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National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF NATIONAL MARINE SANCTUARIES
Olympic Coast National Marine Sanctuary
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October 23, 2015

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Dear Ms. Balla-Holden and Ms. Harrison;

The National Oceanic and Atmospheric Administration's (NOAA) Office of National Marine Sanctuaries (ONMS), Olympic Coast National Marine Sanctuary (OCNMS or sanctuary) has reviewed the Sanctuary Resource Statement (SRS) and subsequent clarifying information submitted by the U.S. Navy and NOAA's National Marine Fisheries Service (NMFS) associated with proposed Northwest Testing and Training (NWTT) activities. OCNMS notes the excellent coordination and cooperation it has received from the Navy and NMFS during OCNMS' efforts to meet their respective deadlines. The Navy's Northwest Training Range Complex's (NWTRC) Offshore Area overlaps the boundaries of OCNMS, and the proposed activities will result in incidental harassment of marine mammals both within and outside the sanctuary, which NMFS proposes to authorize over a 5 year period (2015-2020). Pursuant to section 304(d) of the National Marine Sanctuaries Act (NMSA), this letter recommends that the U.S. Navy and NMFS implement five recommended alternatives to minimize injury and to protect the sanctuary resources within OCNMS.

BACKGROUND

Consultation Process

Section 304(d) of the NMSA (16 U.S.C. § 1434(d)) requires federal agencies to consult with the Secretary of Commerce (Secretary), through NOAA, regarding any federal action or proposed action, including activities authorized by federal license, lease, or



permit, that is likely to¹ destroy, cause the loss of, or injure² any sanctuary resource. A portion of the NWTT activities will occur within and in close proximity to OCNMS. Within OCNMS, likely impacts from these activities include Level A and Level B harassment of marine mammals, which NMFS is proposing to authorize under the Marine Mammal Protection Act (MMPA)³. Thus, the Navy and NMFS are consulting jointly with OCNMS under Section 304(d) of the NMSA (16 U.S.C. § 1434).

The Section 304(d) consultation process requires federal action agencies to submit a Sanctuary Resource Statement to ONMS a minimum of 45 days prior to taking the action. It is then incumbent upon the ONMS to develop and recommend alternatives to protect sanctuary resources within 45 days of receipt of complete information in the form of a Sanctuary Resources Statement. Additional documents have been cited by the Navy and NMFS to support this consultation, including the Navy's Draft Final Environmental Impact Statement (FEIS) for NWTT activities (May 2015) and NMFS's Proposed Rule for Takes of Marine Mammals Incidental to U.S. Navy Training and Testing Activities in the Northwest Training and Testing Study Area (Federal Register, June 3, 2015). The Navy and NMFS provided an SRS dated August 31, 2015, following which OCNMS requested and received additional clarifying information on the SRS content from the Navy and NMFS. In a letter dated October 6, 2015, OCNMS verified that the SRS and additional information were sufficient to assess potential effects of NWTT activities on sanctuary resources.

Focus of Consultation

As stated in the SRS, the Navy has a long history of dialog with OCNMS due to the prior existence of the NWTRC Offshore Area at the time of sanctuary designation in 1993. The NWTRC overlaps the entire OCNMS area. The Navy's Quinault Range Site, where testing activities subject to consultation occur, overlaps 34% of OCNMS (809 square nm). The Navy's Offshore Area (for training activities) and Quinault Range Site (for testing activities) each extend offshore beyond sanctuary waters. Thus, this consultation considers activities likely to injure sanctuary resources occurring both within and outside sanctuary's boundaries.

Despite the spatial overlap of the Navy's operating areas and OCNMS' boundaries, the SRS estimates that only a small percentage of the total training activities occurring within the Offshore Area of the NWTRC occur directly within the sanctuary or within a

¹ For the Stellwagen Bank National Marine Sanctuary, under section 2202(e) of the Oceans Act of 1992 (Pub. L. 102-587), the requirement to consult is triggered by any federal or federally-licensed activity that "may affect sanctuary resources."

² The NMSA defines "to injure" as "to change adversely, either in the short or long term, a chemical, biological or physical attribute of, or the viability of. This includes, but is not limited to, to cause the loss of or destroy." Throughout this letter reference to the word "injury" means "injury" as defined under the NMSA.

³ Take (as discussed in the SRS and in NMFS' proposed rule) is a conservative estimate of potential impact to populations of marine mammals that does not reflect likelihood for reduced impacts through the implementation of proposed mitigation and monitoring. However, as a basis for initiating NMSA 304d consultation, take occurring within the sanctuary has been considered "likely" injury by NMFS and Navy and thus will be evaluated and discussed as such.

proximity likely to injure sanctuary resources. According to the SRS, a maximum of 2.5% (n=13) of the 524 annual training events within the Offshore Area could be conducted within range of likely injury to sanctuary resources. A higher percentage of testing activities are estimated to take place within likely injury range of the sanctuary due to the sanctuary's direct overlap with the Quinault Range Site (Figure 1). Specifically, the SRS estimates that 32% (n=64) of the 203 annual testing events could be conducted within range of likely injury to sanctuary resources. It should be noted, however, that whereas most NWTRC training activity occurs in the Offshore Area, most testing activity occurs in Hood Canal (an inshore NTWRC area), not in the Quinault Range Site. Thus, only 5% of total NWTRC-wide testing activity is estimated to result in likely injury to OCNMS resources.

