22 August 2019

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Office of Naval Research's (ONR) application seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take marine mammals by harassment. The taking would be incidental to conducting research activities[1] in the Beaufort and Chukchi Seas. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 31 July 2019 notice (84 Fed. Reg. 37240) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

Background

ONR plans to conduct its research activities approximately 233 km north of Alaska in the Beaufort and Chukchi Seas. The purpose is to conduct various experiments investigating (1) oceanographic and climate change processes and (2) how the changing environment affects acoustic propagation and the acoustic environment. Sources could be deployed and/or retrieved on up to 150 days. Moored and drifting sources would operate intermittently for the entire year, and ice-breaking activities could occur on up to 8 days. Various low-, mid-, and high-frequency active sources would be used (see the *Federal Register* notice for more details).

NMFS preliminarily has determined that, at most, the proposed activities would temporarily modify the behavior of four marine mammal species or stocks. It also anticipates that any impact on the affected species and stocks would be negligible. NMFS does not anticipate any take of marine mammals by death or serious injury and believes that the potential for temporary or permanent hearing impairment would be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- implementing delay and shut-down procedures;
- implementing vessel avoidance measures;

[1] Activities would be conducted in support of the Stratified Ocean Dynamics of the Arctic Program, Arctic Mobile Observing System Program, Ocean Acoustics Program, and the Naval Research Laboratory.

- maintaining a separation distance[2] of 305 m from any sighted pinniped;
- using delay and shut-down procedures, if a species for which authorization has not been granted or if a species for which authorization has been granted but the authorized takes are met, approaches or is observed within the Level B harassment zone[3];
- retrieving a moored passive acoustic monitoring device that was deployed last year and deploying another device to collect data for an additional year—those data would be compiled with data obtained from other devices deployed in 2016 and 2017 to estimate marine mammal densities in the area;
- reporting injured and dead marine mammals to NMFS and the Alaska Regional Stranding Coordinator and suspending activities, if appropriate; and
- submitting a draft and final exercise monitoring report to NMFS.

Availability of marine mammals for subsistence

The proposed activity would occur 227 km seaward of known subsistence use areas. However, ONR did discuss its proposed research activities with the Arctic Waterways Safety Committee and the Alaska Eskimo Whaling Commission. Based on those discussions, ONR plans to establish check-in and communication procedures to minimize any impacts of its activities[4]. Based on the location of the proposed activities, NMFS has preliminarily determined that the proposed taking would not have an unmitigable adverse impact on the availability of marine mammals for subsistence use by Alaska Natives.

The Commission concurs with NMFS's preliminary findings and therefore recommends that NMFS issue the incidental harassment authorization, subject to inclusion of the proposed mitigation, monitoring, and reporting measures.

Behavior thresholds

To further define its behavior thresholds for non-impulsive sources[5], the Navy developed multiple[6] Bayesian biphasic dose response functions[7] (Bayesian BRFs) for Phase III activities. The Bayesian BRFs were a generalization of the monophasic functions previously developed[8] and applied to behavioral response data[9] (see Department of the Navy 2017 for specifics). The biphasic portions of the functions are intended to describe both level- and context-based responses as proposed in Ellison et al. (2011). At higher amplitudes, a level-based response relates the received sound level to

[2] For personnel on the ice or in aircraft.
[3] This standard measure was inadvertently omitted from the preamble and the proposed authorization. NMFS indicated it would be included in the final authorization.
[4] The Commission informally noted that this information was specified in the application and the communication procedures were included in the draft authorization, but none of the information was included in the *Federal Register* notice. NMFS indicated all relevant information would be included in the preamble to the final authorization.
[5] Acoustic sources (i.e., sonars and other transducers).
[6] For odontocetes (except beaked whales), beaked whales, mysticetes, and pinnipeds. The Navy used the 120-dB re 1 µPa unweighted, step-function threshold for harbor porpoises as it had done for Phase II activities.
[7] Comprising two truncated cumulative normal distribution functions with separate mean and standard deviation values, as well as upper and lower bounds. The model was fitted to data using the Markov Chain Monte Carlo algorithm.
[8] By Antunes et al. (2014) and Miller et al. (2014).
[9] From both wild and captive animals.

the probability of a behavioral response; whereas, at lower amplitudes, sound can cue the presence, proximity, and approach of a sound source and stimulate a context-based response based on factors other than received sound level[10]. The Bayesian BRFs are reasonable and a much-needed improvement on the two dose response functions (BRFs)[11] that the Navy had used both for TAP I and Phase II activities.

