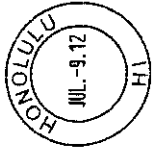
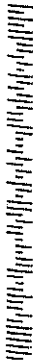


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NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST
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1220 PACIFIC HWY, BLDG-1, FL 3
SAN DIEGO, CA 92132-5190

7/9/12

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Naval Facilities Engineering Command, Southwest
Attention: HSTT EIS/OEIS Project Manager – EV21.CS
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Madam or Sir;

As a member of the public and an expert in marine mammal science, I respectfully submit the following comments on the Navy's Hawaii-Southern California Training and Testing Activities Draft Environmental Impact Statement/Overseas Environmental Impact Statement for your consideration.

To begin with, I have concerns that the draft EIS/OEIS does not fully consider the scientific documentation of strandings of marine mammals that may be associated with the types of activities proposed by the Navy. For example, the work of Wang and & Yang (2006) indicating pygmy killer whales stranded in Taiwan as a result of active sonar & seismic operations is dismissed as “not supported by the data available” on page 3.4-45. In addition, there is no mention of the concurrent unusual melon-headed whale activity in Hanalei Bay, Kaua‘i and Sasanhaya Bay, Rota, Northern Mariana Islands in 2004. These “strandings” are both included in the report “Marine Mammal Strandings Associated with U.S. Navy Sonar Activities” (April 2012) associated with the Atlantic Fleet Training and Testing EIS ([http://aftteis.com/Portals/4/aftteis/Supporting%20Technical%20 Documents/Marine%20Mammal_Stranding_Report_v02.pdf](http://aftteis.com/Portals/4/aftteis/Supporting%20Technical%20Documents/Marine%20Mammal_Stranding_Report_v02.pdf)). The Atlantic Navy report describes five stranding events associated with U.S. Navy sonar activities and five stranding events speculated to be linked to U.S. Navy sonar activities. I suggest that the Hawaii-Southern California EIS/OEIS include details of the Hanalei Bay incident and that it acknowledge the heightened risk for certain species documented to strand during Naval activities. In addition to melon-headed whales, beaked whales are considered to be especially vulnerable to injury and death associated with Navy sonar (five beaked whale stranding events with potential links to Navy sonar activity are described in the Atlantic EIS cited above). Although such strandings of beaked whales associated with Naval exercises have not been seen in Hawai‘i, the science indicates that animals affected by Navy sonar in Hawai‘i may not be easily detectable (Faerber and Baird 2010). Overall, my recommendation is that the Navy expand its description of potential impacts to include a more thorough treatment of historical stranding information as done in the Atlantic EIS and acknowledge that species such as melon-headed whales and beaked whales have higher risks for injury and death. Potentially, a variable regarding higher risk should be incorporated into the model for calculating take of these species.

Although not described in detail, five stranding events identified as including U.S. Navy exercises as a contributing cause are listed on page 3.4-113. This and other stranding events illustrate the need for mitigation plans for live and dead strandings. Although I am aware that the Navy has participated in carcass removal and necropsy in past strandings in Hawai‘i, I

encourage the Navy to develop a more formal mitigation plan as part of the EIS/OEIS. I understand that a regional stranding implementation plan is being developed collaboratively between the Navy and NOAA. I encourage the Navy (and NOAA) to seek input from the State of Hawai'i and the Pacific territories and to incorporate cultural considerations into protocols. This does not require the Navy to take formal responsibility for causing any marine mammal stranding, but it would make the Navy a formal partner in the activities necessary to deal with stranded animals. This should include monetary support for removal of animals and appropriate necropsy and sampling. It is to the Navy's benefit to have full necropsy and sampling done on stranded animals to reduce speculation that the Navy is responsible for deaths that have not been properly investigated. Funding for such necropsy work has gone down significantly in recent years.

