ANNUAL REPORT NUMBER 2

NAVY OPERATIONS OF SURVEILLANCE TOWED ARRAY SENSOR SYSTEM LOW FREQUENCY ACTIVE (SURTASS LFA) SONAR ONBOARD USNS VICTORIOUS (T-AGOS 19) USNS ABLE (T-AGOS 20), USNS EFFECTIVE (T-AGOS 21), AND USNS IMPECCABLE (T-AGOS 23) UNDER THE NATIONAL MARINE FISHERIES SERVICE 15 AUGUST 2013 LETTERS OF AUTHORIZATION

DEPARTMENT OF THE NAVY
CHIEF OF NAVAL OPERATIONS

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

µ	micro
%	percent or percentage
BO	Biological Opinion
CFR	Code of Federal Regulations
CLFA	Compact Low Frequency Active
CNO	Chief of Naval Operations
CNP	Central North Pacific
dB	decibel(s)
dB re 1 µPa @ 1 m	decibel(s) relative to one microPascal at one meter from center of acoustic source
DoN	Department of the Navy
EIS	Environmental Impact Statement
EO	Executive Order
EOG	Executive Oversight Group
ESA	Endangered Species Act
ft	foot/feet
HF	high frequency
HF/M3	High Frequency Marine Mammal Monitoring (sonar)
hr	hour(s)
Hz	Hertz
IA	Inshore Archipelago
ITS	Incidental take statement
km	kilometer(s)
LF	low frequency
LFA	Low Frequency Active
LOA	Letter(s) of Authorization
m	meter(s)
M3	Marine Mammal Monitoring (program)
MAI	Marine Acoustics, Inc.
MILDET	Military Detachment
min	minute(s)
MMC	Marine Mammal Commission
MMPA	Marine Mammal Protection Act
NEPA	National Environmental Policy Act
nmi	nautical mile(s)
NMFS	National Marine Fisheries Service
NMS	National Marine Sanctuary

NOAA	National Oceanic and Atmospheric Administration
NP	North Pacific
OBIA	Offshore Biologically Important Area
OEIS	Overseas Environmental Impact Statement
OIC	Officer in Charge
Pa	Pascal
RL	received level
rms	root mean square
SAG	Scientific Advisory Group
sec	second(s)
SEIS/SOEIS	Supplemental Environmental Impact Statement/ Supplemental Overseas Environmental Impact Statement
SEL	sound exposure level
SL	source level
SPE	single ping equivalent
SPL	sound pressure level
SURTASS	Surveillance Towed Array Sensor System
T-AGOS	Tactical Auxiliary General Ocean Surveillance (vessel)
TL	twin line
U.S.	United States of America
U.S.C.	United States Code
USNS	United States Naval Ship
VLA	vertical line array
WNP	Western North Pacific

1 PURPOSE

As a requirement of the Marine Mammal Protection Act (MMPA) Final Rule (NOAA, 2012) for employment of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar, which specifies the regulations governing the taking of marine mammals incidental to Navy operation of SURTASS LFA sonar (50 CFR 218 Subpart X), this annual report provides an unclassified summary of SURTASS LFA sonar operations onboard the United States Naval Ship (USNS) VICTORIOUS (Tactical Auxiliary General Ocean Surveillance [T-AGOS] 19) (Figure 1), USNS ABLE (T-AGOS 20), USNS EFFECTIVE (T-AGOS 21), and USNS IMPECCABLE (T-AGOS 23) for the period 15 August 2013 through 14 August 2014. This annual report has been prepared in accordance with the requirements of the MMPA Final Rule 50 CFR § 218.236(b) (NOAA, 2012) and Condition 13(f) of the annual Letters of Authorization (LOAs) for SURTASS LFA sonar issued by the National Marine Fisheries Service (NMFS) (Appendix A) (NOAA, 2013).

Figure 1. USNS VICTORIOUS (T-AGOS 19).

The primary purpose of this annual report is to provide NMFS with an unclassified summary of the year's quarterly mission reports, estimates of the marine mammal stocks affected by SURTASS LFA sonar operations, analysis of the effectiveness of mitigation measures, an assessment of any long-term effects, and any discernible or estimated cumulative effects. This report also provides NMFS with information necessary to demonstrate conformance to the Terms and Conditions (Paragraph 8.3) of the Biological Opinion under the Endangered Species Act (ESA) on the issuance of the LOAs (NMFS, 2013).

A description of the passive (SURTASS) and active (LFA) components and operating characteristics of the SURTASS LFA sonar system may be found in the 2012 to 2013 Annual Report No. 1 (DoN, 2013) or the 2012 Supplemental Environmental Impact Statement/Overseas Supplemental Environmental Impact Statement (SEIS/SOEIS) for SURTASS LFA sonar (DoN, 2012).

2 REGULATORY COMPLIANCE

In 2011, NMFS received an application from the Navy requesting five-year regulations and annual LOAs to take marine mammals, by harassment, incidental to conducting SURTASS LFA sonar operations in

areas of the world's oceans from August 2012 through August 2017. These operations, which constitute a military readiness activity, have the potential to cause behavioral disturbance and injury (if not mitigated) to marine mammals. Section 101(a)(5)(A) of the MMPA, and implementing regulations at 50 CFR part 216, subpart I, provide the legal basis for NMFS issuing the five-year regulations and annual LOAs for SURTASS LFA sonar.

On 8 June 2012, the Navy released a Final SEIS/SOEIS for employment of SURTASS LFA sonar (DoN, 2012). NMFS was a cooperating agency on the FSEIS/SOEIS under the Council on Environmental Quality's regulations implementing the National Environmental Policy Act (NEPA) of 1972. The Record of Decision for the Navy's FSEIS/SOEIS was signed 15 August 2012.

On 20 August 2012, NMFS issued the third set of regulations under the MMPA to govern the unintentional taking of marine mammals incidental to employment of SURTASS LFA sonar during routine training, testing, and military operations on a maximum of four ocean surveillance ships in areas of the Pacific, Atlantic, and Indian Oceans and the Mediterranean Sea, from the period of 15 August 2012 through 14 August 2017 (NOAA, 2012). These regulations authorized NMFS to issue annual LOAs for the incidental take of marine mammals associated with the employment of SURTASS LFA sonar; set forth the permissible methods of taking; set forth other means of effecting the least practicable adverse impact on marine mammal species and their habitat; and set forth requirements pertaining to the monitoring and reporting.

2.1 CURRENT REGULATIONS

Under the NMFS 2012 MMPA Final Rule (50 CFR Part 218, Subpart X), the Navy is authorized to conduct routine SURTASS LFA sonar training, testing, and military operations in the oceanic areas of the Pacific, Atlantic, and Indian Oceans, and the Mediterranean Sea with the exception of geographic areas such as the polar regions. Additional geographic restrictions for employment of SURTASS LFA sonar include the coastal standoff range, offshore biologically important areas (OBIAs), and known human diver locations. SURTASS LFA sonar transmissions will not exceed 180 decibels relative to 1 microPascal (root mean square) (dB re 1 µPa [rms]) within 22 kilometers (km) (12 nautical miles [nmi]) from all land masses with a coastline (regardless of size and including islands) (i.e., coastal standoff range) or within 1 km of the outer perimeter of any OBIA (LOA Condition 8h(i and ii).

References to Underwater Sound Levels

- References to underwater sound pressure level (SPL) in this document are values given in decibels (dBs) and are assumed to be standardized at 1 microPascal at 1 m (dB re 1 µPa @ 1 m [rms]) for source level (SL) and dB re 1 µPa (rms) for received level (RL), unless otherwise stated (Urick, 1983; ANSI, 2006).
- Single ping equivalent (SPE) is an intermediate calculation for input to the risk continuum based impact analyses in this document. SPE accounts for the energy of all the LFA acoustic transmissions that a modeled animal receives during an entire LFA mission (7 days for pre-mission analyses and the actual duration of LFA sonar transmissions for post-mission analyses). SPE is a function of SPL, not SEL. SPE levels will be expressed as "dB SPE" in this document. Calculating the potential risk from SURTASS LFA sonar is a complex process; see Appendix C of the 2012 SEIS/SOEIS (DoN, 2012) for details.

Twenty-two marine mammal OBIAs for SURTASS LFA sonar have been designated globally (Table 1) (NOAA, 2012). The only OBIA for SURTASS LFA sonar that is within the geographic mission areas

Table 1. SURTASS LFA OBIAs for marine mammals and their period of effectiveness.		
OBIA NUMBER	**OBIA**	**PERIOD OF EFFECTIVENESS**
1	Georges Bank	Year-round
2	Roseway Basin Right Whale Conservation Area	June through December, annually
3	Great South Channel, U.S. Gulf of Maine, and Stellwagen Bank NMS	January 1 to November 14, annually
4	Southeastern U.S. Right Whale Seasonal Habitat	November 15 to April 15, annually
5	North Pacific Right Whale Critical Habitat	March through August, annually
6	Silver Bank and Navidad Bank	December through April, annually
7	Coastal waters of Gabon, Congo and Equatorial Guinea	June through October, annually
8	Patagonian Shelf Break	Year-round
9	Southern Right Whale Seasonal Habitat	May through December, annually
10	Central California National Marine Sanctuaries	June through November, annually
11	Antarctic Convergence	October through March, annually
12	Piltun and Chayvo Offshore Feeding Grounds in the Sea of Okhotsk	June through November, annually
13	Coastal waters off Madagascar	July through September, annually for humpback whale breeding and November through December, annually for migrating blue whales
14	Madagascar Plateau, Madagascar Ridge, and Walters Shoal	November through December, annually
15	Ligurian-Corsican-Provencal Basin and Western Pelagos Sanctuary in the Mediterranean Sea	July to August, annually
16	Hawaiian Islands Humpback Whale NMS and Penguin Bank	November through April, annually
17	Costa Rica Dome	Year-round
18	Great Barrier Reef between 16° S and 21° S	May through September, annually
19	Bonney Upwelling off the southern coast of Australia	December through May, annually
20	Northern Bay of Bengal and Head of Swatch-of-No-Ground	Year-round
21	Olympic Coast NMS, The Prairie, Barkley Canyon, and Nitnat Canyon	Olympic NMS: December, January, March, and May, annually The Prairie, Barkley Canyon, and Nitnat Canyon: June through September, annually
22	Abrolhos Bank	August through November, annually

requested for 2013 through 2014 employment of SURTASS LFA sonar is the Hawaiian Islands Humpback Whale National Marine Sanctuary (NMS) and Penguin Bank OBIA, wherein employment of SURTASS LFA sonar is restricted from November through April, annually (Table 1). During military operations, however, SURTASS LFA sonar transmissions may exceed 180 dB re 1 µPa (rms) within the boundaries of SURTASS LFA sonar OBIAs when: 1) operationally necessary to continue tracking an existing underwater contact; or 2) operationally necessary to detect a new underwater contact within the OBIA (50 CFR 218.234(g)(1) and LOA Condition 8[i]) This exception does not apply to routine training and testing with SURTASS LFA sonar systems.

Under the 2012 MMPA Final Rule, NMFS issued the Navy four LOAs (Appendix A) valid from the annual period 15 August 2013 to 15 August 2014 for the employment of SURTASS LFA sonar aboard the USNS ABLE, USNS EFFECTIVE, USNS IMPECCABLE, and USNS VICTORIOUS. The LOAs authorized a total of 432 hours per vessel over the annual LOA period for employment in 11 mission areas located in the northwest and north-central Pacific Ocean: east of Japan, North Philippine Sea, west Philippine Sea, offshore Guam, Sea of Japan, East China Sea, South China Sea, offshore Japan (10° to 25°N and 25° to 40°N), Hawaii North, and Hawaii South. An estimated 20 nominal active sonar missions (16 missions in the northwestern Pacific Ocean and four missions in the Hawaii mission areas) (or equivalent shorter missions) are authorized for all four vessels over the annual period. SURTASS LFA sonar vessels can only transmit LFA sonar signals that are between 100 and 500 Hertz (Hz) with a source level (SL) for each of the 18 projectors at no more than 215 dB re 1 µPa at 1 meter (rms) (dB re 1 µPa @ 1 m [rms]) and a maximum duty cycle of 20 percent (%) (LOA Condition 3). Additionally, takes by MMPA Level B harassment will not exceed 12% of any marine mammal stock for all vessels combined.

3 MITIGATION MEASURES AND MITIGATION MONITORING REQUIREMENTS

Mitigation protocols, operational restrictions, and mitigation monitoring requirements under which the Navy may operate SURTASS LFA sonar were set forth in the 2012 Record of Decision (DoD, 2012), MMPA Final Rule (NOAA, 2012), and in the annual LOAs (Appendix A). These protocols, restrictions, and requirements were promulgated to the Navy Fleet commands by the Chief of Naval Operations (CNO), N2/N6F24 via executive direction messages on 15 August 2013.

The goal of the mitigation measures and mitigation monitoring required for the employment of SURTASS LFA sonar are to minimize, to the greatest extent practicable, adverse impacts on marine mammal species or stocks and their habitat as well as to avoid the risk of injury to marine mammals. These objectives are met through geographical restrictions on LFA sonar employment, maintenance of a mitigation and buffer zone around the transmitting LFA sonar source, ramp-up procedures for the high frequency/marine mammal monitoring (HF/M3) sonar system, suspension or delay of LFA sonar transmissions when marine mammals are detected, and mission planning. Mitigation measures and mitigation monitoring include visual (daylight hours only), passive acoustic, and active acoustic monitoring whenever the LFA acoustic source is transmitting.

3.1 GEOGRAPHIC RESTRICTIONS

Geographic restrictions for the use of SURTASS LFA sonar require that the RL of LFA sonar remain below 180 dB re 1 µPa (rms) at distances of 22 km (12 nmi) of any coastline, including islands, and 1 km (0.54 nmi) from the outer perimeter of the 22 designated OBIAs for SURTASS LFA sonar (Table 1). OBIAs are areas of the world's oceans outside of 22 km (12 nmi) of a coastline where marine mammals aggregate in high densities; carry out biologically important activities (breeding/calving, foraging, migrating); or are areas with small, distinct populations of marine mammals with a limited distribution. In the 2012 MMPA Final Rule, NMFS designated 22 LFA OBIAs as marine areas of critical biological importance to marine mammals (Table 1) (NOAA, 2012). The only LFA OBIA that is within or even near the authorized mission areas for SURTASS LFA sonar during the period encompassed in this annual

report is the Hawaiian Islands Humpback Whale NMS and Penguin Bank, with the effective period from November through April, annually. However, no SURTASS LFA sonar missions occurred in Hawaiian waters during the 2013 to 2014 LOA period.

3.2 MITIGATION AND BUFFER ZONE

The mitigation zone for SURTASS LFA sonar encompasses an ocean volume ensonified to a RL >180 dB re 1 µPa (rms) by LFA sonar transmissions. Based on spherical spreading, this zone will vary between the nominal horizontal ranges of 0.75 to 1.0 km (0.40 to 0.54 nmi) over a depth of approximately 87 to 157 m (285 to 515 ft) from the LFA sonar source array, with the center of the LFA sonar source array located at an approximate depth of 122 m [400 ft]) below the sea surface. Under rare environmental conditions (e.g., strong acoustic duct) this range could be somewhat greater than 1 km (0.54 nmi). Knowledge of local environmental conditions (such as sound speed profiles [depth vs. temperature] and sea state) that affect sound propagation is critical to maintaining the appropriate mitigation zone distance.

