



MARINE MAMMAL COMMISSION

1 May 2013

Mr. P. Michael Payne, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Mr. Payne:

The Marine Mammal 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 acoustic technology experiments in the western North Pacific Ocean during a one-year period. The Commission also has reviewed the National Marine Fisheries Service's 2 April 2013 notice (78 Fed. Reg. 19652) announcing receipt of the application and proposing to issue the incidental harassment authorization, subject to certain conditions.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service issue the incidental harassment authorization but—

- assess the potential risk to marine mammals from the acoustic technology experiments by requiring ONR to (1) provide the best available mean density estimates plus two standard deviations for the densities based on surveys in areas other than the locations where the experiments could occur, (2) describe any known or suspected sources of bias associated with the use of those data, and (3) re-estimate the numbers of takes using those mean densities plus two standard deviations;
- require ONR to use a third clearance time category of 60 minutes for deep-diving species (i.e., beaked whales and sperm whales) after a delay or shut down, if the animal is not observed to have left the mitigation zone; and
- require ONR to use passive acoustic monitoring continually during the experiments to supplement its daytime visual monitoring.

RATIONALE

ONR proposes to conduct acoustic technology experiments for up to four underwater acoustic sources (one that is referred to as “oceanographic” because it would be used for assessing oceanographic parameters and three that are referred to simply as “experimental” sources because their purpose is classified). The acoustic technology experiments would occur during a two-week period within international waters at one of nine locations—Sea of Japan, East China Sea, South China Sea, North Philippine Sea, West Philippine Sea, waters east of Japan, waters offshore of

Guam, waters from 25 to 40°N latitude, or waters from 10 to 25°N latitude. Water depths in those nine locations range from 100–9,500 m. The purpose of the experiments is to verify the performance of the acoustic sources in a realistic environment—that is, do they perform as expected. The vessel used for the experiments would be moving at speeds less than 5 knots when testing the oceanographic acoustic source, but would be stationary when testing the three experimental sources. All of the acoustic sources operate below 1.5 kHz and sound pressure levels would be less than 220 dB re 1 μ Pa. Testing of the oceanographic source would occur for no more than 24 hours, and testing of all three of the experimental sources would occur for no more than 69 hours total. Both types of experiments could occur during both day and night.

The Service preliminarily has determined that, at most, the proposed activities temporarily would modify the behavior of 34 marine mammal species. It also anticipates that any impact on the affected species and stocks would be negligible. The Service does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation and monitoring measures. Those measures include—

- using civilian protected species observers to monitor a 1-km mitigation zone 30 minutes before, during, and 30 minutes after the experiments;
- using passive acoustic monitoring during nighttime hours or during periods of decreased visibility, specifically 30 minutes before, during, and 30 minutes after the experiments or 30 minutes after sunrise, whichever occurs first;
- using delay and shut-down procedures during daytime visual monitoring and nighttime passive acoustic monitoring;
- reporting injured and dead marine mammals to the Service using the Service’s phased approach and suspending activities, if appropriate; and
- submitting both a classified and unclassified report.

Density estimates

ONR estimated the numbers of takes expected to result from the proposed experiments using the best available density data. Density estimates from line-transect surveys in or near the nine proposed experiment locations were used, if available. However, in those instances when survey data were not available within or near those locations, ONR extrapolated densities from regions with similar oceanographic characteristics to those locations. For example, the waters within the eastern tropical Pacific Ocean have been surveyed extensively and those data provide a comprehensive understanding of marine populations in temperate oceanic waters (Ferguson and Barlow 2001 and 2003). Thus, ONR used density data from Ferguson and Barlow (2001 and 2003) for certain species and that same extrapolation approach for other species.

The Commission understands that density data are not available for all areas in which activities occur. However, it has recommended previously that when the density estimates have inherent uncertainties, the Service require the applicant to use in its risk assessment the best density estimate plus some measure of uncertainty to account for potential measurement error and bias resulting from the use of data from another location. In this case, Ferguson and Barlow (2001 and

2003) included coefficients of variation (i.e., the standard deviation divided by the mean) with the density estimates from the equatorial tropical Pacific Ocean. Therefore, the precautionary approach would be to use the best available density estimates for each species plus a measure of uncertainty to account for measurement error and then describe any known or suspected sources of bias to account for using data from another location. Accordingly, the Marine Mammal Commission recommends that the National Marine Fisheries Service assess the potential risk to marine mammals from the acoustic technology experiments by requiring ONR to (1) provide the best available mean density estimates plus two standard deviations for the densities based on surveys in areas other than the locations where the experiments could occur, (2) describe any known or suspected sources of bias associated with the use of those data, and (3) re-estimate the numbers of takes using those mean densities plus two standard deviations.

