



FINAL SUPPLEMENTAL ENVIRONMENTAL  
IMPACT STATEMENT / SUPPLEMENTAL  
OVERSEAS ENVIRONMENTAL IMPACT  
STATEMENT FOR  
SURVEILLANCE TOWED ARRAY SENSOR  
SYSTEM LOW FREQUENCY ACTIVE  
(SURTASS LFA) SONAR



DEPARTMENT OF THE NAVY  
CHIEF OF NAVAL OPERATIONS

JANUARY 2015

Page purposefully left blank

# FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT/SUPPLEMENTAL OVERSEAS ENVIRONMENTAL IMPACT STATEMENT FOR SURVEILLANCE TOWED ARRAY SENSOR SYSTEM LOW FREQUENCY ACTIVE (SURTASS LFA) SONAR



**January 2015**

***Lead Agency***

Department of the Navy

***Cooperating Agency***

National Marine Fisheries Service

For Additional Information, Contact:  
SURTASS LFA Sonar SEIS/SOEIS Program Manager  
4201 Wilson Boulevard #110-185  
Arlington, Virginia 22203  
E-Mail: [eisteam@surtass-lfa-eis.com](mailto:eisteam@surtass-lfa-eis.com)

Page purposefully left blank

# FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT/SUPPLEMENTAL OVERSEAS ENVIRONMENTAL IMPACT STATEMENT FOR SURVEILLANCE TOWED ARRAY SENSOR SYSTEM LOW FREQUENCY ACTIVE (SURTASS LFA) SONAR

Lead Agency: United States Department of the Navy  
Cooperating Agency: National Marine Fisheries Service  
Title of the Proposed Action: SURTASS LFA Sonar Routine Training, Testing, and Military Operations  
Designation: Final Supplemental Environmental Impact Statement/Supplemental Overseas Environmental Impact Statement  
Point of Contact: CDR C.V. Morgan, USN  
Attn: SURTASS LFA Sonar SEIS/SOEIS Program Manager  
4201 Wilson Boulevard #110-185  
Arlington, Virginia 22203

## ABSTRACT

Pursuant to the order issued by the United States District Court for the Northern District of California on May 22, 2014, the Navy prepared this Final Supplemental Environmental Impact Statement (SEIS)/Supplemental Overseas Environmental Impact Statement (SOEIS) for the limited purpose of remedying the deficiency under the National Environmental Policy Act (NEPA) identified on page 54 of the Court's March 28, 2014 amended summary judgment order. In that order the Court found the NEPA analysis deficient in that the Navy failed to use the best available data in the 2012 Final SEIS/SOEIS (FSEIS/SOEIS) (DoN, 2012) when it determined potential impacts from employment of SURTASS LFA sonar systems<sup>1</sup> on one stock of common bottlenose dolphins in Hawaiian waters rather than the more current information that show five stocks of common bottlenose dolphins in Hawaiian waters<sup>2</sup>.

---

1 In this SEIS/SOEIS, "SURTASS LFA sonar systems" refers to both the LFA and compact LFA (CLFA) systems, each having similar acoustic transmission characteristics.  
2 The Navy failed to use the stock delineations and stock abundances for the common bottlenose dolphin in Hawaiian waters from the 2010 Stock Assessment Report (Carretta et al., 2011).

Page purposefully left blank

## **EXECUTIVE SUMMARY**

Building upon analyses and information included in the Final Overseas Environmental Impact Statement/Environmental Impact Statement (FOEIS/EIS) (DoN, 2001), the Final Supplemental EIS (FSEIS) (DoN, 2007), and the FSEIS/SOEIS (DoN, 2012) for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar, the scope of this SEIS/SOEIS is limited to providing a revised analysis of potential impacts of SURTASS LFA sonar employment on Hawaii common bottlenose dolphin stocks in the geographic area where the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins (Kauai/Niihau, Oahu, 4-Islands [Molokai, Lanai, Maui, and Kahoolawe], Hawaii Island, and the Hawaii Pelagic stocks) occur.

This supplemental analysis on SURTASS LFA sonar has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §4321 et seq.)<sup>3</sup>; Executive Order (EO) 12114, Environmental Effects Abroad of Major Federal Actions<sup>4</sup>; the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (Title 40 Code of Federal Regulations [40 CFR] §§1500 to 1508); U.S. Navy (hereafter, Navy) procedures for implementing NEPA (32 CFR §775); and Navy environmental readiness guidelines. The National Marine Fisheries Service (NMFS) is a cooperating agency (in accordance with 40 CFR § 1501.6) for the development of this narrowly-tailored SEIS/SOEIS.

### **ES.1 DESCRIPTION OF PROPOSED ALTERNATIVES**

#### **ES.1.1 ALTERNATIVES**

Since this supplement is limited to providing a revised analysis of potential impacts to Hawaii common bottlenose dolphin stocks, the alternatives evaluated in this SEIS/SOEIS remain the same as described in the 2012 SEIS/SOEIS (DoN, 2012), which include the No Action Alternative, Alternative 1, and Alternative 2. Alternative 1 from the 2012 FSEIS/FSEOIS included use of the same Offshore Biologically Important Areas (OBIA)s as those in the preferred alternative from the 2007 FSEIS/FSEOIS. Alternative 2 from the 2012 FSEIS/FSEOIS, the alternative chosen in the Navy's August 15, 2012 Record of Decision, differed from Alternative 1 only in that Alternative 2 included a comprehensive update of the OBIA)s. With respect to waters where any of the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins could occur, the OBIA)s in Alternatives 1 and 2 are the same because the comprehensive update in Alternative 2 did not change the OBIA)s in these waters.

### **ES.2 AFFECTED ENVIRONMENT**

SURTASS LFA sonar may be employed in the oceanic environment in which common bottlenose dolphins that are part of the Hawaiian Islands Stock Complex could occur. As such, the potential exists for impacts on the Hawaiian Islands Stock Complex of common bottlenose dolphins. In the previous NEPA and EO 12114 documentation on SURTASS LFA sonar (DoN, 2001, 2007, and 2012), aspects of the physical and socioeconomic environments were fully analyzed but are not addressed herein, as they are not relevant to the limited purpose of this SEIS/SOEIS. In this SEIS/SOEIS, only certain aspects of the biological environment relevant to the Hawaiian Islands Stock Complex of common bottlenose dolphins that are necessary to provide a revised analysis of the potential impact of SURTASS LFA sonar on these Hawaii common bottlenose dolphin stocks are addressed.

---

3 The provisions of NEPA apply to major Federal actions that occur or have effects in the U.S., its territories, or possessions.

4 The provisions of EO 12114 apply to major Federal actions that occur or have effects outside of U.S. territories (the U.S., its territories, and possessions).

For Hawaiian waters, NMFS has designated five stocks of common bottlenose dolphins as part of the Hawaiian Islands Stock Complex: Kauai/Niihau, Oahu, 4-Islands (Molokai, Lanai, Maui, and Kahoolawe), Hawaii Island, and the Hawaii Pelagic stocks (Carretta et al., 2014). The boundary between the Hawaii Pelagic and insular<sup>5</sup> stocks is designated as the 1,000-meter (m) (3,281-foot [ft]) isobath, except between the Oahu and 4-Islands stocks, where the stocks are separated roughly equidistantly between Oahu and the 4-Islands group by the 500-m (1,640-ft) isobath through the center of the Kaiwi Channel.

The population sizes of the five stocks of the Hawaiian Islands Stock Complex of common bottlenose dolphins have been estimated, largely from photographic identification studies for the insular stocks, and these data represent the best currently available. Densities of the common bottlenose dolphins in the Hawaiian Islands Stock Complex are used in evaluating the potential environmental impacts associated with exposure to SURTASS LFA sonar transmissions. However, densities were not available for all the five stocks in the Hawaiian Islands Stock Complex of common bottlenose dolphins. A density of 0.0025 individuals per square kilometer was estimated for the Hawaii Pelagic stock from the 2010 dedicated visual survey of the waters of the Hawaiian exclusive economic zone (Bradford et al., 2013). Since densities were not available for the four insular stocks, densities were derived for each of these four stocks by scaling the density of the Hawaii Pelagic stock by the ratio of the pelagic stock abundance and each of the given insular stock abundances; for example, the density of the Oahu stock (0.0003 individuals per km<sup>2</sup>) was calculated by multiplying the density of the Hawaii Pelagic stock (0.0025 individuals per km<sup>2</sup>) by the Oahu stock abundance estimate (743 animals) and dividing by the Hawaii Pelagic stock abundance (5,950 animals).

### **ES.3 ENVIRONMENTAL CONSEQUENCES**

The basis for the analysis of potential impacts to the five stocks of the Hawaiian Islands Stock Complex of common bottlenose dolphins presented in this SEIS/SOEIS is consistent with the FOEIS/EIS, the FSEIS, and the FSEIS/SOEIS for SURTASS LFA sonar (DoN, 2001, 2007, 2012), and has been updated with respect to the potential impacts discussed below based on the best available literature and information. Except as discussed below, the assumptions and conclusions presented in Chapter 4 of the FOEIS/EIS, FSEIS, or FSEIS/SOEIS with respect to potential impacts on common bottlenose dolphins remain valid and are incorporated herein by reference.

#### **ES.3.1 POTENTIAL IMPACTS UNDER THE NO ACTION ALTERNATIVE**

Under this alternative, the Navy would not employ SURTASS LFA sonar, including within the range of the five stocks of the Hawaiian Islands Stock Complex of common bottlenose dolphins; thus, any potential impact to the five common bottlenose dolphin stocks from the proposed activities would be eliminated. As discussed more fully in the 2012 FSEIS/SOEIS (DoN, 2012), however, the No Action Alternative does not meet the Navy's purpose and need.

#### **ES.3.2 POTENTIAL IMPACTS UNDER ALTERNATIVES 1 AND 2**

Since Alternatives 1 and 2 are the same for the waters where any of the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins could occur, the potential impacts assessed in this SEIS/SOEIS are the same under either Alternative 1 or Alternative 2. Analyses to determine the percentage of marine mammal stocks potentially affected (with mitigation) for exposures from 120 to 180 dB re 1  $\mu$ Pa (rms) and  $\geq 180$  dB re 1  $\mu$ Pa (rms) have been conducted for the five stocks comprising the Hawaiian Islands Stock Complex common bottlenose dolphins (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) in the two proposed North-Central Pacific mission areas ("Hawaii North" and "Hawaii South") for potential SURTASS LFA sonar missions.