To determine the distance to the 180-dB rms RL isopleth from the LFA sonar source, local environmental data and underwater acoustic prediction models are used to determine the propagation of the LFA sonar signal in real-time. These sound field estimates are to be completed prior to and during LFA sonar transmissions. The propagation of the LFA sound field will be updated at least every 12 hours, if not more frequently due to changing meteorological or oceanographic (environmental) conditions (LOA Condition 8[c]). If the sound field analysis indicates that the distance to the 180-dB re 1 µPa isopleth (i.e., mitigation zone radius) has changed, the Officer in Charge (OIC) of the Military Detachment (MILDET) aboard the SURTASS LFA sonar vessels notifies the crew members conducting visual and acoustic mitigation monitoring so that their monitoring procedures incorporate the correct mitigation zone distance.

In addition to the mitigation zone surrounding the LFA sonar source, per the 2012 MMPA Final Rule and annual LOAs, NMFS requires an additional 1-km (0.54-nmi) buffer zone beyond the LFA mitigation zone to further minimize the potential for injury to marine mammals. While the implementation of this additional buffer zone has proven to be practicable under current operations, the Navy's analysis indicates that adverse impacts below 180-dB re 1 µPa (rms) RL were not minimized appreciably (DoN, 2007).

3.3 RAMP-UP PROCEDURES FOR HF/M3 SONAR

Prior to transmission, calibration, or testing of SURTASS LFA sonar, the power level of the HF/M3 sonar system is to be ramped up over a period of no less 5 minutes from the maximum SL of 180 dB re 1 µPa @ 1 m (rms) (SPL) in 10-dB increments until the operating level is attained to ensure that there are no inadvertent exposures of local animals to RLs ≥180 dB re 1 µPa (rms) from the HF/M3 sonar. This ramp-up procedure should be conducted at least 30 minutes prior to any SURTASS LFA sonar transmission, prior to LFA sonar calibrations or testing that are not part of regular LFA sonar transmissions, and any time the HF/M3 sonar has been powered down for more than two minutes.

If during the ramp-up procedure a marine mammal is detected, the SPL of the HF/M3 sonar is not to be increased. Once marine mammals are no longer detected by visual or passive acoustic monitoring, the HF/M3 ramp-up process may resume.

3.4 SUSPENSION OR DELAY OF SURTASS LFA SONAR SIGNALS

If a marine mammal is detected within the mitigation or buffer zone, SURTASS LFA sonar transmissions are to be immediately be suspended or delayed. LFA transmissions may commence/resume when there have been no further detections of a marine mammal for 15 minutes within the LFA mitigation and buffer zones.

3.5 MISSION PLANNING

The Navy ensures that no more 12% of any marine mammal stock is taken by MMPA Level B harassment during the annual LOA period. To accomplish this requirement, the Navy coordinates the mission

planning for the SURTASS LFA sonar vessels and maintains a running total of the percentage of each marine mammal species or stock taken by MMPA Level B harassment by all four SURTASS LFA sonar vessels.

3.6 MITIGATION MONITORING MEASURES TO PREVENT INJURY TO MARINE ANIMALS

The purpose of mitigation monitoring measures is to ensure, to the greatest extent practicable, that no marine mammal is subjected to a sound pressure level of 180 dB re 1 µPa (rms) or greater. In accordance with the Navy's 2012 Record of Decision (DoD, 2012), 2012 MMPA Final Rule (50 CFR §218.235) (NOAA, 2012), and LOA conditions 9 and 10, three types of mitigation monitoring (Table 2) are conducted when SURTASS LFA sonar is transmitting:

- **Visual monitoring** from the bridge of the SURTASS LFA sonar vessel during daylight hours by personnel trained to detect and identify marine mammals using standard (7x) binoculars and the naked eye;
- **Passive acoustic monitoring** using the passive low-frequency (LF) SURTASS array to listen for sounds generated by marine mammals as an indicator of their presence when SURTASS LFA sonar is deployed and transmitting; and
- **Active acoustic monitoring** using the HF/M3 sonar, which is a Navy-developed, enhanced high frequency (HF) commercial sonar used to detect, locate, and track marine mammals that may pass close enough to the SURTASS LFA sonar array to enter the LFA mitigation and buffer zones.

Table 2. Summary of mitigation measures and mitigation monitoring to prevent injury to marine mammals required for the operation of SURTASS LFA sonar.

MITIGATION MEASURE	CRITERIA	ACTIONS
Visual Monitoring	Potentially affected species near the vessel but outside the LFA mitigation zone plus 1-km (0.54-nmi) buffer zone	MILDET OIC notified and animals tracked for possible intersection with mitigation/buffer zone
	Potentially affected species sighted inside the LFA mitigation zone plus 1-km (0.54-nmi) buffer zone	SURTASS LFA sonar transmissions delayed/suspended
Passive Acoustic Monitoring	Potentially affected species detected	MILDET OIC notified; SURTASS LFA sonar transmissions delayed/suspended
Active Acoustic Monitoring	Contact detected and determined to have a track that would pass within the LFA mitigation zone plus 1-km (0.54-nmi) buffer zone	MILDET OIC notified and animals tracked for possible intersection with mitigation/buffer zone
	Potentially affected species detected inside the LFA mitigation zone plus 1-km (0.54-nmi) buffer zone	SURTASS LFA sonar transmissions delayed/suspended

Monitoring must commence at least 30 minutes before the first SURTASS LFA sonar transmissions; continue between transmission pings and for at least 15 min after the completion of SURTASS LFA sonar transmissions, and persist until such time as marine mammals showing abnormal behavioral patterns return to normal or conditions prevent continued observations.

Additionally, marine mammal biologists qualified in conducting visual at-sea monitoring for marine mammals are to train the personnel of each SURTASS LFA sonar vessel designated to conduct visual monitoring. These lookouts are to be trained in conducting at-sea visual monitoring and in effectively communicating information about their visual detections within their command structure.

4 MONITORING AND REPORTING REQUIREMENTS

4.1 MONITORING

In addition to designating qualified personnel to conduct the mitigation, monitoring, and reporting required by the MMPA rulemaking and annual LOAs for SURTASS LFA sonar employment, the Navy also cooperates with NMFS and other Federal agencies in monitoring the impacts potentially associated with SURTASS LFA sonar activities. Further, the Navy is tasked with conducting four types of monitoring actions designed to increase the knowledge of affected marine mammal species or their environment.

4.1.1 POTENTIAL RESEARCH ON THE EFFECTS OF SURTASS LFA SONAR ON BEAKED WHALES AND/ OR HARBOR PORPOISES

To increase understanding of how harbor porpoises and beaked whale species respond behaviorally and physiologically when exposed to SURTASS LFA sonar, the 2012 MMPA rulemaking for SURTASS LFA sonar employment (NOAA, 2012) charged the Navy with assessing different types of monitoring and research to accomplish this goal. The Navy was to convene a Scientific Advisory Group (SAG) of recognized marine biology and marine bioacoustic scientific subject matter experts who would identify feasible monitoring and/or research options the Navy could implement. The SAG recommendations are considered independent scientific findings that are fully accessible to the public. Following the Navy's receipt of the SAG research or monitoring recommendations, per the MMPA Final Rule, the Navy is to prepare a plan of action outlining their strategy for implementing the SAG's recommendations or describe, in writing, why none of the SAG's recommendations are feasible and meet with NMFS to discuss any other potential options (NOAA, 2012). Per condition 12(a) of the 2013 to 2014 LOAs for SURTASS LFA sonar, the Navy is to complete their consideration of the SAG report.

4.1.2 MARINE MAMMAL MONITORING (M3) PROGRAM

Condition 12b of the LOAs for SURTASS LFA sonar require the Navy to continue to assess data acquired by its Marine Mammal Monitoring (M3) program and work toward making some portion of that data, after appropriate security reviews, available to scientists with appropriate clearances. The Navy's M3 program entails the use of Navy static and mobile passive acoustic systems to detect and identify marine mammal species, and often individual whales. M3 acousticians can track movements of individual or groups of cetaceans, sometimes over long time periods. From this information, seasonal occurrence patterns over ocean basins can be established. M3 acousticians also can determine short-term and long-term effects on cetacean behavior associated with underwater anthropogenic sound (e.g., oil and gas seismic surveys using airgun arrays; Navy sonars) during specific activities.

4.1.3 PASSIVE ACOUSTIC MONITORING

Since the SURTASS passive component is such an effective passive acoustic monitoring system, NMFS has asked the Navy to explore the potential to use the SURTASS towed horizontal line array with other Navy assets or range monitoring programs to augment the collection of data on marine mammal vocalizations prior to, during, or after Navy exercises (LOA Condition 12[c]).

4.1.4 AMBIENT NOISE MONITORING

Ambient noise is the typical or persistent background noise that is present in the marine environment. Ambient noise is broadband in all frequencies and directional both horizontally and vertically. Under LOA condition 12(d), the Navy is to continue collecting data on ambient underwater noise with the goal of potentially declassifying and archiving the data for future incorporation into oceanic underwater noise budgets and databases.

4.2 REPORTING REQUIREMENTS

NMFS-directed reporting under the MMPA Final Rule and annual LOAs provide information for assessments of whether incidental harassment of marine mammals occurred within the SURTASS LFA mitigation zone during routine training, testing and military operations, based on data from the mitigation monitoring (visual, passive acoustic, active acoustic) records. Data analysis on post-operation acoustic information is utilized to estimate the percent of marine mammal stocks potentially exposed to SURTASS LFA signals at ≥180 dB (RL) and <180 dB re 1 µPa (rms) (RL).

During routine training, testing, and military operations of SURTASS LFA sonar, technical and environmental data are collected and recorded, including data from visual and acoustic monitoring, ocean environmental measurements, and technical operational inputs. As stipulated in the MMPA Final Rule and LOAs, quarterly, annual, and comprehensive reports are required:

- Quarterly mission reports are submitted to NMFS for each SURTASS LFA sonar vessel, including all active-mode missions, 30 days after the end of each quarter beginning on the date the LOA's effectiveness. The quarterly reports consist of separate classified and unclassified sections.
- Annual reports are submitted to NMFS 45 days after the expiration of the LOAs and are unclassified summaries of the annual quarterly reports and include the Navy's estimates of the percentage of marine mammal stocks affected by SURTASS LFA sonar operations.
- A final comprehensive report, which is an unclassified assessment of any impacts of SURTASS LFA sonar on marine mammal stocks during the 5-year period of the MMPA regulations, is submitted to NMFS and the public at least 240 days prior to expiration of the MMPA Final Rule regulations.

Additionally, the Navy is required under LOAs Condition 12(a) to include the status in its next LOAs application on the progress it has made regarding assessing and making some portion of the data collected by the Navy's passive underwater arrays available to scientists, after appropriate security review. Further, LOAs Condition 12(b) requires that the Navy draft a plan of action describing its strategy for implementing the SAG's research and monitoring recommendations to increase the understanding of the potential effects of LFA sonar transmissions on beaked whales and/or harbor porpoises, or submit a written description to NMFS regarding why such research is not feasible/or is unlikely, which will be followed by a meeting with NMFS to discuss any other potential options.

5 SUMMARY OF SURTASS LFA SONAR OPERATIONS AND MITIGATION MONITORING MEASURES FROM 15 AUGUST 2013 TO 14 AUGUST 2014

Per 50 CFR § 218.236(b) and Condition 13(f) of the LOAs, this annual report is the unclassified summary for the period from 15 August 2013 through 14 August 2014 of the quarterly reports under the second year LOAs of the five-year Final Rule period for the USNS VICTORIOUS, USNS ABLE, USNS EFFECTIVE, and USNS IMPECCABLE. During this reporting period, seven missions were conducted in two of the Navy's mission areas for SURTASS LFA in the northwestern Pacific Ocean using three SURTASS LFA sonar systems. This annual report details the one mission by the USNS VICTORIOUS (T-AGOS 19), three missions by the USNS ABLE (T-AGOS 20), and three missions by the USNS

EFFECTIVE (T-AGOS 21) completed during the annual reporting period (Table 3). In total during this second annual LOA reporting period, the Navy conducted seven SURTASS LFA sonar missions over 20.4 days that resulted in total LFA sonar transmissions of 38.6 hours (hr). Of the permitted 1,728 hr of LFA transmit time for four SURTASS LFA sonar vessels, the Navy transmitted 2.2% of its permitted allocation. During the 38.6 hr of LFA sonar transmissions and in accordance with the mitigation monitoring protocol for SURTASS LFA sonar, LFA sonar was suspended or delayed five times during the 2013 through 2014 annual LOA reporting period. No visual or passive acoustic detections were reported during the seven missions, but 10 detections resulted from employment of HF/M3 sonar (Table 3).

5.1 USNS VICTORIOUS MISSIONS

During the 2013 to 2014 LOA reporting period, the USNS VICTORIOUS (T-AGOS 19) completed one mission during which LFA sonar was transmitted for 7.68 hr over 3.81 days. One HF/M3 sonar detection was determined to be a possible marine animal although there were no visual or passive acoustic detections to confirm. In accordance with mitigation monitoring protocols, LFA sonar transmissions were suspended/delayed following the HF/M3 sonar detection.

5.2 USNS ABLE MISSIONS

The USNS ABLE (T-AGOS 20) conducted three SURTASS LFA sonar missions during the 2013 to 2014 LOA period. The duration of the three missions totaled 11.13 days, during which LFA sonar was transmitted for a total of 18.10 hr. No detections of marine animals were made by visual or passive acoustic monitoring during the missions, but nine HF/M3 detections were made during the ABLE's three missions. As a result, LFA sonar transmissions were suspended or delayed four times during the missions. SURTASS LFA sonar operators determined during one mission that five of the HF/M3 sonar detections were non-biological sonar returns, and thus LFA sonar transmissions were not suspended or delayed.

5.3 USNS EFFECTIVE MISSIONS

Three missions were completed during the 2013 to 2014 LOA reporting period by the USNS EFFECTIVE (T-AGOS 21), resulting in a total of 12.85 hr of LFA sonar transmissions over 5.5 days. No visual, passive acoustic, or active acoustic (HF/M3) detections were made during the EFFECTIVE's three missions. Thus, LFA sonar was not shut down nor suspended during the missions.

5.4 USNS IMPECCABLE MISSIONS

No missions were conducted by the USNS IMPECCABLE (T-AGOS 23) during the annual LOA period 15 August 2013 through 14 August 2014.

5.5 VISUAL OBSERVER TRAINING

In compliance with the regulations of the MMPA Final Rule (50 CFR 216 Subpart Q) and annual LOAs for SURTASS LFA sonar employment, a senior marine biologist from Marine Acoustics, Inc. (MAI) qualified in conducting at-sea visual monitoring of marine mammals from surface vessels conducted training sessions for the crew members designated as lookouts aboard three of the SURTASS LFA sonar vessels. Trainings were conducted for lookouts and civilian officers from the USNS VICTORIOUS, USNS ABLE, and USNS EFFECTIVE during the 2013 to 2014 LOA reporting period.

The visual monitoring training consists of three training modules: 1) monitoring component that covers the requirements and fundamentals of at-sea visual monitoring for marine species specified under permits for LFA sonar; 2) a marine mammal identification component that describes basic information about the potentially occurring species and characteristics to identify them at sea; and 3) a short game-type quiz of the materials covered during the training.

