UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
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OCT 13 2010

Mr. L. M. Foster
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250 Makalapa Drive
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Dear Mr. Foster:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the U.S. Department of the Navy's (Navy) essential fish habitat assessment for training conducted at the Silver Strand Training Complex (SSTC) in San Diego County, California. NMFS offers the following comments pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act (FWCA).

Proposed Project

The proposed project includes a wide variety of military training activities to be performed at the SSTC. The SSTC is a set of training areas located in and around the Silver Strand, a narrow strip of land separating San Diego Bay and the Pacific Ocean. These training areas extend from Breaker's Beach and Zuniga Jetty in the north to the southern end of the Silver Strand peninsula and include locations on land, within San Diego Bay and in the nearshore waters of the Pacific Ocean. Training activities include vessel operation, surf passage and beaching, underwater and land detonation, naval special warfare training, over the shore logistics activities (e.g., temporary pier construction and transportation of personnel and materials onshore), swimming and diving, and beach runs. These exercises will require the use of boats, ships, amphibious vehicles, helicopters, fixed-wing aircraft, unmanned aerial and underwater vehicles, and personnel on foot and swimming. Vessel operations will be performed with a variety of craft including small rigid hull inflatable boats (RHIB), large amphibious vehicles, such as the expeditionary fighting vehicles (EFV) that weigh approximately 63,000 pounds, and larger ships. Some vessel operations are entirely water-based and take place offshore (e.g., navigation, boarding drills, etc.), while others are amphibious in nature, including boat launch and recovery, beaching of vessels and combat simulations.

Based upon pre-consultation discussions, the applicant has proposed various revisions to the original proposed project that would avoid, minimize and/or mitigate impacts to essential fish habitat (EFH). First, the applicant has proposed to conduct updated oceanside benthic habitat mapping surveys to more accurately depict habitat types within the Oceanside SSTC boat lanes. The updated surveys will enable the Navy to avoid any sensitive habitats (e.g., understory algal communities, surfgrass, kelp, sea fans or sea palms, etc.) when conducting underwater demolition exercises or other activities that may impact bottom habitat. Second, the applicant will perform surveys for California grunion (*Leuresthes tenuis*) spawning events prior to initiating beach-related activities that could harm grunion eggs (e.g., Causeway Pier Insertion and Retraction training; Elevated Causeway System, or ELCAS). These surveys will be

used to avoid impacting areas of the beach where grunion have spawned until those eggs are hatched and no additional spawning has taken place. Third, the applicant will restrict amphibious landing activities within San Diego Bay to the designated training lane at the Bravo training area and mitigate for 1.13 acres of eelgrass impacts at that location. The Navy will use credits from the eelgrass mitigation bank established by the Navy in San Diego Bay to meet this obligation. In addition, The Navy will also continue to conduct baywide surveys to monitor eelgrass beds within San Diego Bay every four years. Fourth, similar to current reports the Navy provides for other range complexes, and in conjunction with the anticipated reporting requirements associated with the NMFS Incidental Harassment Authorization (IHA) consultation, the Navy plans to provide annual reports to the NMFS Southwest Region Habitat Conservation Division on the quantities (number of detonations) and types (charge weight) of explosives used at SSTC. During proposed IHA mitigation monitoring events for marine mammals and sea turtles, the Navy will also document the extent and quantity of fish mortality associated with underwater detonations. Finally, the Navy plans to incorporate an adaptive management process to review data collected, documentation of impact (or lack thereof) to NMFS trust resources, lessons learned, and other recommendations for improvement with regard to EFH resources in the SSTC for consideration by NMFS. Items the Navy proposes to bring forward for consideration by NMFS during this process include, but are not limited to, the updated benthic habitat survey, pre-event grunion surveys, and IHA monitoring. NMFS regards these changes as integral components of the proposed action and expects that all proposed activities will be completed consistent with those measures. Any deviation from these conservation measures will be beyond the scope of this consultation and may require supplemental consultation to determine what effect the modified action is likely to have on EFH.

Action Area

The proposed project occurs in EFH for various federally managed fish species within the Pacific Coast Groundfish, Coastal Pelagic Species and Highly Migratory Species Fishery Management Plans (FMPs). In addition, the project occurs within estuarine habitat and in the vicinity of eelgrass, which are considered habitat areas of particular concern (HAPC) for various federally managed fish species within the Pacific Coast Groundfish FMP. HAPC are described in the regulations as subsets of EFH which are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under MSA; however, federally permitted projects with potential adverse impacts to HAPC will be more carefully scrutinized during the consultation process.

