBR estimate is 509, but that value could be as low as 137 using the 2006 data or as high as 852 using the 2002 data; the current serious injury and mortality estimate of 357 would exceed PBR if only the 2006 data were used. Regardless of how the data are interpreted and matched, however, serious injury and mortality of Atlantic white-sided dolphins exceed the zero mortality rate goal of 10 percent of PBR. To address this and other transboundary issues, the Marine Mammal Commission recommends that the National Marine Fisheries Service seek to develop a more effective means of assessing transboundary stocks and the effects of human activities on them at its planned joint scientific review group meeting.

**Non-fishery sources of mortality**

Our society is becoming increasingly aware of the potential for human activities other than directed hunting and fisheries to adversely affect marine mammals. Ship strikes, marine debris, oil spills or other chemical releases, climate change, harmful algal blooms, zoonotic diseases, and underwater sound all have such potential. These factors are not consistently listed or even mentioned in SARs. The 2007 Pacific Ocean SAR mentions the potential effects of manmade sound from ships and military activities or geophysical exploration and development but only for selected beaked, sperm, and baleen whales. Other stocks may be as much or more at risk from such risk factors, but those factors are not mentioned in the SAR. A number of stocks are at risk from the adverse effects of sound, including many of the echolocating delphinids and seals that use underwater sound for breeding purposes. The 2007 Atlantic Ocean SAR does not cite potential risk to *Kogia* species from sonar sound, even though data in published literature support concern that military sonar may affect *Kogia* much like it affects beaked whales, and concern has been expressed about the potential effects on *Kogia* of oil and gas industry activities in the Gulf of Mexico. We believe that, to be complete, the Service should describe in the SARs those sources of undetermined effect for which there is a reasonable basis for concern, even if conclusive evidence of effect is not yet available. Difficulties in diagnosing causes of injury and mortality in stranded animals or dead animals encountered at sea means that effort devoted to improving diagnostic capabilities for

stranding networks and other first-responders should reduce the proportion of deaths attributed to "unknown" causes and enhance the Service's ability to assess and reduce mortality due to human activity.

Please contact me if you have questions about these recommendations or wish to discuss them.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director