The results of the Navy's analysis demonstrate that 0.00% of any of the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins would be exposed to sound levels  $\geq 180$

---

5 Insular=of or having to do with an island or islands



dB re 1  $\mu$ Pa (rms) in either mission area. Thus, no common bottlenose dolphins are expected to be affected through injury or mortality from exposure to SURTASS LFA sonar transmissions. At exposures of 120 to 180 dB re 1  $\mu$ Pa (rms) (single ping equivalent [SPE])<sup>6</sup>, the overall percentages for any of the five potentially-affected Hawaii common bottlenose dolphin stocks range from 0.00% to 0.82% during employment of SURTASS LFA sonar for one modeled mission in each of the proposed two mission areas. The highest estimated percentage of any stock of the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins potentially affected at exposures of 120 to 180 dB re 1  $\mu$ Pa (rms) during employment of SURTASS LFA sonar is 0.8241% of the Hawaii Pelagic stock of common bottlenose dolphins during proposed employments in the Hawaii North mission area. The second highest percentage of any stock potentially affected at SURTASS LFA sonar exposures of 120 to 180 dB re 1  $\mu$ Pa (rms) is 0.1921% of the Hawaii Pelagic stock of common bottlenose dolphins during proposed employments in the Hawaii South mission area. The highest potential impact to any insular stock is 0.0188% of the Hawaii Island stock in the Hawaii South mission area; the remainder of the insular stocks has much lower potential impacts. The results of the analysis in this document show that the impact on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins is not significant when SURTASS LFA sonar is employed in accordance with the mitigation measures (geographic restrictions, monitoring/reporting, and sonar shutdown protocols) detailed in the 2012 FSEIS/SOEIS (DoN, 2012). These conclusions are consistent with the selection of Alternative 2 in the August 15, 2012 Record of Decision and do not provide a basis for modifying that decision in any respect.

#### **ES.4 PUBLIC PARTICIPATION**

Public involvement in the review of the Draft SEIS/SOEIS (DSEIS/SOEIS) is required under 40 CFR § 1503.1 and in Navy environmental compliance guidance. This regulation and guidance provide for affirmative solicitation of comments from those persons or organizations that may be interested or affected by the proposed action. In conjunction with the filing of the DSEIS/SOEIS with the U.S. Environmental Protection Agency (EPA), copies of the SURTASS LFA DSEIS/SOEIS were distributed to agencies and officials of Federal, state, and local governments, organizations, and other interested parties. With the publication of the EPA's Notice of Availability on the DSEIS/SOEIS for SURTASS LFA sonar in the *Federal Register* on October 24, 2014 (EIS No. 20140308), the 45-day public comment period on the DSEIS/SOEIS began (EPA, 2014). Consistent with NEPA implementing regulations, no public hearings or meetings were scheduled by the Navy, and the Navy neither received any requests by the public for meetings or hearings on the DSEIS/SOEIS nor for an extension of the public comment period.

The Navy received comment letters/emails on the DSEIS/SOEIS from one Federal agency and two State of Hawaii departments/offices. Chapter 5 of this SEIS/SOEIS has been prepared to document the public involvement process, to present the comments received during the public comment period on the DSEIS/SOEIS, and to offer the Navy and NMFS' comment responses.

---

6 The term "Single Ping Equivalent" (SPE) is defined in three previous EISs/SEISs (DoN, 2001, 2007, and 2012). SPE accounts for the energy of all the SURTASS LFA sonar transmissions that a modeled animal receives during an entire simulated LFA sonar mission. Calculating potential impacts is a complex process, and the reader is referred to the previous EISs/SEISs for more detail. However, SPE is a function of sound pressure level (dB re 1  $\mu$ Pa), not sound exposure level (dB re 1  $\mu$ Pa<sup>2</sup>-sec).

# TABLE OF CONTENTS

<b>1.0</b>	<b>PURPOSE AND NEED .....</b>	<b>1-1</b>
1.1	SCOPE OF THIS SEIS/SOEIS .....	1-1
1.2	PUBLIC PARTICIPATION .....	1-1
<b>2.0</b>	<b>DESCRIPTION OF THE PROPOSED ALTERNATIVES .....</b>	<b>2-1</b>
<b>3.0</b>	<b>AFFECTED ENVIRONMENT .....</b>	<b>3-1</b>
3.1	MARINE MAMMALS: COMMON BOTTLENOSE DOLPHIN .....	3-1
3.1.1	<i>Status and Stock Designation</i> .....	3-1
3.1.2	<i>Population Estimation</i> .....	3-1
3.1.2.1	Abundance Estimation .....	3-1
3.1.2.2	Density Estimation .....	3-3
3.1.3	<i>Distribution</i> .....	3-3
3.1.4	<i>Movement and Diving Behaviors</i> .....	3-4
<b>4.0</b>	<b>ENVIRONMENTAL CONSEQUENCES .....</b>	<b>4-1</b>
4.1	POTENTIAL IMPACTS UNDER THE NO ACTION ALTERNATIVE .....	4-1
4.2	POTENTIAL IMPACTS UNDER ALTERNATIVES 1 AND 2 .....	4-1
4.2.1	<i>Auditory Impacts</i> .....	4-1
4.2.1.1	Masking .....	4-1
4.2.1.2	Behavioral Reactions .....	4-2
4.2.2	<i>Strandings</i> .....	4-2
4.2.3	<i>Quantitative Risk Assessment Analysis of Potential Impacts on Common Bottlenose Dolphins</i> .....	4-2
4.2.3.1	Summary of Risk Assessment .....	4-3
4.3	CUMULATIVE IMPACTS .....	4-4
4.4	SUMMARY .....	4-4
<b>5.0</b>	<b>DISTRIBUTION AND PUBLIC REVIEW PROCESS .....</b>	<b>5-1</b>
5.1	FILING AND DISTRIBUTION OF THE DRAFT SEIS/SOEIS .....	5-1
5.1.1	<i>Filing of Draft SEIS/SOEIS</i> .....	5-1
5.1.2	<i>Distribution of Draft SEIS/SOEIS</i> .....	5-1
5.2	PUBLIC REVIEW PROCESS .....	5-3
5.2.1	<i>Public Comment Period</i> .....	5-3
5.2.2	<i>Receipt of Comments</i> .....	5-3
<b>6.0</b>	<b>LITERATURE CITED .....</b>	<b>6-1</b>
<b>7.0</b>	<b>LIST OF PREPARERS AND REVIEWERS .....</b>	<b>7-1</b>
	<b>APPENDIX A: CORRESPONDENCE .....</b>	<b>A-1</b>

## LIST OF TABLES

Table 3-1. Abundances and densities estimated for the Hawaiian Islands Stock Complex of common bottlenose dolphins during all seasons in the Hawaii North and South mission areas in which SURTASS LFA sonar may be employed.....	3-2
Table 4-1. Estimates of the percentage of Hawaii common bottlenose dolphin stocks potentially affected by SURTASS LFA sonar (one mission) in the Hawaii North mission area during summer season.....	4-3
Table 4-2. Estimates of the percentage of Hawaii common bottlenose dolphin stocks potentially affected by SURTASS LFA sonar (one mission) in the Hawaii South mission area during spring and fall seasons.....	4-3
Table 5-1. Responses by the Navy and NMFS to the public comments received on the DSEIS/SOEIS for SURTASS LFA sonar.....	5-4

## LIST OF FIGURES

Figure 3-1. The 1,000-m isobath boundaries in gray shading (except between the Oahu and 4-Islands stocks, which are separated by the 500-m isobath) of the four insular stocks of common bottlenose dolphins in the waters of the MHI, with areas beyond these boundaries representing the Hawaii Pelagic stock.....	3-2
--	-----

## LIST OF ACRONYMS AND ABBREVIATIONS

%	percent or percentage
μPa	microPascal(s)
CEQ	Council on Environmental Quality
CLFA	Compact Low Frequency Active
CV	coefficient of variation
CNO	Chief of Naval Operations
DASN (E)	Deputy Assistant Secretary of the Navy (Environment)
dB	decibel(s)
dB re 1 μPa <sup>2</sup> -sec	decibels relative to one microPascal squared per second
dB re 1 μPa @ 1 m	decibels relative to one microPascal measured at one meter from center of acoustic source
DSEIS/SOEIS	Draft Supplemental Environmental Impact Statement/Supplemental Overseas Environmental Impact Statement
EIS	Environmental Impact Statement
EO	Presidential Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FOEIS	Final Overseas Environmental Impact Statement
FSEIS	Final Supplemental Environmental Impact Statement
ft	foot or feet
Hz	Hertz
IUCN	International Union for Conservation of Nature
km	kilometer(s)
km <sup>2</sup>	square kilometer(s)
kHz	kiloHertz
LF	low frequency
LFA	low frequency active
m	meter(s)
MFAS	mid-frequency active sonar
MHI	Main Hawaiian Islands
MMPA	Marine Mammal Protection Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
nmi	nautical mile(s)
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
OEIS	Overseas Environmental Impact Statement
PTS	permanent threshold shift

***FINAL SEIS/SOEIS FOR SURTASS LFA SONAR***

---

RL	received level
rms	root mean square
ROD	Record of Decision
sec	second(s)
SEIS	Supplemental Environmental Impact Statement
SEL	sound exposure level
SL	source level
SOEIS	Supplemental Overseas Environmental Impact Statement
SPE	single ping equivalent
SPL	sound pressure level
SURTASS	Surveillance Towed Array Sensor System
U.S.	United States of America

---

# 1 PURPOSE AND NEED

The underlying purpose and need for employment of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA<sup>7</sup>) sonar remains the same as described in the 2012 Final Supplemental Environmental Impact Statement/Supplemental Overseas Environmental Impact Statement (FSEIS/SOEIS) (DoN, 2012).

## 1.1 SCOPE OF THIS SEIS/SOEIS

Pursuant to the order issued by the United States District Court for the Northern District of California on May 22, 2014, the Navy prepared this SEIS/SOEIS for the limited purpose of remedying the deficiency under the National Environmental Policy Act (NEPA) identified on page 54 of the Court's March 28, 2014 amended summary judgment order. In that order the Court found the NEPA analysis deficient in that the Navy failed to use the best available data in the 2012 Final SEIS/SOEIS (FSEIS/SOEIS) (DoN, 2012) when it determined impacts from use of SURTASS LFA sonar systems on one stock of common bottlenose dolphins in Hawaiian waters rather than the more current information that show five stocks of common bottlenose dolphins in Hawaiian waters (Kauai/Niihau, Oahu, 4-Islands [Molokai, Lanai, Maui, and Kahoolawe], Hawaii Island, and the Hawaii Pelagic stocks)<sup>8</sup>. Accordingly, the scope of this SEIS/SOEIS is limited to providing a revised analysis of potential impacts of SURTASS LFA sonar on the five common bottlenose dolphin stocks that comprise the Hawaiian Islands Stock Complex in the geographic area where the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins (Kauai/Niihau, Oahu, 4-Islands [Molokai, Lanai, Maui, and Kahoolawe], Hawaii Island, and the Hawaii Pelagic stocks) occur.

