1 May 2013

Mr. P. Michael Payne, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Office of Naval Research's (ONR) application seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take marine mammals by harassment. The taking would be incidental to acoustic technology experiments in the western North Pacific Ocean during a one-year period. The Commission also has reviewed the National Marine Fisheries Service's 2 April 2013 notice (78 Fed. Reg. 19652) announcing receipt of the application and proposing to issue the incidental harassment authorization, subject to certain conditions.

RECOMMENDATIONS

The Marine Mammal Commission recommends that the National Marine Fisheries Service issue the incidental harassment authorization but—

- assess the potential risk to marine mammals from the acoustic technology experiments by requiring ONR to (1) provide the best available mean density estimates plus two standard deviations for the densities based on surveys in areas other than the locations where the experiments could occur, (2) describe any known or suspected sources of bias associated with the use of those data, and (3) re-estimate the numbers of takes using those mean densities plus two standard deviations;
- require ONR to use a third clearance time category of 60 minutes for deep-diving species (i.e., beaked whales and sperm whales) after a delay or shut down, if the animal is not observed to have left the mitigation zone; and
- require ONR to use passive acoustic monitoring continually during the experiments to supplement its daytime visual monitoring.

RATIONALE

ONR proposes to conduct acoustic technology experiments for up to four underwater acoustic sources (one that is referred to as "oceanographic" because it would be used for assessing oceanographic parameters and three that are referred to simply as "experimental" sources because their purpose is classified). The acoustic technology experiments would occur during a two-week period within international waters at one of nine locations–Sea of Japan, East China Sea, South China Sea, North Philippine Sea, West Philippine Sea, waters east of Japan, waters offshore of

Guam, waters from 25 to 40ºN latitude, or waters from 10 to 25ºN latitude. Water depths in those nine locations range from 100–9,500 m. The purpose of the experiments is to verify the performance of the acoustic sources in a realistic environment—that is, do they perform as expected. The vessel used for the experiments would be moving at speeds less than 5 knots when testing the oceanographic acoustic source, but would be stationary when testing the three experimental sources. All of the acoustic sources operate below 1.5 kHz and sound pressure levels would be less than 220 dB re 1 μPa. Testing of the oceanographic source would occur for no more than 24 hours, and testing of all three of the experimental sources would occur for no more than 69 hours total. Both types of experiments could occur during both day and night.

The Service preliminarily has determined that, at most, the proposed activities temporarily would modify the behavior of 34 marine mammal species. It also anticipates that any impact on the affected species and stocks would be negligible. The Service does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation and monitoring measures. Those measures include—

- using civilian protected species observers to monitor a 1-km mitigation zone 30 minutes before, during, and 30 minutes after the experiments;
- using passive acoustic monitoring during nighttime hours or during periods of decreased visibility, specifically 30 minutes before, during, and 30 minutes after the experiments or 30 minutes after sunrise, whichever occurs first;
- using delay and shut-down procedures during daytime visual monitoring and nighttime passive acoustic monitoring;
- reporting injured and dead marine mammals to the Service using the Service's phased approach and suspending activities, if appropriate; and
- submitting both a classified and unclassified report.

Density estimates

ONR estimated the numbers of takes expected to result from the proposed experiments using the best available density data. Density estimates from line-transect surveys in or near the nine proposed experiment locations were used, if available. However, in those instances when survey data were not available within or near those locations, ONR extrapolated densities from regions with similar oceanographic characteristics to those locations. For example, the waters within the eastern tropical Pacific Ocean have been surveyed extensively and those data provide a comprehensive understanding of marine populations in temperate oceanic waters (Ferguson and Barlow 2001 and 2003). Thus, ONR used density data from Ferguson and Barlow (2001 and 2003) for certain species and that same extrapolation approach for other species.