Effects of the Action

An adverse effect is defined in the regulations as "any impact which reduces quality and/or quantity of EFH...[and] may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions." Thus, the threshold for an adverse effect determination is low. The degree and/or extent of the adverse effect influence the scope of EFH conservation recommendations that are provided by NMFS.

Due to the large number of activities associated with the proposed project, and the fact that many activities (e.g., swimming) will have little or no impact to EFH, it is appropriate to focus the evaluation of potential adverse effects on groups of activities rather than individual exercises, as was done in the EFH

assessment. These groups of activities include vessel operations, underwater detonations, and amphibious and beach-related activities (e.g., vessel beaching and over the shore logistics activities).

Aspects of vessel movement activities, including engine noise from large vessels and accelerating small vessels, can alter fish behavior resulting in an adverse impact to EFH. Amphibious exercises can also impact fish and will be discussed in more detail later. Studies have shown that the optimal hearing sensitivity for hearing generalists, which includes most marine fish, is at or around 300 Hz. These species respond primarily to particle motion as opposed to pressure. Hearing specialists, which are rare in marine waters, can detect sound at well above 1,000 Hz and include some clupeids, gadids and pomacentrids (Amoser and Ladich 2005, Popper 2003). Because of these differences in hearing sensitivities, the distance at which a fish will detect and exhibit a behavioral response can vary greatly. Behavioral responses noted during experiments with herring and rockfish ranged from avoidance (fish move slowly away from the sound source) to alarm (fish gathered together, fled at high speed, dove repeatedly, and quickly changed directions) to startle (fish severely flexed their bodies and then swam at high speed without changing direction, or shuddered with each blast) (Schwarz and Greer 1984, Pearson et al. 1992). In general, fish often exhibit a change in behavior to sound emission, especially continuous strong and/or intermittent sounds of low frequency. Low-frequency sounds emitted by large vessels or accelerating small vessels often evoke an avoidance response, but the fish return to normal behavior shortly after departure of the vessel. Therefore, the sound-related effects on EFH associated with vessel movement are expected to be temporary and no more than minimal in nature.

Impacts resulting from underwater explosive detonations and loud, impulsive sounds can include: disturbance, injury or death from the shock/pressure wave; acoustic impacts; disruption of habitat; exposure to chemical by-products; behavioral effects similar to those related to sound noted previously; and indirect effects such as those on prey species or other components of the food web. The type and severity of the impact varies greatly depending upon several factors, including the magnitude of the explosion, proximity of habitat or fish to the explosion, marine community characteristics, size and body type of fish, type of water body (e.g., enclosed bay, open ocean, etc.), position of detonation within the water column, etc. Despite the inherent variability in determining impacts associated with underwater explosives, there are a few general conclusions that can be made based on empirical studies. Specifically, underwater explosives are lethal to most fish species in the immediate vicinity of the explosion regardless of size, shape, or internal anatomy. As the distance from the explosion increases, fish with gas-filled swim bladders are more susceptible to the blast and suffer a higher mortality than those without swim bladders (Hastings and Popper 2005, Baxter et al. 1982, Keevin and Hempen 1997). To estimate mortality effects on fish, the Navy SSTC EFH assessment (Sec. 5.3.1.1) included an analysis based on Young (1991) that calculated a 10% mortality distance (or 90% survival) for fish of varying sizes due to the detonation of explosives of varying charge weights. It is important to note that lethal and sub-lethal effects to fish, as well as behavioral effects similar to those associated with sound noted previously, would be expected outside of the 10% mortality distance. The analysis revealed a 10% mortality distance of 810 feet for a fish weighing 0.1 pound and a detonation of a 29 pound explosive at 60 feet depth. The calculations showed the same detonation would result in a 10% mortality distance of 445 feet for a fish weighing 10 pounds. These mortality estimates are useful for providing a general idea of the area of impact associated with individual detonations of varying sizes. However, there is insufficient information in the EFH assessment to accurately assess the total mortality associated with a detonation or the cumulative impact of these underwater explosive exercises over time (e.g., one year).