The EIS appears to dismiss some of the science associated with mid-frequency sonar effects on marine mammals. On page 3.4-95 it states "As a result, no marine mammals addressed in this analysis are given differential treatment due to the possibility for acoustically mediated bubble growth." Regardless of the mechanism, it is clear that certain species, like the beaked and melon-headed whales, can be affected by mid-frequency sonar. Bernaldo de Quirós et al. (2012b) found that deep diving marine mammals have a higher risk of decompression; that risk should be considered in determining levels of take. Further, the protocols designed by Bernaldo de Quirós et al. (2012a, 2012b) should be included in official necropsy protocols.

The Navy acknowledges on page 3.4-92 that long-beaked dolphins have been directly killed by Navy activity in an incident involving explosives. This illustrates the importance of mitigation zones. Some odontocetes are more cryptic and surface less often than long-beaked dolphins. As such, I recommend that the Navy not reduce any of the mitigation zones used in the previous EIS/OEIS. Smaller mitigation zones, as proposed in the draft EIS/OEIS, will only increase risk to marine mammals. Even if animals are not at risk for direct injury by the sound, it is clear that behavioral responses of marine mammals can be contributing factors to injury and death, suggesting that mitigation zones should be conservatively large to account for behavior-induced injury.

Page 3.4-97 states that "Hearing loss resulting from auditory fatigue could effectively reduce the distance over which animals can communicate, detect biologically relevant sounds such as predators, and echolocate (for odontocetes). The costs to marine mammals with temporary threshold shift, or even some degree of permanent threshold shift have not been studied." There are some studies of threshold shift in cetaceans (*e.g.* Mooney et al. 2009, Nachtigall et al. 2004). These studies examine things like TTS frequencies and behavioral effects of sonar. Studies also describe odontocete immune response to sonar pings and seismic water guns (Romano et al. 2004). I did not do an exhaustive search of the literature, but further information about TTS and PTS should be reported in the EIS as a quick search indicates some is available.

The EIS/OEIS states on page 3.4-93 "The potential for auditory trauma in marine mammals exposed to impulsive sources (*e.g.*, explosions) is inferred from tests of submerged terrestrial mammals exposed to underwater explosions (Richmond et al. 1973; Yelverton et al. 1973; Ketten et al. 1993)." Terrestrial mammals do not have the same hearing physiology and mechanisms as marine mammals, though some ear structures are conserved among the

mammals. I am not clear on how terrestrial data can be translated to marine mammal potential for auditory trauma. A clearer explanation of this link would be helpful to assess whether this comparison is appropriate. Darlene Ketten has published a number of articles on cetacean hearing physiology, and Cranford et al. (2008) reported on sound transmission and reception in Cuvier's beaked whales using CT scan information, which could be cited in this section.

Because the Navy's model of biologically significant population consequences of Navy activities included abundance estimates, the Navy EIS/OEIS chooses to combine what are now considered separate populations of marine mammals among the Hawaiian Islands for the analysis. This is biologically inappropriate and does not account for the lack of dispersal among island regions. Because populations of many odontocete species are now scientifically documented to be local and island-associated, an analysis of impact by population is necessary to assess effects to these populations. If this assessment cannot be conducted now because of the need to use abundance estimates in the model, I have suggestions. One, the fact that these populations are separate should be acknowledged and described, with a full literature review, in the EIS/OEIS. Two, the letter of authorization and EIS/OEIS should include language that reflects a commitment to do new calculations as abundance estimates become available. With the new Guidelines for Marine Mammal Stock Assessments becoming finalized soon and the new research that is becoming available regularly, abundance estimates for many of these stocks should likely be available before the next reauthorization, so I encourage quick turn around on updating impact estimates as these data become available.

Another aspect of local populations is that displacement of these populations could be permanent or long-term. Other members of the species may not be able to repopulate an area where animals are displaced. Alternatively, movement of local populations out of the area may not be possible if marine mammals have behaviorally adapted to the area. Some high-risk species like melon-headed whales and Blainville's and Cuvier's beaked whales show evidence of local populations near the Island of Hawai'i (Aschettino et al. 2011, Baird et al. 2011, McSweeney et al. 2007). The increased risks associated with local, island-associated populations should be described in the EIS/OEIS and potentially taken into account in the modeling.