The Commission understands that density data are not available for all areas in which activities occur. However, it has recommended previously that when the density estimates have inherent uncertainties, the Service require the applicant to use in its risk assessment the best density estimate plus some measure of uncertainty to account for potential measurement error and bias resulting from the use of data from another location. In this case, Ferguson and Barlow (2001 and

2003) included coefficients of variation (i.e., the standard deviation divided by the mean) with the density estimates from the equatorial tropical Pacific Ocean. Therefore, the precautionary approach would be to use the best available density estimates for each species plus a measure of uncertainty to account for measurement error and then describe any known or suspected sources of bias to account for using data from another location. Accordingly, the Marine Mammal Commission recommends that the National Marine Fisheries Service assess the potential risk to marine mammals from the acoustic technology experiments by requiring ONR to (1) provide the best available mean density estimates plus two standard deviations for the densities based on surveys in areas other than the locations where the experiments could occur, (2) describe any known or suspected sources of bias associated with the use of those data, and (3) re-estimate the numbers of takes using those mean densities plus two standard deviations.

Mitigation and monitoring measures

The Service would require ONR to monitor the area near the vessel visually for at least 30 minutes before, during, and 30 minutes after the experiments cease or 30 minutes after sunset, whichever comes first. During nighttime and periods of low visibility, it would require ONR to monitor the area acoustically for at least 30 minutes before, during, and 30 minutes after the experiments cease or 30 minutes after sunrise, whichever comes first. The Service also would require that when transmissions have been delayed or shut down because a marine mammal has been detected visually within the proposed 1-km mitigation zone during daytime or detected acoustically during nighttime, acoustic transmissions would not resume until the marine mammal is outside the mitigation zone (i.e., the animal is observed to have left the mitigation zone or has not been seen or otherwise detected within the mitigation zone, including detection by acoustic means, for 15 minutes in the case of small odontocetes and pinnipeds and 30 minutes in the case of mysticetes and large odontocetes).

The Commission supports the use of the delay and shut-down procedures proposed by ONR but also believes that the proposed clearance times during visual monitoring may not be adequate for all species. For small cetaceans, the Commission has recommended a clearance time of at least 15 minutes because their dive times are shorter and generally fall within that limit. For some large cetaceans, however, the proposed 30-minute clearance time may be inadequate, sometimes markedly so. Beaked and sperm whales, in particular, may remain submerged for periods far exceeding 30 minutes. Blainville's and Cuvier's beaked whales dive to considerable depths (> 1,400 m) and can remain submerged for more than 80 minutes (Baird et al. 2008). The grand mean dive duration for those species of beaked whales during foraging dives is approximately 60 minutes (51.3 and 64.5 minutes for Blainville's and Cuvier's beaked whales, respectively; Baird pers. comm.). Sperm whales also dive to deep depths and can remain submerged for up to 55 minutes (Drouot et al. 2004), with a grand mean dive time of approximately 45 minutes (Watwood et al. 2006). If those species continue foraging in the same area as one of the stationary experimental sources and that source is turned on after only 30 minutes, then beaked whales and sperm whales could be exposed to sound levels sufficient to cause Level A harassment.

In addition, observers may not detect marine mammals each time they return to the surface, especially cryptic species such as beaked whales, which are difficult to detect even under ideal conditions. Barlow (1999) found that "[a]ccounting for both submerged animals and animals that are

otherwise missed by the observers in excellent survey conditions, only 23 percent of Cuvier's beaked whales and 45 percent of *Mesoplodon* beaked whales are estimated to be seen on ship surveys if they are located directly on the survey trackline." Therefore, after either a delay or shut down, the Marine Mammal Commission recommends that the National Marine Fisheries Service require ONR to use a third clearance time category of 60 minutes for deep-diving species (i.e., beaked whales and sperm whales), if the animal is not observed to have left the mitigation zone. Further, because of the cryptic nature of some species, the Commission also recommends that the Service require ONR to use passive acoustic monitoring continually during the experiments to supplement its daytime visual monitoring.

Please contact me if you have questions regarding the Commission's recommendations and comments.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director

Literature cited

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Drouot V., A. Gannier, and J.C. Goold. 2004. Diving and feeding behaviour of sperm whale (*Physeter macrocephalus*) in the northwestern Mediterranean Sea. Aquatic Mammals 30:419–426.

Ferguson, M.C., and J. Barlow. 2001. Spatial distribution and density of cetaceans in the eastern Pacific Ocean based on summer/fall research vessel surveys in 1986-96. National Oceanic and Atmospheric Administration Administrative Report LJ-01-04. Southwest Fisheries Science Center, La Jolla, California. 61 pages.

