29 August 2022

Dr. Amy R. Scholik-Schlomer, Fishery Biologist
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Dr. Scholik-Schlomer:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the National Marine Fisheries Service's (NMFS) request for assistance in nominating experts to peer review its Draft Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and In-Air Thresholds for Onset of Auditory Injury/Permanent and Temporary Threshold Shifts (Updated Technical Guidance). The Updated Technical Guidance provides guidance for evaluating the potential impacts of anthropogenic sound on marine mammal hearing under NMFS's jurisdiction and is based upon NMFS's original and revised Technical Guidance (NMFS 2016 and 2018, respectively). The Commission provided a list of recommended reviewers to NMFS in 2013 and 2015 for previously proposed criteria and thresholds that ultimately informed NMFS's original Technical Guidance (NMFS 2016). For the current peer review, NMFS requested a list of reviewers with relevant scientific expertise in marine mammal bioacoustics, including hearing capabilities and/or communication, and noise-induced hearing loss or auditory injury, including threshold shift studies on marine and/or terrestrial mammals.

The Commission convened a steering committee that was comprised of the Chair of the Commission, Dr. Frances Gulland, and two members of the Commission's Committee of Scientific Advisors on Marine Mammals, Drs. Sue Moore and Aaron Thode. The steering committee identified 13 individuals with relevant scientific expertise for the review panel, see Table 1. Similar to previous recommendations, the steering committee did not consider multiple individuals with potentially relevant expertise because they were (1) current government employees, (2) involved in the development of the Navy's technical report[1] that underlies the Updated Technical Guidance, or (3) involved in drafting Southall et al. (2019). The Commission believes that the recommended experts have the relevant expertise necessary for reviewing and commenting on the Updated Technical Guidance, provide a diversity of perspectives regarding hearing loss or auditory injury, and are independent, thereby minimizing any conflicts of interest.

The Commission recommends that NMFS choose from the list of experts identified in Table 1 to conduct a peer review of its Updated Technical Guidance and allow those experts at least

[1] Including individuals affiliated with the U.S. Navy and National Marine Mammal Foundation.

30 days to review the relevant documentation. Please contact me if you have questions regarding the Commission's recommendation or require additional information.

Sincerely,

Peter O. Thomas, Ph.D.
Executive Director

cc: Kim Damon-Randall, Director of the Office of Protected Resources
Jolie Harrison, Chief of the Permits and Conservation Division of the Office of Protected Resources

References

NMFS. 2016. Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: Underwater acoustic thresholds for onset of permanent and temporary threshold shifts. Office of Protected Resources, Silver Spring, Maryland. 189 pages.

NMFS. 2018. 2018 Revision to: Technical guidance for assessing the effects of anthropogenic sound on marine mammal hearing: Underwater acoustic thresholds for onset of permanent and temporary threshold shifts. Office of Protected Resources, Silver Spring, Maryland. 178 pages.

Southall, B.L., J.J. Finneran, C. Reichmuth, P.E. Nachtigall, D.R. Ketten, A.E. Bowles, W.T. Ellison, D.P. Nowacek, and P.L. Tyack. 2019. Marine mammal noise exposure criteria: Updated scientific recommendations for residual hearing effects. Aquatic Mammals 45(2):125–232. https://doi.org/10.1578/AM.45.2.2019.125.

Table 1. Recommended list of experts to conduct a peer review of the NMFS's Updated Technical Guidance—the list includes each individual's affiliation and relevant area(s) of expertise.

Name	**Affiliation**	**Relevant area(s) of expertise**
David Barclay	Dalhousie University	Metrics for distinguishing impulsive and non-impulsive sounds and use of effective quiet thresholds
Robert Burkard	University of Buffalo	Auditory electrophysiology, including animal studies of steady-state response and effects of high stimulus rates on auditory brainstem response
Ted Cranford	San Diego State University	Hearing and sound reception mechanisms in low- and mid-frequency cetaceans, including finite element modeling to elucidate audiograms for low-frequency cetaceans
Ron Kastelein	SEAMARCO[2]	Effects of sound on high-frequency odontocetes and pinnipeds, including threshold shift studies, equal latency contours, and weighting functions
Colleen Le Prell	University of Florida	Effects of sound on humans, including sound-induced hearing loss and hair cell loss
Aran Mooney	Woods Hole Oceanographic Institution	Hearing capabilities and pathways of high- and mid-frequency cetaceans
William Murphy	Stephenson and Stephenson Research and Consulting, LLC[3]	Effects of sound on humans, including hearing function, noise-induced hearing loss, sound metrics, and auditory risk assessment and mitigation
Wei Qui	Auditory Research Laboratory, State University of New York at Plattsburgh	Effects of impulsive sound on humans and domestic animals, including threshold shift studies, kurtosis, hair cell loss, and general hearing loss
Richard Salvi	Center of Hearing and Deafness, University of Buffalo	Effects of sound on humans, including noise-induced hearing loss, hair cell loss, and auditory perception
Jillian Sills	University of California Santa Cruz	Hearing capabilities of pinnipeds; effects of sound on pinnipeds, including threshold shift studies
John (Jack) Terhune	University of New Brunswick	Effects of sound on pinnipeds, including threshold shift studies

[2] Sea Mammal Research Company.
[3] Retired from National Institute for Occupational Safety and Health.

Name	Affiliation	Relevant area(s) of expertise
Doug Wartzok	Florida International University	Physiological ecology and psychophysical studies of marine mammals and general bioacoustics and effects of sound on marine mammals
Aleksandrs Zosuls	Boston University	Cochlear micromechanics and hearing mechanisms in cetaceans, including finite element modeling to elucidate audiograms using middle ear transfer functions for low-frequency cetaceans