20 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 20910-3226

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by the U.S. Navy seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by Level B harassment. The taking would be incidental to military training activities to be conducted at the Silver Strand Training Complex, California, from July 2013 to July 2014. If issued, this authorization may be superseded by a subsequent letter of authorization that may be issued under regulations for the Navy's Hawaii-Southern California Training and Testing Study Area, which includes the Silver Strand Training Complex. That letter of authorization is to be issued in January 2014. The Commission also has reviewed the National Marine Fisheries Service's 24 April 2013 notice (78 Fed. Reg. 24161) announcing receipt of the application and proposing to issue the incidental harassment authorization, subject to certain conditions. The Commission has reviewed multiple applications for the taking of marine mammals incidental to training activities at the Silver Strand Training Complex.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service issue the incidental harassment authorization, but also require the Navy to—

- ensure protection of marine mammals in the areas where detonations will occur by (1) conducting in-situ sound measurements of underwater detonations (i.e., impulse, peak pressure, and sound exposure level), including during the various training activities when it would use time-delay firing devices and respective net explosive weights (i.e., 5-, 10-, and 15- to 29-lbs) and (2) using that information to establish appropriately sized mitigation and buffer zones;
- adjust the size of the mitigation zones using the average swim speed of the fastest swimming marine mammal occurring in the area when time-delay firing devices would be used to detonate explosives and ensure that the zone is monitored adequately (i.e., by increasing the number of required lookouts and platforms, as necessary); and
- monitor the extent of the Level B harassment zones using additional shore- or vessel-based observers to (1) determine the numbers of marine mammals taken during pile-driving and -removal activities and (2) characterize the effects on them.

RATIONALE

The Navy is proposing year-round training activities at the Silver Strand Training Complex in the vicinity of San Diego Bay. The exercises would involve underwater detonations in waters up to 72 ft in depth using charges up to 29 lbs net explosive weight. Some exercises would consist of up to eight sequential detonations separated by a 10-second or 30-minute delay. Operators would use both remotely controlled and time-delay firing devices to detonate the explosives. In addition, the Navy plans to conduct elevated causeway system training exercises by installing and removing 101 24-in hollow steel piles using impact and vibratory hammers. Pile driving and removal would occur during a 13-day period, 24 hours per day. The Navy plans to conduct 373 underwater detonation and 4 pile-driving/removal training exercises each year.

The Service preliminarily has determined that, at most, the proposed activities would result in a temporary modification in the behavior of small numbers of up to eight species of marine mammals and that any impact on the affected species would be negligible. The Service does not anticipate any take of marine mammals by death or serious injury. It also believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of the proposed mitigation and monitoring measures. Those measures include monitoring mitigation zones 30 minutes before, during, and 30 minutes after the exercises and implementing power-down, shut-down, and ramp-up procedures. Generally, the mitigation zones for underwater detonations encompass nearly the entire extent of the Level B harassment zone. The Navy also would conduct in-situ measurements during the first pile-driving and -removal exercise to verify and adjust the mitigation and buffer zones, if necessary. In addition, protected species observers would monitor a subset (2 to 4 percent) of the underwater detonation exercises per year to validate the Navy's pre- and post-event mitigation effectiveness and to observe marine mammals' responses to those activities.

Mitigation and monitoring measures

The Navy proposes to conduct (and the Commission supports) in-situ measurements of sound propagation during the first pile-driving and -removal exercise to verify and adjust the mitigation and buffer zones, if necessary. However, the Navy did not propose the same types of measurements for the underwater detonation exercises, as the Commission has recommended previously. Accurately determining the size of the Level A harassment zone for these exercises is imperative to ensure protection of marine mammals in the areas where detonations will occur. Conducting in-situ sound measurements would be especially important for those activities using time-delay firing devices that, once triggered, cannot be stopped safely even if a marine mammal is observed within the harassment zone. That being the case, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Navy to ensure protection of marine mammals in the areas where detonations will occur by (1) conducting in-situ sound measurements of underwater detonations (i.e., impulse, peak pressure, and sound exposure level), including during the various training activities when it would use time-delay firing devices and respective net explosive weights (i.e., 5-, 10-, and 15- to 29-lbs) and (2) using that information to establish appropriately sized mitigation and buffer zones.