This supplemental analysis has been prepared in compliance with NEPA of 1969 (42 United States Code [USC] § 4321 et seq.)<sup>9</sup>; Executive Order (EO) 12114, Environmental Effects Abroad of Major Federal Actions<sup>10</sup>; the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (Title 40 Code of Federal Regulations [40 CFR] §§ 1500 to 1508); U.S. Navy (hereafter, Navy) procedures for implementing NEPA (32 CFR § 775); and Navy environmental readiness guidelines. The National Marine Fisheries Service (NMFS) is a cooperating agency in accordance with 40 CFR § 1501.6) for the development of this narrowly-tailored SEIS/SOEIS.

## 1.2 PUBLIC PARTICIPATION

The public was notified of the Navy's intent to prepare a narrowly-tailored SEIS/SOEIS to analyze the potential impact of SURTASS LFA sonar on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins on July 1, 2014 (DoD, 2014). Commencing with the filing of the Draft SEIS/SOEIS (DSEIS/SOEIS) with the U.S. Environmental Protection Agency (EPA), copies of the DSEIS/SOEIS for SURTASS LFA sonar were distributed to agencies and officials of Federal, state (Hawaii), and local governments and organizations, as well as to other interested parties. The EPA's Notice of Availability (NOA) on the DSEIS/SOEIS was published in the *Federal Register* on October 24,

7 In this SEIS/SOEIS, "SURTASS LFA sonar systems" refers to both the LFA and compact LFA (CLFA) systems, each having similar acoustic transmission characteristics.

8 The Navy failed to use the stock delineations and stock abundances for the common bottlenose dolphin in Hawaiian waters from the 2010 Stock Assessment Report (Carretta et al., 2011).

9 The provisions of NEPA apply to major Federal actions that occur or have impacts in the U.S., its territories, or possessions.

10 The provisions of EO 12114 apply to major Federal actions that occur or have effects outside of U.S. territories (the U.S., its territories, and possessions).

2014 (EIS No. 20140308), beginning the 45-day public comment period on the DSEIS/SOEIS (EPA, 2014). Consistent with CEQ's implementing regulations, no public hearings or meetings were scheduled by the Navy. The Navy neither received any requests by the public for meetings or hearings on the DSEIS/SOEIS nor for an extension of the public comment period.

The Navy received comment letters/emails on the DSEIS/SOEIS from one Federal agency and two State of Hawaii departments/offices. Chapter 5 of this SEIS/SOEIS has been prepared to document the public involvement process, to present the comments received during the public comment period on the DSEIS/SOEIS, and to offer the Navy and NMFS' comment responses.

## **2 DESCRIPTION OF THE PROPOSED ALTERNATIVES**

Since this supplement is limited to providing a revised analysis of potential impacts to Hawaii common bottlenose dolphin stocks, the alternatives evaluated in this SEIS/SOEIS remain the same as described in the 2012 SEIS/SOEIS (DoN, 2012), which includes the No Action Alternative, Alternative 1, and Alternative 2. Alternative 1 from the 2012 FSEIS/FSOEIS included use of the same Offshore Biologically Important Areas (OBIs) as the preferred alternative in the 2007 FSEIS/FSOEIS. Alternative 2 from the 2012 FSEIS/FSOEIS, the alternative chosen in the Navy's Record of Decision, differed from Alternative 1 only in that Alternative 2 included a comprehensive update of the OBIs. With respect to waters where any of the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins could occur, however, the OBIs in Alternatives 1 and 2 are the same because the comprehensive update in Alternative 2 did not change the OBIs in these waters.



## 3 AFFECTED ENVIRONMENT

SURTASS LFA sonar may be employed in the oceanic environment in which common bottlenose dolphins that are part of the Hawaiian Islands Stock Complex could occur. As such, the potential exists for impacts on the Hawaiian Islands Stock Complex of common bottlenose dolphins. In the previous NEPA and EO 12114 documentation on SURTASS LFA sonar (DoN, 2001, 2007, and 2012), aspects of the physical and socioeconomic environments were fully analyzed but are not addressed herein, as they are not relevant to the limited purpose of this SEIS/SOEIS. This chapter includes only certain aspects of the biological environment relevant to the Hawaiian Islands Stock Complex of common bottlenose dolphins that are necessary to provide a revised analysis of the potential impact of SURTASS LFA sonar on these Hawaii common bottlenose dolphin stocks. Except as discussed below, the assumptions and conclusions presented in Chapter 4 of the FOEIS/EIS (DoN, 2001), FSEIS (DoN, 2007), or FSEIS/SOEIS (DoN, 2012) with respect to potential impacts on common bottlenose dolphins remain valid and are incorporated herein by reference.

### 3.1 MARINE MAMMALS: COMMON BOTTLENOSE DOLPHIN

#### 3.1.1 STATUS AND STOCK DESIGNATION

The International Union for Conservation of Nature (IUCN) classifies common bottlenose dolphins (*Tursiops truncatus*) globally as least concern (lower risk). Under the MMPA, NMFS manages and designates stocks of common bottlenose dolphins in U.S. waters. For Hawaiian waters, NMFS has designated five stocks of common bottlenose dolphins as part of the Hawaiian Islands Stock Complex: Kauai/Niihau, Oahu, 4-Islands (Molokai, Lanai, Maui, and Kahoolawe), Hawaii Island, and the Hawaii Pelagic (Carretta et al., 2014). The Kauai/Niihau, Oahu, 4-Islands, and Hawaii Island stocks are insular stocks, since they are restricted to waters surrounding specific islands. Under the MMPA, none of the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins is considered depleted or a strategic stock.

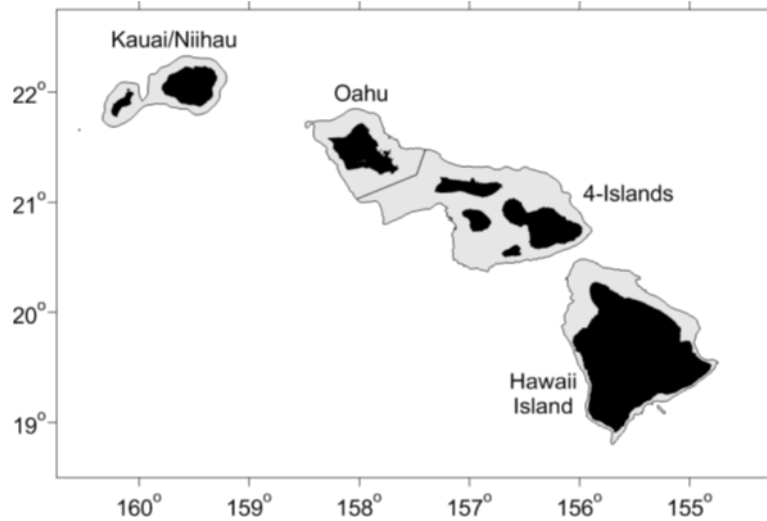
Currently, insufficient data are available on the population structure of common bottlenose dolphins in the waters of the Northwestern Hawaiian Islands to support stock designation; for this reason, NMFS considers common bottlenose dolphins in the waters of the Northwestern Hawaiian Islands to be part of the Hawaii Pelagic stock (Carretta et al., 2014). The boundary between the Hawaii Pelagic and insular stocks is designated as the 1,000-meter (m) (3,281-foot [ft]) isobath, except between the Oahu and 4-Islands stocks, where the stocks are separated roughly equidistantly between Oahu and the 4-Islands group by the 500-m (1,640-ft) isobath through the center of the Kaiwi Channel (Figure 3-1).

#### 3.1.2 POPULATION ESTIMATION

Density and abundance estimates of the populations of marine mammal stocks are used in evaluating the exposure risk to those stocks or populations from activities occurring in the marine environment.

##### 3.1.2.1 Abundance Estimation

The population sizes of the five stocks of the Hawaiian Islands Stock Complex of common bottlenose dolphins have been estimated, largely from photographic identification (photo-ID) studies, for the four insular stocks (Baird et al., 2009; Carretta et al., 2014); these data represent the best that are currently available (Table 3-1). The abundance estimate of 184 dolphins for the insular Kauai/Niihau stock of common bottlenose dolphins is based on 2003 to 2005 photo-ID studies (Baird et al., 2009; Carretta et



**Figure 3-1. The 1,000-m isobath boundaries in gray shading (except between the Oahu and 4-Islands stocks, which are separated by the 500-m isobath) of the four insular stocks of common bottlenose dolphins in the waters of the MHI, with areas beyond these boundaries representing the Hawaii Pelagic stock (Carretta et al., 2014). Image used with permission of NMFS Pacific Islands Fishery Science Center.**

al., 2014). Photo-ID studies of common bottlenose dolphins in 2002, 2003, and 2006 in Oahu waters (except the windward waters) provided the occurrence data from which an abundance of 743 dolphins was derived for the Oahu insular stock of common bottlenose dolphins (Baird et al., 2009; Carretta et al. 2014). For the abundance of the 4-Islands insular stock, occurrence data from 2002 to 2006 photo-ID studies of individual common bottlenose dolphins in the waters of Maui and Lanai were used to derive an abundance estimate of 191 dolphins (Baird et al., 2009; Carretta et al., 2014). Since this abundance estimate does not encompass common bottlenose dolphins from the waters of all four islands represented in this stock, particularly the windward waters, the abundance likely underestimates the population of the 4-

Island stock of common bottlenose dolphins (Carretta et al., 2014). In 2002 through 2006, photo-ID studies in waters of Hawaii Island resulted in an abundance estimated at 128 dolphins (Baird et al., 2009; Carretta et al., 2014) for the Hawaii Island stock. Again, the photo-ID surveys did not encompass

**Table 3-1. Abundances and densities estimated for the Hawaiian Islands Stock Complex of common bottlenose dolphins during all seasons in the Hawaii North and South mission areas in which SURTASS LFA sonar may be employed.**

STOCK NAME	STOCK ABUNDANCE (ANIMALS)	STOCK ABUNDANCE REFERENCE(S)	STOCK DENSITY (ANIMALS PER KM <sup>2</sup> )	STOCK DENSITY REFERENCE(S)
Kauai/Niihau	184	Baird et al., 2009; Carretta et al., 2014	0.0001	Bradford et al. 2013
Oahu	743	Baird et al., 2009; Carretta et al., 2014	0.0003	Bradford et al. 2013
4-Islands	191	Baird et al., 2009; Carretta et al., 2014	0.0001	Bradford et al. 2013
Hawaii Island	128	Baird et al., 2009; Carretta et al., 2014	0.0001	Bradford et al. 2013
Hawaii Pelagic	5,950	Bradford et al. 2013; Carretta et al., 2014	0.0025	Bradford et al. 2013

the windward waters of this stock area, so the abundance of 128 dolphins likely underestimates the total population of common bottlenose dolphins around the island of Hawaii (i.e., the Hawaii Island stock) (Carretta et al., 2014).

The stock of Hawaii Pelagic common bottlenose dolphins was recently updated with results from the 2010 dedicated line-transect visual survey of waters in the entire exclusive economic zone (EEZ) of Hawaii. The abundance of common bottlenose dolphins estimated from data observed during the 2010 survey was 5,950 bottlenose dolphins ( $CV^{11} = 0.59$ ) in the Hawaii Pelagic stock (Bradford et al., 2013; Carretta et al., 2014).