The observation-training component includes an overview of the reasons why visual monitoring of marine species is conducted during active LFA sonar transmissions as well as the monitoring requirements and

Table 3. Summary of SURTASS LFA sonar operations for the LOA annual reporting period, 15 August 2013 through 14 August 2014.

LFA Vessel	Missions	Mission Duration (days)	LFA Sonar Transmissions (hours)	Visual Detections	Passive Acoustic Detections	Active Acoustic/ HF/M3 Detections	Suspensions/ Delays Per Mitigation Protocol (Total Duration of Suspension/Delay [hrs])
USNS VICTORIOUS (T-AGOS 19)	1	3.81	7.68	0	0	1	1
USNS ABLE (T-AGOS 20)	3	11.13	18.10	0	0	9	4[1]
USNS EFFECTIVE (T-AGOS 21)	3	5.50	12.85	0	0	0	0
USNS IMPECCABLE (T-AGOS 23)	0	0	0	0	0	0	0
ANNUAL TOTALS	**7**	**20.44**	**38.63**	**0**	**0**	**10**	**5**

1 Although 9 HF/M3 sonar detections occurred during the USNS ABLE's missions, SURTASS LFA sonar operators determined that 5 of the HF/M3 detections were not biological sonar returns. Thus, LFA sonar transmissions were not suspended or delayed as a result of the HF/M3 detections.

procedures per the LOA and Incidental Take Statement (ITS) permits. The other types of monitoring required during active LFA sonar operations, passive and active acoustic monitoring with the SURTASS array and HF/M3 sonar, respectively, are reviewed. Communication between the civilian crew's command structure and the MILDET crew conducting the other types of monitoring is stressed. Visual monitoring and reporting procedures are reviewed as are the cues the lookouts may spot on the water's surface that indicate the presence of marine mammals and possibly sea turtles. Additionally, factors that may adversely or positively affect the ability to detect marine mammals on the ocean surface are discussed and an overview of marine mammal behavior and video examples of some of those behaviors are presented. Last, in the observation-training component, information on stranded, struck, injured, or dead animals is reviewed, including the reporting procedures should animals in these conditions be observed. Emphasis is placed on the importance of vigilantly monitoring for marine mammals and consistently completing data forms to document their effort, since the information the lookouts collect is reported ultimately to NMFS. The marine mammal identification training-component includes basic information about the types of marine mammals; species that may be encountered in the mission areas in which SURTASS LFA may operate; features of each marine mammal species that are apparent at the sea surface; and photographs, video clips, audio clips, and surface profiles of the potentially occurring marine mammal species. In an effort to ascertain whether the training material was presented in an understandable manner and whether the trainees were retaining the information, following completion of the training components, the trainees participate in a game-style quiz.

A set of marine mammal species guides and a training manual are provided to the vessel's Master, to be retained aboard the vessel for future reference and training of new lookouts. The training manual includes electronic and hard copies of the visual monitoring training, a DVD copy of the Navy's Marine Species Awareness Training video, a list of all the marine mammal likely to be encountered during SURTASS LFA sonar missions, and copies of the LOA and ITS for the respective vessels.

5.6 PASSIVE ACOUSTIC TRAINING

The 2013 to 2014 LOAs and ITS under which the Navy is authorized to conduct LFA sonar operations aboard USNS VICTORIOUS, USNS ABLE, USNS EFFECTIVE, and USNS IMPECCABLE stipulate the conditions governing the sonar's operation. One of the mitigation monitoring conditions requires the Navy to use the passive SURTASS to listen for vocalizing marine mammals. To meet this requirement, by direction of CNO Undersea Capabilities Branch (N2/N6F24), senior marine acousticians and a senior marine biologist from MAI conducted passive acoustic training for the MILDET crews of the USNS VICTORIOUS, USNS ABLE, USNS EFFECTIVE, and USNS IMPECCABLE that conduct passive acoustic monitoring as part of their duties as sonar operators during SURTASS LFA sonar missions. The MILDET crew of the USNS LOYAL, an USNS T-AGOS vessel that is not outfitted with SURTASS LFA sonar, was also trained to increase their ability as sonar operators to distinguish biological sounds from those of mission-directed sounds.

The passive acoustic training consisted of a classified presentation that included: 1) an introductory component that covered the requirements of passive acoustic monitoring for marine species specified under permits for LFA sonar employment; 2) a marine mammal identification component that described basic information about the primary marine mammal species they may detected on SURTASS and species-specific characteristics for visual identification on spectrograms during passive acoustic monitoring; and 3) recommended sonar display parameters to facilitate the detection and identification of marine mammal species. Passive acoustic monitoring crews from the VICTORIOUS, ABLE, EFFECTIVE, and IMPECCABLE have been made aware of their mitigation monitoring and reporting duties and responsibilities when SURTASS LFA sonar is transmitting and the importance of their role in the Navy's continuing authorization to operate SURTASS LFA sonar. In addition, they, as well as the LOYAL MILDET crew, have expanded their awareness of the methods for detecting and identifying biological sounds from those of mission-directed importance.

6 ESTIMATES OF AFFECTED MARINE MAMMAL STOCKS

In its annual LOA applications, the Navy provided estimates of the percentage of marine mammal stocks potentially affected during a proposed number of missions in specific mission areas requested for SURTASS LFA sonar employment, including the two mission areas in which sonar operations occurred during August 2013 to 2014 (Table 4). In this annual report, the Navy provides the post-mission summaries detailing estimates by quarter and annually of the percentages of the marine mammal stocks and number of marine mammals in each stock possibly incidentally harassed using predictive modeling based on seasons, location of the missions, LFA sonar characteristics, length of sonar exposure (i.e., actual LFA sonar transmit hours), oceanographic/environmental conditions, and animal demographics (abundances and densities) for each of the three SURTASS LFA sonar vessels that transmitted LFA sonar during August 2013 to 2014 (Tables 6 to 8). Per LOAs Condition 13(e), this information has been submitted to NMFS as quarterly reports following the end of each quarter of the August 2013 to 2014 reporting period. An overview of the methodology, criteria, and thresholds used for the predictive modeling of the acoustic impact and sonar risk assessment and resulting computation of the incidental harassment estimates detailed herein may be found in the SURTASS LFA sonar Final SEIS/SOEIS (DoN, 2012).

6.1 PRE-MISSION ESTIMATES OF POTENTIALLY AFFECTED MARINE MAMMAL STOCKS

Pre-mission estimates were derived using a number of nominal seven-day missions for each potential mission area, which provided a conservative estimate of the potential effects on marine mammal stocks in those areas where employment of LFA sonar was proposed in the Navy's 2012 LOAs application (DoN, 2013a). During the August 2013 to 2014 period detailed in this annual report, the Navy conducted SURTASS LFA sonar missions in two mission areas within the northwestern Pacific Ocean for which pre-operational risk estimates of marine mammal stocks had been estimated (Table 4) (DoN, 2013a).

The pre-mission estimates of MMPA harassment (i.e., 120 to 180 dB and ≥180 dB, Level B and A, respectively) for marine mammal stocks in these LFA mission areas were well below the criteria delineated by NMFS in LOA Condition 8(j) (Appendix A) and the Final Rule (77 FR 50290) (NOAA, 2012). The highest total percentage of any affected stock was estimated as 6.89% for the Western North Pacific stock of humpback whales, which represented 78 animals in the stock, with all other stocks estimated much lower (Table 4).

6.2 POST-MISSION ESTIMATES OF POTENTIALLY AFFECTED MARINE MAMMAL STOCKS

Overall mission planning during the annual period of the LOAs was fundamentally based on national security and operational anti-submarine warfare requirements. Mission planning for each quarter of the annual LOA period additionally considered the running total percentage of affected marine mammal stocks so that no more than 12% of any marine mammal stock would be taken by MMPA Level B harassment annually by all SURTASS LFA sonar vessels combined (LOA Condition 8[j]). During the August 2013 through August 2014 LOA period, the highest post-mission percentage of any marine mammal stock taken by MMPA Level B harassment for all SURTASS LFA sonar vessels combined was estimated as 2.16% or 26 Longman's beaked whales in the Central North Pacific stock (Table 5), well below the 12% cap on Level B harassment.

Upon completion of SURTASS LFA sonar missions during the 2013 to 2014 LOA reporting period, estimates of marine mammals potentially affected at RLs of 120 to 180 dB and ≥180 dB as a result of exposure to LFA sonar transmissions for three SURTASS LFA sonar vessels (USNS VICTORIOUS, USNS ABLE, and USNS EFFECTIVE) were refined and submitted to NMFS under the quarterly reporting requirements of the MMPA Final Rule (50 CFR § 218.236(a)) and condition 13(e) of the LOAs (Tables 6 to 8). Post-mission affected stock estimates were based on actual LFA sonar transmission hours and

Table 4. Combined pre-mission estimates of the percentage and number of marine mammals potentially affected at RLs of 120 to 180 dB SPE by LFA sonar transmissions in the two northwestern Pacific Ocean mission areas where LFA sonar was employed during August 2013 to 2014; 0.00 percent/0 animals affected at RLs ≥180 dB (with mitigation); estimates based on six 7-day SURTASS LFA sonar missions across seasons (DoN, 2013a); ESA-listed species highlighted.

Marine Mammal Species	Stock[2]	Total percent affected 120-180 dB[3]	Total Number Animals Affected 120-180 dB[4]
Blue whale	CNP	0.01	2
Bryde's whale	WNP	0.33	69
Common minke whale	WNP O	1.99	500
Fin whale	WNP	0.22	22
Humpback whale	WNP	6.89	78
North Pacific right whale	WNP	0.10	3
Western North Pacific gray whale	WNP	0.31	1
Blainville's beaked whale	WNP	0.54	45
Common bottlenose dolphin	WNP	0.73	1,241
Common bottlenose dolphin	IA	0.01	5
Cuvier's beaked whale	WNP	0.44	399
False killer whale	WNP Pelagic	1.62	272
False killer whale	IA	0.19	19
Fraser's dolphin	WNP	0.22	490
Ginkgo-toothed beaked whale	NP	0.19	45
Killer whale	WNP	0.10	14
Kogia spp.	WNP	0.11	378
Longman's beaked whale	WNP	2.75	30
Melon-headed whale	WNP	1.28	472
Pacific white-sided dolphin	WNP	0.07	643
Pantropical spotted dolphin	WNP	0.29	1,291
Pantropical spotted dolphin	IA	0.06	142
Pygmy killer whale	WNP	0.66	200
Risso's dolphin	WNP	1.37	1,145
Risso's dolphin	IA	0.21	173
Rough-toothed dolphin	WNP	0.48	706
Short-beaked common dolphin	WNP	0.16	5,165
Short-finned pilot whale	WNP	2.63	1,410
Sperm whale	NP	0.13	130
Spinner dolphin	WNP	0.02	88
Striped dolphin	WNP	0.54	3,098
Striped dolphin	IA	0.01	61

2 Stock names: CNP=Central North Pacific; WNP=Western North Pacific; NP=North Pacific; IA=Inshore Archipelago.

3 The total percent affected has been rounded up to two decimal places.

4 Fractional animals potentially affected have been rounded up to the next whole number.

Table 5. Total annual post-mission summary of percentages of affected marine mammal stocks and number of marine mammals resulting from seven LFA sonar missions by three SURTASS LFA sonar vessels for the LOA reporting period 15 August 2013 through 14 August 2014 (ESA-listed marine mammal species highlighted).

			120 to 180 dB SPE										≥180 dB SPE (with Mitigation)	
			Quarter 1 (August to November) All Vessels		Quarter 2 (November to February) All Vessels		Quarter 3 (February to May) All Vessels		Quarter 4 (May to August) All Vessels		Total Annual, All Vessels Combined		Total Annual, All Vessels	
All Affected Marine Mammal Species/Species Groups	Number Marine Mammals in Stock	Stock Name[2]	Percent Stock Affected[3]	Number Animals Affected[4]	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected
Blue whale	9,250	CNP	0.0000	1	0.0003	1	0.0018	1			0.0021	3	0.0000	0
Bryde's whale	20,501	WNP	0.0240	5	0.0085	2	0.0614	14	0.0325	18	0.1264	39	0.0000	0
Common minke whale	25,049	WNP "O"	0.2841	72	0.0473	12	0.3576	92	0.3678	93	1.0568	269	0.0000	0
Fin whale	9,250	WNP	0.0000	0	0.0062	1	0.0774	8	0.0612	6	0.1448	15	0.0000	0
Humpback whale	1,107	WNP	0.0001	1	0.2323	3	1.3692	16			1.6016	20	0.0000	0
North Pacific right whale	922	WNP	0.0000	0	0.0031	1	0.0482	3			0.0513	4	0.0000	0
Western North Pacific gray whale	121	WNP					0.3559	2			0.3559	2	0.0000	0
Blainville's beaked whale	8,032	WNP	0.0395	4	0.0127	2	0.1125	10	0.186	15	0.3507	31	0.0000	0
Common bottlenose dolphin	168,791	WNP offshore	0.0387	66	0.0226	39	0.0218	37			0.0831	142	0.0000	0
Common bottlenose dolphin	105,138	IA					0.0049	6	0.0199	21	0.0248	27	0.0000	0
Cuvier's beaked whale	90,725	WNP	0.0378	35	0.0121	12	0.026	26	0.0099	9	0.0858	82	0.0000	0
False killer whale	16,668	WNP	0.1499	25	0.0457	8	0.0844	15			0.2800	48	0.0000	0
False killer whale	9,777	IA					0.2162	22	0.3028	30	0.5190	52	0.0000	0
Fraser's dolphin	220,789	WNP	0.0305	68	0.0049	11	0.0479	108	0.0505	113	0.1338	300	0.0000	0
Ginkgo-toothed beaked whale	22,799	NP	0.0139	4	0.0045	2	0.0396	10	0.0655	15	0.1235	31	0.0000	0
Killer whale	12,256	WNP	0.0067	1	0.002	1	0.0342	5	0.0205	3	0.0634	10	0.0000	0
Kogia spp.	350,553	WNP	0.0187	66	0.0024	9	0.0206	73	0.0133	48	0.0550	196	0.0000	0
Longman's beaked whale	1,007	CNP	0.2125	3	0.0506	1	1.1563	14	0.7416	8	2.1610	26	0.0000	0
Melon-headed whale	36,770	WNP	0.1008	38	0.0306	12	1.113	411	0.7416	274	1.9860	735	0.0000	0
Pacific white-sided dolphin	931,000	WNP	0.0000	0	0.0035	33	0.0070	66			0.0105	99	0.0000	0
Pantropical spotted dolphin	438,064	WNP	0.0303	133	0.0086	38	0.2387	818	0.3105	681	0.5881	1,670	0.0000	0
Pygmy killer whale	30,214	WNP	0.0599	19	0.0183	6	0.1083	34	0.1644	51	0.3509	110	0.0000	0
Risso's dolphin	83,289	WNP	0.2357	197	0.0337	29	0.1327	111			0.4021	337	0.0000	0
Risso's dolphin	83,289	IA					0.2393	201	0.3428	286	0.5821	487	0.0000	0
Rough-toothed dolphin	145,729	WNP	0.0784	115	0.0106	16	0.0919	135	0.0683	101	0.2492	367	0.0000	0
Short-beaked common dolphin	3,286,163	WNP	0.0119	391	0.0045	148	0.0067	220			0.0231	759	0.0000	0
Short-finned pilot whale	53,608	WNP	0.3629	195	0.0691	38	0.2522	137	0.0792	44	0.7634	414	0.0000	0
Sperm whale	102,112	NP	0.0133	14	0.0031	4	0.0220	23	0.031	33	0.0694	74	0.0000	0
Spinner dolphin	1,015,059	WNP	0.0008	8	0.0002	3	0.0014	16	0.0021	23	0.0045	50	0.0000	0
Striped dolphin	570,038	WNP	0.0559	319	0.0159	91	0.0315	180			0.1033	590	0.0000	0
Striped dolphin	570,038	IA					0.0121	70	0.0268	154	0.0389	224	0.0000	0

Table 6. Post-mission quarterly and total annual estimates of the percentages of marine mammal stocks and the associated number of marine mammals in that stock affected by the one LFA sonar mission conducted by the USNS VICTORIOUS (T-AGOS 19) in the northwestern Pacific Ocean during the LOA reporting period from August 2013 to August 2014. ESA-listed marine mammals highlighted.