The SRS implies that modifications of the profile of Navy activities within or near OCNMS have been implemented since sanctuary designation due to the Navy's engagement in sanctuary management planning, stating "Although the Navy is specifically authorized to conduct certain activities within the OCNMS, the Navy currently conducts very limited training within the OCNMS and does not use explosives within the OCNMS. The Navy expects this level and type of activity to continue into the reasonably foreseeable future." This consultation is a continuing step in a longer-term dialog between NOAA and the Navy agencies aimed at reducing impacts and protecting sanctuary resources, particularly those resources sensitive to sound.

Past dialog between OCNMS and Navy regarding NWTT activities has focused primarily on military expended materials resulting in marine debris and seafloor habitat disturbance within the sanctuary. Informal consultation between the Navy and OCNMS since 2009, as well as continuing dialog through the Navy's participation in the OCNMS' Advisory Council and management planning processes, has resulted in efforts to better quantify and reduce these impacts. For example, the Navy has agreed to provide to OCNMS with the annual monitoring reports provided to NMFS under MMPA requirements and, to the extent practical, include information on where expendable materials were discharged. Also, the Navy decided to locate an underwater training minefield outside the sanctuary and, when Navy funding was prioritized, conducted research into use of biodegradable components for military expended materials used for training purposes. The SRS discusses this history of efforts to reduce the impacts of expendables within the sanctuary and discounts these impacts from further attention in this consultation. OCNMS is not providing additional recommended alternatives for these impacts at this time, but does encourage continued dialog with the Navy to ensure that OCNMS has information necessary to assess the types and amounts of debris introduced to the sanctuary and potential impacts to sanctuary resources, and to continue to improve ways to protect sanctuary resources from those impacts.

Additionally, the SRS notes parallel consultation activity under the Endangered Species Act, Magnuson-Stevens Fisheries Conservation and Management Act and National Historical Preservation Act for this NWTT action that has addressed potential for impacts to specific resources within OCNMS. OCNMS defers to the consultations conducted by NMFS regarding potential impacts to salmonid fishes and sea turtles in OCNMS, noting

that their reduced or lower frequency hearing sensitivities suggest injury to those resources is unlikely due to the Navy's predominate use of mid-frequency (here defined as 1-10 kHz) acoustic sources associated with the proposed activities. The Navy's Draft FEIS for this action discounts impacts to the sanctuary's maritime heritage and cultural resources, and based on this assessment, OCNMS concurs there is no likely injury to these resources within OCNMS from Navy activities.

The SRS asserts that the likely injury to sanctuary resources associated with NWTT activities is incidental harassment to marine mammals due to acoustic emissions. NMFS, in its proposed rule, finds that the only take of marine mammals over the entire NWTRC is via impulsive and non-impulsive acoustic harassment. Thus, the determined focus of injury assessment in the SRS is Level A and Level B acoustic harassment of marine mammals within OCNMS. OCNMS concurs with this focus for purposes of this (2015) 304(d) consultation. The analysis below will examine these effects and support OCNMS recommendations to protect marine mammal resources.

SUMMARY OF RECOMMENDED ALTERNATIVES

The following recommended alternatives would further protect sanctuary resources and eliminate, minimize or mitigate injury to sanctuary resources associated with the proposed Navy NWTT activities and NMFS' five-year authorization of take associated with these activities. The analysis and rationale used by OCNMS to develop these recommended alternatives follows this section.

1. Navy training activities should be modified to reduce, and when possible, to eliminate likely injury to sanctuary resources in the form of incidental harassments of marine mammals. Exclusion of OCNMS waters from training events would formalize the Navy's apparent avoidance of sanctuary waters, including biologically important areas (BIAs) for baleen whales that overlap the sanctuary waters, ensuring the Navy's protection of acoustically sensitive humpback and gray whales as well as of other marine mammals within the sanctuary.
2. The Navy and NMFS should designate a stand-off distance for OCNMS waters for training activities that achieves a meaningful reduction⁴ in harbor porpoise and beaked whale takes, and eliminates all takes of other species, including killer whales, to the maximum degree possible.
3. The Navy and NMFS should seek meaningful reduction of testing-associated takes within OCNMS, which could be accomplished through a variety of means. These means are best identified by the Navy due to their partly classified knowledge of the conditions required for specific testing activities and the specific source types used in testing activities. Meaningful reduction in takes in OCNMS resulting from testing could be achieved by (in isolation or in combination):

⁴ For the purposes of these recommendations, a meaningful reduction minimizes, to the degree possible, the total number of takes and the number of takes categorized as level A versus level B, as predicted through exposure modeling conducted and applied by the Navy and NMFS in their assessment of likely impacts to sanctuary resources.

- a) Reducing the total number of testing activities within or in close proximity to OCNMS (theoretically focusing on those that are less dependent on OCNMS-specific conditions)
- b) Reducing the total duration of all types of testing activities within or in close proximity to OCNMS (theoretically focusing on those that are less dependent on OCNMS-specific conditions)
- c) Reducing or eliminating (when possible) the use of higher intensity and lower frequency source types associated with activities within or in close proximity to OCNMS.
- d) Eliminating Level A and reducing Level B takes occurring within Quinault Canyon. Given the placement of the canyon within the Quinault Range Site and the possibility of beaked whale takes in the Quinault Canyon resulting from distant testing sources, OCNMS recommends a stand-off distance for Quinault Canyon for testing activities that achieves a meaningful reduction in beaked whale takes, and eliminates all takes of other species to the maximum degree possible.

4. Monitoring and reporting should be further developed to ensure that future consultations have the benefit of information that can be applied at the scale of the sanctuary. Specifically, the Navy should collect and report more information regarding the number of testing and training events that are conducted within or in close proximity to OCNMS by year, such that predictions of annual take can provide assessments of actualized annual take within OCNMS.

