14 October 2011

The Honorable Jane Lubchenco, Ph.D.
Undersecretary and Administrator
National Oceanic and Atmospheric Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW. Rm. 5128
Washington, D.C. 20230

Dear Dr. Lubchenco:

The Marine Mammal Commission held its 2011 annual meeting on 10-12 May in New Orleans, Louisiana. A major portion of the meeting focused on federal and state efforts to respond to the BP Deepwater Horizon oil spill and to assess short and long-term effects of the spill on marine mammals in the Gulf of Mexico. At the meeting, National Oceanic and Atmospheric Administration (NOAA) representatives described your agency's response efforts during the spill and its ongoing assessment of natural resource damages. The Commission greatly appreciates their participation in the meeting.

Clearly, NOAA has played, and continues to play, a major role in response, assessment, and restoration activities. The Commission commends the agency for its strong leadership in those activities, especially with respect to the reallocation of NOAA resources and public access to oil spill-related information through www.geoplatform.gov and the Environmental Response Management Application. The unprecedented scale of both the spill and the response created huge challenges, and the Commission appreciates the extraordinary efforts of all involved during the response. That being said, a careful and comprehensive review of response, assessment, and restoration activities associated with the Gulf spill should identify important lessons for improving those activities when future spills occur. With that purpose in mind, the Marine Mammal Commission offers the following recommendations and rationale.

RECOMMENDATIONS

The Marine Mammal Commission recommends that NOAA—

- develop and implement a strategy to (1) review its actions during the course of the Gulf spill response and assessment, (2) clarify its legal and scientific objectives and the relationship between them, (3) characterize the lessons learned from this spill that should be incorporated into future response and assessment plans, and (4) characterize its capacity for responding to and assessing the effects of future spills, especially those that may occur in the Arctic;
- use the results of the review to update national and regional contingency plans and to update the Marine Mammal Oil Spill Response Guidelines;
- incorporate in its review of the Gulf spill (1) a careful and in-depth analysis of the factors that, heretofore, have precluded the collection of adequate scientific baseline information for

managing the Gulf of Mexico's marine mammals and marine resources, (2) the steps necessary to address those factors;

- as part of the review process, convene a group of independent scientists to evaluate the assessments carried out under the guidance of the Marine Mammal and Sea Turtle Technical Working Group;
- develop and implement a plan identifying its highest priorities for assessment of long-term effects of the oil spill on marine mammals;
- work with the Bureau of Ocean Energy Management, other federal and state agencies, and other funding entities, as appropriate, to secure the additional resources needed to monitor long-term oil spill effects;
- continue to work with the National Institute of Environmental Health Sciences, Centers for Disease Control and Prevention, National Institute of Science and Technology, Environmental Protection Agency, Bureau of Ocean Energy Management, and other federal agencies and independent laboratories as appropriate to develop and standardize, in a timely manner, laboratory analytical methods for the detection, quantification, and toxicity determination of polycyclic aromatic hydrocarbons and dispersants in marine mammals and other marine wildlife;
- fully fund and expedite the analysis of representative samples from stranded or live-captured marine mammals for evidence of exposure and persistence of polycyclic aromatic hydrocarbons and dispersants; and, as appropriate, include the results of the analyses in the natural resource damage assessments of the effects of the Gulf spill; and,
- develop a restoration plan for the Gulf that ensures not only thorough clean-up of the spilled oil, but also basic assessment of the Gulf's marine mammal stocks and the factors affecting their status.

RATIONALE

Balancing scientific and legal considerations

During the spill, attention and effort were rightly focused on stemming the flow of oil, removing it from the marine environment where and when possible, and implementing protective measures to keep it away from sensitive environments. Few would question those priorities. Assessment activities also began almost immediately to evaluate the nature and extent of injuries resulting from the spill. Both the response and assessment are complex activities carried out under great public scrutiny. Considering the unique challenges presented by the Deepwater Horizon oil spill, a careful and comprehensive review of response and assessment activities is warranted.

One major area that deserves review is the relationship between scientific and legal objectives in the assessment of oil spill effects. As assessment activities were initiated, a distinction seemed to evolve between two related, but separate goals: (1) providing a science-based understanding of the effects of spilled oil and response activities on the marine ecosystem, and (2) gathering evidence for future legal proceedings regarding the cause of the spill and the nature and extent of damage. Many of the responders were required to work at the interface of science and law, and often the boundaries were not clear to them. The interplay between science and law was also

confusing to many scientists outside the assessment process and to the public, especially regarding authorities, responsibilities, and priorities in the face of this calamity.

