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Thank you for the opportunity for Cetacean Society International (CSI) to offer the following comment on the Draft Overseas Environmental Impact Statement / Environmental Impact Statement (DEIS) for the Undersea Warfare Training Range (USWTR). CSI offers these comments in addition to being a signatory to comments submitted by the Natural Resources Defense Council.

CSI's primary concerns are for potentially significant impacts on cetaceans and marine turtles from ship strikes on-range during operations and vessel transit to and from the range, and cetacean aversion/avoidance behavior in response to the noise from multiple sonars and maneuvering vessels, with a specific concern for population-level impacts on North American right whales.

Because regulatory agencies, accumulating scientific evidence, and continual legal actions have impeded sonar training by the Navy, knowledgeable experts within the Navy appear to accept, if confidentially, that current operational mitigations are inadequate. The Navy appears to be actively researching realistic methods to detect vulnerable marine species of concern, and to operate under realistic mitigation protocols that would actually work throughout the range of weather and darkness under which the training and transit would be conducted. Nevertheless training must go on in the interim, whether or not the current DEIS is truly adequate, so the default "solution" the Navy may choose, as they did for the Southern California training range, may be to demand "emergency" waivers and exemptions to regulations and federal laws. CSI is a co-plaintiff in the case the Supreme Court is currently deliberating on the constitutionality of these actions.

CSI respects the need for readiness training, understands the significance of active sonars to mission success, and hopes that the Navy can find a way to operate without always seeking "emergency" waivers to regulations they cannot comply with. Most of all we wish we had the ability to provide realistic solutions to the conflict between conducting sonar operations and conserving marine animals. We believe the DEIS should be a platform for Navy to describe sponsored research to improve at-sea detection of vulnerable marine mammals and turtles. We also believe that knee-jerk denials and unnecessary secrecy are counterproductive and a slur on the Service's reputation.

Unfortunately this DEIS amounts to just another denial of the growing evidence supporting the conclusion that active sonar operations do harm cetaceans. Why were so few up-to-date scientific resources incorporated during the rewrite of the first USWTR DEIS? That document received universally negative reviews in 2006, in part for its dependence upon outdated references. During the interim period additional scientific evidence and military reports have accumulated, clarifying and documenting the potential for deleterious effects from active sonar operations on marine animals, as well additional evidence about ship strike potential and avoidance. There is no excuse for the outdated and in some cases disproven

resources still included in the current DEIS. Why wasn't a conscientious and professional effort made to ensure that the most current evidence was included? Has the Navy gotten what it paid for?

The trend in the evidence has been absolute: while data remains sparse and in some cases classified, and controlled experiments are at early stages, the accumulated evidence more strongly than ever suggests that active sonar operations may adversely affect cetacean behaviors, and under certain conditions the affects may have population-level significance. Initial research and discussion focused on the types of harm and injury noted most often from stranded animals, from the perspective that the harm and injury was caused directly by the animals being too close to an acoustical source of sufficient power. Many of the mitigations in the DEIS reflect this limited view. While direct harm remains a significant potential to individuals, the numbers of harmed animals would always be limited, generally below a regulatory threshold.

However, the current focus of research and discussion is about the potential for active sonars to provoke aversion or avoidance behaviors from animals that may perceive the sonars at near threshold levels, perhaps many miles from the source. Active sonars perceived at power levels far too low to cause direct injury have precipitated behaviors that resulted in mortalities. While it is inappropriate to assume that each new mass stranding might be linked to active sonar use, it is more inappropriate not to investigate the potential by every means available. Unfortunately, such investigations often are hindered by remote locations, delayed responses, technical difficulties, and automatic military denials under a cover of secrecy.

A recent example is June's mass stranding of common dolphins near Cornwall, England. Despite immediate denials by the Royal Navy the event now has been linked to an active sonar exercise incorporating assets of several nations, including the Royal and U.S. Navies. A Freedom of Information (FOI) request to the British Ministry of Defence (MoD) was required to verify that the exercise was concurrent with the stranding, and a FOI request is underway to determine the extent of the U.S. Navy's participation. Experts now agree that these dolphins, a species known for strong social bonds, were behaving adversely to the exercise operations, and some of those that happened to approach the shore became involved in the mass stranding. There is no evidence to deal with the obvious questions about groups of animals that fled in other directions, or the population-level effect of scattering the group, or denial of habitat, or curtailed behaviors that may have been significant to survival. There might have been some evidence if qualified observers had been allowed to monitor cetaceans concurrent with the exercise. The unnecessary secrecy prevented both navies, and everyone else, from understanding more about the events so as to mitigate more successfully in the future.