### **3.1.2.2 Density Estimation**

Density estimates were not available for all five stocks in the Hawaiian Islands Stock Complex of common bottlenose dolphins. A density of 0.0025 individuals per  $km^2$  was estimated for the Hawaii Pelagic stock from the 2010 dedicated visual survey of the waters of the Hawaiian EEZ (Bradford et al., 2013). Since density estimates were not available for the four insular stocks, density estimates were derived for the insular stocks by scaling the density estimate of the Hawaii Pelagic stock by the ratio of the Pelagic stock abundance and each of the given insular stock abundances (Table 3-1); for example, the density of the Oahu stock (0.0003 individuals per  $km^2$ ) was calculated by multiplying the density of the Hawaii Pelagic stock (0.0025 individuals per  $km^2$ ) by the Oahu stock abundance estimate (743 animals) and dividing by the Hawaii Pelagic stock abundance (5,950 animals). This process resulted in a density estimate of 0.0001 animals per  $km^2$  for the Kauai/Niihau, 4-Islands, and Hawaii Island stocks and 0.0003 animals per  $km^2$  for the Oahu stock of common bottlenose dolphins.

### **3.1.3 DISTRIBUTION**

The common bottlenose dolphin is widely distributed worldwide in warm temperate to tropical waters and diverse habitats ranging from rivers and protected bays to insular waters and the open ocean (Wells and Scott, 2009). In the western North Atlantic Ocean, Gulf of California, and eastern Pacific Ocean, discrete coastal and pelagic forms of the common bottlenose dolphins have been recognized (Parsons et al., 2002; Parsons et al., 2006; Segura et al., 2006; Lowther, 2006; Waring et al., 2014).

Common bottlenose dolphins could occur throughout the waters of the Hawaiian Islands, from Hawaii Island to Kure Atoll in the Northwestern Hawaiian Islands. In the waters of the Main Hawaiian Islands (MHI), common bottlenose dolphins could occur regularly in the shallower, insular shelf waters surrounding the islands as well as in deep open-ocean, pelagic waters (Mobley et al., 2000; Barlow, 2006; Baird et al. 2009).

The waters of the Hawaiian Islands support several island-associated populations, including spinner dolphins, rough-toothed dolphins, and false killer whales (Baird et al., 2006; Baird et al., 2008; Andrews et al., 2010; Chivers et al., 2010; Martien et al., 2011). Four discrete island-associated groups of common bottlenose dolphins were suggested as a result of the photo-ID work of Baird et al. (2009), during which high re-sighting rates and little to no movements among the distinct groups of bottlenose dolphins clustered around Oahu, Kauai/Niihau, the 4-Islands (Maui, Molokai, Lanai, and Kahoolawe), and Hawaii Island were observed. The genetic studies of Martien et al. (2012) later provided further support for the insular stocks of bottlenose dolphins in the MHI being distinct from the pelagic bottlenose dolphins found offshore in deeper waters. Additionally, Baird et al. (2013) found that the highest percentage of common bottlenose dolphins sighted in twelve years of compiled sighting surveys in the waters of the MHI were observed in waters less than 1,000 m (3,281 ft), and typically in waters less than 500 m (1,640 ft) deep. For this reason, the boundary between the insular and pelagic stocks of common bottlenose dolphins in the MHI is designated as the 1,000-m isobath.

---

<sup>11</sup> CV stands for coefficient of variation, which is a statistical measure of the dispersion of data points around the mean and shows the extent of variability in relation to the mean of the population. A CV of <1 means there is low variability.

### **3.1.4 MOVEMENT AND DIVING BEHAVIORS**

Although common bottlenose dolphins in the waters of other oceanic archipelagos have been observed traveling long distances between islands, such as in the Canary Islands where bottlenose dolphins traveled 30 to 120 km (16.2 to 64.8 nmi) between four islands (Tobeña et al., 2014), Baird et al. (2009) found no evidence of long-distance inter-island movements in the MHI. While individual bottlenose dolphins have been observed traveling between Kauai and Niihau and amongst the 4-Islands, no evidence exists for movements between the four discrete insular stocks of common bottlenose dolphins (Baird et al., 2006). The analysis of Baird et al. (2009) to determine the range of dispersal rates for their photo-ID data indicated rates of less than 1% per year. Little is known about how the reproductive seasonality of bottlenose dolphins in the Hawaiian Islands may affect the timing or pattern of movements in the waters of each stock's residency.

Movement patterns of pelagic bottlenose dolphins are different than those of island-associated populations. Klatsky et al. (2007) found that pelagic common bottlenose dolphins in the deep waters off the Bermuda Pedestal traveled an average of 28 km per day (15 nmi/day) in waters about 1,400 m (4,593 ft) deep and dove deeper at night, to depths greater than 450 m (1,476 ft) and lasting as long as 5 minutes. Bottlenose dolphins dive to more shallow depths, less than 50 m (164 ft), in daylight, or in shallow waters (Klatsky et al., 2007). Average dive durations range from 38 seconds to 1.2 min but have been recorded lasting as long as 10 min (Mate et al., 1995; Croll et al., 1999). The deepest dive recorded by a bottlenose dolphin is 535 m (1,755 ft) by a trained individual (Ridgway, 1986).

## 4 ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential impacts on the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins that could result from the implementation of the No Action Alternative, Alternative 1, and Alternative 2 from the 2012 FSEIS/SOEIS (DoN, 2012) and has been updated with respect to the potential impacts discussed below based on the best available literature and information. Except as discussed below, the assumptions and conclusions presented in Chapter 4 of the FOEIS/EIS (DoN, 2001), FSEIS (DoN, 2007), or FSEIS/SOEIS (DoN, 2012) with respect to potential impacts on common bottlenose dolphins remain valid and are incorporated herein by reference.

### 4.1 POTENTIAL IMPACTS UNDER THE NO ACTION ALTERNATIVE

Under this alternative, the Navy would not employ SURTASS LFA sonar, including within the range of the five stocks of the Hawaiian Islands Stock Complex of common bottlenose dolphins. Thus, any potential impact to the five common bottlenose dolphin stocks from the proposed activities would be eliminated. As discussed more fully in the 2012 FSEIS/SOEIS (DoN, 2012), however, the No Action Alternative does not meet the Navy's purpose and need.

### 4.2 POTENTIAL IMPACTS UNDER ALTERNATIVES 1 AND 2

The potential impacts on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins are the same of those analyzed in the SURTASS LFA Sonar FOEIS/EIS (DoN, 2001), FSEIS (DoN, 2007), and FSEIS/SOEIS (DoN, 2012), which are incorporated by reference, except as addressed below. As discussed in Chapter 2 of this SEIS/SOEIS, Alternative 1 from the 2012 FSEIS/SOEIS differed from Alternative 2 only in that Alternative 2 (the alternative chosen in the Navy's Record of Decision), included a comprehensive update of the OBIAs. With respect to waters in which any of the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins could occur, however, the OBIAs in Alternatives 1 and 2 are the same because the comprehensive update in Alternative 2 did not change the OBIAs in these waters. The potential impacts assessed in this SEIS/SOEIS are therefore the same under either Alternative 1 or Alternative 2.

#### 4.2.1 AUDITORY IMPACTS

##### 4.2.1.1 Masking

Masking occurs when noise interferes with an animal's ability to detect, discriminate, recognize, or communicate signals of interest (Fletcher, 1929; Richardson et al., 1995). Masking is most pronounced when noise is at the same frequency as the sound of interest and when noise occurs frequently.

Masking impacts on the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins from exposure to SURTASS LFA sonar signals will be limited for a number of reasons. First, the frequency range of SURTASS LFA sonar transmissions (< 500 Hz) is at the lower end of the hearing range of common bottlenose dolphins (estimated at 150 Hz, up to 160 kHz) (Southall et al., 2007). Common bottlenose dolphins are most sensitive at frequencies between 14.1 kHz and 28.2 kHz (Houser and Moore, 2014), which does not overlap with the frequency range of SURTASS LFA sonar transmissions. Therefore, there is limited potential for common bottlenose dolphins to even be able to hear SURTASS LFA sonar signals, much less have them mask important signals. Second, the bandwidth of any SURTASS LFA sonar transmitted signal is limited (30 Hz), and the instantaneous bandwidth at any given time of the signal is small, on the order of  $\leq 10$  Hz. Since the amount of masking is directly related to the bandwidth of narrow

band signals (Branstetter and Finneran, 2008; Branstetter et al., 2014), such as those transmitted by SURTASS LFA sonar, the potential for any masking in common bottlenose dolphins is expected to be minimal and unlikely.

#### **4.2.1.2 Behavioral Reactions**

The primary potential impact on common bottlenose dolphins from exposure to SURTASS LFA sonar is change in a biologically significant behavior, though as mentioned above, common bottlenose dolphins are not particularly sensitive to low-frequency sounds such as SURTASS LFA sonar. Since common bottlenose dolphins have their most sensitive hearing at frequencies between 14 and 28 kHz, recent studies have focused on the potential impacts of mid-frequency active sonar (MFAS) on the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins (Baird et al., 2014). Common bottlenose dolphins in the vicinity of the Pacific Missile Range Facility in the waters of Kauai, Hawaii were tagged prior to scheduled MFAS use. While only one individual dolphin was able to be tagged coincident with MFAS transmissions, the animal showed no movement away from the region, despite received levels estimated at 149 to 168 dB root mean squared (rms). Given the current behavioral response function for MFAS, a high probability of a significant behavioral reaction would be predicted at these received levels (RLs) (Finneran and Jenkins, 2012); however, that was not observed.

#### **4.2.2 STRANDINGS**

Stranding occurs when marine mammals passively (unintentionally) or purposefully come ashore, either alive, but debilitated or disoriented, or dead. The use of SURTASS LFA sonar was not associated with any of the 11 known mass strandings that occurred from 2013 through the present in the North Pacific Ocean. Thus, no new information suggests any stranding risk for the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins from use of SURTASS LFA sonar.

#### **4.2.3 QUANTITATIVE RISK ASSESSMENT ANALYSIS OF POTENTIAL IMPACTS ON COMMON BOTTLENOSE DOLPHINS**

The same analytical methodology and process used in previous risk assessment analyses of the potential for impacts from SURTASS LFA sonar and that have been documented in three EISs/SEISs (DoN, 2001, 2007, and 2012) and in the most recent MMPA rulemaking for SURTASS LFA sonar employment (NOAA, 2012) were used in the analysis for this SEIS/SOEIS.

Two modeling locations were selected north and south of the MHI (termed “Hawaii North” and “Hawaii South” mission areas), which represent reasonable sites where SURTASS LFA sonar could be employed. Once sites were selected, during a sensitivity analysis, representative seasons were selected to model the highest potential (upper bound) for potential impacts from exposure to SURTASS LFA sonar. Table 4-4 from the 2012 FSEIS/FSOEIS (DoN, 2012), which is incorporated by reference, provides information regarding the modeling location of these mission areas.