In addition to mortality and injury to fish, impacts to habitat would also be expected as a result of underwater explosives. Detonations would disturb the substrate and kill or displace benthic organisms

and those in the overlying water column, while increased turbidity could temporarily decrease the foraging efficiency of fish and reduce water clarity and light penetration necessary for photosynthesis. Based on estimations in the Navy SSTC EFH assessment, a maximum of 78.5 square feet of benthic habitat would be disturbed per detonation. Unfortunately, the EFH assessment lacks specific information regarding the number, size (i.e., charge weight), geographic location and depth of each detonation necessary to evaluate the extent of the overall anticipated impact to nearby habitats. The sensitivity of specific habitats (e.g., seagrass, rocky reef, kelp) and the demonstrated associations with these habitats by various fish species underscore the importance for avoiding impacts to these habitat types. Therefore, the careful siting of underwater detonation locations during daylight hours over sandy bottom to avoid sensitive habitats, as described in the proposed project, will be critical. Additionally, NMFS supports the clarification provided in the revised EFH assessment that no explosive detonations will occur near sensitive eelgrass habitats (e.g., within the bay and near Breakers Beach), and that the detonation of any explosives larger than the 0.033 pounds shock wave generator, or SWAG, devices will occur only in the nearshore environment over sandy bottom.

A subset of the many amphibious activities to be performed at SSTC, including those exercises that involve the construction and removal of temporary piers, the beaching of large landing craft, and the placement/anchoring of devices to implement fluid transfer training, has the potential to adversely impact EFH. For example, amphibious activities that involve vessels, Lighter Amphibious Resupply Cargo-5 ton (LARC Vs), Causeway Pier Insertion and Retraction training or ELCAS and take place in the bay have the potential to adversely impact eelgrass habitat. However, because the proposed project will restrict these activities to the Bravo training lane and eelgrass mitigation will be performed using the Navy's established eelgrass mitigation bank, NMFS believes these impacts have been adequately addressed.

Potential impacts to grunion from these same amphibious activities (i.e., Causeway Pier Insertion and Retraction training; LARC Vs and ELCAS) are also a concern. Along the coast of southern California to southern Baja California during the months of March through August, grunion use intertidal sandy beach habitats for spawning and maturation of eggs. These eggs will mature over a period of approximately two weeks, when extreme high tides reach eggs and stimulate hatching. Activities that require construction and/or the movement of material on beaches and within the tidal areas, such as those listed above, during this season may smother and/or physically damage grunion eggs because of compression by heavy work equipment or burial by the placement of sand material. This could have negative impacts on the reproductive success of grunion. While grunion protective measures are included in the project description, they are focused on higher intensity spawning events during April and May. NMFS believes it is important to ensure protection for more than just high intensity spawning events, which can be rare. Therefore, additional grunion protection measures are included in the EFH conservation recommendations section below.

The deployment of the offshore petroleum discharge system (OPDS) with a self-sinking hose could adversely impact EFH if the conduit is laid on top of sensitive habitats. In addition, the discharge of either hypersaline or freshwater could impact local marine conditions by altering salinity levels and increasing turbidity at the point of release. Therefore, although NMFS believes this system is an improvement over the previous one that required anchoring to the seafloor, additional conservation recommendations are offered below to avoid impacts to sensitive habitat.

Another potential project concern is the spread of the invasive alga *Caulerpa taxifolia* from project activities. As you may be aware, this alga had been introduced to our coastline. Evidence of harm that can ensue as a result of an uncontrolled spread of the alga has already been seen in the Mediterranean Sea

where it has destroyed local ecosystems, impacted commercial fishing areas, and affected coastal navigation and recreational opportunities. Although it is not known to be present within San Diego Bay, it had been detected in two other locations in southern California. If the invasive alga is present within the project area, bottom-disturbing activities would adversely affect EFH by promoting its spread and increasing its negative ecosystem impacts.

EFH Conservation Recommendations

Based upon the effects analysis above, NMFS believes the proposed project would adversely affect EFH for various federally managed fish species within the Pacific Coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species FMPs, and therefore disagrees with the Navy's determination that no adverse effect to EFH would be anticipated. Pursuant to section 305(b)(4)(A) of the MSA, NMFS offers the following EFH conservation recommendations to further avoid, minimize, mitigate, or otherwise offset the adverse affects to EFH.

1. The intent of the nearshore benthic habitat survey is to provide the Navy with current information regarding any sensitive habitats that may exist in the area to ensure any underwater demolition activities will be located away from these important habitats. Therefore, NMFS recommends this survey proceed as soon as possible. Specifically, the bathymetry component should occur during the fall of 2010, while the biological component could proceed in the spring of 2011.

2. Similar to the measures used to avoid sensitive habitats when selecting underwater explosive device detonation sites, the nearshore habitat survey data should be used to ensure the OPDS system is not placed within any sensitive habitats.