CSI is grateful, therefore, that the U.S. Navy has supported initial efforts to enable experts to quantify behaviors of cetaceans before, during and after being exposed to active sonar operations. The first public research of this type was during RIMPAC 2008, and we hope it can be extended to other active sonar operational training. An adequate DEIS would include a summary of this data for review.

Beaked whales continue to be a focus of considerable research, but the evidence from the bell-ringing events that triggered this focus faced considerable military interference. Recent events

also have provided significant evidence, but only after being forced into public review. An unpublished MoD report for the Defence Science and Technology Laboratory documented cetacean behavior during Operation Anglo-Saxon 06, an exercise similar to future training represented by this DEIS. The report stated that during sonar operations beaked whales ceased vocalizing and foraging, noting that "Since these animals feed at depth, this could have the effect of preventing a beaked whale from feeding over the course of the trial and could lead to second or third order effects on the animal and population as a whole." The report was only obtained after a FOI request was made by *Nature*, and references a 2005 MoD document that discusses second- and third-order effects such as starvation and death. Repeated research on AUTEC with tagged beaked whales exposed to orca and generic mid-frequency transmissions affirms the basic aversion behavior discussed in the MoD reports.

The DEIS will remain inadequate until more reasonably current scientific evidence has been incorporated, the discussion reflects those data, and some allowances are made for future findings amplifying the need for substantially improved mitigations. The evidence is mounting that deleterious, significant impacts can be provoked by aversive or avoidance behaviors to active sonar, and perhaps other exercise noises, at ranges out to near the limit of a cetacean's perception. Navy-funded research has focused on perception thresholds, and it is logical to investigate the threshold of behavioral reactions to actual mid-frequency sonar sounds, as affected by environmental conditions and normal operations such as beam aiming and vessel maneuvers. It will be invalid to do this in controlled circumstances, for example using captive animals, as they will have had no experience with sonar noise, and no perception of the noise as a threat.

No visual or passive acoustical mitigations can reach out to where the vulnerable animals might first react to sonar operations. The solution to the extended range impacts may require technological changes to what the sonars sound like to marine animals, and the development of those technologies should not wait for absolute proof of the need.

While the DEIS relies upon unrealistic visual and acoustic mitigations for both ship strikes and sonar operations, we assume the Navy is searching for reasonable, practical solutions to this fundamental flaw. But at the moment it is simply illogical to state, and impossible to prove, that visual observers are able to detect cetaceans and sea turtles even at current mitigation ranges, during all operations encompassed by the DEIS, including darkness, high sea states and extreme surface weather. Surprisingly, sea state does not appear to be mentioned at all, while it has been established that above Beaufort 4 visual sightings become almost moot. Range operations must occur well above that level, or the training will not meet real-world conditions.

The ship strike mitigations do not specify speeds but allow for captain's discretion to operate at "slow, safe speed; that is the slowest speed consistent with essential mission, training and operations at which the speed can take proper and effective action to avoid a collision;" and "to the extent practicable and consistent with the mission, training and operations...vessel operations…will be limited to daylight and periods of good visibility." But proper training stresses and tests both ship and crew, and a captain under pressure to fulfill the mission or meet a start time might stretch this "mitigation" to speeds known to produce mortalities, in conditions where even experienced observers would not have a reasonable chance to sight vulnerable animals. While respecting a captain's authority and responsibility CSI believes the DEIS must incorporate

specific speed limits that at least match regulatory limits, such as ten knots or less. Training schedules or time constraints also must allow for slow speed mitigations. A vessel or crew under training should not be expected to make a specific on-range start time if they encounter a cetacean or sea turtle, and should be given leeway to mitigate that encounter.

Visual and acoustical mitigations are particularly unrealistic for sea turtles, as demonstrated by recent research on the hibernating behaviors of loggerhead sea turtles. Sea turtles in winter spend long periods resting below the surface, essentially hibernating, and although undetectable to all known mitigations, could be impacted by operations described in the DEIS. Vessel speed limits are the only available way to limit those impacts. “Only some like it hot — quantifying the environmental niche of the loggerhead sea turtle”, Hawkes, et al, *Diversity and Distributions, (Diversity Distrib.)*(2007) 13, 447–457) , states, in addition to previously demonstrated at-sea hibernation by sea turtles, “that large numbers of adult North American loggerheads are making long resting dives at the edge of the Gulf Stream in winter, enabling them to sit-out cold periods in the winter while exploiting highly productive waters in higher latitudes on a seasonal basis.” “Offshore federal waters of the USA constitute a more important habitat for both foraging and wintering turtles than previously appreciated. These areas are potential hotspots for interaction with proposed military training activities and should receive special monitoring efforts to fully assess the extent of overlap.”