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Watwood S.L., P.J.O. Miller, M. Johnson, P.T. Madsen, and P.L. Tyack. 2006. Deep-diving foraging behavior of sperm whales (*Physeter macrocephalus*). Journal of Animal Ecology 75:814–825.

Opposed to Naval Sonar Operations/China Sea/Japan

Document 2013-07606

Whales and other marine mammals rely on their hearing for life's most basic functions, such as orientation, communication, breeding and feeding. Echolocation is fundamental to their survival. When a sound thousands of times more powerful than a jet engine fills their ears, the results will be devastating -- and deadly.

The Navy's most widely used sonar systems operate in the mid-frequency range. Evidence of the danger caused by these systems surfaced dramatically in 2000, when whales of four different species stranded themselves on beaches in the Bahamas. Although the Navy initially denied responsibility, the government's investigation established that mid-frequency sonar caused the strandings. After the incident, the area's population of Cuvier's beaked whales nearly disappeared, leading researchers to conclude that they either abandoned their habitat or died at sea. Similar mass strandings have occurred at other sites around the globe.

The Navy no longer denies the deaths of cetaceans, instead now asks permission to kill and harm. It is an outrage and an atrocity on the oceans and marine life wherever it travels. It is quite enough that this atrocity is performed within our own coastlines, with outcomes poorly understood or predicted, with scientific methods for detection and density close to absent, but to perpetrate this outside of our own economic waters is an outrage and cannot be permitted.

Many of these beached whales have suffered physical trauma, including bleeding around the brain, ears and other tissues and large bubbles in their organs.

Scientists believe that the mid-frequency sonar blasts may drive certain whales to change their dive patterns in ways their bodies cannot handle, causing debilitating and even fatal injuries.

Stranded whales are only the most visible symptom of a problem affecting much larger numbers of marine life. Naval sonar has been shown to disrupt feeding and other vital behavior and to cause a wide range of species, particularly those that depend on echolocation to panic and flee. Scientists are concerned about the cumulative effect of all of these impacts on marine animals.

Sonar Beaching Events
Over the past three decades, several mass stranding events have been associated with or speculated to be related to naval operations, seismic surveys, and other anthropogenic activities that introduce soundi nto the marine environment (Canary Islands, Greece, Vieques, U.S. Virgin Islands, Madeira Islands, Haro Strait [Washington], Alaska, Hawaii, North Carolina). Therefore, acute noise exposure has the potential to either directly or indirectly contribute to stranding events.

-January 2006 At least four beaked whales strand in the Gulf of Almeria, Spain, while sonar exercises take place offshore.

-January 2005 At least 34 whales of three species strand along the Outer Banks of North Carolina as Navy sonar training goes on offshore.

-July 2004 Four beaked whales strand during naval exercises near the Canary Islands.

-July 2004 Approximately 200 melon-headed whales crowd into the shallow waters of Hanalei Bay in Hawaii as a large Navy sonar exercise takes place nearby. Rescuers succeed in directing all but one of the whales back out to sea.

-June 2004 As many as six beaked whales strand during a Navy sonar training exercise off Alaska.

-May 2003 As many as 11 harbor porpoises beach along the shores of the Haro Strait, Washington State, as the USS Shoup tests its mid-frequency sonar system.

-September 2002 At least 14 beaked whales from three different species strand in the Canary Islands during an anti-submarine warfare exercise in the area. Four additional beaked whales strand over the next several days.

-May 2000 Three beaked whales strand on the beaches of Madeira during NATO naval exercises near shore.

-October 1999 Four beaked whales strand in the U.S. Virgin Islands during Navy maneuvers offshore.

-October 1997 At least nine Cuvier's beaked whales strand in the Ionian Sea, with military activity reported in the area.

-May 1996 Twelve Cuvier's beaked whales strand on the west coast of Greece as NATO ships sweep the area with low- and mid-frequency active sonar.

-October 1989 At least 20 whales of three species strand during naval exercises near the Canary Islands.

-December 1991 Two Cuvier's beaked whales strand during naval exercises near the Canary Islands.