Science and law are both endeavors that seek to determine the truth. But they do so in somewhat different ways. By their nature, legal proceedings are adversarial, with each side of an issue shaping the facts to create a more compelling case than the other side. A number of legal proceedings may follow this spill and, for the most part, they will be aimed at assessing responsibility for the spill and its adverse effects. Science, on the other hand, is not necessarily adversarial, but rather a means of collecting and sharing information for all to examine and use for describing a particular phenomenon or answering a particular question. In this case, the major questions were how to stop the spill and what are or will be its effects. The Commission recognizes that the pursuit of legal remedies is as important an endeavor as the pursuit of science in association with addressing aspects of the oil spill.

Still, the two seemed to come into conflict, leading to considerable confusion. For example, some scientists (both federal and private) participating in spill response and assessment were uncertain about what data and samples could be collected and analyzed and what results shared. During much of the spill and response, many were under the impression that scientific efforts were being unnecessarily constrained and research opportunities unnecessarily lost. The Commission does not have a sufficient basis for evaluating the merits of those concerns, but thinks they warrant follow-up. At least four things might have contributed to the confusion. First, rumors always abound during such an event and require some time to sort, investigate, and either verify or dispel. Second, the agencies and organizations involved in the response and assessment have different roles and objectives, and those objectives may not have been clearly integrated and prioritized. Third, even within a single agency, objectives and information may not have been transferred effectively up and down the agency's organizational structure. And fourth, in a case like this, law and science simply may not be completely compatible.

Such matters are not easily reviewed during a spill when decisions must be made regarding both response and assessment and actions must be carried out expeditiously. Rather, they might be best reviewed after an event when problems are still fresh in people's minds and before their attention is redirected toward other concerns. Although NOAA is still actively engaged in response and assessment, and also has initiated restoration planning, the Commission thinks it important to review response and assessment efforts sooner rather than later. Important lessons may be lost if not evaluated, summarized, and recorded for future planning and reference. Our nation's ever growing demand for oil and gas resources increases not only the number of operations over the outer continental shelf, but also the risk of another major spill, not only in the Gulf but in other vulnerable areas such as the Arctic. It would be unfortunate to be faced with another spill of substantial magnitude in the near future, but especially so if agencies have not evaluated and corrected any shortcomings evident in their response to the Gulf spill and the assessment of its effects.

With all these concerns in mind, the Marine Mammal Commission recommends that NOAA develop and implement a strategy to (1) review its actions during the course of the Gulf spill response and assessment, (2) clarify its legal and scientific objectives and the relationship between them, (3) characterize the lessons learned from this spill that should be incorporated into future

response and assessment plans, and (4) characterize its capacity for responding to, and assessing the effects of, future spills, especially those that may occur in the Arctic.

Updating contingency plans and response guidelines

The results of such a review would be useful in updating national and regional contingency plans and oil spill response guidelines, which have been developed by multiple agencies in accordance with various laws, regulations, and directives. In the Gulf, response to oiled wildlife is covered generally in two regional contingency plans. As currently written, those plans do not include specific references to marine mammals. The plans designate the Fish and Wildlife Service as the lead agency for responding to endangered species and they charge NOAA with responsibility for the "living marine resources it manages and protects" (www.nrt.org). This includes endangered species, as well as non-endangered marine mammals and a host of other protected and harvested species. During the Gulf spill, the lack of specificity in the plans resulted in confusion within the Unified Command regarding NOAA's authority and responsibilities for marine mammals, sea turtles, and other protected species. As a result, NOAA officials were not always notified immediately in situations requiring Endangered Species Act consultations or the development of best management practices for activities affecting these species. An in-depth review of NOAA's response to this spill should evaluate such sources of confusion and help the agency clarify its responsibilities and authority in contingency plans. This review would also serve to clarify authority and procedures for response specific to marine mammals, as outlined in NOAA's Marine Mammal Oil Spill Response Guidelines (Johnson and Ziccardi 2006). Therefore, the Marine Mammal Commission recommends that NOAA use the results of the review recommended above to update national and regional contingency plans and to update the Marine Mammal Oil Spill Response Guidelines.

Reckoning with the baseline problem

A full accounting of the spill's effects on wildlife is simply not possible, even for many of the Gulf's largest and most charismatic fauna, because of the lack of baseline information. In the Gulf, the lack of such information for marine mammals has been and continues to be a serious and longstanding problem. One of the major lessons of the *Exxon Valdez* oil spill was that assessing spill effects requires good baseline information (Loughlin 1994, Matkin et al. 2008). Now, two decades later, the evidence indicates that lesson still has not been heeded. Of the 57 marine mammal stocks identified in the Gulf, baseline information is adequate for only a handful of them.