The Commission is concerned, however, that following the development of the BRFs, the Navy then implemented various cut-off distances beyond which it considered the potential for significant behavioral responses to be unlikely (Table C.4 in Department of the Navy 2017). The Navy indicated it was likely that the context of the exposure is more important than the amplitude at large distances[12] (Department of the Navy 2017)—that is, the context-based response dominates the level-based response. The Commission agrees with that notion but notes that the Bayesian BRFs already incorporate such factors. Including additional cut-off distances contradicts the data underlying the Bayesian BRFs and negates the intent of the functions themselves.

The actual cut-off distances used by the Navy also appear to be unsubstantiated or based on very limited data. For example, the Navy and NMFS indicated that data on pinniped behavioral responses in general are limited, and that there is a total lack of data for distances beyond 3 km from the source (Department of the Navy 2017 and 84 Fed. Reg. 37258). However, the Navy arbitrarily set the cut-off distance at 10 km for pinnipeds. In response to the Commission's comments regarding those cut-off distances, the Navy indicated that pinnipeds do not exhibit strong reactions to sound pressure levels up to 140 dB re 1 μPa based on Southall et al. (2007; 83 Fed. Reg. 65230). The Commission notes, as did the Navy and NMFS, that those data were limited and furthermore were based on sources that did not have characteristics similar to MFA sonar[13]. Southall et al. (2007) additionally indicated that data did not exist regarding exposures at higher received levels at that time. Fortunately, data on pinniped behavioral responses now exist both for sound sources similar to MFA sonar and at higher received levels. Those data ultimately were used by the Navy to develop the Bayesian BRF for pinnipeds (see Table 3-2 in Department of the Navy 2017 for details), while none of the data cited in Southall et al. (2007) were used. Some of the pinnipeds did in fact exhibit 'strong' reactions based on the Southall et al. (2007) severity scale[14] to received levels less than and equal to 140 dB re 1 μPa, and those data were used to inform the context portion of the Bayesian BRF.

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[10] e.g., the animal's previous experience, separation distance between sound source and animal, and behavioral state including feeding, traveling, etc.

[11] One for odontocetes and pinnipeds and one for mysticetes.

[12] For example, the Navy indicated that the distance to the basement level of 120 dB re 1 μPa for the BRFs from TAP I and Phase II sometimes extended to more than 150 km during activities involving the most powerful sonar sources (e.g., AN/SQS-53).

[13] Some sources emitted sound at much lower frequencies (the acoustic thermometry of the ocean climate (ATOC) sound source emitted signals at a center frequency of 75 Hz) and at a greater repetition rate than MFA sonar (Costa et al. 2003). Other sources emitted sound at higher frequencies (the Airmar™ acoustic harassment device (AHD) emitted signals at 10 kHz or higher and acoustic communication signals were emitted at 12 kHz with higher frequency harmonics) and at a greater repetition rate with shorter pulse durations (specifically the AHD) than MFA sonar (Jacobs and Terhune 2002, Kastelein et al. 2006).

[14] Equating to significant behavioral responses as specified by the Navy.

For odontocetes[15], the cut-off distances were based on tagging data from a single species, the Risso's dolphin. Interestingly, Risso's dolphins tens of kilometers from the source exhibited similar responses to those that were within hundreds of meters of the source (Southall et al. 2014). That is, the dolphins did not exhibit any clear, overt behavioral response to either the real MF source or the scaled MF source at either distance, and the scaled MF source had to be shut down from full power when the dolphins entered the 200-m shut-down zone. The Commission remains unconvinced of the appropriateness of the cut-off distances.

