



# MARINE MAMMAL COMMISSION

22 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. Marine Corps seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of Atlantic bottlenose dolphins by Level B harassment. The taking would be incidental to various training exercises at the Marine Corps Air Station, Cherry Point Range Complex, North Carolina. The Commission also has reviewed the National Marine Fisheries Service's 29 March 2013 notice (78 Fed. Reg. 19224) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions. The Service also is requesting comments regarding its intent to promulgate regulations under section 101(a)(5)(A) governing the taking of bottlenose dolphins incidental to the various training exercises for a five-year period. The Commission has commented on multiple incidental harassment authorization requests related to those training activities.

## RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service—

- promulgate regulations but consult with the Commission regarding its concerns prior to issuing the proposed rule;
- require the Marine Corps to (1) describe in detail the method by which it determined the zones of exposure for gunnery exercises that use large arms and (2) specify if multiple types of rounds or ordnance would be used within a single exercise and describe in detail how it determined the zones of exposure for those exercises prior to issuing the incidental harassment authorization or publishing a proposed rule;
- require the Marine Corps to implement a plan to evaluate the effectiveness of all of its mitigation and monitoring measures before initiating or, at the very latest, in conjunction with the exercises covered by the incidental harassment authorization (i.e., night vision technology, remote-camera system, visual observations during range sweeps and cold passes) or the proposed regulations (i.e., including the passive acoustic monitoring system);
- require the Marine Corps to use the passive acoustic monitoring system to supplement its visual observations as soon as practicable; and

- require the Marine Corps to use either direct strike or dynamic Monte Carlo models to determine probability of ordnance strike rather than using its simplistic, unrealistic calculations of strike probability prior to issuing the incidental harassment authorization and publishing the proposed rule.

## **RATIONALE**

The Marine Corps is planning year-round air-to-surface and surface-to-surface training exercises using bombing targets BT-9 and BT-11 at the Cherry Point Range Complex within southern Pamlico Sound, North Carolina. The training exercises would occur in water depths of 0.3–6.1 m and consist of inert and live ordnance (up to 15 lbs net explosive weight). The Marine Corps would conduct 1,554 aircraft and 322 vessel sorties per year at the BT-9 site and 6,727 aircraft and 51 vessel sorties per year at the BT-11 site. Aircraft sorties would be conducted using fixed- and rotary-wing aircraft. Training would involve bombing, rocket, gunnery, strafing, special weapons (i.e., laser systems), and mine-laying exercises. Types of ordnance would include small arms, large arms, bombs, grenades, rockets, and pyrotechnics. Live firing would occur at the BT-9 site only. Training exercises could occur at any time, day or night.

The Service preliminarily has determined that, at most, the proposed activities temporarily would modify the behavior of small numbers of bottlenose dolphins. 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 its proposed mitigation and monitoring measures. Those measures include—

- conducting range sweeps at 100–300 m in altitude the morning of each training exercise to ensure the target area is clear of vessels, other personnel, and protected species;
- conducting a “cold pass” (i.e., no ordnance delivered) at 61–914 m in altitude immediately prior to air-to-surface ordnance delivery during day and night to ensure the target area is clear of vessels, other personnel, and protected species;
- using delay procedures for all training exercises if a marine mammal is present within 914 m of the target area at BT-9 or anywhere within Rattan Bay at BT-11;
- using remotely operated, high-resolution cameras equipped with night-vision capabilities to monitor the target areas during day and night;
- abiding by the Service’s Southeast Region Marine Mammal & Sea Turtle Viewing Guidelines, when feasible;
- using Marine Corps personnel to serve as protected species observers and requiring those personnel to complete Marine Species Awareness Training;
- conducting weekly and post-exercise monitoring;
- funding Duke University to continue long-term vessel-based and acoustic monitoring of marine mammals in Pamlico Sound;
- reporting injured, stranded, and dead marine mammals immediately (or as soon as operationally feasible and clearance procedures allow) to the Service, including any marine mammals struck by a vessel; and
- submitting a final report.

The Service plans to publish proposed regulations governing the taking of marine mammals incidental to the proposed activities in the upcoming year. The Commission supports the promulgation of regulations for the proposed activities but continues to be concerned about certain aspects of this and similar authorizations for Marine Corps activities at Cherry Point. These concerns have been raised in past Commission letters (e.g., see the enclosed letter from 13 December 2011). Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service promulgate regulations but consult with the Commission regarding its concerns prior to issuing the proposed rule.