5. Passive acoustic monitoring efforts within OCNMS should continue during the next five-year (2015-2020) NMFS authorization period. Associated with mitigative recommendations presented in this consultation, OCNMS recommends a stand-off for the sanctuary as a whole from training activities that would reduce exposures of coastal species in the sanctuary, as well as stand-off for testing in the Quinault Canyon specifically that would reduce exposures for populations using or with preferences for that unique habitat. This monitoring should focus on:

- a) Continuing information gathering to support the design of these stand-offs and to monitor their effectiveness via continuation of long term monitoring stations. We recommend that passive acoustic installation with higher frequency as well as lower frequency capacity continue to be maintained within or near the Quinault Canyon.
- b) Inshore passive acoustic installations should be maintained in the northern sanctuary associated with the multiple baleen whale BIAs, the hot spot of marine mammal activity associated with the western Strait of Juan de Fuca and movement of Southern Resident killer whales between the inshore and offshore portions of the NWTRC. These installations should cover the frequency range necessary to monitor exposure in that area to Navy source activity as well as vocal behaviors/presence of low, mid and higher frequency cetacean species.

ANALYSIS AND RATIONALE FOR RECOMMENDED ALTERNATIVES

Analysis and rationale used by OCNMS to develop these recommendations follows.

Key Aspects of Proposed Action Used in OCNMS Assessment

The Navy and NMFS used two methods to estimate numbers of marine mammals likely to be injured within OCNMS as a result of certain predicted NWTT activity scenarios. For training, the percentage of the NWTRC Offshore Area that is within OCNMS (2%) was used as a multiplier against Offshore Area-wide estimates of take for all populations with distributional relevance within OCNMS. A maximum of 2.5% of total Offshore training activities was determined to result in likely injury within the sanctuary; thus, the area multiplier correlates well to an activity-based multiplier. Balancing this estimate of low spatial overlap with OCNMS, however, is the fact that training activities include some of the highest intensity (dB) sources used in the NWTT activities. Examples of source types used in the six types of training activities with potential injurious impacts to OCNMS marine mammals (Table 2 of the SRS) are discussed in the Navy's Draft FEIS (Chapter 2 and Appendix A). NMFS' proposed rule suggests that Level B takes associated with training are likely associated with the use of the highest intensity mid-frequency sources, such as MF1 (active hull-mounted surface ship sonar; e.g., AN/SQS-53C and AN/SQS-60) at some distance (SRS suggests over 50nm in most cases) from OCNMS boundaries, stating "hull-mounted sonar...accounts for the largest takes of marine mammals (because of the source strength and number of hours it's conducted)". Annual estimated Level B takes in OCNMS resulting from training activities include 700 harbor porpoises, 75 Dall's porpoises, 124 dolphins (4 species), 48 beaked whales and Kogia, 2 sperm whales and 25 Northern elephant seals, among other species (total estimated Level B takes in OCNMS=999, Table 5, SRS). No Level A takes (permanent threshold shifts in hearing or additional physical harm) from training activities are estimated for any species in the sanctuary, and no takes of any kind are estimated for baleen whales or killer whales in the sanctuary associated with training activities. The takes presented by Navy are annualized in the SRS, but NMFS' action would issue 5 years of take at these annual levels. Therefore, the total estimated Level B takes in OCNMS resulting from training activities over the five year authorization would be 4,995.

For testing activities, each of seven types of total annual testing activities with potential injurious effects within the sanctuary was individually used to quantify the percentage of total modeled take in the Offshore Area resulting from testing that could occur in or near the sanctuary. These activity-based calculations estimated the total number of activities per type occurring offshore, followed by the percentage of each activity type that was considered to occur within or within close proximity to the sanctuary, multiplied by the total take estimated for that activity throughout the Offshore Area for each marine mammal population with relevance to OCNMS. Examples of source types used in the seven types of training activities that occur almost entirely within range of injurious impacts to OCNMS marine mammals (Table 2 of the SRS), as discussed in the Navy's Draft FEIS (Chapter 2 and Appendix A) and NMFS' proposed rule, suggest that Level A and Level B takes associated with testing are associated with a range of higher (over 200dB) to medium (over 180dB) intensity and mainly mid-frequency source types,

including active acoustic sonobuoys (MF3, e.g., DICASS) and “other active sources”. NMFS’ proposed rule also includes significant use of low frequency sources (LF4 and LF5: low-frequency sources between 180 dB and 200 dB, and low-frequency sources less than 180 dB) for NWTRC-wide testing activities. It is unclear from the SRS whether some of these sources are associated with the seven testing activities that could occur within range of OCNMS (Table 2 of the SRS). Sources at these levels and frequencies would alter potential for overlap with some lower frequency sensitive species in the sanctuary (e.g., turtles, baleen whales), a concern that is raised in the assessment discussion in this document. In the SRS, 122 annual Level A takes were estimated within the sanctuary, representing potential for permanent threshold shifts in hearing for 1 Kogia, 39 harbor porpoises, 42 Dall’s porpoises, 37 harbor seals and 3 Northern elephant seals for each of the 5 years that NMFS’ proposed rule would authorize. Additionally, Level B exposures are estimated for 990 marine mammals in the sanctuary annually associated with testing activities, including 459 harbor porpoises, 203 Dall’s porpoises, 14 beaked whales and Kogia, 4 killer whales, 2 sperm whales, 1 fin whale, 27 Northern elephant seals and 33 harbor seals, among other species (Table 5, SRS). *Together, therefore, NMFS is proposing to authorize 610 Level A and 9,945 Level B takes of marine mammals in the sanctuary over 5 years from Navy training and testing activities.*