3. With regard to the monitoring and reporting requirements associated with the IHA process, NMFS understands the sensitivity of location data associated with underwater explosive exercises. However, having spatial location data for detonations will allow the confirmation of compliance with the site selection protective measure and provide information to assess the effectiveness of that measure upon subsequent habitat surveys or site inspections. Therefore, the Navy should provide location data associated with underwater explosive detonation events for all explosives with charge weight >= 5 pounds NEW to the greatest extent practicable.

4. If suitable grunion spawning habitat is identified and spawning is observed during the pre-event grunion surveys, then no beach impacting activities within the spawning zone should occur until the eggs are hatched at the following two spring-tide series and no subsequent spawning activities have occurred.

5. Prior to the removal of piles in the bay, a pre-construction survey for *Caulerpa* of the project area should be conducted in accordance with the *Caulerpa* Control Protocol (http://swr.nmfs.noaa.gov/hcd/ccpv1.htm) not earlier than 90 days prior to and not later than 30 days prior to construction. The results of that survey should be transmitted to NMFS and the California Department of Fish and Game at least 15 days prior to initiation of proposed work. In the event that *Caulerpa* is detected within the project area, no work shall be conducted until such time as the infestation has been isolated, treated, and the risk of spread is eliminated.

Statutory Response Requirement

Please be advised that regulations at section 305(b)(4)(B) of the MSA and 50 CFR 600.920(k) of the MSA require your office to provide a written response to this letter within 30 days of its receipt and at least 10 days prior to final approval of the action. A preliminary response is acceptable if final action cannot be completed within 30 days. Your final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH conservation recommendations, you must provide an explanation of the reasons for not implementing those recommendations. The reasons must include the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

Supplemental Consultation

Pursuant to 50 CFR 600.920(l), the Navy must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations.

Fish and Wildlife Coordination Act Comments

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development [16 U.S.C. 661]. The FWCA establishes a consultation requirement for federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage [16 U.S.C 662(a)]. Consistent with this consultation requirement, NMFS provides recommendations and comments to federal action agencies for the purpose of conserving fish and wildlife resources. The FWCA allows the opportunity to offer recommendations for the conservation of species and habitats beyond those currently managed under the MSA. NMFS has determined that sensitive habitats (e.g., seagrasses, rocky reef) and California grunion may be negatively impacted by proposed project activities. These habitats and fish are important for a large variety of recreational fishery species and are key components of a healthy bay and nearshore ecosystem. Assuming implementation of the protective measures included in the project description and EFH conservation recommendations noted previously, NMFS has no additional FWCA recommendations to provide.

Please contact Mr. Eric Chavez at 562-980-4064, or via email at Eric.Chavez@noaa.gov if you have any questions concerning this EFH consultation or require additional information.

Sincerely,

NB Chesney

for Robert S. Hoffman
Assistant Regional Administrator
for Habitat Conservation Division

cc: Ms. Amy Kelley, Navy, San Diego

References Cited

1. Amoser, S. and F. Ladich. 2005. Diversity in noise-induced temporary hearing loss in otophysine fishes. J. Acoust. Soc. Am. 113: 2170–2179.
2. Baxter, L. II, E.E. Hays, G.R. Hampson, and R.H. Backus. 1982. Mortality of fish subjected to explosive shock as applied to oil well severance on Georges Bank. Woods Hole Oceanographic Institution Report WHO-82-54.
3. Hastings, M.C. and A.N. Popper. 2005. Effects of Sound on Fish. Report to California Department of Transportation. January. 82pp. http://www.dot.ca.gov/hq/env/bio/files/Effects_of_Sound_on_Fish23Aug05.pdf.
4. Keevin, T.M., and G.L. Hempen. 1997. The Environmental Effects of Underwater Explosions with Methods to Mitigate Impacts. U.S. Army Corps of Eng. St. Louis, MO. 118p.
5. Pearson, W. J., J. R. Skalski, and C. I. Malme. 1992. Effects of sounds from a geophysical survey device on behaviour of captive rockfish (Sebastes sp.). Can. J. Fish. Aquat. Sci. 49: 1343.1356.
6. Popper, A. N. 2003. Effects of anthropogenic sounds on fishes. Fisheries 28(10): 24-31.
7. Schwarz, A. L. and Greer, G. L. 1984. Responses of Pacific herring, Clupea harengus pallasi, to some underwater sounds. Can. J. Fish. Aquat. Sci. 41, 1183–1192.
8. Young, G.A. 1991. Concise methods for predicting the effects of underwater explosions on marine life. NAVSWC NO 91-220. Naval Surface Warfare Center. Silver Spring, MD.