Why doesn’t the DEIS incorporate adequate scientific data regarding the herd behavior of cetaceans that live in strongly-bonded groups? Considerable data on herding mammals is available, and applicable to several species of cetaceans with habitats overlapping the training areas and transit zones. One animal reacting fearfully to a perceived threat provokes other animals at least to become alert. That individual may have learned to fear mid-frequency active sonar sounds after a previous experience, and can be expected to react when the sound is received again, perhaps even near a threshold level. That may be the point where the individual reacts by fleeing away from the sound. Transmitting vessels’ maneuvers, sweep changes and additional environmental factors may give the perception that the threat-sound is approaching, also provoking the fearful animal to flee. Even if surrounding animals do not perceive the threat itself they are likely to react by fleeing with the panicked individual. The numbers of animals fleeing may quickly include all members of the herd, by definition becoming a stampede. As a group and individual survival behavior, a full stampede requires no external obvious threats after the first animal is triggered to flee, and it may continue until the herd reaches exhaustion or some obstacle. For some cetaceans, such as pilot whales or common dolphins, that obstacle may be a beach. A mass stranding that appears to have no obvious cause, such as disease or adverse weather, must be evaluated for the potential that the animals were driven near shore by something, with the actual stranding perhaps being triggered by one or more individuals accidentally coming ashore. This potential is amplified when the mass stranding includes more than one species.

Testing active sonars before being engaged in a training exercise must be regulated as clearly as speed restrictions, and require that full mitigations be in effect. The testing may provoke the same deleterious responses that can occur during the exercise, as demonstrated by several known events near Japan and Hawaii.

The North Atlantic right whale should be the species of greatest concern to everyone involved with the planned USWTR, and discussed accordingly in the DEIS. However, the DEIS discussion of the direct, significant and potentially population-level impact on the species is inadequate. This concern is amplified by the DEIS choice of Site A off Jacksonville as the Preferred Alternative. While Site A is clearly a cost-efficient solution to the Navy's needs, it presents the most significant risks to the extremely vulnerable North Atlantic right whale population. Because the estimated species' population is less than 400 individuals, anthropogenic threats and impacts are increasing in spite of major efforts to reduce them, and regulatory actions have been constrained by political actions, it is nonsensical for the Navy to increase the risk by choosing a location that begins so close to the only known right whale calving ground and to the migratory pathway the whales need to move between calving and feeding areas.

In fact the DEIS should include a cost/risk analysis for the Navy of interrupted or cancelled training because right whales, especially mother/calf pairs, are found on the eventual USWTR range, or in the transit zone. Experts predict this is likely for the Preferred Alternative, Site A, the Jacksonville OPAREA. Because of the mother's protective caution the mother/calf pair are more vulnerable to disturbance, and therefore will suffer more harassment and harm from training operations and transits to the range. If visual and acoustical mitigations live up to DEIS expectations it is very likely whales will be found to be in the way, and they cannot be ignored. Scheduling training only for the period when right whales are less likely to be in the southeast also imposes severe limits to the needs of the Navy, but it is the only "solution" if Site A is utilized.

If the Navy assigns a vessel to monitor whales in the transit area or while training occurs the vessel would soon find out what commercial whale watch vessels already know; right whales can spend long periods below the surface, and can seem to disappear even when watched by experts. Statistically, only 1/3 of the right whale mother/calf pairs may be detected when within 1.5nm of vessels, and only 55% of those at the surface may be seen. However, in all waters affected by range activity mothers with calves can be expected to spend more time at the surface because of the calf's shorter breath hold. This makes them significantly more vulnerable to ship strikes. The Navy certainly understands the physics of sound in the near-surface environment, and must concur with the experts that cetaceans are not likely to hear the sounds of an approaching vessel. To date no acoustical warning has proven to cause whales to avoid approaching ships, but it is cost effective research that the Navy should support.