Sharing the waters in the SOCAL operating area are more then 37 species of marine mammals, including dolphins, whales, and sea lions. Certain species of marine mammals—such as beaked whales—are uniquely susceptible to injury from active sonar, because they are very deep divers, and spend little time at the surface, so these injuries would not necessarily be detected by the Navy. In fact, the Navy contends that methods used to determine population densities are so cumbersome that uncertainty in the density is typically large, because of the low number of sightings.

In the various Navy proposals, repeatedly there is stated difficulty, or near impossibility to identify species, much less density. Therefore, it is possible that the density is much higher, lending itself to a low estimate on an already massive number of potentially "taken" animals. Reasons for difficulty to identify are primarily rarity of sighting, more often misidentification with other species, or such similarity that they are grouped within a guild. **It certainly does occur to me that we will have much less difficulty firmly identifying species once they are dead and/or beached.**

Michele Bollo
Encinitas, CA 92024

To whom it may concern,

Opposed to Naval Sonar Operations/China Sea/Japan
Document 2013-07606

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Sincerely,

Lyndal Ford

Please remember that there is no "Undo" button when dealing with the environment at this large a magnitude. Do you want to be on the side of history which says we caused this massive destruction of marine life for our own species' welfare? I thought we are co-pilots on this earthly adventure and no species has the right to cause so much damage to others. Sadly, humans do not have a good track record in this area, but we could do the right thing on this issue. This is so wrong.

Sharon Zupo

Please deny the NOAA/NMFS request of the Navy's for a permit to do acoustic experiments in the North Pacific.

Our oceans are in trouble as it is. These acoustic experiments will do far more harm than good. How many more cetaceans have to die or be seriously harmed for our military to engage in continued needless war games?

Please DENY their request.

Thank you,

Cindy Forth

To Whom it may Concern:

Do not let the The Office of the Naval Research (ONR) to preform acoustic technology experiment (ATE) during spring, summer 2013 in the Western North Pacific.
This will harm or kill animals that are unable to receive health care or defend themselves.

'Connections between Naval acoustic activities and strandings are on the rise. While few strandings due to sonar are acknowledged by the Navy the stranding in the Bahamas in 2000 was confirmed and the effects were devastating as noted by cetacean researcher and expert Ken Balcolmb in an interview discussing the 2000 stranding in the Bahamas'Yes there's actually hemorrhaging going on. It isn't an auditory injury per se. It affects the ears, but this pressure damage is not related to whether or not the whales have temporary threshold shift in their hearing [a hearing loss]. The National Marine Fisheries Service (NMFS) says these injuries are survivable-and they are, but only with hospitalization. And whales don't have that option'. (source)
Please check out:
http://www.youtube.com/watch?v=O9gDk29Y_YY&feature=player_embedded#!

It is unethical to harm helpless lives!
DO NOT ALLOW THIS NOW or EVER.
The animals have a right to live, just because they can not speak does not give their rights away.
If this is your ocean , it is mine too, do not destroy it or its animals by allowing unethical "testing".

Stephanie Walkeapaa

Dear Mr Magliocca,

Please note my strong objection to the activities proposed in the above application.

The projected effect on marine mammals contains far too many unknowns and poorly supported extrapolations from minimal data to allow the activities to take place.

Since the carcasses of most whale species sink, it is highly unlikely that the damage to marine mammals will come to our attention. At least until we notice the unexplained extinction of certain species...

Please reject this application.

yours respectfully

Simon Varnam

424 Kamiyuno
Fujinomiya-shi
Shizuoka-ken
Japan

My name is Thako Harris and I'd like to add my voice to the opposition I this Navy Sonar test. I believe it is killing marine mammals and completely detrimental to the health of ocean ecosystems. Do not do this!

Sincerely,

Thako Harris

To Whom It May Concern~
As it should concern ALL of us!!
I oppose the proposed acoustic experiment by the U.S. Navy in the Western North Pacific Ocean.
It's time to stop harrassing and killing Marine Life with sonar!!