Abundance and density estimates for each of the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins were derived at the two representative SURTASS LFA sonar mission areas during all seasons (Table 3-1). These population data were derived from the most current, available published literature and documentation.

Estimates of the percentage of common bottlenose dolphin stocks affected by SURTASS LFA sonar employment in the two potential mission areas, for the seasons specified, have been derived for this SEIS/SOEIS (Tables 4-1 and 4-2). The estimated stock values support the conclusion that estimates of potential impacts from SURTASS LFA sonar employment on Hawaii common bottlenose dolphin stocks are below the conditions delineated by NMFS in the LOAs issued under the 2012 Final Rule (NOAA, 2012).

**Table 4-1. Estimates of the percentage of Hawaii common bottlenose dolphin stocks potentially affected by SURTASS LFA sonar (one mission) in the Hawaii North mission area during summer season.**

<b>HAWAII NORTH MISSION AREA</b>				
<b>MARINE MAMMAL SPECIES</b>	<b>STOCK</b>	<b>NUMBER ANIMALS IN STOCK</b>	<b>PERCENT STOCK AFFECTED (WITH MITIGATION) &lt;180 dB</b>	<b>PERCENT STOCK AFFECTED (WITH MITIGATION) ≥180 dB</b>
Common bottlenose dolphin	Hawaii Pelagic	5,950	0.8241	0.0000
	Kauai/Niihau	184	0.0004	0.0000
	Oahu	743	0.0004	0.0000
	4-Islands	191	0.0004	0.0000
	Hawaii Island	128	0.0004	0.0000

**Table 4-2. Estimates of the percentage of Hawaii common bottlenose dolphin stocks potentially affected by SURTASS LFA sonar (one mission) in the Hawaii South mission area during spring and fall seasons.**

<b>HAWAII SOUTH MISSION AREA</b>				
<b>MARINE MAMMAL SPECIES</b>	<b>STOCK</b>	<b>NUMBER ANIMALS IN STOCK</b>	<b>PERCENT STOCK AFFECTED (WITH MITIGATION) &lt;180 dB</b>	<b>PERCENT STOCK AFFECTED (WITH MITIGATION) ≥180 dB</b>
Common bottlenose dolphin	Hawaii Pelagic	5,950	0.1921	0.0000
	Kauai/Niihau	184	0.0013	0.0000
	Oahu	743	0.0013	0.0000
	4-Islands	191	0.0033	0.0000
	Hawaii Island	128	0.0188	0.0000

#### **4.2.3.1 Summary of Risk Assessment**

Analyses to determine the percentage of marine mammal stocks potentially affected (with mitigation) for exposures from 120 to 180 dB re 1 µPa (rms) and ≥180 dB re 1 µPa (rms) have been conducted for the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic stocks) in the two proposed North-Central Pacific mission areas for potential SURTASS LFA sonar missions (Tables 4-1 and 4-2).

The results of the Navy's analysis demonstrate that 0.00% of any stock of Hawaii common bottlenose dolphins would be exposed to sound levels ≥180 dB re 1 µPa (rms) in either mission area. Thus, no common bottlenose dolphins are expected to be affected through injury or mortality from exposure to

SURTASS LFA sonar transmissions. At exposures of 120 to 180 dB re 1  $\mu$ Pa (rms) (single ping equivalent [SPE]<sup>12</sup>), the overall percentages for any of the five potentially affected Hawaii common bottlenose dolphin stocks range from 0.00% to 0.82% during employment of SURTASS LFA sonar for one modeled mission in each of the proposed two mission areas<sup>13</sup> (Tables 4-1 and 4-2). The highest estimated percentage of any of the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins potentially affected at exposures of 120 to 180 dB re 1  $\mu$ Pa (rms) during employment of SURTASS LFA sonar is 0.8241% of the Hawaii Pelagic stock of common bottlenose dolphins during proposed employment in the Hawaii North mission area<sup>14</sup>. The second highest percentage of any stock potentially affected at SURTASS LFA sonar exposures of 120 to 180 dB re 1  $\mu$ Pa (rms) is 0.1921% of the Hawaii Pelagic stock of common bottlenose dolphins during proposed employment in the Hawaii South mission area. The highest potential impact to any insular stock is 0.0188% of the Hawaii Island stock in the Hawaii South mission area; the remainder of the insular stocks has much lower potential impacts.

### **4.3 CUMULATIVE IMPACTS**

Recent literature provides information regarding oceanic noise levels to which any of the five stocks comprising the Hawaiian Islands Stock Complex (Kauai/Niihau, Oahu, 4-Islands, Hawaii Island, and Hawaii Pelagic) of common bottlenose dolphins may be exposed. Širović et al. (2013) measured ocean noise levels at seven sites in the tropical and subtropical Pacific Ocean, including around the MHI of Kauai and Hawaii Island. Širović et al. (2013) found a seasonal pattern of increased background noise levels of up to 8 dB from January through April due to humpback whale vocalizations at the Kauai site. At both the Kauai and Hawaii Island sites, distant shipping caused an increase of 7 to 13 dB during months in which shipping was reported (Širović et al., 2013). This additional information on ambient noise levels in Hawaiian waters supports the conclusion presented in the 2012 FSEIS/FSOEIS (incorporated herein by reference) that the cumulative impacts associated with employment of SURTASS LFA sonar are not a reasonably foreseeable adverse significant impact on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins, particularly considering SURTASS LFA sonar's nominal 7.5 to 10% duty cycle.

### **4.4 SUMMARY**

The potential impacts from SURTASS LFA sonar employment on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins from injury (non-auditory or permanent loss of hearing) under either Alternative 1 or 2 are considered negligible, and the potential impacts from temporary loss of hearing or behavioral change (significant change in a biologically important behavior) are considered minimal. The potential for auditory masking due to exposure to LFA sonar signal transmissions is expected to be minimal and unlikely.

---

12 The term "Single Ping Equivalent" (SPE) is defined in three previous EISs/SEISs (DoN, 2001, 2007, and 2012). SPE accounts for the energy of all the SURTASS LFA sonar transmissions that a modeled animal receives during an entire simulated LFA sonar mission. Calculating potential impacts is a complex process and the reader is referred to the previous EISs/SEISs for more detail, but SPE is a function of sound pressure level (dB re 1  $\mu$ Pa), not sound exposure level (dB re 1  $\mu$ Pa<sup>2</sup>-sec).

13 Applying the density estimate method used in the Navy's 2014 to 2015 LOAs application for SURTASS LFA sonar (i.e., using the Hawaii Pelagic stock density estimate also for the insular stocks) instead of the density estimate derived as set forth in Section 3.1.2 herein yields overall percentages from 0.01% to 0.87%, which are consistent with the percentages used in section 3.1.2 in terms of the potential impacts discussed in Section 4.4 below.

14 Applying the density estimate method used in the Navy's 2014 to 2015 LOAs application for SURTASS LFA sonar, the highest estimated potential impact to this stock complex would be 0.8722%, for the Hawaii Island insular stock.



Cumulative impacts from employment of SURTASS LFA sonar are not a reasonably foreseeable significant adverse impact on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins.

The results of the analysis in this document show that the impact on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins is not significant when SURTASS LFA sonar is employed in accordance with the mitigation measures (geographic restrictions, monitoring/reporting, and sonar shutdown protocols) detailed in the 2012 FSEIS/SOEIS (DoN, 2012). These results include:

- Potential impacts on the five stocks comprising the Hawaiian Islands Stock Complex of common bottlenose dolphins are expected to be limited to MMPA Level B harassment. The Navy does not expect those effects to impact rates of recruitment or survival on the associated common bottlenose dolphin stocks of Hawaii.
- Navy's impact analysis does not anticipate any mortality or any injury (MMPA Level A harassment) of the five stocks comprising the Hawaiian Islands Complex of common bottlenose dolphins to occur as a result of SURTASS LFA sonar employment, and the potential to cause strandings is negligible. Thus, impacts on recruitment or survival of the five stocks comprising the Hawaiian Islands Complex of common bottlenose dolphins are expected to be negligible.
- Cumulative impacts are not a reasonably foreseeable adverse significant impact.

These conclusions are consistent with the selection of Alternative 2 in the August 15, 2012 Record of Decision and do not provide a basis for modifying that decision in any respect.

## **5 DISTRIBUTION AND PUBLIC REVIEW PROCESS**

The CEQ regulations implementing the NEPA (40 CFR §1503.1) as well as Navy guidance on environmental readiness require that Navy agencies solicit comments on DSEISs from Federal and appropriate state agencies in addition to the public. This chapter describes the distribution, review, and comment process on the DSEIS/SOEIS for SURTASS LFA sonar.

### **5.1 FILING AND DISTRIBUTION OF THE DRAFT SEIS/SOEIS**

#### **5.1.1 FILING OF DRAFT SEIS/SOEIS**

Pursuant to Section 102(2) of the NEPA of 1969 as implemented by the CEQ regulations (40 CFR §§ 1500 to 1508) and EO 12114 (Environmental Effects Abroad of Major Federal Actions), the Navy prepared and filed the DSEIS/SOEIS for SURTASS LFA sonar with the EPA on October 17, 2014 to document the supplemental analyses solely on the potential impacts to the five stocks comprising the Hawaiian Islands Stock Complex of the common bottlenose dolphin in association with the employment of SURTASS LFA sonar.

#### **5.1.2 DISTRIBUTION OF DRAFT SEIS/SOEIS**

In accordance with EPA guidelines, prior to filing of the DSEIS/SOEIS with the EPA, copies of the DSEIS/SOEIS were distributed to the relevant EPA regional offices. In conjunction with filing of the DSEIS/SOEIS with the EPA and the announcement of the public availability of the document, copies of the SURTASS LFA Sonar DSEIS/SOEIS were distributed to appropriate Federal and state (Hawaii) government agencies and officials and other interested parties, as follows.