The Navy should identify known "hot spots" for species and preferentially avoid hot spots for Endangered, Threatened, and Candidate marine mammals unless there is a National Security issue. There is already some mitigation of that nature in place for humpback whales. There is extensive research on monk seal and false killer whale movements (*e.g.* Baird et al. 2012) that should be considered in the EIS/OEIS as areas to avoid Navy activity if possible.

On page 3.4-107, the EIS states "Humpback whales showed a trend from negative to positive reactions with vessels during the study period. The author concluded that the whales had habituated to the human activities over time." I urge the Navy to not use terms like "negative" and "positive" because they suggest that there is a "positive" way to harass marine mammals. Even marine mammals engaged in approach are not necessarily experiencing a "positive" interaction. For example, calves of dolphins fed by humans in Shark Bay Australia have up to twice as much calf mortality than unprovisioned dolphins in the area (Mann et al. 2000). Although one could argue the dolphins "choose" to interact with humans and to take handouts, it is not actually in their best interest biologically because it distracts them from protecting and

rearing their calves. This is a “positive” interaction with negative consequences. It is also important to remember the difference between habituation and tolerance. Some animals may not have anywhere else to go and therefore, tolerate disturbance. The draft EIS/OEIS states on page 5-24 “The Navy will cease transmissions when a marine mammal is sighted within 200 yd. (183 m). The exercise will re-commence if one of the following conditions are met: the animal is thought to have exited the mitigation zone and the mitigation zone has been clear from any additional sightings for a pre-established amount of time; the vessel has transited more than a pre-established distance beyond the location of the last sighting; or if the ship concludes that dolphins are deliberately closing in on the ship to ride the vessel’s bow wave.” Although the EIS/OEIS indicates that bow-riding animals would be out of the main transmission axis of active sonar, bow-riding behavior can cease at any time and approaching animals could be in danger of sonar affects. Again, it is important to remember that because an animal “chooses” to approach the vessel does not mean the animal is unaffected by sonar—animals do not always make the best choices for their own health and safety.

I support the continued implementation of Marine Species Awareness Training and use of lookouts. I suggest that mitigation measures could also include passive acoustic monitoring to help detect cryptic and long-diving marine mammals. The EIS/OEIS mentions that marine mammals are sometimes detected this way, but does not include passive acoustic detection in protocols for mitigation, with the exception of increased vigilance by lookouts. Passive acoustic detection and localization of marine mammals has come a long way in the last few years. The Journal of the Acoustical Society of America will be publishing a special issue on methods for marine mammal passive acoustics later this year. We encourage the Navy to continue to get the latest information to inform mitigation that includes passive acoustic monitoring and detection. Acoustic monitoring has also been done for several years off Hawai‘i’s coasts through the University of Hawai‘i. We encourage the Navy to continue to support these efforts and use this information to learn more about “hot spots” of cetacean activity near the Hawaiian Islands and incorporate this information into updates of the letter of authorization and to develop better means of detecting and localizing cetaceans near testing and training exercises.

The Navy’s main mitigation measures include visual detection within a radius of the activity and cessation of the activity until the marine mammal has not been seen for 30min. This may not cover the beaked whales and sperm whales well, as these species can be under the water for more than an hour at a time without appearing at the surface. I suggest movement to a new area or at least an hour without seeing these species before restarting activities. I also encourage as much wait time as possible for cryptic species that are difficult to see, such as pygmy and dwarf sperm whales.

On page 3.4-57, the draft EIS/OEIS states “There are no significant species-specific threats to spinner dolphins in the Study area.” The species-specific threats associated with swimming with spinner dolphins in Hawaiian bays are well documented (*e.g.* Courbis 2007, Courbis and Timmel 2009, Danil et al. 2005, Timmel et al. 2008), and NOAA published a Federal Register notice of intent to propose rulemaking to protect spinner dolphins from human interactions in Hawai‘i (National Marine Fisheries Service 2005). With the number of publications and the intent of NOAA to engage in rulemaking on the issue, swimming with spinner dolphins should be considered a significant species-specific threat.