Marine Mammal Species/Species Groups	Number Animals in Stock	Stock Name[2]	120 to 180 dB SPE										≥180 dB SPE (with Mitigation)	
			Quarter 1 (August to November)		Quarter 2 (November to February)		Quarter 3 (February to May)		Quarter 4 (May to August)		Total Annual		Total for Quarter and Annual	
			Percent Stock Affected[3]	Number Animals Affected[4]	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected
Mysticetes														
Bryde's whale	20,501	WNP					0.0253	6			0.0253	6	0.0000	0
Common minke whale	25,049	WNP "O"					0.1044	27			0.1044	27	0.0000	0
Fin whale	9,250	WNP					0.0215	2			0.0215	2	0.0000	0
North Pacific right whale	922	WNP					0.0243	1			0.0243	1	0.0000	0
Western North Pacific gray whale	121	WNP					0.1880	1			0.1880	1	0.0000	0
Odontocetes														
Blainville's beaked whale	8,032	WNP					0.0477	4			0.0477	4	0.0000	0
Common bottlenose dolphin	105,138	IA					0.0026	3			0.0026	3	0.0000	0
Cuvier's beaked whale	90,725	WNP					0.0025	3			0.0025	3	0.0000	0
False killer whale	9,777	IA					0.1142	12			0.1142	12	0.0000	0
Fraser's dolphin	220,789	WNP					0.0163	37			0.0163	37	0.0000	0
Ginkgo-toothed beaked whale	22,799	NP					0.0168	4			0.0168	4	0.0000	0
Killer whale	12,256	WNP					0.0163	2			0.0163	2	0.0000	0
Kogia spp.	350,553	WNP					0.0053	19			0.0053	19	0.0000	0
Longman's beaked whale	1,007	WNP					0.5581	6			0.5581	6	0.0000	0
Melon-headed whale	36,770	WNP					0.5581	206			0.5581	206	0.0000	0
Pantropical spotted dolphin	438,064	WNP					0.1171	513			0.1171	513	0.0000	0
Pygmy killer whale	30,214	WNP					0.0394	12			0.0394	12	0.0000	0
Risso's dolphin	83,289	IA					0.1264	106			0.1264	106	0.0000	0
Rough-toothed dolphin	145,729	WNP					0.0252	37			0.0252	37	0.0000	0
Short-finned pilot whale	53,608	WNP					0.0253	14			0.0253	14	0.0000	0
Sperm whale	102,112	NP					0.0076	8			0.0076	8	0.0000	0
Spinner dolphin	1,015,059	WNP					0.0005	6			0.0005	6	0.0000	0
Striped dolphin	570,038	IA					0.0064	37			0.0064	37	0.0000	0
			No T-AGOS 19 Missions— Negative Activity Report		No T-AGOS 19 Missions— Negative Activity Report				No T-AGOS 19 Missions— Negative Activity Report					

Table 7. Post-mission quarterly and total annual estimates of the percentages of marine mammal stocks and the associated number of marine mammals in that stock affected by the three LFA sonar missions conducted by the USNS ABLE (T-AGOS 20) in the northwestern Pacific Ocean during the LOA reporting period from August 2013 to August 2014. ESA-listed marine mammals highlighted.

Marine Mammal Species/Species Groups	Number Animals in Stock	Stock Name[2]	120 to 180 dB SPE										≥180 dB SPE (with Mitigation)	
			Quarter 1 (August to November)		Quarter 2 (November to February)		Quarter 3 (February to May)		Quarter 4 (May to August)		Total Annual		Total for Quarter and Annual	
			Percent Stock Affected[3]	Number Animals Affected[4]	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected
Mysticetes														
Blue whale	9,250	CNP					0.0018	1			0.0018	1	0.0000	0
Bryde's whale	20,501	WNP					0.0361	8	0.0054	12	0.0415	20	0.0000	0
Common minke whale	25,049	WNP "O"					0.2532	65	0.2456	62	0.4988	127	0.0000	0
Fin whale	9,250	WNP					0.0559	6	0.0409	4	0.0968	10	0.0000	0
Humpback whale	1,107	WNP					1.3692	16			1.3692	16	0.0000	0
North Pacific right whale	922	WNP					0.0239	2			0.0239	2	0.0000	0
Western North Pacific gray whale	121	NP					0.1679	1			0.1679	1	0.0000	0
Odontocetes														
Blainville's beaked whale	8,032	WNP					0.0648	6	0.1242	10	0.1890	16	0.0000	0
Common bottlenose dolphin	168,791	WNP Offshore					0.0218	37			0.0218	37	0.0000	0
Common bottlenose dolphin	105,138	IA					0.0023	3	0.0133	14	0.0156	17	0.0000	0
Cuvier's beaked whale	90,725	WNP					0.0235	23	0.0066	6	0.0301	29	0.0000	0
False killer whale	16,668	WNP Pelagic					0.0844	15			0.0844	15	0.0000	0
False killer whale	9,777	IA					0.1020	10	0.2022	20	0.3042	30		
Fraser's dolphin	220,789	WNP					0.0316	71	0.0337	75	0.0653	146	0.0000	0
Ginkgo-toothed beaked whale	22,799	NP					0.0228	6	0.0437	10	0.0665	16	0.0000	0
Killer whale	12,256	WNP					0.0179	3	0.0137	2	0.0316	5	0.0000	0
Kogia spp.	350,553	WNP					0.0153	54	0.0089	32	0.0242	86	0.0000	0
Longman's beaked whale	1,007	WNP					0.5982	8	0.4952	5	1.0934	13	0.0000	0
Melon-headed whale	36,770	WNP					0.5549	205	0.4952	183	1.0501	388	0.0000	0
Pacific white-sided dolphin	931,000	WNP					0.0070	66			0.0070	66	0.0000	0
Pantropical spotted dolphin	438,064	WNP					0.1216	305	0.2073	455	0.3289	760	0.0000	0
Pygmy killer whale	30,214	WNP					0.0689	22	0.1098	34	0.1787	56	0.0000	0
Risso's dolphin	83,289	WNP					0.1327	111			0.1327	111	0.0000	0
Risso's dolphin	83,289	IA					0.1129	95	0.2289	191	0.3418	286		
Rough-toothed dolphin	145,729	WNP					0.0667	98	0.0456	67	0.1123	165	0.0000	0
Short-beaked common dolphins	3,286,163	WNP					0.0067	220			0.0067	220	0.0000	0
Short-finned pilot whale	53,608	WNP					0.2269	123	0.0529	29	0.2798	152	0.0000	0
Sperm whale	102,112	NP					0.0144	15	0.0207	22	0.0351	37	0.0000	0
Spinner dolphin	1,015,059	WNP					0.0009	10	0.0014	15	0.0023	25	0.0000	0
Striped dolphin	570,038	WNP					0.0315	180			0.0315	180	0.0000	0
Striped dolphin	570,038	IA					0.0057	33	0.0179	103	0.0236	136	0.0000	0
			No T-AGOS 20 Missions— Negative Activity Report		No T-AGOS 20 Missions— Negative Activity Report									

Table 8. Post-mission quarterly and total annual estimates of the percentages of marine mammal stocks and the associated number of marine mammals in that stock affected by the three LFA sonar missions conducted by the USNS EFFECTIVE (T-AGOS 21) in the northwestern Pacific Ocean during the LOA reporting period from August 2013 to August 2014. ESA-listed marine mammals highlighted.

			120 to 180 dB SPE										≥180 dB SPE (with Mitigation)	
			Quarter 1 (August to November)		Quarter 2 (November to February)		Quarter 3 (February to May)		Quarter 4 (May to August)		Total Annual		Total for Quarter and Annual	
Marine Mammal Species/Species Groups	Number Animals in Stock	Stock Name[2]	Percent Stock Affected[3]	Number Animals Affected[4]	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected	Percent Stock Affected	Number Animals Affected
Mysticetes														
Blue whale	9,250	CNP	0.0000	1	0.0003	1					0.0003	2	0.0000	0
Bryde's whale	20,501	WNP	0.0240	5	0.0085	2			0.0271	6	0.0596	13	0.0000	0
Common minke whale	25,049	WNP "O"	0.2841	72	0.0473	12			0.1222	31	0.4536	115	0.0000	0
Fin whale	9,250	WNP			0.0062	1			0.0203	2	0.0265	3	0.0000	0
Humpback whale	1,107	WNP	0.0001	1	0.2323	3					0.2324	4	0.0000	0
North Pacific right whale	922	WNP			0.0031	1					0.0031	1	0.0000	0
Odontocetes														
Blainville's beaked whale	8,032	WNP	0.0395	4	0.0127	2			0.0618	5	0.1140	11	0.0000	0
Common bottlenose dolphin	168,791	WNP Offshore	0.0387	66	0.0226	39					0.0613	105	0.0000	0
Common bottlenose dolphin	105,138	IA							0.0066	7	0.0066	7	0.0000	0
Cuvier's beaked whale	90,725	WNP	0.0378	35	0.0121	12			0.0033	3	0.0532	50	0.0000	0
False killer whale	16,668	WNP Pelagic	0.1499	25	0.0457	8					0.1956	33	0.0000	0
False killer whale	9,777	IA							0.1006	10	0.1006	10	0.0000	0
Fraser's dolphin	220,789	WNP	0.0305	68	0.0049	11			0.0168	38	0.0522	117	0.0000	0
Ginkgo-toothed beaked whale	22,799	NP	0.0139	4	0.0045	2			0.0218	5	0.0402	11	0.0000	0
Killer whale	12,256	WNP	0.0067	1	0.0020	1			0.0068	1	0.0155	3	0.0000	0
Kogia spp.	350,553	WNP	0.0187	66	0.0024	9			0.0044	16	0.0255	91	0.0000	0
Longman's beaked whale	1,007	WNP	0.2125	3	0.0506	1			0.2464	3	0.5095	7	0.0000	0
Melon-headed whale	36,770	WNP	0.1008	38	0.0306	12			0.2464	91	0.3778	141	0.0000	0
Pacific white-sided dolphin	931,000	WNP			0.0035	33					0.0035	33	0.0000	0
Pantropical spotted dolphin	438,064	WNP	0.0303	133	0.0086	38			0.1032	226	0.1421	397	0.0000	0
Pygmy killer whale	30,214	WNP	0.0599	19	0.0183	6			0.0546	17	0.1328	42	0.0000	0
Risso's dolphin	83,289	WNP	0.2357	197	0.0337	29					0.2694	226	0.0000	0
Risso's dolphin	83,289	IA							0.1139	95	0.1139	95	0.0000	0
Rough-toothed dolphin	145,729	WNP	0.0784	115	0.0106	16			0.0227	34	0.1117	165	0.0000	0
Short-beaked common dolphins	3,286,163	WNP	0.0119	391	0.0045	148					0.0164	539	0.0000	0
Short-finned pilot whale	53,608	WNP	0.3629	195	0.0691	38			0.0263	15	0.4583	248	0.0000	0
Sperm whale	102,112	NP	0.0133	14	0.0031	4			0.0103	11	0.0267	29	0.0000	0
Spinner dolphin	1,015,059	WNP	0.0008	8	0.0002	3			0.0007	8	0.0017	19	0.0000	0
Striped dolphin	570,038	WNP	0.0559	319	0.0159	91					0.0718	410	0.0000	0
Striped dolphin	570,038	IA							0.0089	51	0.0089	51	0.0000	0
							No T-AGOS 21 Missions—Negative Activity Report							

oceanographic conditions; the same analysis methodology and population data (densities and abundances) were utilized to compute both pre- and post-mission take estimates. The density and abundance estimates of the potentially affected marine mammal stocks in the two mission areas in which LFA sonar was transmitted during this LOA reporting period were derived using the best available published data and information (Appendix B; DoN, 2013a).

The highest total percentage of marine mammal stocks estimated to be affected by all SURTASS LFA sonar transmissions (RLs 120 to 180 dB) from the three vessels that transmitted LFA sonar during the annual LOA reporting period was 2.1610% of the Western North Pacific stock of Longman's beaked whales while the highest percentage of affected ESA-listed marine mammal stocks was estimated at 1.6016% for the Western North Pacific stock of humpback whales (Table 5). The highest number of any marine mammal stock estimated to be affected by SURTASS LFA sonar transmissions (RLs 120 to 180 dB) from all vessels during the annual LOA period was 1,670 pantropical spotted dolphins of the Western North Pacific stock (Table 5). The percentage and number of animals in any marine mammal stocks affected by LFA sonar transmissions at RLs ≥180 dB (with mitigation) from all vessels during the annual reporting period were 0% and 0 marine mammals, respectively.

The 7.68 hr of LFA sonar transmissions during the one mission the USNS VICTORIOUS conducted from 15 August 2013 through 14 August 2014 affected an estimated 0.5581% of the Western North Pacific stocks of Longman's beaked whales and melon-headed whales, which represents 6 and 206 animals, respectively, of each stock estimated to be affected at RLs of 120 to 180 dB (Table 6). The largest number of marine mammals estimated to be affected at RLs of 120 to 180 dB was 513 pantropical spotted dolphins from the Western North Pacific stock.

At 1.3692%, or 16 animals, the Western North Pacific stock of humpback whales was estimated to be the most affected at RLs of 120 to 180 dB by the 18.10 hr of LFA sonar that were transmitted during three missions in the northwestern Pacific Ocean by the USNS ABLE (Table 7). The largest number of marine mammals estimated to be affected by the ABLE's LFA transmissions at RLs of 120 to 180 dB was 760 pantropical spotted dolphins in the Western North Pacific stock.

The USNS EFFECTIVE's three missions over the 2013 to 2014 annual LOA period entailed 12.85 hr of LFA sonar transmissions, which affected the highest estimated percentage, 0.5095% of the Western North Pacific stock of Longman's beaked whales (or 7 animals) at RLs of 120 to 180 dB (Table 8). An estimated 539 short-beaked common dolphins were the stock with the highest estimated number of affected animals at RLs of 120 to 180 dB out of a stock estimated to include more than 3 million animals.

6.3 SUMMARY OF AFFECTED MARINE MAMMAL SPECIES AND STOCKS

The post-operational incidental harassment estimates (Tables 5 through 8) for SURTASS LFA sonar transmissions during the 2013 to 2014 annual LOA period indicate that no marine mammals from any stocks in the northwestern Pacific Ocean were exposed to received levels at or above 180 dB (with mitigation applied). The highest overall percentage of any marine mammal stock exposed at RLs of 120 to 180 dB from all SURTASS LFA vessel transmissions during the seven total missions conducted over the annual LOA reporting period was estimated as 2.16% for the Western North Pacific stock of Longman's beaked whales, which represented a total of 26 animals affected (Table 5). The post-operational estimates are, therefore, significantly below the 12% allowed for any marine mammal stock under LOA Condition 8(j) and the Final Rule (77 FR 50290) (NOAA, 2012).

