



MARINE MAMMAL COMMISSION

5 July 2012

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 National Marine Fisheries Service's 7 June 2012 notice (77 Fed. Reg. 33718) proposing to renew and modify a letter of authorization issued to the Navy under section 101(a)(5)(A) of the Marine Mammal Protection Act. The Service has issued to the Navy letters of authorization that govern the taking of marine mammals incidental to conducting military training operations in the Mariana Islands Range Complex. The incidental take regulations under which the letters of authorization are issued allow the taking of marine mammals by Level A and Level B harassment and by unintentional mortality during the five-year period from August 2010 to August 2015. The renewed letter of authorization would pertain to operations conducted from August 2012 to August 2015.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service issue the letter of authorization but require the Navy to—

- model the proposed monitoring schemes to determine what portion of the associated buffer zone is being monitored at any given time and the probability that any of the cetacean species in the area and entering the various-sized buffer zones would be detected before it gets too close to the detonation site;
- (1) measure empirically the propagation characteristics of the blast (i.e., impulse, peak pressure, and sound exposure level) from the 5- and 10-lb charges used in the proposed exercises and (2) use that information to establish appropriately sized exclusion and buffer zones; and
- re-estimate the sizes of the buffer zones using the average swim speed of the fastest-swimming marine mammal that occurs in the areas within the Complex where time-delay firing devices would be used and for which taking authorization has been granted.

RATIONALE

The National Marine Fisheries Service has promulgated regulations that authorize the Navy to take marine mammals incidental to specified military training operations near the Mariana Islands

in the Pacific Ocean. Specifically, the regulations authorize taking incidental to training with mid- and high-frequency active sonar, weapons systems (including explosive and non-explosive practice munitions), underwater detonations (including high-explosive detonations), vessels, and aircraft. The Navy is requesting that the Service renew the letter of authorization but modify it to allow the use of time-delay firing devices to detonate underwater explosives.

The time-delay firing devices allow divers to set explosive charges and move away before they detonate. Once activated, they cannot be paused or cancelled without risks to the divers. The Navy prefers to use these devices because they likely would be used in combat situations and therefore are necessary to ensure realistic training. For the purpose of triggering explosives, they pose less risk to human safety than other triggering devices because they are not susceptible to unintentional triggering and do not emit electromagnetic radiation.

However, time-delay firing devices do pose some risks to marine mammals. In March 2011, several long-beaked common dolphins were found dead following a Navy mine neutralization training exercise that used time-delay firing devices at the Silver Strand Training Complex. After the incident, the Navy suspended its use of time-delay firing devices in its training exercises pending a review and possible changes to the incidental take authorizations for its range complexes. It also has been working with the Service to develop more robust mitigation and monitoring measures designed to prevent similar incidents in the future.

Mitigation and monitoring measures

As demonstrated by the March 2011 incident, mitigation and monitoring measures for mine neutralization training exercises need to account for the possible movements of marine mammals after time-delay firing devices are activated but before the explosives detonate. For shallow-water exercises using time-delay devices, the Navy proposes to monitor for marine mammals using two vessels, three vessels, or two vessels and a helicopter, depending on the size of the buffer zone. The current letter of authorization stipulates that observer vessels would monitor the zone by following parallel tracklines equidistant from one another. The Navy now is proposing to position vessels at the mid-points of buffer zone radii, equidistant from one another. The vessels would travel in a circular pattern around the detonation location surveying both the inner (toward the detonation site) and outer (away from the detonation site) areas of the buffer zone. Although this approach may improve the Navy's monitoring capability, the overall efficacy of the approach is uncertain. It should be possible to model this monitoring approach based on the size of the buffer zone, detection capability of observers on the monitoring vessels, species that may be encountered, and their swimming behavior and speed. To assess the efficacy of the proposed monitoring approach, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Navy to model the proposed monitoring schemes to determine what portion of the associated buffer zone is being monitored at any given time and the probability that any of the cetacean species in the area and entering the various-sized buffer zones would be detected before it gets too close to the detonation site.

The Navy also is proposing to increase the radius of the buffer zone from 700 yards to 1,000 or 1,400 yards. It based those increases on (1) the size of the modeled exclusion zones for two

Mr. P. Michael Payne
5 July 2012
Page 3

detonation weights (i.e., 5 and 10 lbs), (2) the duration of the delay before detonation (5–10 minutes), and (3) an average swim speed for delphinids of 3 knots, with an added unspecified correction factor to account for animals that may be transiting at speeds faster than the average. The Navy and the Service believe that, as long as marine mammals are not observed within the buffer zones before the firing device is activated, the animals are unlikely to swim into the exclusion zone before the explosives detonate.

The Commission disagrees for two reasons. First, the exclusion zones were estimated using a model rather than empirical measurements. To the Commission's knowledge, the model has not been validated, but such validation is necessary, particularly in shallow water where the propagation characteristics of a blast (i.e., impulse, peak pressure, and sound exposure level) are difficult to predict. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Navy to (1) measure empirically the propagation characteristics of the blast (i.e., impulse, peak pressure, and sound exposure level) from the 5- and 10-lb charges used in the proposed exercises and (2) use that information to establish appropriately sized exclusion and buffer zones.

Second, the Commission does not believe that the use of 3 knots as an average swim speed is appropriate for the species involved, even with an additional correction factor to account for animals swimming faster than 3 knots. If an animal swims at just 4 knots for the duration of the time-delay, the size of the buffer zones would be inadequate in 5 of the 12 scenarios presented in Table 3 of the notice. Importantly, many marine mammals are capable of swimming much faster than 4 knots, especially during short timeframes. The average swim speed for bottlenose dolphins, the species for which the swim speed is presumably based, range between approximately 2.6 and 8 knots (Lockyer and Morris 1987, Mate et al. 1995, Ridoux et al. 1997). Furthermore, pelagic dolphins and whales occur within the Complex, swim faster than coastal species, and are the species the Service authorized the Navy to take incidental to mine neutralization training exercises. For example, the average swim speed of captive Atlantic spotted dolphins was approximately 6.8 knots (Rohr and Fish 2004) and of wild pantropical spotted dolphins was 6.9 knots (Au and Perryman 1982). Because some of the marine mammal species found within the Complex can and generally do swim faster than 3 knots, the exclusion and buffer zones proposed by the Service and the Navy are clearly inadequate. To address this concern, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Navy to re-estimate the sizes of the buffer zones using the average swim speed of the fastest-swimming marine mammal that occurs in the areas within the Complex where time-delay firing devices would be used and for which taking authorization has been granted.

Please contact me if you have questions about these recommendations.

Sincerely,

A handwritten signature in blue ink that reads "Timothy J. Ragen". The signature is written in a cursive, flowing style.

Timothy J. Ragen, Ph.D.
Executive Director

References

- Au, D., and W. Perryman. 1982. Movement and speed of dolphin schools responding to an approaching ship. *Fishery Bulletin* 80(2):371–379.
- 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. Beauflet. 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., and F.E. Fish. 2004. Strouhal numbers and optimization of swimming by odontocete cetaceans. *Journal of Experimental Biology* 207:1633–1642.