15 November 2017

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 U.S. Navy's 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 its ice exercise (ICEX) in the Beaufort Sea and Arctic Ocean in 2018. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 19 October 2017 notice (82 Fed. Reg. 48683) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

Background

The Navy plans to conduct its ICEX approximately 185–370 km north of Prudhoe Bay, Alaska. The purpose is to conduct submarine training and testing activities from an ice camp. During a six-week timeframe beginning in February, the ice camp would be established, acoustic activities would occur, and the ice camp would be demobilized. Various active sources would be used including low-, mid-, and high-frequency sources (see the *Federal Register* notice for more details).

NMFS preliminarily has determined that, at most, the proposed activities would temporarily modify the behavior of small numbers of ringed seals. 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—

- avoiding ice camp establishment near pressure ridges;
- establishing the ice camp gradually over five days[1] to allow seals to relocate to lairs that are not in the immediate vicinity of the camp;
- avoiding transitting pressure ridges and snow drifts on foot and on snowmobiles;

[1] And completed by March 15.

- requiring snowmobiles to follow established routes;
- approaching marine mammals on the ice no closer than 100 m;
- using delay[2] and shut-down procedures via passive acoustic capabilities;
- reporting[3] injured and dead marine mammals to NMFS and 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 outside of the primary subsistence use season (i.e., summer months) and is 185–370 km seaward of known subsistence use areas during that time of year. However, the Navy did contact the Inupiat Community of the Arctic Slope, Native Village of Kaktovik, and Native Village of Nuiqsut and received no comments on the proposed activities. Based on the location and timing 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[4], the Navy developed multiple[5] Bayesian biphasic dose response functions[6] (Bayesian BRFs) for Phase III activities, which were used for the proposed authorization as well. The Bayesian BRFs are a generalization of the monophasic functions previously developed[7] and applied to behavioral response data[8] (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 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[9]. The Bayesian BRFs are reasonable and a much needed improvement on the Navy's two dose

[2] NMFS confirmed that the delay procedure was inadvertently omitted from the proposed authorization text. The Navy would conduct passive acoustic monitoring for at least 15 minutes before the activity would begin and would delay any activity until 15 minutes have passed with no marine mammal detections. That measure is similar to the proposed shut-down procedure and would be included in the final authorization.
[3] NMFS confirmed that the Navy would report any dead or injured marine mammal, irrespective of whether it caused the death or injury. This would be clarified in the final authorization.
[4] Acoustic sources (i.e., sonars and other transducers).
[5] For odontocetes, mysticetes, beaked whales, and pinnipeds.
[6] 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.
[7] By Antunes et al. (2014) and Miller et al. (2014).
[8] From both wild and captive animals.
[9] e.g., the animal's previous experience, separation distance between sound source and animal, and behavioral state including feeding, traveling, etc.

response functions (BRFs)[10] that it had used both for Tactical Training Theater Assessment and Planning (TAP) I and Phase II activities.

Rather than use the Bayesian BRFs to inform its take estimates, NMFS decided to implement additional 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[11]. That is, the context-based response dominates the level-based response. The Commission agrees and notes that, although an important contextual factor is the distance between the animal and the sound source, those factors already have been included in the Bayesian BRFs. Including additional cut-off distances contradicts the underlying data of those functions and negates the intent of the functions themselves.

The actual cut-off distances used by the Navy also appear to be unsubstantiated. For example, the Navy indicated there are limited data on pinniped behavioral responses in general, and a total lack of data beyond 3 km from the source (Department of the Navy 2017). However, the Navy arbitrarily set the cut-off distance at 10 km for the proposed ICEX activities.

More concerning is the fact that, depending on the activity and species, the cut-off distances could effectively eliminate a large portion of the estimated numbers of takes. For the Atlantic Fleet Training and Testing Draft Environmental Impact Statement/Overseas Environmental Impact Statement (DEIS), the estimated numbers of takes would be reduced to zero for odontocetes beginning where the probability of response is 29 percent, for pinnipeds where the probability of response is 27 percent, and for harbor porpoises where the probability of response is 100 percent (for sonar bin MF1 in Table 3.7-11 of the DEIS). The cut-off distances equate to received levels greater than both thresholds currently used by the Navy and where actual context-based behavioral responses have been observed (see the Commission's 2 August 2017 letter detailing this issue). Although this level of information was not provided in the proposed authorization application, one can only assume that the numbers of takes for ringed seals were reduced as well. The magnitude of those reductions are unknown. For all of these reasons, the Commission 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.

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

Sincerely,

Rebecca J. Lent

Rebecca J. Lent, Ph.D.,
Executive Director

[10] One for odontocetes and pinnipeds and one for mysticetes.
[11] For example, the Navy indicated that the range 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; Department of the Navy 2017).

References

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