

2019 TO 2020 ANNUAL REPORT OF SURVEILLANCE TOWED ARRAY SENSOR SYSTEM LOW FREQUENCY ACTIVE (SURTASS LFA) TRAINING AND TESTING ACTIVITIES



**DEPARTMENT OF THE NAVY
CHIEF OF NAVAL OPERATIONS**

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ACRONYMS AND ABBREVIATIONS

μ	micro
BW	blue whale
CLFA	Compact Low Frequency Active
CSM	cross-spectral matrix
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
ESA	Endangered Species Act
FW	fin whale
HF/M3	High Frequency Marine Mammal Monitoring (sonar)
hr	hour(s)
HW	humpback whale
HYW	hybrid blue/fin whale
Hz	Hertz
ICP	integrated common processor
ITS	Incidental Take Statement
IUSS	Integrated Underwater Sensor System
km	kilometer(s)
LF	low frequency
LFA	Low Frequency Active
LOA	Letter of Authorization
m	meter(s)
M3	Marine Mammal Monitoring
MMPA	Marine Mammal Protection Act
nmi	nautical mile(s)
NMFS	National Marine Fisheries Service
NOPF	Naval Ocean Processing Facility
OBIA	Offshore Biologically Important Area
Pa	Pascal
RL	received level
rms	root mean square
SL	source level
SP	sperm whale
SPL	sound pressure level
SURTASS	Surveillance Towed Array Sensor System
SW	sei whale
T-AGOS	Tactical Auxiliary General Ocean Surveillance
TAPP	Tactical Acoustic Intelligence Product Program
US	United States of America
USNS	United States Naval Ship
yd	yard(s)
yr	year(s)

1 INTRODUCTION

This annual report is a requirement of the Marine Mammal Protection Act (MMPA) Final Rule (50 CFR 218 Subpart X) (NOAA, 2019b) and the Letter of Authorization (NOAA, 2019a) (Appendix A) as well as the Endangered Species Act (ESA) Incidental Take Statement (ITS) (NMFS, 2019) for Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar systems onboard United States (US) Navy ocean surveillance ships for training and testing activities conducted under the authority of the Secretary of the Navy. This report provides an unclassified summary of SURTASS LFA¹ sonar use during training and testing activities and associated mitigation monitoring conducted in the western and central North Pacific Ocean and eastern Indian Ocean during the annual effective period from August 12, 2019 through August 11, 2020. SURTASS LFA sonar systems are currently onboard four vessels: the US Naval Ship (USNS) VICTORIOUS (Tactical Auxiliary General Ocean Surveillance [T-AGOS] 19), USNS ABLE (T-AGOS 20) (Figure 1), USNS EFFECTIVE (T-AGOS 21), and USNS IMPECCABLE (T-AGOS 23).

The sonar signals transmitted by the four SURTASS LFA sonar systems range between the frequencies of 100 and 500 Hertz (Hz) with each of the 18 LFA sonar array projectors transmitting sounds with the source level (SL) of no more than 215 decibels (dB) relative to 1 micro Pascal at 1 meter (m) (dB re 1 μ Pa @ 1 m) (root mean square [rms]) at a maximum duty cycle of 20 percent. During years 1 through 4 of the seven-year LOA period (i.e., August 12, 2019 through August 11, 2023), LFA sonar transmissions from all SURTASS LFA sonar vessels, regardless of the number of vessels, may not exceed 496 hours (hr) per year. In years 5 through 7 of the LOA (August 12, 2023 through August 11, 2026), the number of LFA sonar transmit hours may not exceed 592 hr per year for all vessels, regardless of the number of vessels. In this, Year 1 of the LOA period, a total of 496 LFA sonar transmit hours were authorized for all training and testing activities using SURTASS LFA sonar.



Figure 1. SURTASS LFA Sonar Vessel, the USNS ABLE (T-AGOS 20).

To provide greater geographic context for the marine mammals potentially occurring in the western and central North Pacific Ocean and eastern Indian Ocean areas in which SURTASS LFA sonar may be used for training and testing activities (Figure 2), the Navy has selected 15 nominal, representative geographic areas, which are the same geographic areas used to model and assess potential acoustic impacts on marine mammals (Table 1). During training and testing activities using SURTASS LFA sonar, the Navy is approved to take marine mammals in these areas by MMPA Level B incidental harassment. To mitigate the potential for harassment of any kind during LFA sonar training or testing activities, the Navy conducts visual, passive acoustic (using the SURTASS array), and active acoustic (using the high frequency marine mammal monitoring [HF/M3] sonar system) monitoring of the mitigation zone (2,000

1 In this annual report, "SURTASS LFA sonar systems" is inclusive of both the LFA and compact LFA (CLFA) sonar systems, both having similar acoustic transmission characteristics.

