

May 23, 2017

Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
1315 East West Highway
Silver Spring, MD
20910

Dear Jolie,

I am writing to provide comments on the proposed rule authorizing takes of marine mammals incidental to the U.S. Air Force 86 Fighter Weapons Squadron conducting the Long Range Strike Weapons System Evaluation Program (WSEP) at the Pacific Missile Range Facility (PMRF) on Kaua‘i, Hawai‘i. These comments address inadequacies with the proposed mitigation measures, note some issues with estimation of takes and the selection of which species are considered for Section 7 consultation, and provide suggestions for improved mitigation and monitoring.

The primary mitigation measure proposed (aerial surveys) is insufficient to minimize impacts on marine mammals for several reasons, including inappropriate sea states for detection of marine mammals, as well as potentially using an inappropriate aerial survey platform. Detection probability on surveys decreases with an increase in both sea state¹ and survey speed. The impact site is not in the lee of the island and typically is subjected to wind speeds in excess of 15 knots, equivalent to a Beaufort 4 sea state, at which point the probability of detecting the two species with the highest number of takes (dwarf and pygmy sperm whales) is approximately 0.3% of what it is in Beaufort 0 conditions¹. While the preamble to the proposed rule notes that operations will be delayed “if daytime weather and/or sea conditions preclude adequate monitoring for detecting marine mammals”, “adequate” sea conditions are not defined, and during the October 2016 WSEP² wind speeds were in the 17-20 mph range, equivalent to Beaufort 4 or 5 sea state³. Thus the likelihood of detecting animals that are present would be extremely low, even with a survey platform that was covering the area relatively slowly⁴. The

¹ Barlow, J. 2015. Inferring trackline detection probabilities, $g(0)$, for cetaceans from apparent densities in different survey conditions. *Marine Mammal Science* doi 10.1111/mms.12205

²Department of the Air Force. 2016. Protected species monitoring and mitigation results for 2016 Long Range Strike Weapon System Evaluation Program operational testing, Pacific Missile Range Facility, Kaua‘i, HI.

³Sustained wind speed at Lihue, Kaua‘i during the October 2016 WSEP was between 17 and 20 mph, equivalent to Beaufort 4 or 5 sea state.

⁴Expected trackline detection probability ($g(0)$) values for a fast moving survey platform would be substantially lower than reported by Barlow 2015.

aerial surveys would be conducted for 30 minutes around the target site prior to the first impact, ending at some point prior to the estimated impact to allow the aerial survey platform to safely leave the area. If any marine mammals are observed in a ~13-mile radius around the impact site the launch would be delayed. It is unclear from the proposed rule whether helicopters will be used for the aerial survey, or if some other platform will be used. The impact site is approximately 90 km from the air field at PMRF. The FR notice states that “when missions are located farther offshore, surveys may be conducted by mission aircraft (typically jet aircraft such as F-15E, F-16, or F-22) or a U.S. Coast Guard C-130 aircraft”, rather than by a helicopter or by a C-62 aircraft. Normal marine mammal aerial surveys (for research purposes) are flown at ~100 mph, while the cruising speed of a C-130 is approximately 336 mph. Cruising speeds of mission aircraft are presumably much faster. Since the impact location is known, the Air Force should be able to specify whether the surveys will be done with a helicopter or some other less suitable survey platform.

Given that the proposed aerial surveys will have an extremely low probability of detecting marine mammals that are present, real-time acoustic monitoring of the PMRF hydrophone range should be used as a supplemental mitigation measure. The final report for protected species monitoring and mitigation for the October 2016 WSEP² noted that “the engineer monitoring the hydrophones listened for any signs of marine mammal life post [aerial] survey and leading up to weapon impact”, demonstrating that some form of acoustic monitoring is already being undertaken during Air Force operations. The instrumented hydrophone range at PMRF has frequently been used for real-time detection, classification and localization (DCL) of marine mammals on the range as part of research activities⁵. Cascadia Research Collective (CRC) has participated in 10 different field efforts off PMRF working in conjunction with the Navy to respond to marine mammals that are detected acoustically through the hydrophone system. While there are acknowledged limitations to using the system for DCL, just as there are with aerial surveys, the Navy has successfully directed a CRC small vessel to a variety of species of marine mammals on the range, including sperm whales, short-finned pilot whales, false killer whales, Blainville’s beaked whales, bottlenose dolphins, and rough-toothed dolphins, demonstrating that groups can be successfully localized and classified as to species using this method^{5,6}. Given that recordings from the hydrophones will be made, and thus presence (and potential take) of some species may be detected after the fact, using the hydrophones for real-time mitigation would also decrease the likelihood of the Air Force exceeding authorized takes or the taking of species (e.g., sperm whales or false killer whales) where no takes have been authorized.

⁵ Baird, R.W., D.L. Webster, S. Watwood, R. Morrissey, B.K. Rone, S.D. Mahaffy, A.M. Gorgone, D.B. Anderson and D.J. Moretti. 2016. Odontocete studies on the Pacific Missile Range Facility in February 2015: satellite-tagging, photo-identification, and passive acoustic monitoring. Prepared for Commander, U.S. Pacific Fleet. Also - Baird, R.W., A.N. Dille, D.L. Webster, R. Morrissey, B.K. Rone, S.M. Jarvis, S.D. Mahaffy, A.M. Gorgone and D.J. Moretti. 2015. Odontocete studies on the Pacific Missile Range Facility in February 2014: satellite-tagging, photo-identification, and passive acoustic monitoring. Prepared for Commander, U.S. Pacific Fleet, submitted to Naval Facilities Engineering Command, Pacific by HDR Environmental, Operations and Construction, Inc.