#### **FEDERAL AGENCIES/ORGANIZATION**

Horst Greczmiel  
Associate Director of NEPA Oversight  
Executive Office of the President  
Council on Environmental Quality  
722 Jackson Place, N.W.  
Washington, DC 20503

U.S. EPA  
Office of Federal Activities  
EIS Filing Section  
Mail Code 2252-A, Room 7220  
Ariel Rios Building (South Oval Lobby)  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

U.S. EPA, Region 1  
EPA New England Headquarters  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

U.S. EPA, Region 2  
Main Regional Office  
290 Broadway  
New York, NY 10007-1866

U.S. EPA, Region 3  
1650 Arch Street  
Philadelphia, PA 19103-2029

U.S. EPA, Region 4  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, GA 30303-8960

U.S. EPA, Region 6  
1445 Ross Avenue, Suite 1200  
Dallas, TX 75202

**FINAL SEIS/SOEIS FOR SURTASS LFA SONAR**

---

U.S. EPA, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105

U.S. EPA Region 10  
1200 6th Avenue, Suite 900  
Seattle, WA 98101

Dr. Willie R. Taylor  
Director, Office of Environmental Policy and  
Compliance  
U.S. Department of the Interior  
1849 C Street, NW, MS 2462  
Washington, DC 20240

U.S. Department of Justice  
Environment and Natural Resources Division  
Office of the Assistant Attorney General  
950 Pennsylvania Avenue, NW  
Washington, DC 20530-0001

U.S. Fish and Wildlife Service  
Environmental Coordination Branch  
Department of the Interior  
1849 C Street, NW  
Washington, DC 20240

Loyal Mehroff  
Field Supervisor, Pacific Islands Fish and  
Wildlife Office  
U.S. Fish and Wildlife Service  
300 Ala Moana Boulevard, Room 3-122, Box  
50088  
Honolulu, HI 96850

Cathy Tortorici  
Chief, Endangered Species Act Interagency  
Cooperation Division  
NMFS, NOAA  
Office of Protected Resources F/PR5  
1315 East-West Highway  
Silver Spring, MD 20910

Jolie Harrison  
Office of Protected Resources F/PR1  
Chief, Permits and Conservation Division  
NMFS, NOAA  
1315 East-West Highway  
Silver Spring, MD 20910

Rebecca Lent  
Executive Director, Marine Mammal  
Commission  
4340 East West Highway, Suite 700  
Bethesda, MD 20814

Alecia Van Atta  
Patrick Opay  
Pacific Islands Regional Office  
NMFS, NOAA  
NOAA Inouye Regional Center  
1845 Wasp Boulevard, Building 176  
Honolulu, HI 96818

Frank Parrish  
Division Chief, Protected Species Division  
Pacific Islands Fishery Science Center  
NMFS, NOAA  
NOAA Inouye Regional Center  
1845 Wasp Boulevard, Building 176  
Honolulu, HI 96818

Daniel Basta  
Director, NOAA National Marine Sanctuaries  
Program  
1315 East-West Highway  
Silver Spring, MD 20910

Allen Tom  
Director, Pacific Islands Region  
Office of National Marine Sanctuary  
726 South Kihei Road  
Kihei, HI 96753

Malia Chow  
Superintendent, Hawaiian Islands Humpback  
Whale National Marine Sanctuary  
NOAA / DKIRC  
Attn: NOS/HIHWNMS  
1845 Wasp Boulevard, Building 176  
Honolulu, HI 96818-5007

Environmental Response / Environmental  
Protection Branch  
Fourteenth Coast Guard District  
Prince Kalanianaʻole Federal Building  
300 Ala Moana Boulevard, 9th Floor  
Honolulu, HI 96850-4982

**STATE OFFICIALS AND AGENCIES**

Frazer McGilvray  
Administrator, Division of Aquatic Resources  
State of Hawaii  
1151 Punchbowl Street, Room 330  
Honolulu HI 96813

Leo R. Asuncion, Jr.  
Acting Director, Hawaii Office of Planning  
State of Hawaii  
P.O. Box 2359  
Honolulu, HI 96804

**LOCAL ORGANIZATIONS**

Hawaii Documents Center  
Hawaii State Library  
478 South King Street  
Honolulu, HI 96813.

Wailuku Public Library  
251 High Street  
Wailuku, HI 96793

Kaneohe Public Library  
45-829 Kamehameha Highway  
Kaneohe, HI 96744  
Hilo Public Library  
300 Waianuenue Avenue  
Hilo, HI 96720

Lihue Public Library  
4344 Hardy Street  
Lihue, HI 96766

## **5.2 PUBLIC REVIEW PROCESS**

In the Navy's Notice of Intent (NOI), published in the *Federal Register* on July 1, 2014 (DoD, 2014), the Navy, with NMFS as a cooperating agency, announced its intention to prepare a SEIS/SOEIS to analyze the potential impact of SURTASS LFA sonar on the five common bottlenose dolphin stocks comprising the Hawaiian Islands Stock Complex. The NOI described the limited purpose of the SEIS/SOEIS, which is to remedy the single deficiency identified by a Federal court during recent litigation associated with the Navy's 2012 FSEIS/SOEIS on the global employment of SURTASS LFA sonar (DoN, 2012). The 45-day public comment period for the DSEIS/SOEIS was noted in the NOI with a likely timeline of the draft document being available in early fall 2014.

### **5.2.1 PUBLIC COMMENT PERIOD**

Per CEQ regulation (40 CFR § 1506.10), the 45-day public comment period on the DSEIS/SOEIS for SURTASS LFA sonar commenced when the EPA published its NOA in the *Federal Register* on October 24, 2014 (EPA, 2014). The Navy also published an NOA in the *Federal Register* on November 3, 2014 (DoD, 2014a).

The Navy accepted comments on the DSEIS/SOEIS from interested members of the public, Federal, and state agencies and organizations until the end of the 45-day comment period, December 8, 2014. Consistent with CEQ's implementing regulations, no public hearings or meetings were scheduled by the Navy. The Navy received neither any requests by the public for meetings or hearings on the DSEIS/SOEIS nor for an extension of the public comment period.

### **5.2.2 RECEIPT OF COMMENTS**

Comments on the DSEIS/SOEIS were received by letter and email. Comment letters/emails on the DSEIS/SOEIS were received from one Federal agency and two State of Hawaii departments/offices for a total of four comments (Table 5-1). Responses to the received comments required no changes to the content of the SEIS/SOEIS.

**Table 5-1. Responses by the Navy and NMFS to the public comments received on the DSEIS/SOEIS for SURTASS LFA sonar.**

<b>COMMENT NUMBER</b>	<b>COMMENTS</b>	<b>RESPONSE</b>
<b>State of Hawaii, Department of Land and Natural Resources; Land Division (Oahu and Kauai), Division of Boating and Ocean Recreation, Engineering Division</b>		
1	No comments.	No action required.
<b>State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources/ State Manager-Hawaiian Islands Humpback Whale National Marine Sanctuary</b>		
2	<p>The SEIS is limited to providing a revised analysis of potential impacts of SURTASS LFA sonar employment on Hawaii common bottlenose dolphin stocks in the geographic area where the five stocks that comprise the Hawaiian Islands Stock Complex of common bottlenose dolphins occur.</p> <p>Based on a review of the SEIS, DAR concurs that the potential impacts on the fives [sic] stocks are expected to be limited. However, DAR does note that there exist concerns over the impacts of Low Frequency Active Sonar to marine mammals generally and would like to continue to work with the Navy wherever possible to develop strategies to minimize these impacts.</p> <p>Should there be any changes to the project plans or if new activities arise, DAR requests the opportunity to review and comment on those changes.</p>	No action required.
<b>State of Hawaii, Office of Planning (Hawaii Coastal Zone Management Program)</b>		
3a	The Office of Planning (OP), as the lead agency for the Hawaii Coastal Zone Management program, understands that this SEIS/SOEIS is limited in its scope and this project will take place in offshore waters. However, it does not address the Coastal Zone Management Act (CZMA) objectives and policies found in Hawaii Revised Statutes	This comment is beyond the limited scope of the narrowly-tailored DSEIS/SOEIS. That said, the proposed use of SURTASS LFA sonar is consistent with the NOAA-approved enforceable policies of the Hawaii Coastal Zone Management (CZM) Program. A consistency determination was submitted when the use of SURTASS LFA sonar was first proposed, to

**Table 5-1. Responses by the Navy and NMFS to the public comments received on the DSEIS/SOEIS for SURTASS LFA sonar.**

COMMENT NUMBER	COMMENTS	RESPONSE
3a (Continued)	<p>(HRS) § 205A-2 as it pertains to the common stock bottlenose dolphins [sic] in Hawaiian waters. Pursuant to CZMA, the Final SEIS/SOEIS should include a discussion of the proposed project's ability to meet the objectives and policies set forth in HRS § 205A-2. The analysis should address all of the objectives and policies of HRS § 205A-2 including Coastal Ecosystems and Marine Resources. If the project does not impact the other objectives, it should be stated as such. Listed below are specific examples in the Draft SEIS/SOEIS of potential impacts on Coastal Ecosystems and Marine Resources:</p> <ol style="list-style-type: none"> <li>1). The document discusses the impact on the common bottlenose dolphin stock if either the U.S. Navy's preferred alternatives 1 or 2 are carried out. In HRS § 205A-2(10)(D), Marine Resources, this objective seeks to promote research, study, and understanding of ocean processes, marine life , and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources. The common stock bottlenose dolphin is an important species in Hawaiian waters, both culturally and biologically.</li> <li>2). The Draft SEIS /SOEIS provides a summary of the potential impacts from SURTASS LFA on the five stocks of common bottlenose dolphins found in Hawaiian waters. The policy goal for HRS § 205A-2(4) (A) Coastal Ecosystems is to exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources. The protection of the health and diversity of common stock bottlenose dolphins in Hawaiian waters meets this policy</li> </ol>	<p>which the State of Hawaii Office of Planning concurred. Neither the proposed use of SURTASS LFA sonar in waters near Hawaii nor the relevant Hawaii CZM Program's enforceable policies have changed since that time.</p>

**Table 5-1. Responses by the Navy and NMFS to the public comments received on the DSEIS/SOEIS for SURTASS LFA sonar.**

<b>COMMENT NUMBER</b>	<b>COMMENTS</b>	<b>RESPONSE</b>
	goal.	
3b	The National Coastal Zone Management Act requires federal agency activities to be consistent with approved state coastal programs to the maximum extent practicable. Because the proposing agency for this Draft SEIS/ SOEIS is a federal agency, this endeavor needs to comply with Federal Consistency requirements.	See Response to Comment 3a above.
<b>Department of the Interior (Bureau of Land Management, Bureau of Indian Affairs, Bureau of Reclamation, Fish and Wildlife Service, United States Geological Survey, National Park Service, Office of Surface Mining)</b>		
4	No comments from any Dol agencies.	No action required.