A Sincerely Concerned Citizen of the United States,
Denise Foster

With all the challenges our environment has due to pollution, overpopulation, destruction of natural resources, please preserve the oceans for generations to come. The health of the oceans is directly related to our health. Please help leave our children a healthy planet so they may live & survive.
Thank you,
Hannah Lewis, DDS

Dear Sirs,
it is completely irresponsible to allow such testing as is being proposed. We have sufficient evidence that it is harmful, and often deadly to our sea life. With pollution, radiation, small sea life is severely endangered which, in turn, is starving our cetaceans. The balance of nature is fragile. Testing by the Navy will provide such useless information, compared to the necessity of having a healthy ocean.

Plankton and algae die off, larger mammals become deaf and disoriented, they cannot survive the effects of even the low decibel testing. PLEASE consider the future of our plane and the health of our marine animals.

Do the right thing!

Very Sincerely,

STOP FACILITATING THE MURDER OF THE HIGHEST BEINGS ON THE PLANET. NOAA IS A SUBSIDIARY OF THE US NAVY AND BOTH ORGANIZATIONS SHOULD BE SHUT DOWN AND THEIR OFFICIALS JAILED FOR CRIMINAL COMPLICITY IN CRIMES AGAINST LIFE.

http://tutunui-wananga.blogspot.co.nz/2012/11/stop-cetacean-genocide-by-navy-big-oil.html

http://tutunui-wananga.blogspot.co.nz/2012/07/real-global-threats-to-cetaceans-us.html

http://tutunui-wananga.blogspot.co.nz/2012/05/us-navy-ecocide-is-our-mission-making.html

Dear NOAA/NMFS:

PLEASE deny the Navy's request for a permit to do acoustic experiments in the North Pacific.

As I'm sure you are quite familiar, seismic/acoustic testing has horrifying and documented impacts on the humans on the sea, the cetaceans. As humans we have the choice to be accountable for the brutal acts of suffering we inflict on other sentient beings.

Isn't it time we started making the right choice?

Sincerely,
Rachel Clark

Science writer
www.nasw.org/users/rachelclark/

Dear P. Michael Payne:

Please deny the Navy's request for a permit to do acoustic experiments in the North Pacific. These acoustic Naval experiments promise to bring deadly consequences for the whales and dolphins in the Western North Pacific Ocean.

Thank you,

Rebeca Suarez
Tavernier, FL

I would like to submit the following to the U.S. Navy:

To the United States Navy:

I would very much like to let you know that I am extremely concerned about your continued use of underwater sounds - sonar - in your military exercises. The reason is that cetaceans - whales, dolphins, and porpoises - rely on echolocation 100 percent of the time to navigate, hunt, socialize, communicate, and avoid predators. Echolocation involves the use of sounds only since the open waters are too murky for cetaceans to see well underwater. As you know, sound travels much faster underwater than light. When you emit moderately to extremely loud sounds, these sounds travel so fast and so far that they would reach cetaceans, no matter where they are and how far they are from the source of the sounds. Cetaceans become so frightened that they'd swim away as far and as fast as possible until they no longer hear such sounds. Deep-diving cetaceans rushing to the surface for air can cause them to have the 'bends'. Cetaceans that are not able to get away from the loud sounds as quickly as possible may experience head trauma, as well as damage to their hearing systems. When cetaceans experience the 'fight-or-flight' by trying to escape from the loud sounds, they can no longer use their echolocation and would end up stressed, disoriented, and lethargic. Some would beach and others would perish at sea.

Imagine yourself being exposed to extremely loud sounds that reverberate through your ears. You'd cover your ears and run away from the source of the sounds. However, the source keeps following you, and you would end up suffering from pain to your ears, as well as a painful headache. You'd eventually become deaf or hard of hearing as a result of your hearing system being damaged. Unlike you, cetaceans cannot cover their 'ears' nor can they escape loud sounds altogether since their home waters are already so 'polluted' with loud sounds every which way! As far as being exposed to loud sounds, cetaceans are much worse off than humans!