In addition, no marine mammal stranding events associated with the times and locations of SURTASS LFA sonar missions were reported during this annual LOA period. Last, no apparent avoidance reactions or acute effects to threatened or endangered species were observed in response to exposure from SURTASS LFA sonar transmissions.

7 SUMMARY OF MONITORING AND REPORTING FOR LOA PERIOD AUGUST 2013 TO AUGUST 2014

7.1 2013 TO 2014 STATUS ON POTENTIAL RESEARCH ON THE EFFECTS OF SURTASS LFA SONAR ON BEAKED WHALES AND/OR HARBOR PORPOISES

7.1.1 SCIENTIFIC ADVISORY GROUP (SAG)

MMPA Final Rule §218.235(h) and §218.236(e) and conditions of the 2013 to 2014 LOAs for SURTASS LFA sonar vessels (Conditions 12[a] and 13[b]) charge the Navy with completing the assessment of the types of monitoring/research to increase the understanding of the potential effects of LFA sonar transmissions on beaked whales and/or harbor porpoises. During early 2013, the Navy convened the SAG, led by Dr. Brandon Southall and consisting of five other scientific specialists from university, private, and government organizations[5]. In August 2013, the SAG submitted a report, based on the best available information, of their recommendations on the types of laboratory and field research and monitoring efforts that the team of scientists considered feasible for the Navy to implement. In broad terms, the SAG concluded that the available data suggest that the potential for adverse effects from SURTASS-LFA sonar exposure on beaked whales and porpoises appears limited. The SAG recommended a phased research approach designed to verify this conclusion and address the most relevant research questions.

While data on the LF hearing capabilities of beaked whale species and harbor porpoises are limited, the SAG concluded that the available information suggests that the fundamental frequencies of SURTASS LFA sonar (rather than harmonics) would be the most audible aspects of the LFA sonar signal. Further, the geographic overlap between the current mission areas in which SURTASS LFA sonar has been authorized annually to operate and the distributional range of the two taxa is greater for the more pelagic beaked whale species than for the more coastally-occurring harbor porpoises. The SAG developed a strategic, iterative, parallel research approach for beaked whales (primarily involving field work with existing methods) and harbor porpoises (primarily involving laboratory studies with existing methods) that could be implemented to address specific information gaps, if deemed necessary.

7.1.2 EXECUTIVE OVERSIGHT GROUP (EOG)

Following the submittal of the SAG report, in 2014, the Navy twice convened the EOG, composed of Navy and NMFS personnel and representatives of the Marine Mammal Commission. The purpose of the EOG is to provide the Navy with: 1) independent, objective review of the SAG's findings, 2) research guidance and prioritization, and 3) final recommendations to the Navy and NMFS on research efforts to ascertain effects of exposure to SURTASS LFA sonar specifically targeting beaked whale species and harbor porpoises. The members of the EOG have additionally recommended additional lower-cost research and monitoring studies based on existing occurrence and underwater acoustic vocalization data. The EOG is in the process of ranking the research and monitoring efforts and will assist the Navy in providing NMFS with a report of the recommendations along with a strategic approach to implementing the research/monitoring initiatives given the limited research funding available.

7.2 STRANDING INCIDENT MONITORING

As required by LOA Condition 13(c), the Navy monitors and reviews information on marine mammal strandings from the media as well as federal, state, and international organizations. Thirteen stranding events occurred in the western and central North Pacific Ocean during the 2013 to 2014 annual LOA period near or in the mission areas where SURTASS LFA sonar was authorized to operate. Two strandings occurred in the Hawaiian Islands, where SURTASS LFA sonar was not employed during the

5 The members of the SAG consist of Dr. Brandon Southall (Southall Environmental Associates, Inc.), Dr. William Ellison (Marine Acoustics, Inc.), Dr. Chris Clark (Cornell University), Dr. Dan Costa (University of California Santa Cruz), Dr. Ron Kastelein (Sea Mammal Research Company), and Dr. Jason Gedamke (NMFS).

2013 to 2014 LOA period. From August 2013 to August 2014, four stranding events occurred in the Philippine Islands, one stranding event occurred in Taiwan, two strandings occurred in Vietnam, one in Guam, while the remaining strandings occurred along the coast of China. Dynamite fishing practices was the known cause of one of the Philippine strandings, killing 22 dwarf sperm whales, with weather conditions (passing of Typhoon Rammasun) thought to have been the cause of two of the strandings along China's coast. The cause of the remainder of the strandings in the northwestern Pacific is unknown; no information was available on whether necropsies were conducted on the majority of the strandings to assess the cause of death.

None of the stranding events that occurred in the central or western North Pacific Ocean coincided spatially or temporally with LFA sonar employment during the 2013 to 2014 LOA period. Further, no dead, injured, or stranded marine mammals were observed or detected at sea by any of the SURTASS LFA sonar vessels during their annual missions.

7.3 PASSIVE ACOUSTIC DATA

The Navy continues to internally discuss declassifying and sharing some portion of classified data collected by the M3 program and the Navy's underwater passive acoustic systems with scientists with the appropriate security credentials, per LOA Conditions 12(b) and 13(a). Due to these ongoing internal Navy discussions and associated security concerns, nothing further on the status of this requirement can be detailed.

7.4 AUGMENTING MARINE MAMMAL MONITORING WITH SURTASS PASSIVE SONAR

As LOA Condition 12(c) requires, the Navy continues to review the feasibility of using SURTASS passive sonar arrays to augment marine mammal monitoring capabilities during Navy Range activities or other exercises. Presently, there are no near-term opportunities foreseen in which a SURTASS LFA vessel would be available to augment the collection of data on marine mammal vocalizations before, during, or after designated exercises; particularly those occurring within Navy range complexes. A considerable constraint in using the SURTASS passive sonar array to participate in distant exercises or during range complex activities is the low speed at which the SURTASS LFA vessels are capable of traveling, necessitating lengthy transit times and thus, considerable operational costs.

7.5 AMBIENT NOISE DATA

Ambient underwater noise data have been collected by Navy passive acoustic assets, are processed, and archived. Due to national security concerns, use of these data is currently for official use only. In accordance with LOA Condition 12(d), the Navy continues to study the feasibility of declassifying portions of these data after all related security concerns have been resolved.

7.6 MITIGATION EFFECTIVENESS

LOA Condition 13(f)(iii) requires an analysis of the effectiveness of the mitigation measures associated with the authorized operation of SURTASS LFA sonar with recommendations for improvement where applicable. During SURTASS LFA sonar transmissions, the radial distance of the LFA mitigation zone was predictably about 1 km (0.54 nmi), which in combination with the buffer zone, resulted in an approximate 2-km (1.08-nmi) monitoring radius around the LFA sonar vessels.

Although visual observers have been trained in accordance with Condition 9(a)(i) of the LOAs and were posted as specified in LOA Condition 9(a)(iii) and CNO executive directive during LFA sonar transmissions, no visual detections of marine mammals or sea turtles resulted from these efforts during the annual LOA period. The embarked MILDET and system engineers monitored the SURTASS passive sonar system for marine mammal vocalizations as specified in LOA Condition 9(b) and were additionally trained in the distinction between biological and mission-directed sounds. However, no passive acoustic detections were made during the seven SURTASS LFA sonar missions (Table 3).

The HF/M3 sonar systems were operated continuously during LFA sonar transmissions in accordance with MMPA Final Rule requirements and LOA Conditions 8(e) and 9(c) (Appendix A). Ten active acoustic (HF/M3 sonar) detections were reported with no corresponding passive acoustic or visual detections during the missions of the USNS VICTORIOUS, USNS ABLE, and USNS EFFECTIVE. Of these 10 detections, five were assessed to be possible marine animals, which accordingly resulted in the suspension/delay of LFA sonar transmissions.

In the 2001 FOEIS/EIS (DoN, 2001), the Navy estimated that the probability of detection for visual and passive acoustic monitoring was low, with predicted probabilities of 9% and 25%, respectively; however, detection effectiveness of the active acoustic monitoring (HF/M3) was demonstrated to be 95%. The three mitigation monitoring measures used together result in a predicted effectiveness nearing 100% within the 180-dB LFA mitigation zone (DoN, 2007 and 2011). No recent available data alter these conclusions. Hence, the Navy proposes no recommendations for improvements to the mitigation monitoring measures.

During the LOA reporting period from 15 August 2013 through 14 August 2014, all mitigation measure/mitigation monitoring required by the LOAs, MMPA Final Rule, and CNO directives were strictly adhered to and conducted in accordance with the protocols specified in those requirements. This minimized, to the greatest extent practicable, adverse impacts on marine mammal stocks and species and their habitats. In examining the results of the mitigation monitoring procedures during this annual LOA reporting period in addition to the results of the previous eleven years of SURTASS LFA sonar operations, the Navy has concluded that the mitigation measures/mitigation monitoring have been implemented properly, and accordingly, have successfully minimized the potential effects of SURTASS LFA sonar to marine mammals. This conclusion is supported by documentation that no known mortality or injury to marine mammals stocks have occurred over this period.

7.7 ASSESSMENT OF LONG-TERM EFFECTS AND ESTIMATED CUMULATIVE IMPACTS

Since the incidental harassments that occurred during this LOA reporting period are consistent with those projected in the relevant NEPA documentation on SURTASS LFA Sonar (i.e., the 2012 DoN FSEIS/SOEIS) and supporting documentation, the Navy's assessment of the long-term effects and estimated cumulative impacts from employment of SURTASS LFA sonar over this LOA reporting period has not changed and remains consistent with earlier findings. The four SURTASS LFA sonar systems do not add appreciably to the underwater sounds to which marine mammal stocks are exposed, no evidence exists indicating that SURTASS LFA sonar transmissions have caused mortality or injury to marine mammals, and the cumulative effects from the operation of up to four SURTASS LFA sonar systems are not a reasonably foreseeable significant adverse impact on marine mammals.

7.8 ADAPTIVE MANAGEMENT

Since the understanding of the potential effects of SURTASS LFA sonar on marine mammals is continuing to evolve, the MMPA Final Rule (NOAA, 2012) provided an adaptive management process that allows NMFS to modify or augment existing mitigation or monitoring measures (after consultation with the Navy) if doing so will have a reasonable likelihood of more effectively accomplishing the mitigation and monitoring objectives (50 CFR 218.241). NMFS and the Navy will meet annually (if deemed necessary) to discuss the monitoring reports, Navy research and development studies, current science, and to determine whether mitigation or monitoring modifications are appropriate.

The second Adaptive Management meeting for the SURTASS LFA sonar program is scheduled for early December 2014. Representatives from NMFS Office of Protected Resources and General Council (GC); Navy CNO (N2/N6 F24 and N45), Navy GC, DASN(E), ASN (EIE) GC, Navy Judge Advocate General, and support contractors; and the Marine Mammal Commission have been invited to attend. The planned meeting discussions include overviews of the Navy's quarterly monitoring reports and associated

incidental harassment, status of monitoring and reporting requirements, recent relevant scientific literature, discussion of possible OBIAs, and pertinent marine mammal stranding events.

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APPENDIX A:

EXEMPLAR[6] LETTER OF AUTHORIZATION (LOA) GOVERNING THE TAKE OF MARINE MAMMALS INCIDENTAL TO THE U.S. NAVY'S OPERATION OF SURVEILLANCE TOWED ARRAY SENSOR SYSTEM LOW FREQUENCY ACTIVE (SURTASS LFA) SONAR, AUGUST 15, 2013 THROUGH AUGUST 14, 2014

6 Only the LOA for the USNS VICTORIOUS (T-AGOS 19) is included herein. The LOAs for the USNS ABLE, USNS EFFECTIVE, and USNS IMPECCABLE are exactly the same as the LOA for the VICTORIOUS, with only the ship's names changing in the individual LOAs.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE

LETTER OF AUTHORIZATION

The Chief of Naval Operations, Department of the Navy, 2000 Navy Pentagon, Washington, D.C. 20350-2000, and persons operating under his authority (i.e., Navy), are authorized to take marine mammals incidental to Navy operations of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar in accordance with 50 CFR Part 218, Subpart X– Taking of Marine Mammals Incidental to Navy Operations of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar subject to the provisions of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*; MMPA) and the following conditions:

1. This Authorization is valid for the period August 15, 2013, through August 14, 2014.

2. This Authorization is valid only for the unintentional taking of the species of marine mammals identified in 50 CFR § 218.230(b) and Condition 5 of this Authorization governing the taking of these animals incidental to the activity specified in Condition 3. This authorization shall be valid only for take consistent with the provisions in 50 CFR § 218.232 and the terms of this Authorization as specified in this Authorization.

3. This Authorization is valid only for activities associated with the routine training, testing, and military operations of the SURTASS LFA sonar onboard the United States Naval Ship (USNS) VICTORIOUS (T-AGOS 19). The sound signals transmitted by the SURTASS LFA sonar source must be between 100 and 500 Hertz (Hz) with a source level for each of the 18 projectors at no more than 215 decibels (dB) re: 1 micro Pascal (μPa) at 1 meter (m) (root mean square (rms)) and a maximum duty cycle of 20 percent.

4. This Authorization, combined with Authorizations for the USNS ABLE (T-AGOS 20), USNS EFFECTIVE (T-AGOS 21), and USNS IMPECCABLE (T-AGOS 23), is valid for an estimated total of 20 nominal active sonar missions among the four SURTASS LFA sonar vessels (or equivalent number of shorter missions but shall not exceed a total of 432 hours of transmit time per vessel during the period of this Authorization's effectiveness) within the following areas:

   (a) Up to 16 nominal missions in the northwestern Pacific Ocean, which includes the following mission areas: east of Japan; the North Philippine Sea; the west Philippine Sea; offshore Guam; the Sea of Japan; the East China Sea; the South China Sea; and offshore Japan (25° to 40° N and 10° to 25° N).

(b) Up to 4 nominal missions in the north-central Pacific Ocean that includes the Hawaii North and Hawaii South mission areas within the Hawaii Range Complex.

SPECIES AUTHORIZED AND LEVEL OF TAKE

5. The incidental take of marine mammals under the activity identified in Conditions 3 and 4 of this Authorization is limited to the following species:

   (a) **Mysticetes**: blue whale (*Balaenoptera musculus*), Bryde's whale (*Balaenoptera edeni*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), common minke whale (*Balaenoptera acutorostrata*), north Pacific right whale (*Eubalena japonica*), sei whale (*Balaenoptera borealis*), and Western North Pacific gray whale (*Eschrichtius robustus*).