⁶ Baird, R.W., D.L. Webster, J.M. Aschettino, D. Verbeck and S.D. Mahaffy. 2012. Odontocete movements off the island of Kaua‘i: results of satellite tagging and photo-identification efforts in January 2012. Prepared for U.S. Pacific Fleet, submitted to NAVFAC PAC by HDR Environmental, Operations and Construction, Inc.

The FR notice mentions that “mobile marine mammal[s]... are expect[ed] to exhibit avoidance behavior to loud sounds within the BSURE area” (page 21180) and “levels [of PTS] would be slight/mild because research shows that most cetaceans exhibit relatively high levels of avoidance” (page 21181). However, CRC research on cetaceans off Kaua‘i, the area where WSEP activities would take place, has shown that individuals of four different species of odontocetes (rough-toothed dolphins, false killer whales, short-finned pilot whales, and bottlenose dolphins) exposed to relatively high source levels of MFA sonar are not leaving the area^{7,8}. Thus assuming that the responsive behaviors of animals moving away from an initial sound source will reduce the likelihood of repeated exposure or repeated TTS leading to PTS may not be correct for all species in this area.

Based on relative densities and the potential ranges of impacts, it is unclear why no takes of ESA-listed sperm whales were requested (or authorized) and why no Section 7 consultation was initiated regarding sperm whales. The FR notice states that sperm whales were not included “because of the low density of this species and the short duration of mission activities.” However, the listed density for sperm whales (0.00156, Table 6⁹) is 9.75 times higher than the density of sei whales (0.00016), another ESA-listed species that is included both for authorized takes and for Section 7 consultation under the ESA. It is possible the reason sperm whales were left out from Section 7 consultation (and requested takes) was because of the reduced distances estimated for either Level A or Level B harassment (Table 5), which means density would have to be substantially higher than for sei whales in order for sperm whales to surpass some probability threshold of being inside the zone of influence. However, the magnitude of the difference in the area encompassed for Level B harassment (based on SPL distances given in Table 5) is less than the magnitude of differences in density (8.8 times vs. 9.75 times), even using the lower value (0.00156) rather than the one presented in Bradford et al. (0.00186)⁹. Thus it seems inconsistent to engage in Section 7 consultation and authorize takes for sei whales but not to do so for sperm whales.

There is a potential for Air Force activities to overlap spatially and temporally with research activities off Kaua‘i conducted both by NMFS and by other researchers, and as such the Air Force should provide the NMFS Pacific Islands Regional Office (PIRO) and any researchers who may be undertaking research activities in the area (i.e., those authorized by NMFS to conduct research around Kaua‘i) advance notification of the planned activities. This would allow for PIRO to ensure that stranding response network staff are notified/available, and in the case of researchers (both NMFS and non-NMFS), allow for the de-conflicting of any research activities.

⁷ Baird, R.W., S.W. Martin, D.L. Webster, and B.L. Southall. 2014. Assessment of modeled received sound pressure levels and movements of satellite-tagged odontocetes exposed to mid-frequency active sonar at the Pacific Missile Range Facility: February 2011 through February 2013. Prepared for U.S. Pacific Fleet, submitted to NAVFAC PAC by HDR Environmental, Operations and Construction, Inc

⁸ Baird, R.W., S.W. Martin, R. Manzano-Roth, D.L. Webster and B.L. Southall. 2017. Assessing exposure and response of satellite-tagged odontocetes to MFA sonar during Submarine Commanders Courses at PMRF. Presentation to the Pacific Marine Sciences Monitoring Program Review, Seattle, April 27, 2017.

⁹ Densities used for almost every species in Table 6 (including sei whales) match what are presented in Bradford et al. (2017), but the density used for sperm whales (0.00156) is lower than what is presented in Bradford et al. (0.00186). If the value from Bradford et al. (2017) is used, sperm whale density is 11.62 times higher than sei whale density. Bradford, A.L., K.A. Forney, E.M. Oleson and J. Barlow. 2017. Abundance estimates of cetaceans from a line-transect survey within the U.S. Hawaiian Islands exclusive economic zone. *Fishery Bulletin* 115:129-142.

For example, if we are attempting to do a project off Kaua'i, knowing of planned range closures would help ensure that we are not excluded from our study area unexpectedly.

Lastly, NMFS should consider additional monitoring requirements other than the collection of acoustic data through the PMRF hydrophone range. CRC has previously worked with the Navy to deploy satellite tags on cetaceans on PMRF prior to Submarine Commanders Courses in order to utilize tag data to examine exposure^{5,6} to acoustic impacts (in this case from mid-frequency active sonar) and to examine the potential responses^{7,8} of these species. This approach, in addition to proposed monitoring efforts, would provide additional information on the exposure and potential responses to WSEP activities that would help inform both estimation of takes and potential mitigation and monitoring for future WSEP activities.

I hope these comments are useful,

Sincerely,

A handwritten signature in black ink, appearing to read 'RW Baird', with a stylized flourish at the end.

Robin W. Baird, Ph.D.
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