The Navy cites the Hawaiian Islands Humpback Whale National Marine Sanctuary as reporting as many as 12,000 humpback whales in 2010; however, the citation is not included in the bibliography of the EIS/OEIS. We suggest that abundance of humpback whales be determined based on the primary literature, such as Calambokidis et al. (2008) (Hawai'i) and Barlow et al. (2011) (North Pacific). I encourage the Navy to use abundance estimates from directed scientific studies in primary literature for modeling of population level effects of Navy activities.

The EIS/OEIS states on page 3.4-115 "The best assessment of long-term consequences from training and testing activities will be to monitor the populations over time within the Study Area. A recent U.S. workshop on Marine Mammals and Sound (Fitch 2011) indicated a critical need for baseline biological data on marine mammal abundance, distribution, habitat, and behavior over sufficient time and space to evaluate impacts from human-generated activities on long-term population survival." I am aware that the Navy helps to support a variety of research on marine mammal populations in the Hawaiian Islands. I encourage the Navy to continue to support research as an indirect mitigation strategy.

On page 3.4-239, Figure 3.4-15 appears to be incorrect. The text states that there were nine humpback whale vessel strikes in 2009 and four in 2010, but no strikes appear in the figure.

On page 3.4-243, the EIS/OEIS states "Based on the probabilities of whale strikes suggested by the data the Navy is requesting takes by mortality or injury of 15 large marine mammals over the course of the 5 years of the HSTT regulations from either training activities of no more than 15 large whales from either training activities over the course of the 5 years of the HSTT regulations. This would consist of no more than four large whales in any given year." This is a confusing sentence. It sounds like the proposal is to get a letter of authorization for take of 15 large whales by vessel strike, but it is not clear what a "large marine mammal" vs. a "large whale" is. This request is broad, asking for takes across species and across populations (stocks) of species. In the past, the maximum number of whale strikes by the Navy across the entire SOCAL and Hawai'i ranges in a five-year period was ten. If the Navy were striking 15 large whales in five years, that would be a large red flag with respect to its activities in comparison with the past 20 years. This also must be considered in the context of several endangered large whale species (sperm whales, humpback whales, blue whales, fin whales, and sei whales), urging caution. I suggest requesting permission for striking 10 large whales rather than 15 over a five year period. Alternatively, I suggest that if more than ten whales are struck in five years, it should trigger an investigation into what has caused an increase in whale strikes and how that cause can be mitigated.

I have some concerns about the request for a five-year letter of authorization, as previous letters have been less than five years, though I understand the administrative burdens and costs associated with constant permit renewals. Although I recognize that the law allowing for a five-year permit requires re-authorization with the publication of significant new information, I encourage the Navy to include language in the EIS/OEIS that makes it clear that new science will be used to adjust model outputs and change mitigation strategies as it becomes available and will not wait for the termination of the permit period.

I am aware that the Navy has considered and discarded a list of mitigation measures described on pages 5-52 and 5-53. I encourage the Navy to reconsider sharing marine mammal sighting data to augment scientific information, minimizing as much as is possible testing and training activity that takes place during sea states or light levels at which marine mammals are unlikely to be seen by lookouts (or alternatively increasing radii of mitigation, passive acoustic monitoring for marine mammals, or wait time when marine mammals are spotted), and avoiding “hot spots” of marine mammal activity, particularly for those animals that are listed or candidate species under the Endangered Species Act.

I appreciate the value of military readiness but also believe strongly in protection of the resources and culture that make a Hawai‘i unique and special place. I encourage collaboration and dialog among stakeholders and the Navy to provide the best protection to both people and the environment.

Sincerely;



Sarah Courbis, Ph.D.

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