   (b) **Odontocetes**: Baird's beaked whale (*Berardius bairdii*), Blainville's beaked whale (*Mesoplodon densirostris*), common bottlenose dolphin (*Tursiops truncatus*), Cuvier's beaked whale (*Ziphius cavirostris*), Dall's porpoise (*Phocoenoides dalli*), dwarf sperm (*Kogia simus*), false killer whale (*Pseudorca crassidens*), Fraser's dolphin (*Lagenodelphis hosei*), ginkgo-toothed beaked whale (*Mesoplodon ginkgodens*), Hubbs' beaked whale (*Mesoplodon carhubbsi*), killer whale (*Orca orcinus*), *Kogia* spp., Longman's beaked whale (*Indopacetus pacificus*), melon-headed whale (*Peponocephala electra*), *Mesoplodon* spp., Pacific white- sided dolphin (*Lagenorhynchus obliquidens*), pantropical spotted dolphin (*Stenella attenuata*), pygmy killer whale (*Feresa attenuata*), pygmy sperm whales (*K. breviceps*), Risso's dolphin (*Grampus griseus*), rough-toothed dolphin (*Steno bredanensis*), short-beaked common dolphin (*Delphinus delphis*), short-finned pilot whale (*Globicephala macrorhynchus*), sperm whale (*Physeter macrocephalus*), spinner dolphin (*Stenella longirostris*), Stejneger's beaked whale (*Mesoplodon stejnegeri*), and striped dolphin (*Stenella coeruleoalba*).

   (c) **Pinnipeds**: Hawaiian monk seal (*Monachus shauinslandi*)

6. The taking of marine mammals by the Holder of this Authorization is limited to the incidental taking of marine mammal species identified in Condition 5 by Level A and Level B harassment (as defined in the MMPA and 50 CFR § 216.3) within those areas authorized under Condition 4. The take, by Level B harassment, that occurs during the year covered by this Authorization may not exceed 12 percent of any marine mammal stock listed in Condition 5 (see Condition 8j).

7. Taking of marine mammal species not listed under Condition 5 by harassment, injury, or mortality or the taking by mortality of any marine mammal species listed under Condition 5, is prohibited.

MITIGATION

8. The Holder of this Authorization, and any individuals operating under his authority, must conduct the activity identified in 50 CFR § 218.230 and Condition 3 of this Authorization in a manner that minimizes, to the greatest extent practicable, adverse impacts on marine mammals, their habitats, and the availability of marine mammals for subsistence. When

conducting operations identified in 50 CFR § 218.230, the following mitigation measures must be implemented:

(a) The Holder of this Authorization, and any individuals operating under his authority, must not broadcast the SURTASS LFA sonar signal at a frequency greater than 500 Hz.

(b) Through mitigation described under 50 CFR § 218.234 and Condition 9 (Mitigation Monitoring) of this Authorization, the Holder of this Authorization and any individuals operating under his authority must ensure, to the greatest extent practicable, that no marine mammal is subjected to a sound pressure level of 180 dB re: 1 µPa (rms) or greater.

(c) **LFA Sonar Mitigation Zone**: Prior to commencing and during SURTASS LFA sonar transmissions, the Holder of this Authorization will use near real-time environmental data and underwater acoustic prediction models to determine the propagation of the SURTASS LFA sonar signals in the mission area. The Holder must determine the distance from the SURTASS LFA sonar source to the 180-dB re: 1 µPa isopleth (rms) (*i.e.*, the LFA sonar mitigation zone) to comply with Condition 8(b).

(i) The Holder will update these sound field estimates every 12 hours or more frequently when meteorological or oceanographic conditions change.

(d) **Additional 1-Kilometer (km) Buffer Zone**: The Holder of this Authorization will establish a 1-km buffer zone around the LFA sonar mitigation zone.

(e) **Ramp-Up Procedures for the HF/M3 System**: The Holder of this Letter of Authorization and any individuals operating under his authority, will ramp up the High Frequency / Marine Mammal Monitoring (HF/M3) active sonar referenced in 50 CFR § 218.234 from a power level beginning at a maximum source sound pressure level of 180 dB re: 1 µPa (rms) in 10-dB increments to operating levels over a period of no less than five minutes:

(i) At least 30 minutes prior to any SURTASS LFA sonar transmission;

(ii) Prior to any SURTASS LFA sonar calibrations or testing that are not part of regular SURTASS LFA sonar transmissions described in 50 CFR § 218.230; and

(iii) Anytime after individuals have powered down the HF/M3 active sonar source for more than two minutes.

(iv) Once individuals detect a marine mammal, they will not increase the HF/M3 active sonar system's sound pressure. Resumption of the ramp-up of HF/M3 sonar system would not occur until marine mammals are no longer detected by the HF/M3 active sonar system, passive acoustic monitoring or visual monitoring described in Condition 9.

(f) **Suspension/Delay for SURTASS LFA Sonar Transmissions:** If the Holder of this Authorization and any individuals operating under his authority, detects a marine mammal through monitoring required under 50 CFR § 218.235 and Condition 9 within either the LFA sonar mitigation zone or the 1-km buffer zone, the Holder will immediately suspend or delay SURTASS LFA sonar transmissions.

USNS VICTORIOUS (2013 – 2014)

(g) **Resumption of SURTASS LFA Sonar Transmissions**: The Holder of this Authorization and any individuals operating under his authority may resume/commence SURTASS LFA sonar transmissions 15 minutes after:

(i) All marine mammals have left the area of the LFA sonar mitigation zone and the 1-km buffer zone; and/or

(ii) There is no further detection of any marine mammal within the LFA sonar mitigation zone plus the 1-km buffer zone as determined by the passive or active acoustic or visual monitoring protocols described in 50 CFR § 218.235 and Condition 9.

(h) **Geographic Restrictions**: The Holder of this Authorization and any individuals operating under his authority will not operate SURTASS LFA sonar such that the SURTASS LFA sonar sound field exceeds 180 dB re: 1 μ Pa (rms):

(i) At a distance of less than or equal to 22 km (14 miles (mi); 12 nautical miles (nmi)) from any coastline, including offshore islands.

(ii) At a distance of less than or equal to 1 km (0.62 mi; 0.54 nm) seaward of the outer perimeter of any Offshore Biologically Important Area (OBIA) for marine mammals designated in 50 CFR § 218.234(f)(2) and described in Condition 8(h)(iii) during the period specified.

(iii) The OBIAs for marine mammals (with specified periods) for SURTASS LFA sonar routine training, testing, and military operations are:

OBIA	Period of Effectiveness
Georges Bank	Year-round
Roseway Basin Right Whale Conservation Area	June through December, annually
Great South Channel, U.S. Gulf of Maine, and Stellwagen Bank National Marine Sanctuary (NMS)	January 1 to November 14, annually
Southeastern U.S. Right Whale Seasonal Habitat	November 15 to April 15, annually
North Pacific Right Whale Critical Habitat	March through August, annually
Silver Bank and Navidad Bank	December through April, annually
Coastal waters of Gabon, Congo and Equatorial Guinea	June through October, annually
Patagonian Shelf Break	Year-round
Southern Right Whale Seasonal Habitat	May through December, annually
Central California NMSs	June through November, annually
Antarctic Convergence Zone	October through March, annually
Piltun and Chayvo offshore feeding grounds in the Sea of Okhotsk	June through November, annually

USNS VICTORIOUS (2013 – 2014)

Coastal waters off Madagascar	July through September, annually for humpback whale breeding and November through December, annually for migrating blue whales.
Madagascar Plateau, Madagascar Ridge, and Walters Shoal	November through December, annually
Ligurian-Corsican-Provencal Basin and Western Pelagos Sanctuary in the Mediterranean Sea	July to August, annually
Hawaiian Islands Humpback Whale NMS and Penguin Bank	November through April, annually
Costa Rica Dome	Year-round
Great Barrier Reef Between 16° S and 21° S	May through September, annually
Bonney Upwelling on the southern coast of Australia	December through May, annually
Northern Bay of Bengal and Head of Swatch-of-No-Ground	Year-round
Olympic Coast NMS and Prairie, Barkley Canyon, and Nitnat Canyon	Olympic NMS: December, January, March, and May, annually The Prairie, Barkley Canyon, and Nitnat Canyon: June through September, annually
Abrolhos Bank	August through November

Note: See § 218.234(f)(2) and Attachment 1 for geographic coordinate information.

(i) **Operational Exception for SURTASS LFA Sound Field in OBIAs**: During military operations, SURTASS LFA sonar transmissions may exceed 180 dB re: 1 µPa (rms) within the boundaries of an OBIA, including operating within an OBIA, when the Holder of this Authorization determines that it is: 1) operationally necessary to continue tracking an existing underwater contact; or 2) operationally necessary to detect a new underwater contact within the OBIA. This exception does not apply to routine training and testing with the SURTASS LFA sonar systems.

(j) **Mission Planning**: The Holder of this Authorization must maintain a running calculation/estimation of takes of each species and stocks over the effective period of these regulations. The Holder of this Authorization will plan all SURTASS LFA sonar missions to ensure that no more than 12 percent of any marine mammal stock listed in 50 CFR § 218.230(b)(1) through (3) would be taken by Level B harassment annually. This annual per-stock cap of 12 percent applies regardless of the number of LFA sonar vessels operating. The Holder of this Authorization must coordinate with the Holder of the Letters of Authorization issued to the USNS ABLE, USNS EFFECTIVE, and the USNS IMPECCABLE, to ensure that this condition is met for all vessels combined.

USNS VICTORIOUS (2013 – 2014)

MITIGATION MONITORING

9. The Holder of this Authorization, and any individuals operating under his authority, must:

   (a) Perform the following for visual mitigation monitoring:

      (i) Marine mammal biologists qualified in conducting at-sea marine mammal visual monitoring from surface vessels will train and qualify designated ship personnel as lookouts to conduct at-sea visual monitoring.

      (ii) Marine mammal biologists will train the lookouts in the most effective means to ensure quick and effective communication within the command structure to facilitate implementation of protective measures if they observe marine mammals.

      (iii) Conduct visual monitoring from the ship's bridge during daylight hours (30 minutes before sunrise until 30 minutes after sunset) during operations that employ SURTASS LFA sonar in the active mode. Maintain a topside watch with standard binoculars (7x) and with the naked eye.

   (b) Perform the following for passive acoustic monitoring:

      (i) Use the low frequency, passive SURTASS sonar system to listen for vocalizing marine mammals.

   (c) Perform the following for active acoustic monitoring:

      (i) Use the HF/M3 active sonar to locate and track marine mammals in relation to the SURTASS LFA sonar vessel and the sound field produced by the SURTASS LFA sonar source array, subject to the ramp-up requirements in § 218.234(e) and Condition 8(e).

10. Mitigation monitoring under Conditions 9(a), (b), and (c) must:

   (a) Commence at least 30 minutes before the first SURTASS LFA sonar transmission (30 minutes before sunrise for visual monitoring);

   (b) Continue between sonar transmissions (pings); and

   (c) Continue either for at least 15 minutes after completion of the SURTASS LFA sonar transmission exercise (30 minutes after sunset for visual monitoring) or if marine mammals are showing abnormal behavioral patterns, for a period of time until behavior patterns return to normal or conditions prevent continued observations.

MONITORING

11. The Holder of this Authorization and any individuals operating under his authority, for activities described in 50 CFR § 218.230 must:

   (a) Cooperate with NMFS and any other federal agency for monitoring the impacts of the activity on marine mammals; and

   (b) Designate qualified on-site individuals to conduct the mitigation, monitoring, and

USNS VICTORIOUS (2013 – 2014)

reporting activities specified in this Letter of Authorization.

12. The Holder of this Authorization and any individuals operating under his authority will conduct all monitoring required under the Letter of Authorization to increase knowledge of the affected marine mammal species. The Holder of this Authorization must:

(a) Complete consideration of the Scientific Advisory Group's final report on the different types of monitoring/research that could increase the understanding of the potential effects of SURTASS low-frequency active sonar transmissions on beaked whales and/or harbor porpoises.

(b) Continue to assess data from the Marine Mammal Monitoring Program and work toward making some portion of that data, after appropriate security reviews, available to scientists with appropriate clearances. Any portions of the analyses conducted by these scientists based on these data that are determined to be unclassified after appropriate security reviews should be made publicly available.

(c) Continue to explore the feasibility of coordinating with other Navy fleet assets and/or range monitoring programs to include the use of SURTASS passive sonar (towed horizontal line arrays) to augment the collection of marine mammal vocalizations before, during, and after designated exercises.

(d) Continue to collect ambient noise data and explore the feasibility of declassifying and archiving the ambient noise data for incorporation into appropriate ocean noise budget efforts.

REPORTING

13. The Holder of this Authorization and any individuals operating under his authority must:

(a) Provide a status update to NMFS when the Holder submits the next annual application on efforts to assess the data collected by its undersea arrays and progress toward making some portion of that data, after appropriate security reviews, available to scientists with appropriate clearances.

(b) Draft a plan of action outlining a strategy for implementing the SAG's recommendations for going forward with beaked whale and/or harbor porpoise research; or describe in writing why such research is not feasible/or is unlikely to increase the understanding of the potential effects of low-frequency active sonar transmissions on beaked whales and/or harbor porpoises, to be followed by a meeting with NMFS to discuss any other potential options.

(c) Systematically observe SURTASS LFA sonar operations for injured or disabled marine mammals and monitor the principal marine mammal stranding networks and other media to correlate analysis of any whale strandings that could potentially be associated with SURTASS LFA sonar operations. The Holder and any individuals operating under his authority shall:

(i) Ensure that NMFS is notified immediately or as soon as clearance procedures allow if an injured, stranded, or dead marine mammal is found during or shortly after, and in the vicinity of, any SURTASS LFA operations. The Holder will report the incident to the Incidental Take Program Supervisor, Permits and

USNS VICTORIOUS (2013 – 2014)

Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Jeannine.Cody@noaa.gov.

(ii) Provide NMFS with species or description of the animal(s), the condition of the animal(s) (including carcass condition if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available).

(iii) In the event that an injured, stranded, or dead marine mammal is found by the Holder and any individuals operating under his authority, that is not in the vicinity of, or found during or shortly after SURTASS LFA sonar operations, the Holder and any individuals operating under his authority, will report the same information to NMFS as listed above as soon as operationally feasible and clearance procedures allow.

(d) In the event of a ship strike by the SURTASS LFA sonar vessel, at any time or place, the Holder and any individuals operating under his authority, must:

(i) Immediately, or as soon as clearance procedures allow, report to the NMFS the species identification (if known), location (lat/long) of the animal (or the strike if the animal has disappeared), and whether the animal is alive or dead (or unknown).

(ii) Report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Jeannine.Cody@noaa.gov.

(iii) Report to the NMFS as soon as operationally feasible the size and length of the animal, an estimate of the injury status (e.g., dead, injured but alive, injured and moving, unknown, etc.).

(iv) Report to the NMFS the vessel class/type and operational status, vessel length, speed, and vessel heading as soon as feasible.

(v) Provide the NMFS a photo or video, if equipment is available.

(e) Submit classified and unclassified quarterly mission reports to the Director, Office of Protected Resources, NMFS no later than 30 days after the end of each quarter beginning on the date of effectiveness of a Letter of Authorization or as specified in the appropriate Letter of Authorization. Each quarterly mission report will include all active-mode missions completed during that quarter. At a minimum, each classified mission report must contain the following information:

(i) Dates, times, and location of each vessel during each mission;

(ii) Information on sonar transmissions during each mission and records of any delays or suspensions;

(iii) Location of the SURTASS LFA sonar mitigation and buffer zones in relation to the LFA sonar array;

USNS VICTORIOUS (2013 – 2014)

(iv) Marine mammal observations including animal type and/or species, number of animals sighted, date and time of observations, type of detection (visual, passive acoustic, HF/M3 sonar), bearing and range from vessel, abnormal behavior (if any), and remarks/narrative (as necessary).

(v) The report will include the Navy's estimates of the percentages of marine mammal stocks affected (both for the quarter and cumulatively for the year covered by the Authorization) by SURTASS LFA sonar operations (both within and outside the LFA sonar mitigation zone), using predictive modeling based on operating locations, dates/times of operations, system characteristics, oceanographic environmental conditions, and animal demographics.