Cetaceans are mammals like us and are completely protected via the Marine Mammal Protection Act. Studies have shown how extremely intelligent, highly sociable, and quite sentient cetaceans are. Besides, cetaceans possess unique characteristics not so unlike that of us, humans. Like us, they have lives to live, as well as families to look after. I know how extremely important security is to you, but all of us - including the military - have a moral responsibility to ensure that all cetaceans are safe and secure in their home waters! After all, cetaceans do have the right to live their lives in peace in their natural oceanic habitats without being disturbed by 'loud foreign noises' that are being forced upon them!

As you know, as human population continues to rise in the United States, there has been a steady decline in cetacean populations. Numerous cetacean species are already endangered or critically endangered. The existence of cetaceans in our waters is not what it used to be!

For the above reasons, we - cetacean advocates - very strongly urge you to refrain from using sonar in the western North Pacific altogether. Since technology is your forte, you definitely have the ability and the means to develop alternatives that would allow you to carry out your military exercises without disturbing cetaceans by any means!

I would very much appreciate your watching the following video so that you'd have an idea of how sonar truly affects cetaceans:

http://www.youtube.com/watch?v=j8rZxmCejD0&feature=related

I do thank you for taking my message - as well as that of so many others - into serious consideration and doing the right thing for cetaceans so that they'd be completely protected at all times!

P. Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service,

I am writing in opposition to the Naval Acoustic Test slated to take place in the Western North Pacific. The marine mammals face so many challenges in these waters, hunting, long line fishing, ship strike, trawlers, and pollution. It seems so unfair to add 220 dB of sound for hours at a time. The Navy is proposing two 24 events.

Although the Navy, and NMFS/NOAA deny the deadly effects of sonar the truth is quite the opposite. The Naval activities is 2000 in the Bahamas confirmed this.

Again please do not give the Navy permission to do this deadly experiment.

Sincerely,

Kirsten Massebeau
PO Box 603
Cannon Beach
Oregon ,97110

By Email to: ITP.Magliocca@noaa.gov

P. Michael Payne
Chief, Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Re: Comments on Application Fed. Reg. 78 FR 19652, page 19652-19670, RIN:0648-XC56, Document Number: 2013-07606 (April 2, 2013)

Dear Mr. Payne:

I urge you to deny the application for an Incidental Harassment Authorization (IHA) by the U.S. Navy's Office of Naval Research (ONR) for Acoustic Technology Experiments in the Western North Pacific Ocean. This IHA application is based on analysis using grossly out-of-date databases, using inappropriate models and contains errors and omissions that call into question conclusion of this analysis. This application has not yet determined the impact of the proposed action using the due diligence of the best available science. The Office of Naval Research has not yet substantially complied an analysis to determined, using the best available science, that the proposed action will have a negligible impact on marine mammal species or stock.

I outline the most egregiously errors below.

1. **Numerous species densities have been omitted contrary to peer reviewed research and Environmental Impact Statements**

This analysis presents spring and summer species density estimates (Tables 5-12) and associated Level A and Level B harassment estimates (Tables 14-23) for nine provinces. Harassment estimates are only provided for species listed. However, peer-reviewed scientific publications can be cited to show not all numerically significant species present in the study providence has been presented and no harassment estimates was calculated and presented for these missing species.

Consider the following:

a. Short-beaked Common Dolphin. The 2012 SURTASS-LFA Environmental Impact Statement (EIS)[1] and this IHA application share exact common provinces, references and methodology to compute marine mammal densities. However there are discrepancies between the reported species densities estimates. Consider the example of the Short-beaked Common Dolphin presented in the table below. Short-beaked Common Dolphin is the highest density species, in most cases by a factor of 10, according to the SURTASS-LFA EIS. But are not present in half of

[1] Department of the Navy. 2012, Letters of Authorization For the Taking of Marine Mammals Incidental to the Operation of Surveillance Towed Array Sensor System Low Frequency Active Sonars Onboard USNS Impeccable (T-AGOS 23), USNS Effective (T-AGOS 21), USNS Able (T-AGOS 20), And USNS Victorious (T-AGOS 19) Under NMFS Proposed Rule (50 CFR 218 Subpart X), Office of the Chief of Naval Operations

the exact same provinces of the ONR IHA application. These discrepancies exist even when both applications use the exact same references and rational for density estimates.