In evaluating the effects of these takes, it should be taken into account that harbor porpoises and beaked whales have unique criteria based on specific data that show these animals to be especially sensitive to sound. Within the Navy’s take estimates in the SRS and within proposed estimates NWTRC-wide in NMFS’s proposed rule, harbor porpoise and beaked whale behavioral criteria are used without weighting the received level before comparing it to the threshold, and step thresholds are applied, rather than the risk functions used for other species. Specifically, the action agencies have adopted an unweighted 140 dB re 1 μ Pa SPL (sound pressure level) threshold for significant behavioral effects for all beaked whales (family: Ziphiidae) and an SPL of 120 dB re 1 μ Pa for predicting behavioral responses in harbor porpoises (i.e., all harbor porpoises exposed to 120 dB or higher will experience Level B behavioral harassment). Tables 3.4-12 and 3.4-13 from the Navy’s Draft FEIS (page 156) estimate that the area ensonified over 120 decibels by a louder training sonar type is ~180 kilometers in radius. Thus, harbor porpoises assessed to be within such ranges are considered takes while spatial scales over which all other marine mammals are considered taken are considerably smaller.

Navy and NMFS-Proposed Mitigation and Monitoring

Navy- and NMFS-proposed mitigations and monitoring that can address or better characterize the impacts of NWT activities on marine mammals within OCNMS are fully described at range-wide scales in the SRS, the Navy’s Draft FEIS, and NMFS’ proposed rule. They include actions to be taken to avoid acoustic harassments in close proximity to use of active acoustic sources, including visual and acoustic detection and other mitigations within zones of potential effect surrounding operational platforms. The proposed mitigations do not include spatial or temporal exclusions based on biologically important areas (BIAs) in the NWTRC for protected marine mammals. As stated in the proposed rule, “Upon request by NMFS the Navy [is] preparing a draft assessment of

these BIAs, including the degree of spatial overlap as well as an assessment of potential impacts or lack of impacts for each BIA. The Navy preliminarily determined that the degree of overlap between Navy activities within the Study Area and regional BIAs is relatively small (10 percent) geographically. Further, a review of the BIAs for humpback whales and gray whales against areas where most acoustic activities are conducted in the Study Area (especially those that involve ASW hull-mounted sonar, sonobuoys, and use of explosive munitions) identified that there is no spatial overlap.” The proposed rule further states this to be “in part due to the generally infrequent, temporally and spatially variable, and extreme offshore nature of sonar-related activities and sound propagation relative to the more coastally distributed biologically important areas”. Thus, it is implied that although there are no proposed spatial or temporal exclusions in the proposed rule, there is little NWTT activity occurring within or in close proximity to the BIAs. Several of these BIAs overlap OCNMS, as will be discussed below.

Implication of little to no activity occurring in specific areas but a desire to avoid creation of temporal and spatial exclusions in those areas as mitigation measures is also asserted by the Navy in their SRS relative to OCNMS. The SRS asserts “To the extent practical, the Navy currently avoids conducting activities within the OCNMS, and expects this practice to continue. However, complete avoidance of all Navy activity inside of the OCNMS does not meet the Navy’s overall purpose and need as described in Section 1 of the NWTT EIS/OEIS and Navy (2014a, b, 2015a). There are occasions when the activity purpose requires that the event be conducted within the environmental conditions found within the OCNMS.” Relative specifically to offshore testing activities with the highest predicted occurrence within and in close proximity to OCNMS, the Navy states “The Quinault Range Site provides key oceanographic features, depth, and logistics proximity for select at-sea testing events that cannot be conducted elsewhere within the NWTT Offshore Area...Alternate sites with similar environmental conditions but outside OCNMS would be located farther from other Navy facilities; the significant additional travel time to set up a test site and return to it repeatedly would have significant adverse impacts on project schedules and costs, reducing the Navy’s ability to meet its mission requirements.”

The SRS presents results from tagging efforts focused on baleen whales and Southern Resident killer whales, with tagged individuals showing both migratory as well as more concentrated use patterns within the sanctuary. The SRS also documents significant monitoring investment over the past 11 years within OCNMS portion of the NWTT Offshore Area. Two passive acoustic monitoring stations (High-frequency Acoustic Recording Packages/HARPS, Figure 1; and Figure 5 in the SRS), one inside the sanctuary at the head of Quinault Canyon (120 meters depth) and one outside sanctuary in deeper water (500 meters depth), have detected sounds made by four baleen whale species (blue whale, fin whale, gray whale and humpback whale) and seven odontocetes (Risso's dolphin, Pacific white-sided dolphin, killer whale, sperm whale, Stejneger's beaked whale, Baird's beaked whale, and Cuvier's beaked whale) (Kerosky et al. 2013 in U.S. Department of the Navy 2013). The Navy notes that both HARPS are now removed and continuation of these installations is dependent on range and fleet-wide monitoring priorities. In addition, acoustic recorders have been deployed over the past decade to

document killer whale use of the outer Washington coast. Currently, there are several NWFSC acoustic buoys (Figures 1 and 2) deployed in or near sanctuary waters, part of a multi-year effort initiated in 2014 to monitor Southern Resident killer whale movements and occurrence along coastal Washington and Oregon to provide a more scientific understanding of their winter distribution off the Pacific Northwest coast (Hanson et al. 2015).

