



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

JUN 13 2013

Dr. Doug Nowacek
DUML, BRL 117
Duke University Marine Lab 1
35 Duke Marine Lab Rd
Beaufort, NC 28516

Dear Dr. Doug Nowacek:

Thank you for agreeing to participate as a peer reviewer of the DRAFT National Oceanic and Atmospheric Administration (NOAA) Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammals. We appreciate your willingness to help with this important effort to create national guidance for NOAA.

Please note the specific requirements below. First and foremost, you must complete a conflict of interest disclosure form (attached) and provide your curriculum vitae (CV) for our files as soon as possible. These tasks must be completed before the review begins.

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Specific Topics of Interest for Consideration during the Peer Review:

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 - Whether the proposed marine mammal auditory weighting functions appropriately account for uncertainty and variability associated with functional hearing groups susceptibility to PTS and TTS
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 - Whether an exposure-response curves reasonably reflect potential variability in behavioral responses

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- Whether the proposed exposure-response curves are appropriate tools for distinguishing between brief and/or minor responses and those which have a higher potential to affect foraging, reproduction, or survival.
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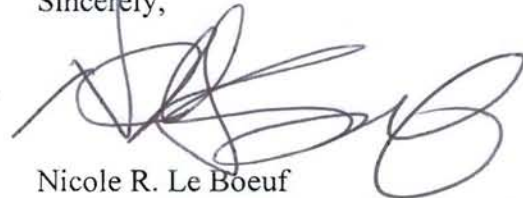
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Sincerely,

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Nicole R. Le Boeuf
Division Chief, Marine Mammal and Sea
Turtle Conservation Division
NMFS Office of Protected Resources

Attachment:

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NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

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Dr. Klaus Lucke
IMARES Wageningen UR
Postbus 167
1790AD Den Burg
The Netherlands

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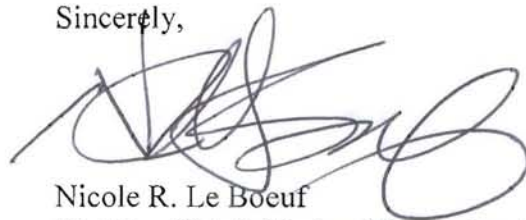
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Dr. Paul Nachtigall
Hawai'i Institute of Marine Biology
PO Box 1346
Kane'ohe, HI 96744

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Marine Physical Laboratory
Scripps Institution of Oceanography, University of California San Diego
9500 Gilman Drive
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Specific Topics of Interest for Consideration during the Peer Review:

1. Our proposed PTS and TTS onset noise exposure levels summarize and interpret the ~24 peer reviewed publications on marine mammal noise-induced TTS. We established a protocol for developing PTS and TTS onset noise exposure levels for impulsive and non-impulsive sources, dividing marine mammals into functional hearing groups (i.e., low-, mid-, and high-frequency cetaceans and otariid and phocid pinnipeds), and incorporating marine mammal auditory weighting functions. Noise exposure levels are presented using the dual metrics of cumulative sound exposure level and peak sound pressure level. Our protocol addresses how to combine multiple datasets, as well as how to determine appropriate surrogates when no data are available. During your review, please consider the following:
 - Whether the proposed onset of PTS and TTS noise exposure levels appropriately account for uncertainty and variability associated with these datasets
 - Whether the entirety of datasets are accurately summarized
 - Whether extrapolations are appropriate based on available datasets
 - Whether metrics chosen (i.e., peak sound pressure level and cumulative sound exposure level) are appropriate to describe potential effects
 - In particular, whether baseline accumulation period for the cumulative sound exposure level metric accurately reflects the potential for exposure