(vi) In the event that no SURTASS LFA sonar missions are completed during a quarter, a report of negative activity will be provided.

(f) Submit an annual, unclassified report to the Director, Office of Protected Resources, NMFS, no later than 45 days after expiration of this Authorization. At a minimum, the annual report will contain the following:

(i) An unclassified summary of the year's quarterly reports;

(ii) The Navy's estimates of the percentages of marine mammal stocks affected by SURTASS LFA sonar operations (both within and outside the LFA sonar mitigation zone), using predictive modeling based on operating locations, dates/times of operations, system characteristics, oceanographic environmental conditions, and animal demographics.

(iii) An analysis of the effectiveness of the mitigation measures with recommendations for improvements, where applicable;

(iv) An assessment of any long-term effects from SURTASS LFA sonar operations; and

(v) Any discernible or estimated cumulative impacts from SURTASS LFA sonar operations.

14. The Holder of this Authorization must comply with the Terms and Conditions of the Incidental Take Statement corresponding to the Endangered Species Act Biological Opinion issued to the Navy and the National Marine Fisheries Service's Office of Protected Resources, Permits and Conservation Division.

15. A copy of this Authorization must be in the possession of the Officer in Charge of the Military Detachment (MILDET) on board the USNS VICTORIOUS to conduct the activity under the authority of this Letter of Authorization and Incidental Take Statement.

Donna S. Wieting

AUG 13 2013

Donna S. Wieting, Director
Office of Protected Resources
National Marine Fisheries Service

Date

USNS VICTORIOUS (2013 – 2014)

Attachment 1 – Table 1 OBIA Coordinates

Name of Area	Location of Area	Months of Importance
Georges Bank	40°00'N, 72°30'W 39°37 N, 72°09'W 39°54'N, 71°43'W 40°02 N, 71°20'W 40°08'N, 71°01'W 40°04'N, 70°44'W 40°00'N, 69°24'W 40°16'N, 68°27'W 40°34'N, 67°13'W 41°00'N, 66°24'W 41°52'N, 65°47'W 42°20'N, 66°06'W 42°18'N, 67°23'W	Year-round
Roseway Basin Right Whale Conservation Area	43°05'N, 65°40'W 43°05'N, 65°03'W 42°45'N, 65°40'W 42°45'N, 65°03'W	June through December, annually
Great South Channel, U.S. Gulf of Maine, and Stellwagen Bank National Marine Sanctuary (NMS)	41°00.000'N, 69°05.000'W 42°09.000'N, 67°08.400'W 42°53.436'N, 67°43.873'W 44°12.541'N, 67°16.847'W 44°14.911'N, 67°08.936'W 44°21.538'N, 67°03.663'W 44°26.736'N, 67°09.596'W 44°16.805'N, 67°27.394'W 44°11.118'N, 67°56.398'W 43°59.240'N, 68°08.263'W 43°36.800'N, 68°46.496'W 43°33.925'N, 69°19.455'W 43°32.008'N, 69°44.504'W 43°21.922'N, 70°06.257'W 43°04.084'N, 70°21.418'W 42°51.982'N, 70°31.965'W 42°45.187'N, 70°23.396'W 42°39.068'N, 70°30.188'W 42°32.892'N, 70°35.873'W 42°07.748'N, 70°28.257'W 42°05.592'N, 70°02.136'W 42°03.664'N, 69°44.000'W 41°40.000'N, 69°45.000'W	January 1 to November 14, annually
Southeastern U.S. Right Whale Seasonal Habitat	Critical Habitat Boundaries are coastal waters between 31°15' N and 30°15'N from the coast out 15 nautical miles (nmi); and the coastal waters between 30°15' N and 28°00"N from the coast out 5 nmi. (50 CFR §226.13(c)) OBIA Boundaries are coastal waters between 31°15"N and 30°15"N from 12 to 15 nmi.	November 15 to April 15, annually
North Pacific Right Whale Critical Habitat	57°03'N, 153°00'W 57°18'N, 151°30'W 57°00'N, 151°30'W 56°45'N, 153°00'W (50 CFR §226.215)	March through August, annually

USNS VICTORIOUS (2013 – 2014)

Name of Area	Location of Area	Months of Importance
Silver Bank and Navidad Bank	Silver Bank: 20° 38.899'N, 69° 23.640'W 20° 55.706'N, 69° 57.984'W 20° 25.221'N, 70° 00.387'W 20° 12.833'N, 69° 40.604'W 20° 13.918'N, 69° 31.518'W 20° 28.680'N, 69° 31.900'W Navidad Bank: 20° 15.596'N, 68° 47.967'W 20° 11.971'N, 68° 54.810'W 19° 52.514'N, 69° 00.443'W 19° 54.957'N, 68° 51.430'W 19° 51.513'N, 68° 41.399'W	December through April, annually
Coastal waters of Gabon, Congo and Equatorial Guinea	An exclusion zone following the 500-m isobath extending from 3°31.055'N, 9°12.226'E in the north offshore of Malabo southward to 8°57.470'S, 12°55.873'E offshore of Luanda.	June through October, annually
Patagonian Shelf Break	Between 200- and 2000-m isobaths and the following latitudes: 35°00'S, 39°00'S, 40°40'S, 42°30'S, 46°00'S, 48°50'S.	Year-round
Southern Right Whale Seasonal Habitat	Coastal waters between 42°00'S and 43°00'S from 12 to 15 nmi including the enclosed bays of Golfo Nuevo, Golfo San Jose, and San Matias. Golfos San Jose and San Nuevo are within 22 km (14 mi; 12 nmi) coastal exclusion zone.	May through December, annually
Central California National Marine Sanctuaries	Single stratum boundary created from the Cordell Bank (15 CFR 922.10), Gulf of the Farallones (15 CFR 922.80), and Monterey Bay (15 CFR 922.30) NMS legal boundaries. Monterey Bay NMS includes the Davidson Seamount Management Zone.	June through November, annually
Antarctic Convergence Zone	30°E to 80°E, 45°S 80°E to 150°E, 55°S 150°E to 50°W, 60°S 50°W to 30°E, 50°S	October through March, annually

USNS VICTORIOUS (2013 – 2014)

Name of Area	Location of Area	Months of Importance
Piltun and Chayvo offshore feeding grounds in the Sea of Okhotsk	54°09.436'N, 143°47.408'E 54°09.436'N, 143°17.354'E 54°01.161'N, 143°17.354'E 53°53.580'N, 143°13.398'E 53°26.963'N, 143°28.230'E 53°07.013'N, 143°35.481'E 52°48.705'N, 143°38.447'E 52°32.077'N, 143°37.788'E 52°21.605'N, 143°34.163'E 52°09.470'N, 143°26.582'E 51°57.686'N, 143°30.208'E 51°36.033'N, 143°42.794'E 51°08.082'N, 143°51.301'E 51°08.082'N, 144°16.742'E 51°24.514'N, 144°11.139'E 51°48.116'N, 144°10.809'E 52°03.194'N, 144°20.363'E 52°23.235'N, 144°10.150'E 52°28.674'N, 144°12.787'E 52°42.523'N, 144°10.150'E 53°12.972'N, 143°55.648'E 53°18.505'N, 143°56.637'E 53°23.041'N, 143°53.011'E 53°28.250'N, 143°53.341'E 53°44.039'N, 143°49.056'E 53°53.207'N, 143°50.045'E 53°59.819'N, 143°48.067'E	June through November, annually
Coastal waters off Madagascar	16°03'55.04"S, 50°27'12.59"E 16°12'23.03"S, 51°03'37.38"E 24°30'45.06"S, 48°26'00.94"E 24°15'28.07"S, 47°46'51.16"E 22°18'00.74"S, 48°14'13.52"E 20°52'24.12"S, 48°43'13.49"E 19°22'33.24"S, 49°15'45.47"E 18°29'46.08"S, 49°37'32.25"E 17°38'27.89"S, 49°44'27.17"E 17°24'39.12"S, 49°39'17.03"E 17°19'35.34"S, 49°54'23.82"E 16°45'41.71"S, 50°15'56.35"E	July through September, annually for humpback whale breeding and November through December, annually for migrating blue whales.
Madagascar Plateau, Madagascar Ridge, and Walters Shoal	25°55'20.00"S, 44°05'15.45"E 25°46'31.36"S, 47°22'35.90"E 27°02'37.71"S, 48°03'31.08"E 35°13'51.37"S, 46°26'19.98"E 35°14'28.59"S, 42°35'49.20"E 31°36'57.96"S, 42°37'49.35"E 27°41'11.21"S, 44°30'11.01"E	November through December, annually

USNS VICTORIOUS (2013 – 2014)

Name of Area	Location of Area	Months of Importance
Ligurian-Corsican-Provencal Basin and Western Pelagos Sanctuary in the Mediterranean Sea	42°50.271'N, 06°31.883'E 42°55.603'N, 06°43.418'E 43°04.374'N, 06°52.165'E 43°12.600'N, 07°10.440'E 43°21.720'N, 07°19.380'E 43°30.600'N, 07°32.220'E 43°33.900'N, 07°49.920'E 43°36.420'N, 08°05.580'E 43°42.600'N, 08°22.140'E 43°50.880'N, 08°34.500'E 43°58.560'N, 08°47.700'E 43°59.040'N, 08°56.040'E 43°57.047'N, 09°03.540'E 43°52.260'N, 09°08.520'E 43°47.580'N, 09°13.500'E 43°36.060'N, 09°16.620'E 43°28.440'N, 09°05.820'E 43°21.360'N, 09°02.100'E 43°16.020'N, 08°57.240'E 43°04.440'N, 08°47.580'E 42°54.900'N, 08°35.400'E 42°45.900'N, 08°27.540'E 42°36.060'N, 08°22.020'E 42°22.620'N, 08°15.849'E 42°07.202'N, 08°17.174'E 41°52.800'N, 08°15.720'E 41°39.780'N, 08°05.280'E 41°28.200'N, 08°51.600'E 42°57.060'N, 06°19.860'E	July to August, annually
Hawaiian Islands Humpback Whale NMS and Penguin Bank	21°10'02.179"N, 157°30'58.217"W 21°09'46.815"N, 157°30'22.367"W 21°06'39.882"N, 157°31'00.778"W 21°02'51.976"N, 157°30'30.049"W 20°59'52.725"N, 157°29'28.591"W 20°58'05.174"N, 157°27'35.919"W 20°55'49.456"N, 157°30'58.217"W 20°50'44.729"N, 157°42'42.418"W 20°51'02.654"N, 157°44'45.333"W 20°53'56.784"N, 157°46'04.716"W 20°56'32.988"N, 157°45'33.987"W 21°01'27.472"N, 157°43'10.586"W 21°05'20.499"N, 157°39'27.802"W 21°10'02.179"N, 157°30'58.217"W	November through April, annually
Costa Rica Dome	Centered at 9°N and 88°W	Year-round

USNS VICTORIOUS (2013 – 2014)

Name of Area	Location of Area	Months of Importance
Great Barrier Reef Between 16° S and 21° S	16°01.829'S, 145°38.783'E 15°52.215'S, 146°20.936'E 17°28.354'S, 146°59.392'E 20°16.228'S, 151°39.674'E 20°58.381'S, 150°30.897'E 20°17.007'S, 149°38.247'E 20°10.941'S, 149°18.247'E 20°02.403'S, 149°12.623'E 19°53.287'S, 149°03.986'E 19°49.866'S, 148°52.135'E 19°53.287'S, 148°44.302'E 19°47.965'S, 148°36.870'E 19°47.205'S, 148°26.024'E 19°19.978'S, 147°39.626'E 19°14.065'S, 147°37.014'E 19°08.913'S, 147°31.993'E 19°05.667'S, 147°24.160'E 19°07.576'S, 147°18.134'E 18°51.718'S, 146°51.219'E 18°44.258'S, 146°54.031'E 18°37.175'S, 146°51.420'E 18°31.620'S, 146°43.385'E 18°27.595'S, 146°40.573'E 17°36.676'S, 146°20.488'E 17°20.484'S, 146°16.671'E 17°07.745'S, 146°13.056'E 16°49.769'S, 146°11.047'E 16°41.835'S, 146°03.817'E 16°39.706'S, 145°54.979'E	May through September, annually
Bonney Upwelling on the west coast of Australia	37°12'20.036"S, 139°31'17.703"E 37°37'33.815"S, 139°42'42.508"E 38°10'36.144"S, 140°22'57.345"E 38°44'50.558"S, 141°33'50.342"E 39°07'04.125"S, 141°11'00.733"E 37°28'33.179"S, 139°10'52.263"E	December through May, annually
Northern Bay of Bengal and Head of Swatch-of-No-Ground	20°59.735'N, 89°07.675'E 20°55.494'N, 89°09.484'E 20°52.883'N, 89°12.704'E 20°55.275'N, 89°18.133'E 21°04.558'N, 89°25.294'E 21°12.655'N, 89°25.354'E 21°13.279'N, 89°16.833'E 21°06.347'N, 89°15.011'E	Year-round
Olympic Coast NMS and Prairie, Barkley Canyon, and Nitnat Canyon	Boundaries within 23 nmi (26.5 m; 42.6 km) of the coast from 47°07′ N to 48°30′ N latitude 48°30'01.995"N, 125°58'38.786"W 48°16'55.605"N, 125°38'52.052"W 48°23'07.353"N, 125°17'10.935"W 48°12'38.241"N, 125°16'42.339"W 47°58'20.361"N, 125°31'14.517"W 47°58'20.361"N, 126°06'16.322"W 48°09'46.665"N, 126°25'48.758"W	Olympic NMS: December, January, March, and May, annually The Prairie, Barkley Canyon, and Nitnat Canyon: June through September, annually

USNS VICTORIOUS (2013 – 2014)

Name of Area	Location of Area	Months of Importance
Abrolhos Bank	16°35'34.909"S, 38°52'30.455"W 16°35'31.619"S, 38°43'41.069"W 16°40'00.131"S, 37°23'52.492"W 19°30'59.069"S, 37°23'52.446"W 19°30'59.974"S, 39°33'38.351"W 19°20'24.752"S, 39°30'33.03"W 18°52'16.884"S, 39°32'31.789"W 18°45'09.937"S, 39°32'27.709"W 18°30'59.345"S, 39°30'59.669"W 18°27'28.985"S, 39°30'13.453"W 18°17'30.429"S, 39°26'21.073"W 18°07'43.518"S, 39°19'52.924"W 18°09'24.931"S, 39°16'24.913"W 18°10'04.585"S, 39°12'30.425"W 18°10'20.682"S, 38°39'06.185"W 18°08'50.404"S, 38°35'00.059"W 18°06'05.466"S, 38°31'41.385"W 18°02'09.399"S, 38°29'26.179"W 17°58'01.372"S, 38°28'45.409"W 17°53'58.883"S, 38°29'34.612"W 16°48'58.768"S, 38°55'23.768"W 16°43'15.682"S, 38°53'40.007"W	August through November, annually

USNS VICTORIOUS (2013 – 2014)

Attachment 2 – Authorized Take Estimates by Mission Areas

The Holder of this Authorization must maintain a running calculation/estimation of takes of each species over the effective period of these regulations. The take, by Level B harassment, that occurs during the year covered by this Authorization may not exceed 12 percent of any marine mammal stock listed in the following tables.