For underwater detonation activities that involve time-delay firing devices, the Navy proposed to use mitigation zones of 1,000, 1,400, or 1,500 yards based on (1) the size of the modeled Level A harassment zones for three detonation weights (i.e., 5, 10, and 15–29 lbs), (2) the duration of the delay before detonation (5–10 minutes), and (3) an average swim speed for dolphins of 3 knots, with an added 200-yard buffer to account for animals that may be transiting at speeds faster than the average. The Commission has commented on this matter in numerous letters and continues to believe that the use of 3 knots as an average swim speed is inaccurate and inadequate (even with an added buffer to account for animals swimming faster than 3 knots). A simple calculation indicates that if a marine mammal swims at just 4 knots for the duration of the time-delay (10 minutes), the size of the mitigation zone would be inadequate for a 5-lb detonation. Importantly, many marine mammals are capable of swimming, and regularly do swim, much faster than 4 knots, especially for short periods. The average swim speed for bottlenose dolphins ranges from 2.6 to 8 knots (Lockyer and Morris 1987, Mate et al. 1995, Ridoux et al. 1997) and for pelagic dolphins from 6.9 to 13 knots (Au and Perryman 1982, Rohr et al. 1998, Rohr and Fish 2004). Because time delays are at least 5 minutes and many of the marine mammal species in the study area can and generally do swim faster than 3 knots, the mitigation zones proposed by the Navy are simply inadequate and pose a risk of additional injury and mortality, as was recently observed at the Silver Strand Training Complex. To address these concerns, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Navy to adjust the size of the mitigation zones using the average swim speed of the fastest swimming marine mammal occurring in the area when time-delay firing devices would be used to detonate explosives and ensure that the zone is monitored adequately (i.e., by increasing the number of required lookouts and platforms, as necessary).

During the proposed pile-driving and -removal activities, the Navy would use at least one trained observer to monitor 30 minutes before, during, and 30 minutes after those activities. The Commission supports monitoring during all activities rather than during just a portion of them. However, the *Federal Register* notice indicated that the Navy would monitor only the "zone of influence." The size of the "zone of influence" is not clear; for example, it could be the mitigation zone, which is based on the potential for Level A harassment, or it could be based on the potential for Level B harassment, extending more than 1,000 or 5,000 yards (for impact or vibratory hammer use, respectively).

More than one observer would be needed to monitor out to 2.7 nmi from the proposed activities, but such monitoring may not be practicable. A small number of shore- or vessel-based observers could collect the data needed to assess changes in marine mammal behavior as a function of distance from the activities and to determine accurately the numbers of marine mammals taken during those activities. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Navy to monitor the extent of the Level B harassment zones using additional shore- or vessel-based observers to (1) determine the numbers of marine mammals taken during pile-driving and -removal activities and (2) characterize the effects on them.

Please contact me if you have questions about these recommendations.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director

References

Lockyer, C., and R. Morris. 1987. Observations on diving behavior and swimming speeds in a juvenile *Tursiops truncatus*. Aquatic Mammals 13:31–35.

Mate, B.R., K.A. Rossback, S.L. Nieukirk, R.S. Wells, A.B. Irvine, M.D. Scott, and A.J. Read. 1995. Satellite-monitored movements and dive behavior of a bottlenose dolphin (*Tursiops truncatus*) in Tampa Bay, Florida. Marine Mammal Science 11(4):452–463.

Ridoux, V., C. Guinet, C. Liret, P. Creton, R. Steenstrup, and G. Beauplet. 1997. A video sonar as a new tool to study marine mammals in the wild: Measurements of dolphin swimming speed. Marine Mammal Science 13:196–206.

Rohr, J.J., E.W. Hendricks, L. Quigley, F.E. Fish, J.W. Gilpatrick, and J. Scardina-Ludwig. 1998. Observations of dolphin swim speed and Stouhal number. Space and Naval Warfare Systems Center Technical Report 1769, San Diego, California, 56 pages.

Rohr, J.J., and F.E. Fish. 2004. Strouhal numbers and optimization of swimming by odontocete cetaceans. Journal of Experimental Biology 207:1,633–1,642.