- Whether effects of exposure duration and frequency (kilohertz) are appropriately taken into consideration
 - Whether the proposed marine mammal auditory weighting functions appropriately account for uncertainty and variability associated with functional hearing groups susceptibility to PTS and TTS
 - Whether the entirety of datasets are accurately summarized
 - Whether extrapolations are appropriate based on available datasets
 - In particular, whether low-frequency cetacean auditory weighting function, where direct data on hearing is nonexistent, is appropriate based on available knowledge
 - Whether division of marine mammal functional hearing groups and associated hearing ranges are appropriate based on available datasets
2. Our proposed behavioral response noise exposure levels summarize and interpret ~50 studies of marine mammals behaviorally responding to seismic surveys and airguns. Of these studies, approximately half could be used directly in the development of the quantitative exposure-response curves because they had information on received level and/or distance from the source. Noise exposure levels are presented as exposure-response curves derived by logistic regression, where responses are scored either as a zero (minor or no behavioral response) or one (more than minor behavioral response). We used the severity index provided in Southall et al. (2007¹) as guidance to help identify a threshold to distinguish between what is considered a minor and/or brief behavioral response and those with higher potential to affect foraging, reproduction, or survival. Note that by using a binary method to define a threshold (between minor and more than minor), we are not trying to predict the severity of a response or assess the full range of significance of a behavioral response. During your review, please consider the following:
- Whether the proposed exposure-response curves appropriately account for uncertainty and variability associated with behavioral datasets
 - Whether the entirety of datasets are accurately summarized
 - Whether extrapolations are appropriate based on available datasets
 - Whether the proposed metric (root mean square sound pressure level) is appropriate to describe potential effects
 - Whether the species group divisions (i.e., mysticetes, odontocetes, and pinnipeds) identified are most appropriate to reflect potential differences in behavioral responses. Whether logistic regression and associated assumptions are an appropriate method to develop exposure-response curves
 - Whether an exposure-response curves reasonably reflect potential variability in behavioral responses

¹ Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene, Jr., D. Kastak, D.R. Ketten, J.H. Miller, P.E. Nachtigall, W.J. Richardson, J.A. Thomas, and P.L. Tyack. 2007. Marine mammal noise exposure criteria: Initial scientific recommendations. *Aquatic Mammals* 33:411-521.

- Whether the proposed exposure-response curves are appropriate tools for distinguishing between brief and/or minor responses and those which have a higher potential to affect foraging, reproduction, or survival.
- Whether the proposed incorporation of distance from the sound source is a useful factor in further distinguishing between minor and/or brief behavioral responses and those with a higher potential to affect foraging, reproduction, or survival.

Requirements of the Peer Review:

1. The President's Office of Management and Budget (OMB) published a Peer Review Bulletin (December 2004) that requires online posting of this peer review, as it has been determined to be "highly influential." To ensure that we have a transparent process for public disclosure, names and affiliations of each peer reviewer is posted online, as well as all comments. We are required to identify peer reviewers by name and affiliation, but NOAA's National Marine Fisheries Service (NMFS) has the ability to post a compilation of reviewer comments. Therefore, we will not associate individual comments with a reviewer's name; rather we will compile the unabridged comments and organize by a review number. Previously submitted Peer Reviews are available at: http://www.cio.noaa.gov/services_programs/prplans/PRsummaries.html
2. The Peer Review Bulletin further requires that non-Federal peer reviewers complete a "Confidential Conflict of Interest Disclosure" form. This form is attached, and we request that you complete this disclosure form and provide your curriculum vitae (CV) for our files as soon as possible. These tasks must be completed before the review begins.
3. Notably, if NMFS receives a Freedom of Information Act (FOIA) request, anonymity of peer reviewers' comments cannot be guaranteed.
4. Finally, the information provided in this draft Guidance is distributed solely for the purpose of pre-dissemination peer review under applicable Information Quality Guidelines. It has not been formally disseminated by NOAA. It does not represent and should not be construed to represent any agency determination or policy. All information associated with the review document is to remain strictly confidential until NOAA releases the acoustic guidance document to the public


Logistics:

1. We anticipate that the review will begin the last week of June.
2. We will hold an introductory teleconference to go over the peer review charge and provide an overview of the document. You will be contacted soon regarding your availability for this teleconference.

3. Please be sure to sign and return a conflict of interest form and attach your CV as soon as possible (i.e., before the start of the review) to ensure there are no issues with you participating in this review.
4. Please provide your comments in electronic or hard copy form.
5. Please forward your comments by no later than **30 days after receipt of the guidance document**. Again, if you identify major concerns, we appreciate it if you let us know as soon as possible.

Unfortunately, due to federal budget constraints, we will not be able to compensate you for your time. Nevertheless, the NMFS Office of Protected Resources appreciates your time and effort in completing this review and would not be able to produce a scientifically robust guidance document without your valuable input. If there are technical questions, please feel free to contact Amy Scholik-Schlomer, at (301) 427-8449 (Amy.Scholik@noaa.gov). Questions on the overall acoustic guidance process can be directed to me at (301) 427-8402 (Nicole.Leboeuf@noaa.gov).

Sincerely,



Nicole R. Le Boeuf
Division Chief, Marine Mammal and Sea
Turtle Conservation Division
NMFS Office of Protected Resources

Attachment:

1. Conflict of Interest Policy and Form