In NMFS' proposed rule, they present the Navy's initial recommendation for species of interest for continued NWTT monitoring, including blue whale, fin whale, humpback whale, Southern Resident killer whale (offshore portion of their annual movements), and beaked whales. As stated by NMFS, "Navy monitoring for NWTT under this LOA authorization and concurrently in other areas of the Pacific Ocean will ... be structured to address region-specific species-specific study questions that will be outlined in the final NWTT Monitoring Project Table in consultation with NMFS". This reinforces OCNMS recommendations for continued monitoring identified in this letter.

OLYMPIC COAST NATIONAL MARINE SANCTUARY INFORMATION AND ASSESSMENT

As described in OCNMS' Final Management Plan and Environmental Assessment, the sanctuary contains biologically important habitat for a range of protected and endangered marine mammals. There are 18 populations of marine mammals that utilize OCNMS with some regularity, with additional rare sightings. Habitat use patterns vary considerably, between populations such as gray whales that predictably migrate close to shore and humpback and gray whales that feed in northern sanctuary waters, to a confluence of baleen and odontocete species that feed at higher productivity upwelling areas at some of the sanctuary's deeper canyons. Much of what we know regarding cetacean use patterns in OCNMS has come from the Navy's investment in monitoring and research programs associated with the NWTT activities. This investment has been vital to the sanctuary's mission and is appreciated as a significant contribution to regional scientific understanding.

Areas of Importance to Key OCNMS Cetaceans

NMFS' proposed rule discusses recent publication of several biologically important areas (BIAs) for cetacean species. Van Parijs (2015) further discusses the intent of these places, which are non-regulatory in nature but seek to augment information provided by density-based estimates of cetacean habitat preference by capturing places where animals may or may not be abundant but are engaged in behaviors with disproportionate importance to their survival and reproductive success. OCNMS encompasses feeding BIAs for humpback whales and gray whales, and migratory BIAs for gray whales (Figure 2).

The Northern Washington humpback feeding BIA (Calambokidis et al. 2015) is situated within OCNMS from the Canadian border south to about La Push. This BIA encompasses the waters from approximately 10 km from shore seawards to the sanctuary's western boundary and overlays 37% of sanctuary waters. Peak occurrence of humpback whales in this BIA is expected from May to November.

The Northwest Washington gray whale feeding BIA (Calambokidis et al. 2015) is situated within OCNMS from the northeastern limit of the sanctuary south along the coast to the waters off La Push, extending approximately 10 km from shore. Peak occurrence of gray whales in this feeding BIA is expected from May to November. This BIA overlays 5% of sanctuary waters along the northern shoreline.

Finally, the migratory BIA for gray whales (Calambokidis et al. 2015) extends along the entire coastline of the sanctuary, with a higher density area from the shore seaward to 10 km (overlays 20% of sanctuary waters) and an additional buffer seaward to 47 km to account for lower density, or potential use by offshore migrants (overlays 87% of sanctuary waters). Occurrence of gray whales in this wider migratory BIA is expected to be almost year-round due to staggered migration in both north and south directions. If you combine these BIAs they cover more than 97% of sanctuary waters.

There are no NWTT-associated takes estimated for humpback and gray whales in OCNMS associated with training or testing activities. There are, however, Level B takes estimated for these species annually associated with NWTRC-wide training (humpback=12, gray whale=6) and testing (humpback=44, gray whale=11). The Navy's assertion in preliminary analysis with NMFS that there is no overlap of NWTT activity with the BIAs appears to be reflected in the lack of take estimated for these species in OCNMS, including the BIAs it overlaps, suggesting that range-wide take is predicted to occur outside the BIAs. However, we are concerned that potential for take of these species within these areas is not being accurately reflected in the take quantification for OCNMS. The methods used to quantify the proportions of Offshore Area-wide takes that could occur within the sanctuary assume that the spatial and temporal overlap between individual populations and specific activity types at the scale of the entire Offshore Area can be used to approximate overlap within the sanctuary. Although those activities that have no potential for overlap with the sanctuary have been omitted from these calculations, such a method will only be conservative for species that are either more populous or are more engaged in biologically important activities more commonly outside the sanctuary than within (e.g., fin whales, sperm whales). For species that use waters within the sanctuary more than waters Offshore Area-wide, there is a possibility of underestimating both levels and impact of resulting take. Again, this is of particular concern for species that are more highly represented in the sanctuary and/or are known to be involved in biologically important behaviors associated with the time they preferentially spend there. This is the case for both humpbacks and gray whales, with some additional evidence for other marine mammal stocks for which information is poor but available data suggests high use patterns associated with types of habitats found within the sanctuary relative to areas outside the sanctuary.

Additional areas within the sanctuary have particular multi-species relevance to marine mammals, and represent "hot spots" for these taxa relative to the Offshore Area as a whole. The western Strait of Juan de Fuca overlaps the northern OCNMS and is a route to Puget Sound from the Offshore Area. Gray whales use these waters while traveling to an important feeding area within the Puget Sound (Calambokidis et al. 2015). Minke whales, Dall's porpoise and harbor porpoises are also concentrated in this region (Erbe et

al. 2014). Satellite telemetry shows significant use of the northern portions of OCNMS and the Strait of Juan de Fuca by highly endangered Southern Resident killer whales (NOAA Fisheries 2015). More specifically, acoustic and observational monitoring has documented the western Strait and Swiftsure Bank area (Figure 1) as an important foraging area for both Southern Resident and Northern Resident killer whales throughout the year (Riera 2012). Transient and Offshore populations of killer whales also routinely forage and transit sanctuary waters, including the Swiftsure Bank area. In the western Strait of Juan de Fuca, killer whale vocalizations were detected on 186 days during a year of monitoring (ibid).