## 6 LITERATURE CITED

- Andrews, K.R., L. Karczmarski, W.W.L. Au, S.H. Rickards, C.A. Vanderlip, B.W. Bowen, E.G. Grau, and R.J. Toonen. 2010. Rolling stones and stable homes: social structure, habitat diversity and population genetics of the Hawaiian spinner dolphin (*Stenella longirostris*). *Molecular Ecology* 19:732-748.
- Baird, R.W., G.S. Schorr, D.L. Webster, S.D. Mahaffy, A.B. Douglas, A.M. Gorgone, and D.J. McSweeney. 2006. A survey for odontocete cetaceans off Kaua'i and Ni'ihau, Hawai'i, during October and November 2005: Evidence for population structure and site fidelity. Report to the Pacific Islands Fishery Science Center, National Marine Fisheries Service. 17 pages.
- Baird, R.W., G.S. Schorr, D.L. Webster, D.J. McSweeney, A.M. Gorgone, and S.J. Chivers. 2008. A survey to assess overlap of insular and offshore false killer whales (*Pseudorca crassidens*) off the island of Hawai'i. Report prepared under Order No. AB133F07SE4484 for the Protected Species Division, Pacific Islands Fisheries Science Center, Honolulu, Hawaii. 11 pages.
- Baird, R.W., A.M. Gorgonne, D.J. McSweeney, A.D. Ligon, M.H. Deakos, D.L. Webster, G.S. Schorr, and K.M. Martien. 2009. Population structure of island-associated dolphins: Evidence from photo-identification of common bottlenose dolphins (*Tursiops truncatus*) in the main Hawaiian Islands. *Marine Mammal Science* 25(2):251-274.
- Baird, R.W., D.L. Webster, J.M. Aschettino, G. S. Schorr, and D. J. McSweeney. 2013. Odontocete cetaceans around the Main Hawaiian Islands: Habitat use and relative abundance from small-boat sighting surveys. *Aquatic Mammals* 39(3):253-269.
- Baird, R.W., S.W. Martin, D.L. Webster, and B.L. Southall. 2014. Assessment of modeled received Sound pressure levels and movements of satellite-tagged odontocetes exposed to mid-frequency active sonar at the Pacific Missile Range Facility: February 2011 through February 2013. Prepared for U.S. Pacific Fleet, submitted to NAVFAC PAC by HDR Environmental, Operations and Construction, Inc. 24 pages.
- Barlow, J. 2006. Cetacean abundance in Hawaiian waters estimated from a summer/fall survey in 2002. *Marine Mammal Science* 22(2):446-464.
- Bradford, A.L., K.A. Forney, E.M. Oleson, and J. Barlow. 2013. Line-transect abundance estimates of cetaceans in the Hawaiian EEZ. PIFSC Working Paper WP-13-004. Pacific Islands Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration. 16 pages.
- Branstetter, B., and J. Finneran. 2008. Comodulation masking release in bottlenose dolphins (*Tursiops truncatus*). *Journal of the Acoustical Society of America* 124:625-633. doi: 610.1121/1121.2918545.
- Branstetter, B., J. Trickey, K. Bakhtiari, A. Black, H. Aihara, and J. Finneran. 2013. Auditory masking patterns in bottlenose dolphins (*Tursiops truncatus*) with natural, anthropogenic, and synthesized noise. *Journal of the Acoustical Society of America* 133:1811-1818. doi: 1810.1121/1811.4789939.
- Carretta, J.V., K.A. Forney, E. Oleson, K. Martien, M.M. Muto, M.S. Lowry, J. Barlow, J. Baker, B. Hanson, D. Lynch, L. Carswell, R.L. Brownell, Jr., J. Robbins, D.K. Mattila, K. Ralls, and M.C. Hill. 2011. U.S. Pacific marine mammal stock assessments, 2010. NOAA Technical Memorandum NMFS NOAA-TM-NMFS-SWFSC-476. Southwest Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration. 357 pages.



- Carretta, J.V., E. Oleson, D.W. Weller, A.R. Lang, K.A. Forney, J. Baker, B. Hanson, K. Martien, M.M. Muto, A.J. Orr, H. Huber, M.S. Lowry, J. Barlow, D. Lynch, L. Carswell, R.L. Brownell, Jr., and D.K. Mattila. 2014. U.S. Pacific marine mammal stock assessments, 2013. NOAA Technical Memorandum NMFS NOAA-TM-NMFS-SWFSC-532. Southwest Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration. 414 pages.
- Chivers, S.J., R.W. Baird, K.M. Martien, B.L. Taylor, E. Archer, A.M. Gorgone, B.L. Hancock, N.M. Hedrick, D. Matilla, D.J. McSweeney, E.M. Oleson, C.L. Palmer, V. Pease, K.M. Robertson, J. Robbins, J.C. Salinas, G.S. Schorr, M. Schultz, J.L. Thieleking, and D.L. Webster. 2010. Evidence of genetic differentiation for Hawai'i insular false killer whales (*Pseudorca crassidens*). NOAA Technical Memorandum NMFS NOAA-TM-NMFS-SWFSC-458. Southwest Fisheries Science Center, National Marine Fisheries Service, LaJolla, California. 49 pages.
- Croll, D.A., B.R. Tershy, A. Acevedo, and P. Levin. 1999. Marine vertebrates and low frequency sound. Technical Report for SURTASS LFA EIS. Marine Mammal and Seabird Ecology Group, Institute of Marine Sciences, University of California, Santa Cruz. 473 pages.
- DoD (Department of Defense). 2012. Record of decision for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar; Notice of decision and availability. Department of the Navy, Department of Defense. Federal Register 77(168):52317.
- DoD (Department of Defense). 2014. Notice of intent to prepare a supplemental environmental impact statement/supplemental overseas environmental impact statement for employment of Surveillance Towed Array Sensor System Low Frequency Active sonar, Notice. Department of the Navy, Department of Defense. Federal Register 79(126):37295.
- DoD (Department of Defense). 2014a. Notice of availability of a draft supplemental environmental impact statement/Supplemental overseas environmental impact statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar, Notice. Department of the Navy, Department of Defense. Federal Register 79(212):65196-65197.
- DoN (U.S. Department of the Navy). 2001. Final overseas environmental impact statement and environmental impact statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar. Washington, D.C.: Department of the Navy, Chief of Naval Operations.
- DoN (U.S. Department of the Navy). 2007. Final supplemental environmental impact statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar. Washington, D.C.: Department of the Navy, Chief of Naval Operations.
- DoN (U.S. Department of the Navy). 2012. Final supplemental environmental impact statement/supplemental overseas environmental impact statement for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar. Washington, D.C.: Department of the Navy, Chief of Naval Operations.
- EPA (U.S. Environmental Protection Agency). 2014. Environmental impact statements; Notice of availability; Weekly receipt of environmental impact statements (filed 10/13/2014 through 10/17/2014). U.S. Environmental Protection Agency, Office of Federal Activities. Federal Register 79(206):63622.
- Finneran, J.J., and A.K. Jenkins. 2012. Criteria and thresholds for U.S. Navy acoustic and explosive effects analysis. Department of the Navy, SPAWAR Systems Center, San Diego, California. 64 pages.
- Houser, D.S., and P.W. Moore. 2014. Report on the current status and future of underwater hearing research. National Marine Mammal Foundation. Downloaded from <<http://nmmf.org/resources/publications/>>.
- Klatsky, L., R. Wells, and J. Sweeney. 2007. Offshore bottlenose dolphins (*Tursiops truncatus*): Movement and dive behavior near the Bermuda Pedestal. Journal of Mammalogy 88(1):59-66.

- Lowther, J.L. 2006. Genetic variation of coastal and offshore bottlenose dolphins, *Tursiops truncatus*, in the eastern North Pacific Ocean. Master's thesis. University of San Diego, San Diego, California. 137 Pages.
- Martien, K.K., R.W. Baird, S.J. Chivers, E.M. Oleson, and B.L. Taylor. 2011. Population structure and mechanisms of gene flow within island—Associated false killer whales (*Pseudorca crassidens*) around the Hawaiian Archipelago. Report PSRG-2011-14. 25 pages.
- Martien, K.M., R.W. Baird, N.M. Hedrick, A.M. Gorgonne, J.L. Thieleking, D.J. McSweeney, K.M. Robertson, and D.L. Webster. 2012. Population structure of island-associated dolphins: Evidence from mitochondrial and microsatellite markers for common bottlenose dolphins (*Tursiops truncatus*) around the main Hawaiian Islands. *Marine Mammal Science* 28(3):E208–E232.
- Mate, B.R., K.A. Rossbach, S.L. Nieuirk, R.S. Wells, A.B. Irvine, M.D. Scott, and A.J. Read. 1995. Satellite-monitored movements and dive behavior of a bottlenose dolphin (*Tursiops truncatus*) in Tampa Bay, Florida. *Marine Mammal Science* 11(4):452-463.
- Mobley, J.R., Jr., S.S. Spitz, K.A. Forney, R. Grotefendt, and P.H. Forestell. 2000. Distribution and abundance of odontocete species in Hawaiian waters: Preliminary results of 1993-98 aerial surveys. NMFS-SWFSC Administrative Report LJ-00-14C. 26 pages.
- NMFS (National Marine Fisheries Service). 2012. Endangered Species Act Section 7 biological opinion on U.S. Navy's proposed use of the Surveillance Towed Array Sensor System Low Frequency Active Sonar from August 2012 through August 2017 and NMFS Office of Protected Resources promulgation of regulations pursuant to the Marine Mammal Protection Act and subsequent issuance of Letters of Authorization pursuant to the MMPA regulations for the U.S. Navy to "take" marine mammals incidental to its employment of the Surveillance Towed Array Sensor System Low Frequency Active sonar in areas of the Atlantic, Pacific, and Indian Oceans and the Mediterranean Sea. Silver Spring, Maryland: NMFS Office of Protected Resources Endangered Species Act Interagency Cooperation Division.
- NMFS (National Marine Fisheries Service). 2014. Endangered Species Act Section 7 biological opinion on U.S. Navy's proposed use of the Surveillance Towed Array Sensor System Low Frequency Active Sonar from August 2014 through August 2015 and NMFS Office of Protected Resources proposed Letters of Authorization pursuant to the MMPA regulations for the U.S. Navy to "take" marine mammals incidental to its employment of the Surveillance Towed Array Sensor System Low Frequency Active sonar in areas of the Pacific Ocean. Silver Spring, Maryland: NMFS Office of Protected Resources Endangered Species Act Interagency Cooperation Division. 386 pages.
- NOAA (National Oceanic and Atmospheric Administration). 2012. Taking and importing marine mammals: Taking marine mammals incidental to U.S. Navy operations of Surveillance Towed Array Sensor System Low Frequency Active Sonar; Final rule. 50 CFR Part 218. *Federal Register* 77(161):50290-50322.
- NOAA (National Oceanic and Atmospheric Administration). 2014. Taking and importing marine mammals: Taking marine mammals incidental to Navy operations of Surveillance Towed Array Sensor System Low Frequency Active Sonar; Notice—Issuance of four Letters of Authorization. *Federal Register* 79(162):49501-49503.
- Parsons, K.M., L.R. Noble, R.J. Reid and P.M. Thompson. 2002. Mitochondrial genetic diversity and population structuring of UK bottlenose dolphins (*Tursiops truncatus*): Is the NE Scotland population demographically and geographically isolated? *Biological Conservation* 108:175–182.
- Parsons, K.M., J.W. Durban, D.E. Claridge, D.L. Herzing, K.C. Balcomb, and L.R. Noble. 2006. Population genetic structure of coastal bottlenose dolphins (*Tursiops truncatus*) in the northern Bahamas. *Marine Mammal Science* 22(2):276-298.

