UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

MAY 1 2013

Timothy J. Ragen, Ph.D.
Executive Director
Marine Mammal Commission
4340 East-West Highway, Suite 700
Bethesda, Maryland 20814

Dear Dr. Ragen:

The DRAFT NOAA Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammals provides guidance for evaluating the potential impacts of anthropogenic sound on marine mammal species under the National Oceanic and Atmospheric Administration's (NOAA) jurisdiction. Specifically, it provides updated permanent threshold and temporary threshold shift exposure levels for all sound sources and updated behavioral response exposure levels for seismic activities.

NOAA has determined that this guidance document is a Highly Influential Scientific Assessment for purposes of the Office of Management and Budget (OMB) Peer Review Bulletin. As such, formal, external peer review is required before the document can disseminated by the Federal Government. For more information on the OMB peer review process and NOAA's Information Quality Guidelines, please consult http://www.cio.noaa.gov/services_programs/info_quality.html.

OMB (2005) states "Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. It is a form of deliberation involving an exchange of judgments about the appropriateness of methods and the strength of the author's inferences." OMB (2005) also notes "Peer review should not be confused with public comment and other stakeholder processes." The focus of the peer review should be on the scientific and technical studies that have been applied and the manner in which they have been applied in this guidance document. The reviewers are asked not to comment on any potential policy or legal implications of the application of the guidance document (i.e., regarding the amount of uncertainty that is acceptable or the amount of precaution that should be embedded in the analysis in order to comport with the statutory requirements).

We are requesting the Marine Mammal Commission's assistance in nominating ten appropriate peer reviewers for this document. From this list of nominees, NOAA's National Marine Fisheries Service will select up to eight peer reviewers based upon their availability and appropriate combination of expertise. In nominating peer reviewers, OMB states the following should be considered: 1) expertise (i.e., ensuring nominated reviewers have the knowledge, experience, and skills necessary to perform the review); 2) balance (i.e., nominated reviewers

Printed on Recycled Paper

represent a diversity of scientific perspective relevant to the subject); and 3) independence (i.e., nominated reviewers are independent of the development of this guidance to assure credibility to the review process).

As the proposed NOAA Marine Mammal Acoustic Guidance encompasses a multitude of issues, a thorough review of information/data provided in this document requires the following expertise:

- Marine mammal bioacoustics (hearing and/or communication)
- Marine mammal ecology
- Noise-induced hearing loss (terrestrial and/or marine)
- Behavioral response to sound or other similar stressors (terrestrial and/or marine)
- Acoustic ecology (terrestrial and/or marine)
- Statistical analysis (i.e., logistic regression)

One key component of this guidance document is the methodology and analysis proposed for developing exposure-response curves to depict the likelihood of marine mammals behaviorally responding to seismic surveys. This is a new methodology proposed by the agency and one that we would like to apply (if appropriate) to other sound sources (e.g., drilling, pile driving, explosives, sonar) in future guidance documents. Thus, having expertise in behavioral ecology of animals exposed to noise or other similar stressors is critical.
Please return peer review nominees, including contact information and area of expertise, by **May 10, 2013,** to Amy R. Scholik-Schlomer (Amy.Scholik@noaa.gov).

If there are technical questions, please feel free to contact Amy Scholik-Schlomer, at (301) 427-8449. Questions on the overall acoustic guidance process can be directed to Nicole Le Boeuf, Chief, Marine Mammal and Sea Turtle Conservation Division, (301) 427-8402 (Nicole.Leboeuf@noaa.gov). We appreciate your time, effort, and input concerning the nomination of peer reviewers for this important NOAA guidance document.

Sincerely,

Helen M. Golde
Acting Director
Office of Protected Resources

Enclosure

Proposed NOAA Marine Mammal Acoustic Guidance Summary

This document provides proposed guidance for assessing the effects of anthropogenic sound on marine mammal species, under the National Oceanic and Atmospheric Administration's (NOAA) jurisdiction. Specifically, it provides noise exposure levels for the onset of temporary threshold shifts (TTS) and permanent threshold shifts (PTS) for all sound sources and behavioral response noise exposure levels for seismic surveys (i.e., primary sound source is airguns).

Temporary and Permanent Threshold Shift Noise Exposure Levels

NOAA's proposed updated TTS and PTS noise exposure levels reflect many of the scientific recommendations made in Southall et al. 2007. For example, sources are divided into two broad categories: 1) impulsive and 2) non-impulsive, noise exposure levels are presented using the dual metrics of peak sound pressure level and cumulative sound exposure level, and marine mammals are divided into functional hearing groups (i.e., low-, mid-, and high-frequency cetaceans and phocid and otariid pinnipeds), with associated auditory weighting functions. Within the guidance document, there is a technical appendix describing the methodology, data sets evaluated, and data analysis used to develop both TTS and PTS onset noise exposure levels. Additionally, there is an appendix describing the methodology used to derive marine mammal auditory weighting functions.

Behavioral Response Noise Exposure Levels

For behavioral response noise exposure levels, NOAA proposes to divide sound sources by broad activity types. NOAA developed the proposed guidance for seismic surveys first (i.e., other activity types would be developed in a supplemental guidance document) because there are numerous available datasets, especially for mysticete species, for this type of source and because the methodology being proposed is new for the agency. NOAA is seeking to finalize this methodology before applying it more broadly to other activity types.