In addition, the head of the Quinault Canyon, in the southwestern portion of OCNMS, includes the deepest point within the sanctuary boundaries (1,477 m or 4,800 feet). Visual and acoustic surveys have demonstrated the importance of the Quinault Canyon for marine mammals, likely relating to key conditions for upwelling and thus feeding. Acoustic detections in this area have included endangered North Pacific right whales (Širovič et al. 2015), as well as humpback whales, sperm whales, offshore, transient, and resident killer whales (Oleson et al. 2009). Satellite tracking of Southern Resident killer whales specifically has shown use by this population of Quinault Canyon waters (NOAA Fisheries 2015). Baird's, Blainville's and Stenjeger's beaked whales (Baumann-Pickering et al. 2014) have been acoustically detected, as well as Pacific white-sided dolphins and Risso's dolphins (Oleson et al. 2009). Visual observations in the vicinity of the Quinault Canyon have documented presence of Dall's porpoise, Cuvier's beaked whale, northern right whale dolphin, and northern fur and elephant seals (Oleson et al. 2009, Oleson and Hildebrand 2012). As stated in NMFS' proposed rule "beaked whales are generally found in deep waters over the continental slope, oceanic seamounts, and areas with submarine escarpments (very seldom over the continental shelf)." Noted above, beaked whales are known to be particularly sensitive to mid-frequency sonars. Methods for take estimation for these species applied by Navy and NMFS are designed to be conservative to their potential for adverse responses over relatively large scales. These methods are not appropriate, however, to evaluate the potential overlap between use of sonars in Navy testing operations in the Quinault Range Site and preferential use of Quinault Canyon within the OCNMS-portion of the Quinault Range Site by beaked whales.

Sanctuary waters within 10 km of shore are ecologically significant for harbor porpoise and Southern Resident killer whales, in addition to gray whales. Based on recent genetic studies and aerial surveys along the U.S. West Coast, the harbor porpoise population that utilizes sanctuary waters is part of the Northern Oregon/Washington Coast stock (Caretta et al. 2013). The status of this stock is unknown due to the most recent abundance estimates being a decade old (ibid). Harbor porpoises are found primarily in waters shallower than the 200 m isobath and are most abundant from shore to about the 92 m (50-fathom) isobath (Calambokidis et al. 2015). As discussed above, harbor porpoises are known to be particularly sensitive to mid frequency sonar. As noted in NMFS' proposed rule, "Since [harbor porpoises are] typically found in nearshore and inshore habitats, resident animals that are present throughout the Study Area could receive multiple exposures over a short period of time year round." Such findings are relevant to the

sanctuary, which contains a higher proportion of coastal and harbor-porpoise preferred habitat relative to the NWTRC Offshore Area as a whole.

New information shows Southern Resident killer whales spending substantial time during the winter and early spring in coastal areas of Washington, Oregon, and California, and utilize these areas for foraging, calf rearing, and seasonal movements (NOAA 2014). Satellite telemetry data have shown the extensive movements of individuals between Cape Flattery, Washington, and Point Reyes, California, from December 2012 to March 2013 with a peak occurrence area within 8 km (5 miles) of shore. In response to this new scientific data, NMFS released the intent to revise the existing critical habitat designation (ibid). Again, such findings are relevant to the sanctuary, which contains a higher proportion of coastal habitat relative to the NWTRC Offshore Area as a whole.

There is more take of harbor porpoises and beaked whales in OCNMS estimated for Navy training than testing activities, despite the fact that much of the testing considered would occur within the OCNMS-portion of the Quinault Range Site rather than far beyond the sanctuary's western-most boundary (where most training would occur). This is also despite the fact that harbor porpoises' preferred habitat in OCNMS is more coastally-oriented and thus in higher potential proximity to testing relative to training emissions, and beaked whale preferred habitat in OCNMS is more likely to be in deep areas such as Quinault Canyon, directly within the Quinault Range Site. This speaks to the higher source levels and/or longer total durations associated with training activities occurring at some greater distance from the sanctuary, as well as to coarse aspects of the methods applied to estimate take at the scale of the sanctuary.

SUMMARY

OCNMS recommends that Navy training activities should be modified to reduce and, when possible, to eliminate likely injury to sanctuary resources in the form of incidental harassments of marine mammals. Exclusion of OCNMS waters from training events, particularly from within the BIAs for baleen whales, would formalize the Navy's apparent avoidance of these areas (which preliminary analysis would assert is status quo) and thus ensure the Navy's protection of these areas and their function for acoustically sensitive humpback and gray whales. However, the bulk of training-associated takes result from longer-distance propagation from events further offshore. We recognize that stand-off distances designed to eliminate take of harbor porpoises in OCNMS would significantly reduce training flexibility in the northern portion of the NWTRC. Coarse estimates, using the Navy's 120 decibel isopleth estimates (Section 3.4 Draft FEIS) and considering concentrated use patterns by harbor porpoises at the 92 meter isobath within the sanctuary (discussed above) suggest an over 100-kilometer stand-off from sanctuary boundaries would be necessary. Thus, OCNMS recommends designing a stand-off distance for OCNMS waters for training activities that achieves a meaningful reduction in harbor porpoise and beaked whale takes (both overall number and levels of exposure), and eliminates all takes of other species, including killer whales, to the maximum degree possible.

We respect the Navy's assertion that full cessation of testing activities within the OCNMS-portion of the Quinault Range Site is not cost-effective for NWTRC operations. We therefore recommend meaningful reduction of testing-associated takes within OCNMS, which could be accomplished through a variety of means. These means are best identified by the Navy given their possession of information characterizing the conditions for specific testing activities and the specific source types used in testing activities which is classified for national security reasons.