The lack of baseline information is indicative of larger problems with our national research and management strategy in the Gulf of Mexico. Our management of this ecosystem cannot be considered science-based if we do not collect and analyze the data needed to guide management. Despite the fact that the Gulf is the base for industries generating billions of dollars annually, our premier marine science agency lacks the necessary infrastructure, equipment, and personnel to understand the ecosystem, monitor industrial activities, and assess their impacts. In essence, our commitment to sound, science-based management does not match our willingness to exploit the Gulf's resources at some peril to its marine ecosystem. In the Commission's view, the lack of baseline information speaks to this larger problem and the as-yet unmet goal of managing marine ecosystems based on a strong scientific foundation. With this fundamental concern in mind, the Marine Mammal Commission recommends that NOAA incorporate in its review of the Gulf spill

(1) a careful and in-depth analysis of the factors that, heretofore, have precluded the collection of adequate scientific baseline information for managing the Gulf of Mexico's marine mammals and marine resources, and (2) the steps necessary to address those factors. That is, such an analysis should consider not only what resources the agency lacks, but why it lacks them, and how it should go about garnering them.

Evaluating the natural resource damage assessment process

The natural resource damage assessment process is required by the Oil Pollution Act of 1990 and is intended to establish a basis for judging warranted levels of compensation for spill effects. Thus, assessing spill effects is central to this objective. With regard to marine mammals and sea turtles, NOAA hosted at least one public meeting of scientific experts to identify potential spill impacts, but subsequent meetings were limited to natural resource trustees and members of the Marine Mammal and Sea Turtle Technical Working Group. Although the Commission greatly appreciates the important work conducted by members of this group, it also believes that the group's work warrants independent review to determine how well it functioned as a whole and whether it provided adequate guidance for assessing effects on marine mammals and sea turtles.

The idea of an independent review of the group's work is certainly consistent with our scientific traditions and experience. Indeed, Hofman (1994) cited early establishment of an independent peer review process to help identify critical research needs as one of the key lessons learned from the *Exxon Valdez* oil spill. Although it may not be possible to incorporate independent scientists directly into the damage assessment process, it is not too late to use a collection of independent scientists to evaluate the Marine Mammal and Sea Turtle Technical Working Group and make recommendations on improving its function or that of similar groups convened after future spills. To that end, the Marine Mammal Commission recommends that, as part of the review process recommended above, NOAA convene a group of independent scientists to evaluate the assessments carried out under the guidance of the Marine Mammal and Sea Turtle Technical Working Group.

Assessment of long-term effects

Natural resource damage assessments for marine mammals, as required by the Oil Pollution Act of 1990, may be completed years before the effects of the Deepwater Horizon oil spill are fully realized. In the *Exxon Valdez* case, long-term wildlife studies have revealed chronic, delayed, and indirect effects that were longer and more severe than previously expected or assumed (Peterson et al. 2003). Exposure to oil from that spill was still impeding recovery of certain sea otter and whale populations after 15 years (Matkin et al. 2008, Ballachey et al. 2007). Clearly, the Deepwater Horizon oil spill differs in some important respects from the *Exxon Valdez* spill. Nonetheless, long-term effects remain a concern for Gulf marine mammals because of the amount of oil spilled, the quantity of dispersants applied at the surface and wellhead, the low recovery rates of spilled oil, uncertainty regarding the eventual disposition of both oil and dispersants, and uncertainty regarding the effects of the spill and response on ecosystem elements important to marine mammals.

Given the uncertainty about the long-term effects of the Gulf spill, the Commission, with input from staff at NOAA and other federal agencies, drafted the enclosed report, "Assessing the

Long-term Effects of the BP Deepwater Horizon Oil Spill on Marine Mammals in the Gulf of Mexico: A Statement of Research Needs." The report is intended to guide assessment of the spill's long-term effects on marine mammal populations, to guide mitigation and restoration efforts, and to help track the changes in the Gulf ecosystem, including those resulting from recovery and restoration. It also should help guide assessment of effects on marine mammals from future spills in the Gulf and elsewhere.

In the report, the Commission outlines priorities for the assessment of long-term effects of the oil spill on Gulf marine mammals, and places the highest priority on—

- assessing the health status of stranded or live-captured animals;
- assessing oil spill-related changes in the ecosystem leading to a potential reduction in prey availability;
- evaluating other ecosystem changes that are harmful to marine mammals and that may have been exacerbated by the spill (e.g., harmful algal blooms, hypoxia or anoxia); and
- determining the extent to which exposure to oil and/or response activities leads to a reduction in status involving individual fitness, population vital rates (survival and reproduction), and population abundance and trends.

The Marine Mammal Commission recommends that NOAA develop and implement a plan identifying its highest priorities for assessment of long-term effects of the oil spill on marine mammals and, for that purpose, it hopes you find the Commission's report to be helpful.