### **Modeling methods and estimating takes**

The Marine Corps estimated its zones of exposure for ordnance based on impulse, peak pressure, and sound exposure level thresholds. Impulse and peak pressure thresholds are instantaneous and do not incorporate a time element. In contrast, thresholds for sound exposure levels are intended to account for the total energy expended in a specific area during an explicit period of time. For any given exercise, the Corps multiplied the area of those estimated zones by the density of bottlenose dolphins to determine the number of takes. However, neither the Corps' application nor the Service's *Federal Register* notice describe in detail how the zones of exposure for specific exercises were calculated. For gunnery exercises, numerous rounds are expended within a single burst (e.g., 200 rounds per burst) and multiple bursts are shot within an exercise event (e.g., 10 bursts per event). It is unclear how the Marine Corps incorporated the number of rounds per burst and the number of bursts per exercise event into its calculation of the zones of exposure for that event, but it appears that it based its calculation on individual rounds rather than the accumulated energy of the total rounds that would be fired in a given period of time (e.g., during the entire training exercise). Thus, it is not clear that the zones of exposure for any such events were estimated accurately.

In addition, it is unclear if the Marine Corps plans to use multiple types of rounds or ordnance within an exercise. If so, the Corps' approach again could lead to inaccurate estimates of sound exposure levels for those exercises because individual rounds or ordnance cannot be treated as independent of each other and are not simply additive. Because the sound exposure level based on a single round may not be an accurate basis for estimating total sound exposure level, the estimated number of takes also could be incorrect. To address this uncertainty, the Marine Mammal Commission recommends that, prior to issuing the incidental harassment authorization or publishing the proposed rule, the National Marine Fisheries Service require the Marine Corps to (1) describe in detail the method by which it determined the zones of exposure for gunnery exercises that use large arms and (2) specify if multiple types of rounds or ordnance would be used within a single exercise and describe in detail how it determined the zones of exposure for those exercises.

### **Mitigation and monitoring measures**

The Marine Corps would conduct range sweeps and/or cold passes prior to initiating any training exercises. It would delay any exercise if a marine mammal was observed visually, either during a cold pass or via the remote-camera system, within 914 m of the target area at BT-9 or anywhere within Rattan Bay at BT-11. It also would not begin those exercises until the marine mammal is observed to have left those areas. In addition, researchers at Duke University are testing a real-time passive acoustic monitoring system at BT-9 that would allow for automated detection of

bottlenose dolphin whistles. The Marine Corps is unsure if the system would be available for the implementation of mitigation measures during the one-year period of the incidental harassment authorization but indicated that it could be operational for future take authorizations and would be evaluated for effectiveness. The Commission commends the Marine Corps for aiming to include a passive acoustic monitoring system to supplement its mitigation and monitoring measures for future authorizations and for determining the systems effectiveness. The Commission continues to believe that the effectiveness of mitigation and monitoring measures is an important consideration in the assessment of risk.

However, under the proposed measures, the Marine Corps would determine the effectiveness of the passive acoustic monitoring system only rather than all of its mitigation and monitoring measures. This presents a problem because some of those measures may have questionable value. For example, the Corps indicated it would use night vision technology to enhance its mitigation and monitoring efforts when it conducts exercises at night. The effectiveness of that technology is not clear, so it is not possible to judge whether it would contribute meaningfully to the protection of marine mammals (i.e., bottlenose dolphins) in the target areas. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service require the Marine Corps to implement a plan to evaluate the effectiveness of all of its mitigation and monitoring measures before initiating or, at the very latest, in conjunction with the exercises covered by the incidental harassment authorization (i.e., night vision technology, remote-camera system, visual observations during range sweeps and cold passes) or the proposed regulations (i.e., including the passive acoustic monitoring system). The Commission further recommends that the Service require the Marine Corps to use the passive acoustic monitoring system to supplement its visual observations as soon as practicable.

### **Probability of direct strike**

The Marine Corps estimated the probability of ordnance striking a marine mammal based on simple calculations using the surface area and density of dolphins and the amount of ordnance expected to be expended within a year. By combining dolphin densities and those activities over space and time into a single calculation, the Marine Corps provided only a crude estimate of strike probabilities. To provide a more reliable estimate of possible takes from ordnance, the Marine Corps should have used direct strike or dynamic Monte Carlo models that account for the locations and trajectories of the expended ordnance and the movement patterns of the bottlenose dolphins in the area, much like the various acoustic models that incorporate animal dosimeters. Such dosimeters could be used in this situation to collect close-approach distance data rather than received sound levels, which would result in more realistic strike probabilities. The models can be adjusted to account for variable ordnance types, speeds, and tracks, as well as the density and movements of dolphins, their dive behavior, and their density. Most of that information is not incorporated in the simple calculations used by the Corps. The probability of ordnance strike may be negligible, but that assumption should be confirmed using the best possible (i.e., most realistic) models of the proposed exercises, environmental conditions, and animals involved. The Marine Mammal Commission reiterates its recommendation that, prior to issuing the incidental harassment authorization and publishing the proposed rule, the National Marine Fisheries Service require the Marine Corps to use either direct strike or dynamic Monte Carlo models to determine probability of ordnance strike rather than using its simplistic, unrealistic calculations of strike probability.

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Please contact me if you have questions about our recommendations or rationale.

Sincerely,

A handwritten signature in blue ink that reads "Timothy J. Ragen". The signature is written in a cursive style with a long horizontal stroke at the beginning.

Timothy J. Ragen, Ph.D.  
Executive Director

Enclosure