Short-beaked Common Dolphin are a very widely distributed, pelagic, offshore species found in water depths greater than 100 fathoms in waters temperatures between 10C and 28C[2]. These conditions define most of the proposed IHA application provinces. Short-beaked Common Dolphin has been observed in the South China Sea[3], but are not present according to ONR IHA application.

Province	Short-beaked Common Dolphin Density Estimates in ONR IHA (animals/km^2)	Short-beaked Common Dolphin in the SURTASS-LFA IHA (animals/km^2)
Sea of Japan	0.0860	0.0761
East China Sea	0.0461	0.0461
South China Sea	Not present	0.0461
North Philippine Sea	0.0562	0.0761
West Philippine Sea	Not present	0.0562
East of Japan	0.0761	0.0761
Offshore Guam	Not present	0.0021
Northwest Pacific Ocean (25-40)	0.0863	0.0863
Northwest Pacific Ocean (10-25)	Not present	0.0863

b. East China Sea (Table 5), Gray Whale, Summer: This species migrates directly across the East China Sea to and from unknown winter breeding grounds with a possibility of presents in the East China Sea during some summer months[4]. This suggests that some estimate of density should be used for harassment estimates.

c. Sea of Japan (Table 4), Pacific White-sided Dolphins, Summer, The Pacific White-sides Dolphin has been reported in the Sea of Japan, during the summer months[5] [6]. Estimate of density should be used for harassment estimates.

d. East of Japan (Table 9), Pantropical Spotted Dolphin, Spring, Published observations of Pantropical Spotted Dolphins east of Japan with abundance

[2] Leatherwood, S., and R. R. Reeves. 1983. The Sierra Club Handbook of Whales and Dolphins. Sierra Club Books, San Francisco, CA.
[3] Smith, B. D., T. A. Jefferson, S. Leatherwood, D. T. Ho, T. C. Van, and Q. L. Hai. 1997. Investigations of marine mammals in Vietnam. Asian Marine Biology 14:145-172.
[4] Omura, H. 1988. Distribution and migration of the western Pacific stock of the gray whale. Scientific Report of the Whales Research Institute 39: 1-9.
[5] Miyashita, T. 1993. Abundance of dolphin stocks in the western North Pacific taken by the Japanese drive fishery. Report of the International Whaling Commission 43:417-437.
[6] Hayano, A., M. Yoshioka, M. Tanaka, and M. Amano. 2004. Population differentiation in the Pacific whitesided dolphin *Lagenorhynchus obliquidens* inferred from mitochondrial DNA and microsatellite analyses. Zoological Science 21(9):989-999.

estimates and densities comparable to like environments[7] [8]. These estimates should be used for harassment estimates.

e. Offshore Guam (Table 10), Sei Whale, Summer, Evidence of Sei whale occurrence around Guam have been reported based on acoustic recordings of vocalization[9][10]. Sei whales have been observed in two recent surveys conducted in the Mariana Island Range Complex[11] [12]. There is evidence that Sei whales occur in the Offshore Guan area and harassment estimates should be included in this IHA application.

2. Numerous harassment estimates were omitted from this application for species shown to be present.

This analysis presents spring and summer species density estimates (Tables 5-12) and associated Level A and Level B harassment estimates (Tables 14-23) for each province. But not all harassment estimates are provided for species listed.

Consider the following:

a. East China Sea, Kogia spp, Summer Density (Table 5) given as 0.0017, but no value is presented in Table 15 for Level A or Level B harassment. This application should be resubmitted with this discrepancy corrected.
b. South China Sea, Risso's Dolphin, Summer Density (Table 6) given as 0.0106, but no value is presented in Table 16 for Level A or Level B harassment. This application should be resubmitted with this discrepancy corrected.

3. Harassment analysis was based on calculation using a grossly out-of-date database and inappropriate model.

This analysis uses harassment estimates based on modeled transmission loss. The transmission loss is modeled using US Navy supplied database (for the sound speed environment) and model (for bottom loss). Together they define the environment to model sound propagation and are the major contributor to predicting transmission loss. However, this application used an out-of-date sound speed database and an inappropriate bottom loss model for the proposed sonar.