Both the Navy and NMFS clearly state that proposed levels of take associated with five years of NWTT activities represent highly conservative evaluations that do not account for reduction in levels of effect due to proposed mitigations. Although OCNMS challenges the claim that these evaluations are unilaterally conservative at the spatial scale of the sanctuary, we do agree that the number of takes occurring within the sanctuary has the potential to be reduced through the use of shut downs and other mitigations during actual events. That said, as the basis for this consultation, the agencies have agreed that injury is likely to occur and risk is not totally eliminated. Despite over 10 years of monitoring, the SRS identifies several information gaps that limit the ability of Navy to determine potential for take with the OCNMS-portion of the NWTRC Offshore Area. OCNMS recommends that monitoring and reporting be further developed to ensure that future consultations have the benefit of information that can be applied at this scale. Specifically, there is a need for the Navy to collect more information regarding the number of testing and training events that actually take place in and within close proximity to the sanctuary, such that predictions of annual take can, within annual reports to NMFS reporting take range-wide, provide assessments of actual annual take within the sanctuary.

Also, OCNMS recommends that passive acoustic monitoring efforts within the sanctuary continue during the next NMFS five-year authorization period (2015-2020). As discussed above, longer term installations have thus far focused in shallower waters at the head of Quinault Canyon as well as in deeper waters outside the canyon. Summarizing the results from this work, the SRS states "Over the past 10 years of Navy funded passive acoustic monitoring within and adjacent to OCNMS, there were relatively few detections of distant propagation from Navy mid-frequency active sonars (Širović et al. 2012, Kerosky et al 2013, Debich et al. 2014, Trickey et al. 2015). Sonar was detected during infrequent (four to seven days per year), temporally separated events, lasting at most a few hours in duration. Received signal levels varied from 108-148 dB re 1 μ Pa, with the majority of pings less than 120 dB. More of these infrequent detections occurs at the monitoring site outside of the OCNMS".

Associated with mitigative recommendations presented in this consultation, OCNMS is seeking a stand-off for the sanctuary as a whole from training activities that would reduce exposures of coastal species in the sanctuary. In addition, OCNMS is seeking a stand-off for testing the Quinault Canyon specifically that would reduce exposures for populations preferring that unique habitat. Continuing information gathering to assist in the design of these stand-offs and/or to monitor their effectiveness will be necessary and should come in the form of longer term monitoring stations. OCNMS therefore recommends that

passive acoustic installation with higher frequency as well as lower frequency capacity continue to be maintained within or near the Quinault Canyon. Additionally, inshore passive acoustic installations should be maintained in the northern sanctuary associated with the multiple BIAs, the hot spot of marine mammal activity associated with the western Strait of Juan de Fuca and movement of Southern Resident killer whales between the inshore and offshore portions of the NWTRC. It is acknowledged that the Navy has invested in current and ongoing research to study killer whale movement patterns in this area, a project that includes significant passive acoustic infrastructure (see Figures 1 and 2). This project will partially fulfill the sanctuary's monitoring interests in this region, providing information on the vocal behavior/presence of mainly mid frequency active cetaceans. However, this infrastructure cannot be leveraged to address the vocal behavior/presence of either the lowest and higher frequency vocally active species of interest in this area of the sanctuary, nor to determine received levels associated with Navy acoustic sources (due to calibration constraints). NOAA has recently installed a long term passive acoustic monitoring station just outside the sanctuary's boundaries in deeper waters relevant to listening to low frequency active species in the sanctuary and in the northern range (see placement of Noise Reference Station, NRS, in Figures 1 and 2). However, this system is only low frequency (below 2kHz) and therefore cannot be used to monitor the effectiveness of stand-offs for mainly mid-frequency Navy sources or in relation to higher frequency vocally active species further inshore. Thus, although added capacity is needed in northern sanctuary waters, significant potential exists to leverage existing capacity in fulfilling monitoring recommendations.

OCNMS believes the recommended alternatives provided in this letter would further protect sanctuary resources and would minimize injury to sanctuary resources associated with the proposed Navy NWTT activities and NMFS' authorization of take associated with these activities. Consistent with Section 304(d) of the NMSA, once you have had an opportunity to consider our recommended alternatives and make decisions on your plans to incorporate any into your final actions, please provide OCNMS with a written statement documenting your decisions and rationale. Finally, pursuant to Section 304(d)(4) of the NMSA, if the Navy and NMFS takes an action other than those recommended herein, and such action results in injury to a sanctuary resource, the heads of Navy and NMFS are required to promptly prevent and mitigate further damage, and restore or replace the sanctuary resources in a manner approved by NOAA.

We appreciate the coordination and cooperation the Navy and NMFS have offered OCNMS so far and look forward to continuing that coordination as these recommendations are considered and implemented. Should you have any questions, please contact Liam Antrim at liam.antrim@noaa.gov (phone: 360-457-6622 x16).

Sincerely,

A handwritten signature in cursive script that reads "Carol Bernthal".