Any long-term plan should include a means for responding to unanticipated problems. For example, hundreds of dolphins have died in nearshore waters of the northern Gulf and, should the evidence indicate that the spill is a contributing factor, NOAA should be able to respond accordingly. Other unanticipated effects cannot be ruled out and any reasonable plan should include the option of re-opening the natural resource damage assessment process. Investigating such unanticipated effects will require sufficient resources. Should available resources not be sufficient for that purpose, then the Marine Mammal Commission recommends that NOAA work with the Bureau of Ocean Energy Management, other federal and state agencies, and other funding entities, as appropriate, to secure the additional resources needed to monitor long-term oil spill effects. NOAA should be partnering with the Bureau of Ocean Energy Management, given that agency's responsibilities under the Outer Continental Shelf Lands Act to balance orderly energy resource development with the protection of human, marine, and coastal environments.

Analysis of marine mammal samples

The Commission understands that NOAA is shifting emphasis from damage assessment to restoration because timely compensation for damages should help facilitate implementation of restoration plans. However, the Commission believes that assessment of damages should not be compromised for the sake of rapid compensation, especially if restoration plans are misdirected or inadequate because of less than thorough assessments.

One of the key components of assessment should be whether marine mammals were exposed to various contaminants during the spill and response. At the Commission's annual

meeting, speakers informed the Commission that samples collected from marine mammals during and after the spill had yet to be analyzed for such contaminants, including polycyclic aromatic hydrocarbons and dispersants. The Commission's understanding is that currently, more than a year after the spill, the trustees still have not approved a workplan for conducting these analyses.

Determining whether marine mammals were affected by the contaminants from the spill and/or response is important not only for the purpose of determining spill and response effects, but also for investigating the large die-off of bottlenose dolphins in the northern Gulf. Although that die-off began before the spill, it has been prolonged and severe, and none of the information collected to date is sufficient to rule out the spill and response actions as contributing factors. The National Marine Fisheries Service, working in coordination with the Working Group on Marine Mammal Unusual Mortality Events, is investigating the strandings and is having tissue samples analyzed for various contaminants and biotoxins. The working group has prioritized sampling for contaminants and biotoxins that have been associated with previous unusual mortality events in the northern Gulf (e.g., brucella, morbillivirus). However, the Service has delayed the analysis of samples for polycyclic aromatic hydrocarbons and persistent organic pollutants.

The Commission understands that part of the delay may reflect uncertainty regarding the best analytical methods for certain types of contaminants. If that is the case, then NOAA should be giving high priority to development of reliable, standardized analytical methods. Doing so is important because characterizing exposure of marine mammals and other wildlife to contaminants should be a major part of the damage assessment for the spill and also for investigation of the bottlenose dolphin mortality event. If some types of contaminants cannot be reliably detected in marine mammal tissues due to rapid elimination, then exploration of alternative methods for assessing exposure should be given a high priority. For those reasons, the Marine Mammal Commission recommends that NOAA continue to work with the National Institute of Environmental Health Sciences, Centers for Disease Control and Prevention, National Institute of Science and Technology, Environmental Protection Agency, Bureau of Ocean Energy Management, and other federal agencies and independent laboratories as appropriate to develop and standardize, in a timely manner, laboratory analytical methods for the detection, quantification, and toxicity determination of polycyclic aromatic hydrocarbons and dispersants in marine mammals and other marine wildlife. In addition, the Marine Mammal Commission recommends that NOAA then fully fund and expedite the analysis of representative samples from stranded or live-captured marine mammals for evidence of exposure and persistence of polycyclic aromatic hydrocarbons and dispersants; and, as appropriate, include the results of the analyses in the natural resource damage assessment of the effects of the Gulf spill. Whether or not these analyses contribute to the natural resource damage assessment, the scientific knowledge gained from this research is critical for effective response to future spills.

Restoration planning for marine mammals

The purpose of a natural resource damage assessment is to determine what restoration actions are necessary to return injured natural resources and services to baseline conditions and make the environment and public whole (15 C.F.R. § 990.30). For the most part, restoration for marine mammals will depend largely on actions taken to promote the recovery of a healthy Gulf ecosystem (i.e., one relatively free of oil and other spill-contaminants; with suitable habitat for

reproduction, resting, foraging; and with suitable diversity and abundance or biomass of prey). The lack of baseline information, as described above, effectively precludes a clear determination of when such restoration has been achieved for marine mammals. In essence, scientists will be unable to characterize the full effects of the spill or to determine when those effects have been alleviated. The only way to overcome this impediment to sound management is to develop a strategy for adequate stock assessment. For that reason, the Commission believes that restoration activities also must be integrated with stock assessment efforts to provide managers with the best possible information on recovery from the spill. To that end, the Marine Mammal Commission recommends that NOAA develop a restoration plan for the Gulf that ensures not only thorough clean-up of the spilled oil, but also basic assessment of the Gulf's marine mammal stocks and the factors affecting their status.

I hope the Commission's recommendations and rationale are helpful. Please contact me if you have any questions.

Sincerely,

Timothy J. Ragen, Ph. D.
Executive Director

Enclosures

cc: Tommy Beaudreau, BOEM
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