Mitigation and monitoring measures

The Service would require ONR to monitor the area near the vessel visually for at least 30 minutes before, during, and 30 minutes after the experiments cease or 30 minutes after sunset, whichever comes first. During nighttime and periods of low visibility, it would require ONR to monitor the area acoustically for at least 30 minutes before, during, and 30 minutes after the experiments cease or 30 minutes after sunrise, whichever comes first. The Service also would require that when transmissions have been delayed or shut down because a marine mammal has been detected visually within the proposed 1-km mitigation zone during daytime or detected acoustically during nighttime, acoustic transmissions would not resume until the marine mammal is outside the mitigation zone (i.e., the animal is observed to have left the mitigation zone or has not been seen or otherwise detected within the mitigation zone, including detection by acoustic means, for 15 minutes in the case of small odontocetes and pinnipeds and 30 minutes in the case of mysticetes and large odontocetes).

The Commission supports the use of the delay and shut-down procedures proposed by ONR but also believes that the proposed clearance times during visual monitoring may not be adequate for all species. For small cetaceans, the Commission has recommended a clearance time of at least 15 minutes because their dive times are shorter and generally fall within that limit. For some large cetaceans, however, the proposed 30-minute clearance time may be inadequate, sometimes markedly so. Beaked and sperm whales, in particular, may remain submerged for periods far exceeding 30 minutes. Blainville's and Cuvier's beaked whales dive to considerable depths (> 1,400 m) and can remain submerged for more than 80 minutes (Baird et al. 2008). The grand mean dive duration for those species of beaked whales during foraging dives is approximately 60 minutes (51.3 and 64.5 minutes for Blainville's and Cuvier's beaked whales, respectively; Baird pers. comm.). Sperm whales also dive to deep depths and can remain submerged for up to 55 minutes (Drouot et al. 2004), with a grand mean dive time of approximately 45 minutes (Watwood et al. 2006). If those species continue foraging in the same area as one of the stationary experimental sources and that source is turned on after only 30 minutes, then beaked whales and sperm whales could be exposed to sound levels sufficient to cause Level A harassment.

In addition, observers may not detect marine mammals each time they return to the surface, especially cryptic species such as beaked whales, which are difficult to detect even under ideal conditions. Barlow (1999) found that "[a]ccounting for both submerged animals and animals that are

Mr. P. Michael Payne
1 May 2013
Page 4

otherwise missed by the observers in excellent survey conditions, only 23 percent of Cuvier's beaked whales and 45 percent of *Mesoplodon* beaked whales are estimated to be seen on ship surveys if they are located directly on the survey trackline." Therefore, after either a delay or shut down, the Marine Mammal Commission recommends that the National Marine Fisheries Service require ONR to use a third clearance time category of 60 minutes for deep-diving species (i.e., beaked whales and sperm whales), if the animal is not observed to have left the mitigation zone. Further, because of the cryptic nature of some species, the Commission also recommends that the Service require ONR to use passive acoustic monitoring continually during the experiments to supplement its daytime visual monitoring.

Please contact me if you have questions regarding the Commission's recommendations and comments.

Sincerely,



Timothy J. Ragen, Ph.D.
Executive Director

Literature cited

- Baird, R.W., D.L. Webster, G.S. Schorr, D.J. McSweeney, and J. Barlow. 2008. Diel variation in beaked whale diving behavior. *Marine Mammal Science* 24:630-642.
- Barlow, J. 1999. Trackline detection probability for long-diving whales. Pages 209–221 in G.W. Garner, S.C. Amstrup, J.L. Laake, B.F.J. Manly, L.L. McDonald, and D.G. Robertson (eds.), *Marine Mammal Survey and Assessment Methods*. Balkema, Rotterdam, The Netherlands.
- Drouot V., A. Gannier, and J.C. Goold. 2004. Diving and feeding behaviour of sperm whale (*Physeter macrocephalus*) in the northwestern Mediterranean Sea. *Aquatic Mammals* 30:419–426.
- Ferguson, M.C., and J. Barlow. 2001. Spatial distribution and density of cetaceans in the eastern Pacific Ocean based on summer/fall research vessel surveys in 1986-96. National Oceanic and Atmospheric Administration Administrative Report LJ-01-04. Southwest Fisheries Science Center, La Jolla, California. 61 pages.
- Ferguson, M.C., and J. Barlow. 2003. Addendum: Spatial distribution and density of cetaceans in the eastern tropical Pacific Ocean based on summer/fall research vessel surveys in 1986-96. National Oceanic and Atmospheric Administration Administrative Report LJ-01-04 (Addendum). Southwest Fisheries Science Center, La Jolla, California. 100 pages.
- Watwood S.L., P.J.O. Miller, M. Johnson, P.T. Madsen, and P.L. Tyack. 2006. Deep-diving foraging behavior of sperm whales (*Physeter macrocephalus*). *Journal of Animal Ecology* 75:814–825.