Carol Bernthal
Sanctuary Superintendent

cc: Leila Hatch, NOAA SBNMS
Vicki Wedell, NOAA ONMS
Molly Holt, NOAA NOS GC
John Fiorentino, NMFS OPR
Jolie Harrison, NMFS OPR
Deborah Ben-David, NOAA Fisheries GC

Figures

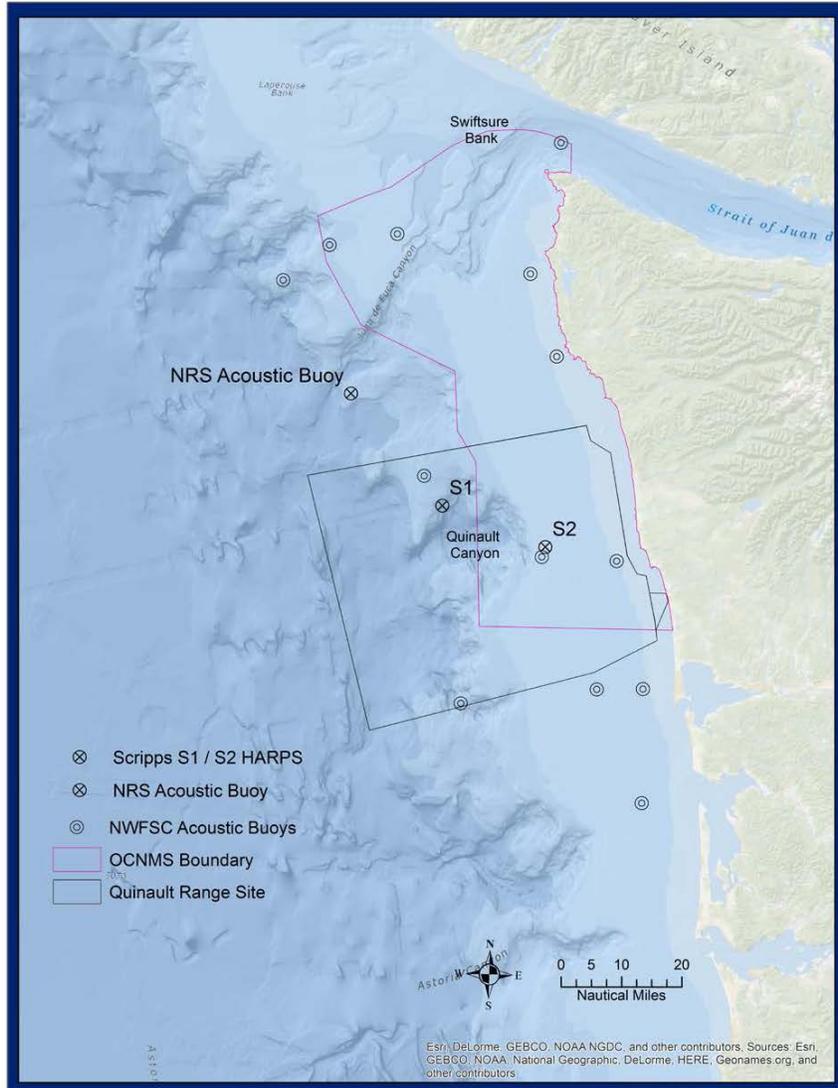


Figure 1. Outer coast of Washington state, Olympic Coast National Marine Sanctuary, Navy Quinault Range Site, and acoustic receiving moorings.

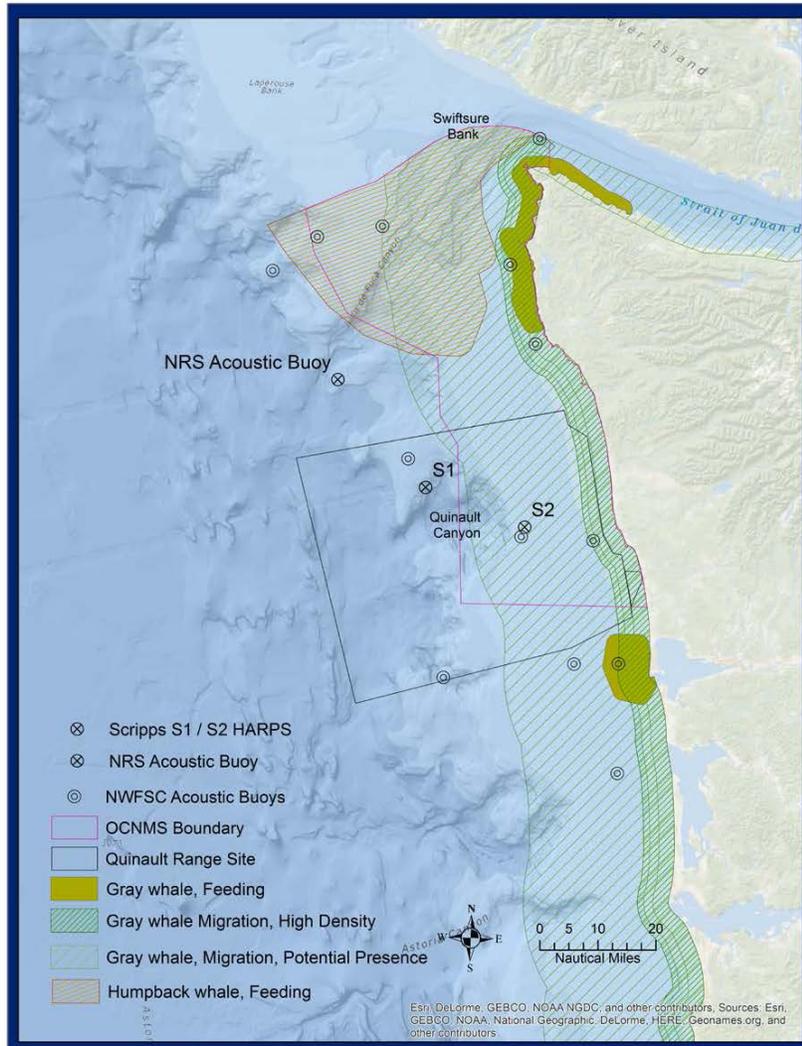


Figure 2. Biologically important areas for marine mammals

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