Even if whales are sighted, attempting to move all training and transits far enough away to prevent acoustical harassment would be a logistical nightmare, especially as the whales are not likely to remain stationary. The mother may be so alarmed and confused by the activity that she might be unable to know which way to escape, creating an unpredictable track. The stress of the situation may compromise the mother's health, as she is not likely to have eaten since migrating south, and must be unhindered in her need to migrate to feeding grounds. Of course the calf would be compromised along with the mother. The event is not likely to escape public notice, as considerable scientific effort is made to locate and track all right whale mothers and calves from birth. In fact, these scientific aerial surveys may provide the expert detection and monitoring the Navy needs to operate legally and efficiently. On the other hand, prohibiting

scientific surveys from maintaining their aerial monitoring while the whales are on-range will interfere with research critical to the species' survival. Experts would verify that this scenario is quite possible, and responsible authorities should consider it, even if only to lower eventual costs to the Navy.

Current research proves that the species' existence depends upon reducing anthropologic impacts, including masking noises. Right whales require specific prey in sufficiently dense aggregations to permit efficient feeding, and evidence suggests their ability to hear other whales feeding may be critical to an individual's survival. Acoustical cues allow an extremely small population to find each other and to find food in a very large ocean. However, evidence suggests that right whales raise the pitch of some calls in the presence of multiple masking sources such as the noises from several vessels. Multiple vessels operating on-range may trigger this response, which signals the animals' efforts to overcome some obstacle to their survival needs. Models that incorporate responses to acoustic cues from other whales as a factor in the efficiency of foraging right whales suggest that the listening whale's foraging efficiency may be reduced by lowering detection ranges. One factor lowering detection ranges may be the masking effects of vessel activity. Even one right whale handicapped by anthropogenic acoustical masking has population-level significance. US Navy vessel and exercise activities associated with the USWTR range will produce a wide range of sounds that are likely to affect right whales. The DEIS should reflect this, because understanding how the whales respond to the maneuvering vessels and multiple sonars is critical to effective mitigations.

When Site A was determined to be the Preferred Alternative, why didn't the Navy fund surveys, as they did for Site C, the 2005 Preferred Alternative? Site D apparently has funded surveys, but these data are not publicly available. Because they did not survey Site A, and the DEIS has relied upon outdated distribution and sighting data, the DEIS forces the convenient but false conclusion about the presence of right whales and the potential for ship strikes in Site A. In fact, right whales have been sighted eastward to the limit of effort, observers have found whales well outside of critical habitat, a tagged whale travelled over 100km offshore, whales have stranded in seasons when they should be absent, and the Gulf Stream fluctuates into Site A. Right whales, certainly including mothers with calves, may indeed be found in Site A.

The western boundary of Site A is only 35 nautical miles east of the easternmost boundary of the Southeast Right Whale Critical Habitat (59 FR 28,805). This Critical Habitat is the only known calving ground for North Atlantic right whales, although SC (Site B) is heavily used by mothers and calves and may also be a calving ground. The Navy assumes that risk to right whales ceases outside of 5 nm beyond critical habitat, which has no basis in fact, but right whales have been seen far outside of critical habitats.

Many DEIS sources for right whale migration and feeding aggregations are from the 80's and 90's when more recent and more accurate resources are available. The DEIS right whale seasonal distribution data for all Sites is inadequate, limiting the discussion of some to a single paragraph. Site B, for example, actually has heavier use in winter by right whales than the DEIS acknowledges. Site B's single paragraph ignores the NMFS 2007 rulemaking for a Restricted Management Area to protect right whales extending at least 35 nm from South Carolina's shore. In that rulemaking NMFS acknowledged that South Carolina may be the preferred calving

ground for some right whales. Site C has a migratory pathway along the shelf break that cuts directly through Site C. There doesn't seem to be any inclusion of the Southeast Implementation Team and Right Whale Consortium presentations or datasets. This data is likely to require rethinking of several DEIs conclusions.

The DEIS is more than inadequate in its right whale discussions; it is irresponsible for the authors to have presented it while ignoring or being unaware of so much necessary data. The DEIS authors should be as alarmed as the rest of us are that the loss of just two female right whales per year may precipitate the species' extinction, that one female has to have four calves to replace herself, and that, where size and sex of the dead animal could be determined, females accounted for 80% of known right whale deaths. The DEIS's failure to adequately discuss the differential risk to mothers and their calves is indefensible, and while it might satisfy the Navy that there are few problems ahead, it is a false assumption that must be corrected before the Final EIS is published .

Sincerely,

William W. Rossiter
President