Proposed noise exposure levels for behavioral response are derived by logistic regression (binary data) depicting the portion of individuals behaviorally responding based on varying received level (root mean square sound pressure level metric) via an exposure-response curve. This methodology is advantageous because it allows for one to account for studies when a behavioral response occurs, as well as those when a behavioral response does not occur (i.e., increases the amount of useable datasets, opposed to just focusing on those where behavioral response occurred). Within the document, there is a technical appendix describing the methodology, data sets evaluated, and data analysis used to develop the behavioral response noise exposure levels.

MARINE MAMMAL COMMISSION

8 May 2013

Helen M. Golde, Acting Director
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Golde:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the National Marine Fisheries Service's request for assistance in nominating experts to peer review the Service's draft guidance for assessing the effects of anthropogenic sound on marine mammals. The Commission offers its list of recommended reviewers with relevant scientific expertise, plus additional recommendations regarding the Service's selection of reviewers.

The Commission convened a steering committee to review and select potential reviewers. It based its selection on a list of 40+ potential reviewers compiled by the steering committee and Commission staff. The steering committee was comprised of the Chairman of the Commission, Dr. Daryl Boness, and two members of the Commission's Committee of Scientific Advisors on Marine Mammals, Dr. Douglas Wartzok and Dr. Sue Moore. The Service approved those steering committee members before they met.

To identify areas of expertise needed for the review, the steering committee and Commission staff used information provided in a draft copy of the Service's letter of request to the Commission, the Service's draft charge to reviewers, and the Service's peer review plan, as submitted to the Office of Management and Budget. The Office of Management and Budget's Final Information Quality Bulletin for Peer Review (70 Fed. Reg. 2664) provided additional guidance.

The steering committee identified ten individuals with relevant scientific expertise for the review panel and seven alternates following the Service's draft charge. The steering committee eliminated several individuals with potentially relevant expertise because they were either (1) current government employees, (2) former government employees involved in the development of the Service's draft guidance, or (3) individuals involved in the development of environmental planning documents used by the Service to evaluate effects of anthropogenic sound on marine mammals. To avoid any real or perceived conflicts of interest, the steering committee also eliminated from consideration individuals, or employees of companies or organizations, that might benefit from a particular outcome of the review.

<u>The Marine Mammal Commission recommends</u> that the National Marine Fisheries Service choose from the list of experts identified in Table 1 to conduct a peer review of the Service's draft guidance for assessing the effects of anthropogenic sound on marine mammals. The Commission recognizes that not all of the recommended experts will be available to serve on the review panel.

4340 East-West Highway • Room 700 • Bethesda, MD 20814-4498 • T: 301.504.0087 • F: 301.504.0099
www.mmc.gov

However, the Service should strive to ensure that all of the identified areas of expertise are represented. In the event a reviewer is not available and an identified area of expertise would not be represented, the Marine Mammal Commission recommends that the Service contact the Commission regarding an appropriate alternate reviewer.

The Commission's list of recommended experts is based on the documents provided by the Service, as mentioned previously. In the event that the Service changes any of those documents, the Marine Mammal Commission recommends that the National Marine Fisheries Service provide the Commission with a copy of the revised document(s) so that changes to the list of recommended experts and alternates can be made by the Commission, if necessary.

The Service announced its intention to conduct an external peer review of its draft acoustic criteria and thresholds at the 2013 Open Water meeting. At that time, the Alaska Eskimo Whaling Commission requested that the Service include a local hunter on the expert panel to ensure consideration of traditional knowledge regarding behavioral responses of bowhead and beluga whales to anthropogenic sound. The Commission believes that traditional knowledge should be considered in the assessment of behavioral responses and, therefore, the Service should consider including on the review panel a Native Alaskan hunter with such knowledge.

Please contact me if you have questions about the Commission's recommendations or require additional information.

Sincerely,

Timothy J. Ragen

Timothy J. Ragen, Ph.D.
Executive Director

Table 1. Recommended list of experts to conduct a peer review of the National Marine Fisheries Service's draft guidance for assessing the effects of anthropogenic sound on marine mammals—the list includes each individual's affiliation and relevant area(s) of expertise[1].

Name	Affiliation	Relevant area(s) of expertise
Jesse Barber	Boise State University	Effects of chronic sound exposure on terrestrial wildlife, including behavioral response; acoustic ecology
Christine Erbe	Curtin University	Modeling the effects of sound on marine mammals, including impulsive sound; effects of sound on marine mammals, including behavioral response
Donald Henderson	University of Buffalo	Effects of impulsive sound on humans and domestic animals, including threshold shifts and general hearing loss
Ron Kastelein	SEAMARCO (Sea Mammal Research Company)	Effects of impulsive sound on high-frequency odontocetes and pinnipeds, including TTS and behavioral response
Klaus Lucke	Christian Albrechts University	Effects of impulsive sound on high-frequency odontocetes, including TTS and behavioral response
Paul Nachtigall	University of Hawaii	Effects of sound on mid-frequency cetaceans, including threshold shifts
Doug Nowacek	Duke University	Effects of sound on low- and mid-frequency cetaceans, including behavioral response
John (Jack) Terhune	University of New Brunswick	Effects of sound on pinnipeds, including threshold shifts and behavioral response
Aaron Thode	Scripps Institution of Oceanography	Acoustic ecology; effects of sound on mid-frequency cetaceans, including behavioral response
Peter Tyack	University of St. Andrews	Effects of sound on low- and mid-frequency cetaceans, including behavioral response

[1] All reviewers were assumed to have basic statistical expertise, including logistic regressions.