- Ridgway, S.H. 1986. Diving by cetaceans. Pages 33-62 in A.O. Brubakk, J.W. Kanwisher, and G. Sundress, eds. Diving in animals and man. Trondheim, Norway: The Royal Norwegian Society of Science and Letters.
- Segura, I., A. Rocha-Olivares, S. Flores-Ramírez, and L. Rojas-Bracho. 2006. Conservation implications of the genetic and ecological distinction of *Tursiops truncatus* ecotypes in the Gulf of California. *Biological Conservation* 133:336-346.
- Sirovic, A., S.M. Wiggins, and E.M. Oleson. 2013. Ocean noise in the tropical and subtropical Pacific Ocean. *The Journal of the Acoustical Society of America* 134:2681-2689.
- Southall, B.L., A.E. Bowles, W.T. Ellison, J.J. Finneran, R.L. Gentry, C.R. Greene Jr., D. Kastak, D.R. Ketten, J.H. Miller, P.E. Nachtigall, W.J. Richardson, J.A. Thomas, and P.L. Tyack. 2007. Marine mammal noise exposure criteria: Initial scientific recommendations. *Aquatic Mammals* 33(4):411-522.
- Tobeña, M., A. Escánez, Y. Rodríguez, C. López, F. Ritterb, and N. Aguilera. 2014. Inter-island movements of common bottlenose dolphins *Tursiops truncatus* among the Canary Islands: Online catalogues and implications for conservation and management. *African Journal of Marine Science* 36(1):137-141.
- Waring, G.T., E. Josephson, K. Maze-Foley, and P.E. Rosel. 2014. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments–2013. NOAA Technical Memorandum NMFS-NE-228. Northeast Fisheries Science Center, National Marine Fisheries Service. 475 pages.

## 7 LIST OF PREPARERS AND REVIEWERS

### Department of the Navy

- Thomas P. Stanley, Captain, U.S. Navy  
Chief of Naval Operations  
Branch Chief, Undersea Capabilities (OPNAV N2/N6F24)  
M.S., Nuclear Engineering and M.S., National Security Strategy  
SEIS/SOEIS Review
- Cynthia V. Morgan, Commander, U.S. Navy  
Chief of Naval Operations  
Deputy Branch Chief, Undersea Capabilities (OPNAV N2/N6F24) and Requirements Officer,  
SURTASS LFA Sonar Systems  
M.S., Meteorology and Physical Oceanography  
SEIS/SOEIS Oversight and Review

### National Marine Fisheries Service

- Jolie Harrison  
Office of Protected Resources  
Chief, Permits and Conservation Division  
M.S., Environmental Science  
SEIS/SOEIS Collaboration and Review
- Jeannine Cody  
Office of Protected Resources  
Fishery Biologist, Permits and Conservation Division  
M.S., Animal Science  
SEIS/SOEIS Collaboration and Review
- Kristine Petersen  
Office of Protected Resources  
Deputy Chief, Endangered Species Act Interagency Cooperation Division  
M.S., Marine Biology  
SEIS/SOEIS Review
- Stanley Rogers  
Office of Protected Resources  
Fishery Biologist, Endangered Species Act Interagency Cooperation Division  
B.S., Aquaculture, Fisheries, and Wildlife Biology  
SEIS/SOEIS Review
- Amy Scholik-Schlomer, Ph.D.  
Office of Protected Resources  
Fishery Biologist, Marine Mammal and Sea Turtle Conservation Division  
Ph.D., Biology  
SEIS/SOEIS Acoustics Review

## Marine Acoustics, Inc.

- Clayton H. Spikes  
Chief Executive Officer  
M.S.; Physical Oceanography  
SEIS/SOEIS Oversight and Review
- Kathleen J. Vigness-Raposa, Ph.D.  
Vice President, Environmental Services  
Ph.D.; Environmental Sciences  
SEIS/SOEIS Project Manager and Preparer
- Cheryl L. Schroeder  
Senior Marine Biologist  
M.S., Biological Oceanography  
SEIS/SOEIS Preparer
- John F. Mayer  
Senior Regulatory Specialist  
M.S., Chemical Oceanography  
SEIS/SOEIS Collaboration

## APPENDIX A: CORRESPONDENCE

From: Schregardus, Donald R SES OASN (EI&E), DASN (Environment)

Sent: Thursday, June 26, 2014 11:46 AM

To: Filipowski, Sean R RDML OPNAV, N2N6F

Cc: Stanley, Tom P CAPT OPNAV, N2/N6F24; MacKinnon, Roderick G CIV OPNAV, N2/N6F24; Morgan, Cynthia V CDR OPNAV, N2N6F24; Jensen, Craig D CIV OASN (EI&E), AGC EI&E; Landis, James E CDR OASN (EI&E), OAGC EI&E; Cecchini, Joseph D CIV OASN EI&E, JGPO; Fitch, Robin CIV OASN (EI&E), ODASN (Environment); Pierson, John C CIV OASN (EI&E), ODASN (Environment)

Subject: Preparation of Supplemental EIS/OEIS for SURTASS LFA

RDML Filipowski,

In 2012, I reviewed the Final Supplemental Environmental Impact Statement/Supplemental Overseas Environmental Impact Statement (Final SEIS/SOEIS) for the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar (June 2012) and the 15 August 2012 Record of Decision (ROD) concerning the continued employment of SURTASS LFA sonar. I found that the SEIS/SOEIS analysis and the ROD satisfactorily considered environmental consequences of the decision to employ SURTASS LFA sonar systems globally. However, litigation against the Navy's 2012 SEIS/SOEIS and associated rulemaking under the Marine Mammal Protection Act (MMPA) resulted in the attached judgment (subsequently modified) by the U.S. District Court for the Northern District of California. To satisfy that judgment and a subsequent court order (also attached), and in furtherance of the purposes of the National Environmental Policy Act (NEPA) and Executive Order 12114 (Environmental Effects Abroad of Major Federal Actions), I am directing you to prepare a supplemental analysis to address the specific NEPA deficiency identified by the court. This analysis will take the form of a narrowly-tailored SEIS/SOEIS prepared for the limited purpose of using the best available data for the Hawaiian Islands stocks complex of common bottlenose dolphins.

Please ensure that the supplemental analysis as discussed above complies with both the NEPA and Executive Order 12114. My point of contact for this supplemental analysis is Mr. Dan Cecchini, who can be reached at XXX-XXX-XXXX.

Thank you.

Sincerely,

Don Schregardus  
DASN (Environment)

**FINAL SEIS/SOEIS FOR SURTASS LFA SONAR**



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
2000 NAVY PENTAGON  
WASHINGTON, DC 20350-2000

9462  
Ser N2N6F/4U119523  
30 Jun 14

From: Director, Warfare Integration Directorate (N2/N6F)  
To: Director, Office of Protected Resources National Marine  
Fisheries Service, National Oceanic and Atmospheric  
Administration (NOAA)

Subj: COOPERATING AGENCY REQUEST FOR SURVEILLANCE TOWED ARRAY  
SENSOR SYSTEM LOW FREQUENCY ACTIVE SONAR SUPPLEMENTAL  
ENVIRONMENTAL IMPACT STATEMENT/SUPPLEMENTAL OVERSEAS  
ENVIRONMENTAL IMPACT STATEMENT

Ref: (a) Deputy Assistant Secretary of the Navy (Environment)  
e-mail to Director, Warfare Integration Directorate  
(N2/N6F), Subj: Preparation of Supplemental EIS/OEIS  
for SURTASS LFA, dtd 26 June 2014


1. In reference (a), the Deputy Assistant Secretary of the Navy (Environment) directed the Navy to prepare a supplemental environmental impact statement (SEIS)/supplemental overseas environmental impact statement (SOEIS) for the employment of the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar. This supplemental analysis is required to address a specific deficiency under the National Environmental Policy Act (NEPA) that was identified in the recent summary judgment order by the U.S. District Court for the Northern District of California that resulted from litigation against the Navy's 2012 SEIS/SOEIS and associated National Marine Fisheries Service (NMFS) rulemaking under the Marine Mammal Protection Act (MMPA). The Navy's supplemental analysis will take the form of a narrowly-tailored SEIS/SOEIS prepared for the limited purpose of addressing the deficiency identified in the summary judgment order regarding use of the best available data for the Hawaiian Islands stock complex of common bottlenose dolphins.

2. The Navy requests that the NMFS Office of Protected Resources (OPR) continue to serve as a cooperating agency in accordance with NEPA regulations (40 CFR 1501.6) and the Council on Environmental Quality Cooperating Agency guidance issued on 30 January 2002. The respective responsibilities of Navy and NMFS OPR will be consistent with those described in and agreed to in the cooperating agency correspondence between the two agencies for the 2012 SEIS/SOEIS (dated 24 November 2008 and 6 February 2009).



Subj: COOPERATING AGENCY REQUEST FOR SURVEILLANCE TOWED ARRAY  
SENSOR SYSTEM LOW FREQUENCY ACTIVE SONAR SUPPLEMENTAL  
ENVIRONMENTAL IMPACT STATEMENT/SUPPLEMENTAL OVERSEAS  
ENVIRONMENTAL IMPACT STATEMENT

3. The Chief of Naval Operations (CNO) point of contact is  
Commander Cynthia V. Morgan, who may be reached at  
cynthia.v.morgan@navy.mil or 703.695.8266.

  
S. R. FILIPOWSKI  
Rear Admiral, U.S. Navy

**FINAL SEIS/SOEIS FOR SURTASS LFA SONAR**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
1315 East-West Highway  
Silver Spring, Maryland 20910  
THE DIRECTOR

**NOV 03 2014**

S.R. Filipowski, Rear Admiral  
United States Navy  
Office of the Chief of Naval Operations  
2000 Navy Pentagon  
Washington, D.C. 20350-2000

Dear Rear Admiral:

Thank you for your letter requesting the National Marine Fisheries Service's (NOAA Fisheries) participation as a cooperating agency in the preparation of a Supplemental Environmental Impact Statement/Supplemental Overseas Environmental Impact Statement (Supplemental EIS/OEIS) for the employment of the Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar. The document will supplement the Navy's 2012 Final SEIS/SOEIS on the same subject, by providing a revised analysis of potential impacts to Hawaiian Islands stock complex of common bottlenose dolphin stocks, using the best available data.

We support the Navy's decision to prepare this third Supplemental EIS/OEIS on this activity and agree to be a cooperating agency. As agreed with Navy staff, the respective responsibilities of Navy and NOAA Fisheries will be consistent with those described in and agreed to in the cooperating agency correspondence between the two agencies for the 2012 SEIS/SOEIS (dated November 24, 2008 and February 6, 2009).

If you need any additional information, please contact Jolie Harrison or Jeannine Cody, (301-427-8401), who will be the NOAA Fisheries points of contact for this SEIS/OEIS.

Sincerely,

Eileen Sobeck  
Assistant Administrator  
for Fisheries



THE ASSISTANT ADMINISTRATOR  
FOR FISHERIES