The Holder of this Authorization must also coordinate with the Holder of the Letter of Authorization issued to the USNS ABLE, the USNS EFFECTIVE, and the USNS IMPECCABLE, to ensure that these conditions are met for all vessels combined.

Category	Requested Take Authorization Level A harassment
Mysticetes	No more than 6 over the course of the regulations.
Odontocetes	No more than 25 over the course of the regulations.
Pinnipeds	No more than 25 over the course of the regulations.

East of Japan—Mission Area 1 1 Mission	
Animal	**Take Estimates Level B harassment**
Bryde's whale	6
Common minke whale	15
Fin whale	3
North Pacific right whale	—
Sei whale	6
Baird's beaked whale	21
Common bottlenose dolphin	139
Cuvier's beaked whale	23
False killer whale	32
Ginkgo-toothed beaked whale	4
Hubbs' beaked whale	4
Killer whale	2
Kogia spp.	28
Pacific white-sided dolphin	65
Pantropical spotted dolphin	79
Pygmy killer whale	19
Risso's dolphin	95
Rough-toothed dolphin	51
Short-beaked common dolphin	696
Short-finned pilot whale	117
Sperm whale	8
Spinner dolphin	3
Striped dolphin	34

USNS VICTORIOUS (2013 – 2014)

North Philippine Sea—Mission Area 2 3 Missions	
Animal	**Take Estimates Level B harassment**
Blue whale	2
Bryde's whale	60
Common minke whale	457
Fin whale	18
Humpback whale	78
North Pacific right whale	2
Blainville's beaked whale	38
Common bottlenose dolphin	1,241
Cuvier's beaked whale	395
False killer whale	272
Fraser's dolphin	430
Ginkgo-toothed beaked whale	38
Killer whale	10
Kogia spp.	347
Longman's beaked whale	20
Melon-headed whale	401
Pacific white-sided dolphin	643
Pantropical spotted dolphin	1,291
Pygmy killer whale	197
Risso's dolphin	1,145
Rough-toothed dolphin	645
Short-beaked common dolphin	5,165
Short-finned pilot whale	1,387
Sperm whale	117
Spinner dolphin	79
Striped dolphin	3,098

USNS VICTORIOUS (2013 – 2014)

West Philippine Sea—Mission Area 3 3 Missions	
Animal	**Take Estimates Level B harassment**
Blue whale	2
Bryde's whale	62
Common minke whale	302
Fin whale	8
Humpback whale	14
Blainville's beaked whale	41
Common bottlenose dolphin	1,279
Cuvier's beaked whale	25
False killer whale	275
Fraser's dolphin	392
Ginkgo-toothed beaked whale	41
Killer whale	12
Kogia spp.	171
Longman's beaked whale	21
Melon-headed whale	406
Pantropical spotted dolphin	1,145
Pygmy killer whale	199
Risso's dolphin	1,039
Rough-toothed dolphin	592
Short-finned pilot whale	669
Sperm whale	107
Spinner dolphin	71
Striped dolphin	1,371

USNS VICTORIOUS (2013 – 2014)

Offshore Guam—Mission Area 4 3 Missions	
Animal	**Take Estimates Level B harassment**
Blue whale	2
Bryde's whale	31
Common minke whale	20
Fin whale	2
Humpback whale	18
Sei whale	18
Blainville's beaked whale	84
Common bottlenose dolphin	98
Cuvier's beaked whale	439
Dwarf sperm whale	669
False killer whale	78
Fraser's dolphin	303
Ginkgo-toothed beaked whale	68
Killer whale	12
Longman's beaked whale	31
Melon-headed whale	295
Pantropical spotted dolphin	1,657
Pygmy killer whale	12
Pygmy sperm whale	220
Risso's dolphin	74
Rough-toothed dolphin	245
Short-finned pilot whale	297
Sperm whale	93
Spinner dolphin	62
Striped dolphin	452

USNS VICTORIOUS (2013 – 2014)

Sea of Japan—Mission Area 5 2 Missions	
Animal	**Take Estimates Level B harassment**
Bryde's whale	8
Common minke whale	25
Common minke whale	10
Fin whale	56
North Pacific right whale	1
Western North Pacific gray whale	2
Baird's beaked whale	18
Common bottlenose dolphin	44
Cuvier's beaked whale	180
Dall's porpoise	2,701
False killer whale	173
Killer whale	8
Kogia spp.	71
Pacific white-sided dolphin	119
Risso's dolphin	421
Rough-toothed dolphin	157
Short-beaked common dolphin	5,155
Short-finned pilot whale	71
Sperm whale	71
Spinner dolphin	9
Stejneger's beaked whale	30
Striped dolphin	297

USNS VICTORIOUS (2013 – 2014)

East China Sea—Mission Area 6 1 Mission	
Animal	**Take Estimates Level B harassment**
Bryde's whale	8
Common minke whale	58
Common minke whale	24
Fin whale	4
North Pacific right whale	—
Western North Pacific gray whale	—
Blainville's beaked whale	6
Common bottlenose dolphin	6
Cuvier's beaked whale	4
False killer whale	17
Fraser's dolphin	58
Ginkgo-toothed beaked whale	6
Killer whale	4
Kogia spp.	11
Longman's beaked whale	3
Melon-headed whale	65
Pacific white-sided dolphin	—
Pantropical spotted dolphin	160
Pygmy killer whale	3
Risso's dolphin	153
Rough-toothed dolphin	46
Short-beaked common dolphin	664
Short-finned pilot whale	27
Sperm whale	10
Spinner dolphin	10
Striped dolphin	68

USNS VICTORIOUS (2013 – 2014)

South China Sea—Mission Area 7 1 Mission	
Animal	**Take Estimates Level B harassment**
Bryde's whale	9
Common minke whale	43
Fin whale	4
North Pacific right whale	1
Western North Pacific gray whale	1
Blainville's beaked whale	7
Common bottlenose dolphin	5
Cuvier's beaked whale	4
False killer whale	19
Fraser's dolphin	60
Ginkgo-toothed beaked whale	7
Killer whale	4
Kogia spp.	31
Longman's beaked whale	10
Melon-headed whale	71
Pantropical spotted dolphin	142
Pygmy killer whale	3
Risso's dolphin	173
Rough-toothed dolphin	61
Short-finned pilot whale	23
Sperm whale	13
Spinner dolphin	9
Striped dolphin	61

USNS VICTORIOUS (2013 – 2014)

Offshore Japan 25-40° N—Mission Area 8 1 Mission	
Animal	**Take Estimates Level B harassment**
Bryde's whale	21
Common minke whale	12
Fin whale	5
Sei whale	15
Baird's beaked whale	3
Blainville's beaked whale	17
Common bottlenose dolphin	23
Cuvier's beaked whale	85
Dwarf sperm whale	269
False killer whale	117
Hubbs' beaked whale	8
Killer whale	7
Longman's beaked whale	1
Melon-headed whale	87
Mesoplodon spp.	17
Pacific white-sided dolphin	105
Pantropical spotted dolphin	191
Pygmy killer whale	2
Pygmy sperm whale	111
Risso's dolphin	17
Rough-toothed dolphin	71
Short-beaked common dolphin	3,746
Short-finned pilot whale	33
Sperm whale	41
Spinner dolphin	32
Striped dolphin	99
Hawaiian monk seal	1

USNS VICTORIOUS (2013 – 2014)

Offshore Japan 10-25° N—Mission Area 9 1 Mission	
Animal	**Take Estimates Level B harassment**
Blue whale	1
Bryde's whale	13
Fin whale	1
Sei whale	6
Blainville's beaked whale	10
Common bottlenose dolphin	32
Cuvier's beaked whale	138
Dwarf sperm whale	175
False killer whale	24
Fraser's dolphin	104
Killer whale	4
Longman's beaked whale	1
Melon-headed whale	110
Pantropical spotted dolphin	474
Pygmy killer whale	3
Pygmy sperm whale	72
Risso's dolphin	19
Rough-toothed dolphin	76
Short-finned pilot whale	92
Sperm whale	88
Spinner dolphin	79
Striped dolphin	245

USNS VICTORIOUS (2013 – 2014)

Hawaii North—Mission Area 10 2 Missions	
Animal	**Take Estimates Level B harassment**
Blue whale	14
Bryde's whale	19
Common minke whale	13
Fin whale	7
Humpback whale	10
Sei whale	1
Blainville's beaked whale	105
Common bottlenose dolphin (Hawaii Pelagic)	101
Common bottlenose dolphin (Kauai/Niihau)	5
Cuvier's beaked whale	554
False killer whale (Hawaii Pelagic)	84
False killer whale (Main Hawaiian Islands Insular)	2
False killer whale (Northwestern Hawaiian Islands)	2
Fraser's dolphin	342
Killer whale	10
Kogia spp.	878
Longman's beaked whale	37
Melon-headed whale	109
Pantropical spotted dolphin	266
Pygmy killer whale	37
Risso's dolphin	85
Rough-toothed dolphin	311
Short-finned pilot whale	278
Sperm whale	208
Spinner dolphin (Hawaii Pelagic)	85
Spinner dolphin (Kauai/Niihau)	4
Striped dolphin	388
Hawaiian monk seal	9

USNS VICTORIOUS (2013 – 2014)

Hawaii South—Mission Area 11 2 Missions	
Animal	**Take Estimates Level B harassment**
Blue whale	4
Bryde's whale	6
Common minke whale	4
Fin whale	4
Humpback whale	2
Sei whale	2
Blainville's beaked whale	24
Common bottlenose dolphin (Hawaii Pelagic)	14
Common bottlenose dolphin (Oahu)	2
Common bottlenose dolphin (4-Islands)	2
Common bottlenose dolphin (Hawaii Island)	2
Cuvier's beaked whale	122
False killer whale (Hawaii Pelagic)	14
False killer whale (Main Hawaiian Islands Insular)	2
Fraser's dolphin	84
Killer whale	4
Kogia spp.	258
Longman's beaked whale	8
Melon-headed whale	28
Pantropical spotted dolphin	54
Pygmy killer whale	10
Risso's dolphin	24
Rough-toothed dolphin	86
Short-finned pilot whale	64
Sperm whale	48
Spinner dolphin (Hawaii Pelagic)	16
Spinner dolphin (Oahu/4-Islands)	2
Spinner dolphin (Hawaii Island)	2
Striped dolphin	78
Hawaiian monk seal	4

USNS VICTORIOUS (2013 – 2014)

APPENDIX B:

MARINE MAMMAL DENSITIES AND ABUNDANCES

Appendix Table B1. Density and abundance estimates for the marine mammal stocks occurring in the two mission areas of the northwestern Pacific Ocean in which SURTASS LFA sonar was operated during the August 2013 through August 2014 LOA period. These same density and abundance estimates were used to estimate the pre-mission (DoN, 2013a) and post-mission harassment of marine mammals (ESA-listed species highlighted). Abundance and density references are provided after the table.

Marine Mammal Species Name	Stock Name[7]	Stock / Abundance (animals)	Stock / Abundance Reference(s)	Density (animals per km^2)[8]				Density reference(s)
				Winter	Spring	Summer	Fall	
Blue whale	CNP	9,250	5, 17, 18	0.0001	0.0001		0.0001	3, 5, 6, 10
Bryde's whale	WNP	20,501	1	0.0006	0.0006	0.0006	0.0006	1
Common minke whale	WNP "O" Stock	25,049	3	0.0044	0.0044	0.0044	0.0044	2
				0.0033	0.0033	0.0033	0.0033	
Fin whale	WNP	9,250	4, 5	0.0002	0.0002	0.0002	0.0002	3
Humpback whale	WNP	1,107	20	0.0009	0.0009		0.0009	10, 11
North Pacific right whale	WNP	922	6	0.0001	0.0001			
Western North Pacific gray whale	WNP	121	1	0.0001	0.0001		0.0001	
Blainville's beaked whale	WNP	8,032	10, 11	0.0005	0.0005	0.0005	0.0005	5, 6
Common bottlenose dolphin	WNP	168,791	9	0.0146	0.0146	0.0146	0.0146	4
	IA	105,138	23	0.0008	0.0008	0.0008	0.0008	7
Cuvier's beaked whale	WNP	90,725	10, 11	0.0054	0.0054	0.0054	0.0054	5, 6
				0.0003	0.0003	0.0003	0.0003	
False killer whale	WNP Pelagic	16,668	9	0.0029	0.0029	0.0029	0.0029	4
	IA	9,777	23	0.0011	0.0011	0.0011	0.0011	9
Fraser's dolphin	WNP	220,789	10, 11	0.0042	0.0042	0.0042	0.0042	8
Ginkgo-toothed beaked whale	NP	22,799	10, 11	0.0005	0.0005	0.0005	0.0005	5, 6
Killer whale	WNP	12,256	10, 11	0.0001	0.0001	0.0001	0.0001	7
Kogia spp.	WNP	350,553	10, 11	0.0031	0.0031	0.0031	0.0031	5, 6
				0.0017	0.0017	0.0017	0.0017	
Longman's beaked whale	WNP	1,007	14	0.0003	0.0003	0.0003	0.0003	7
Melon-headed whale	WNP	36,770	10, 11	0.0043	0.0043	0.0043	0.0043	9

7 NP=North Pacific; WNP=Western North Pacific; CNP=Central North Pacific; IA=Inshore Archipelago

8 No density in a season means that the marine mammal does not occur in that mission area during that season.

Appendix Table B1. Density and abundance estimates for the marine mammal stocks occurring in the two mission areas of the northwestern Pacific Ocean in which SURTASS LFA sonar was operated during the August 2013 through August 2014 LOA period. These same density and abundance estimates were used to estimate the pre-mission (DoN, 2013a) and post-mission harassment of marine mammals (ESA-listed species highlighted). Abundance and density references are provided after the table.

Marine Mammal Species Name	Stock Name[7]	Stock / Abundance (animals)	Stock / Abundance Reference(s)	Density (animals per km^2)[8]				Density reference(s)
				Winter	Spring	Summer	Fall	
Pacific white-sided dolphin	WNP	931,000	13	0.0119	0.0119			5, 6
Pantropical spotted dolphin	WNP	438,064	9	0.0137	0.0137	0.0137	0.0137	4
	IA	219,032		0.0137	0.0137	0.0137	0.0137	
Pygmy killer whale	WNP	30,214	10, 11	0.0021	0.0021	0.0021	0.0021	5, 6
				0.0001	0.0001	0.0001	0.0001	9
Risso's dolphin	WNP	83,289	9	0.0106	0.0106	0.0106	0.0106	4
	IA			0.0106	0.0106	0.0106	0.0106	
Rough-toothed dolphin	WNP	145,729	10, 11	0.0059	0.0059	0.0059	0.0059	5, 6
				0.0036	0.0036	0.0036	0.0036	8
Short-beaked common dolphin	WNP	3,286,163	10, 11	0.0562	0.0562	0.0562	0.0562	5, 6
Short-finned pilot whale	WNP	53,608	9	0.0153	0.0153	0.0153	0.0153	4
				0.0016	0.0016	0.0016	0.0016	9
Sperm whale	NP	102,112	15	0.0012	0.0012	0.0012	0.0012	9
Spinner dolphin	WNP	1,015,059	10, 11	0.0008	0.0008	0.0008	0.0008	8
Striped dolphin	WNP	570,038	9	0.0329	0.0329	0.0329	0.0329	4
	IA	570,038	9	0.0058	0.0058	0.0058	0.0058	7

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