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[7] Gilpatrick, J. W., Jr., W. F. Perrin, S. Leatherwood, and L. Shiroma. 1987. Summary of Distribution Records of the Spinner Dolphin, *Stenella longirostris*, and the Pantropical Spotted Dolphin, *S. attenuata*, from the Western Pacific Ocean, Indian Ocean and Red Sea. NOAA Technical Memorandum NOAA-TMNMFS-SWFC-89. National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, CA.

[8] Miyashita, T. 1993. Abundance of dolphin stocks in the western North Pacific taken by the Japanese drive fishery. Report of the International Whaling Commission 43:417-437.

[9] Stafford, K. M., S. L. Nieukirk, and C. G. Fox. 2001. Geographic and seasonal variation of blue whale calls in the North Pacific. Journal of Cetacean Research and Management 3(1):65-76.

[10] Stafford, K. M. 2003. Two types of blue whale calls recorded in the Gulf of Alaska. Marine Mammal Science 19(4):682-693.

[11] DoN (Department of the Navy). 2007. Marine Mammal and Sea Turtle Survey and Density Estimates for Guam and the Commonwealth of the Northern Mariana Islands. Naval Facilities Engineering Command Pacific and Commander, U.S. Pacific Fleet.

[12] Fulling, G. L., P. H. Thorson, and J. Rivers. 2011. Distribution and abundance estimates for cetaceans in the waters off Guam and the Commonwealth of the Northern Mariana Islands. Pacific Science 65(3):321-343.

Consider the following:

1. According to this IHA application, (Section 6.1, Page 45, line 7-8) version 2.5 of the GDEM sound speed profile database was used. Version 2.5 of GDEM is a very old and out of date database. Calculations based on this database are based on known bad data and do not represent the best available data. GDEM 2.6 was replaced with GDEM 3.0 because of errors resulting in "significant improvements", particularly in shallow water and the Western Pacific[13]. GDEM V2.5 has been shown to require signification improvement in the ONR IHA application area. The sound speed profile database used in this study is more than 3 versions and 10 years old. Changes in the sound speed profile can radically change the transmission loss results and anything based on those results, including harassment estimates. This application should be rejected because it did not use the best available data.

2. The use of the MGS bottom loss model is out of date and not appropriate for this request. MGS is to be used for frequency above 1.5 KHz[14]. This IHA application is for sonar operating "below 1.5 KHz". Additionally, MGS was replaced by HFLB as the Navy Standard 10 years ago. The current version of HFBL is 2.2[15]. The use of MGS does not represent the best available data. The bottom loss model used in this study is not appropriate to the sonar and is 10 years out of date. The bottom loss model determines the amount of sonar energy that is reflected off the bottom. The number of animals harassed could greatly underestimated if the bottom loss model underestimates the amount of reflected energy. This application should be rejected because it did not use the appropriate model.

In conclusion, I urge you to deny the application for an Incidental Harassment Authorization (IHA) by the U.S. Navy's Office of Naval Research for Acoustic Technology Experiments in the Western North Pacific Ocean **because it has not met the requirements of the Marine Mammal Protection Act**. This application contains significant errors and omissions in the species density databases. This application omits numerous species densities contrary to peer reviewed publications. This application omits numerous harassment estimates for species shown to be present. The analysis presented using a grossly out-of-date database and inappropriate model. Because of these discrepancies, this application has not adequately determined the impact of the proposed action using the due diligence of the best available science. ONR has yet to determine if the proposed action will not have a negligible impact on marine mammal species or stock. ONR has not determined if the proposed actions will not have an immitigable adverse impact because it has not presented a complete or appropriate analysis. The Office of Naval Research has not yet substantially complied an analysis to determined, using the best available science, that the actions proposed will have a negligible impact on marine mammal species or stock.

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[13] Carnes, Michael, 2009, "Description and Evaluation of GDEM-V 3.0", Naval Research Lab Stennis Space Center (http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA494306).

[14] Hodges, R,P, 2011, Underwater Acoustics Analysis, Design and Performance of Sonar", , Willey and Son, 2011, Section 6.4.4.

[15] Moskail, W. B., 2012, "Oceanographic and Atmospheric Master Library Software Review Board Review", Naval Research Lab Stennis Space Center.