Moreover, depending on the activity and species, the cut-off distances effectively eliminate a large portion of the estimated numbers of takes. For example, for the Hawaii-Southern California Fleet Training and Testing letter of authorization (LOA) application, the estimated numbers of takes would be reduced to zero for odontocetes beginning where the probability of response is 40 percent, for pinnipeds where the probability of response is 27 percent, and for beaked whales where the probability of response is 28 percent (for sonar bin MF1 in Table 6-10 in the LOA application). The received levels at the various cut-off distances are greater than both the thresholds currently used by the Navy[16] and where actual context-based behavioral responses have been observed (see the Commission's 15 April 2019 letter detailing this issue). Although that level of information was not provided in ONR's proposed incidental harassment authorization application, one can only assume that the numbers of takes for beluga whales and ringed and bearded seals were reduced as well. The magnitude of those reductions are unknown. For all of these reasons, the Commission again recommends that the Navy refrain from using cut-off distances in conjunction with the Bayesian BRFs and re-estimate the numbers of Level B harassment takes based solely on the Bayesian BRFs.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a second one-year[17] incidental harassment authorization renewal for this and other future authorizations if various criteria are met and after an expedited public comment period of 15 days. The Commission agrees that NMFS should take appropriate steps to streamline the authorization process under section 101(a)(5)(D) of the MMPA to the extent possible. However, the Commission is concerned that the renewal process proposed in the *Federal Register* notice is inconsistent with the statutory requirements—section 101(a)(5)(D)(iii) clearly states that proposed authorizations are subject to a 30-day comment period[18].

Another significant issue with the proposed 15-day comment period is the burden that it places on reviewers, who will need to review the original authorization and supporting documentation[19], the draft monitoring report(s), the renewal application or request[20], and the

[15] Other than beaked whales and harbor porpoises.
[16] Including both the step-function threshold for harbor porpoises and the various Bayesian BRFs for the other species.
[17] NMFS informed the Commission that the renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS has yet to specify this in any *Federal Register* notice detailing the new proposed renewal process but should do so.
[18] See also the legislative history of section 101(a)(5)(D), which states "…in some instances, a request will be made for an authorization identical to one issued the previous year. In such circumstances, the Committee expects the Secretary to act expeditiously in complying with the notice and comment requirements." (H.R. Rep. No. 439, 103d Cong., 2d Sess. 29 (1994)). The referenced "notice and comment requirements" specify a 30-day comment period.
[19] Including the original application, hydroacoustic and marine mammal monitoring plans, take estimation spreadsheets, etc.
[20] Including any proposed changes or any new information.

proposed authorization and then formulate comments very quickly. Depending on how frequently NMFS invokes the renewal option, how much the proposed renewal or the information on which it is based deviates from the original authorization, and how complicated the activities are and the taking authorization is, those who try to comment on all proposed authorizations and renewals, such as the Commission, would be hard pressed to do so within the proposed 15-day comment period. Therefore, the Commission recommends that NMFS refrain from using the proposed renewal process for ONR's authorization. The renewal process should be used sparingly and selectively, by limiting its use only to those proposed incidental harassment authorizations that are expected to have the lowest levels of impacts on marine mammals and that require the least complex analyses. Notices for other types of activities should not even include the possibility that a renewal might be issued using the proposed foreshortened 15-day comment period. If NMFS intends to use the renewal process frequently *or* for authorizations that require a more complex review or for which much new information has been generated (e.g., multiple or extensive monitoring reports), the Commission recommends that NMFS provide the Commission and other reviewers the full 30-day comment period as set forth in section 101(a)(5)(D)(iii) of the MMPA.

The Commission hopes its comments are useful. Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,

Peter O Thomas

Peter O. Thomas, Ph.D.,
Executive Director

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