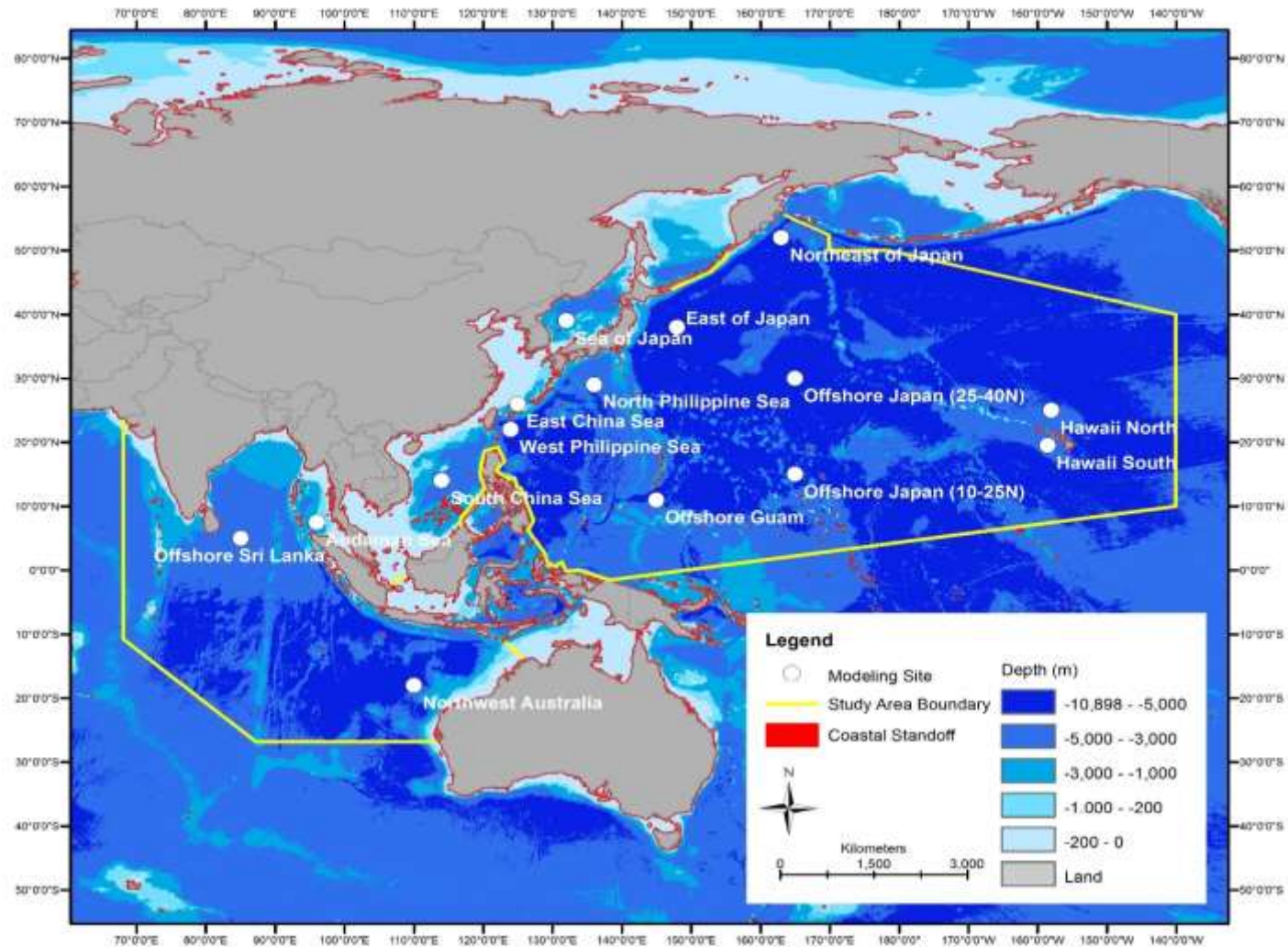


Figure 2. Location of Geographic Area in the Western and Central North Pacific and Eastern Indian Oceans in which the Navy may use SURTASS LFA Sonar for Training and Testing Activities as well as the Representative Geographic Model Areas.

Table 1. Fifteen Nominal Geographic Marine Areas Used for Acoustic Impact Modeling for SURTASS LFA Sonar Activities in the Central and Western North Pacific and Eastern Indian Oceans.

<i>Model Area</i>	<i>SURTASS LFA Mission/Model Area</i>
<i>Western North Pacific Ocean</i>	
1	East of Japan
2	North Philippine Sea
3	West Philippine Sea
4	Offshore Guam
5	Sea of Japan
6	East China Sea
7	South China Sea
8	Offshore Northwest Pacific (25° to 40° N)
9	Offshore Northwest Pacific (10° to 25° N)
15	Northeast of Japan
<i>Central North Pacific Ocean</i>	
10	Hawaii North
11	Hawaii South
<i>Indian Ocean</i>	
12	Arabian Sea
13	Andaman Sea
14	Northwest of Australia

yards [yd]; 1.8 kilometers [km]) surrounding the transmitting LFA sonar array for the presence of marine mammals and sea turtles.

This required unclassified, annual report of training and testing activities using SURTASS LFA sonar summarizes the quarterly training and testing activities using LFA sonar conducted in the central and western North Pacific Ocean and eastern Indian Ocean during the annual period from 12 August 2019 through 11 August 2020, including the results of mitigation monitoring. A separate, classified annual report has also been prepared that additionally provides the dates, times, and locations of the LFA sonar training and testing events conducted during the annual period and estimates of the percentage of marine mammal stocks affected by the transmissions of LFA sonar during the annual period.

2 SUMMARY OF 2019 TO 2020 SURTASS LFA SONAR TRAINING AND TESTING ACTIVITY AND ASSOCIATED MITIGATION MONITORING

During the 2019 to 2020 annual LOA period, the Navy conducted one training activity using SURTASS LFA sonar in the western North Pacific Ocean, which resulted in a total of 11.1 hr of LFA sonar transmissions over 7.9 days, which is less than the authorized number of annual LFA sonar transmit hours (Table 2).

Table 2. Summary of the Training and Testing Activities Using SURTASS LFA Sonar and Associated Mitigation Monitoring from August 2019 to August 2020 on all LFA Sonar Vessels.

<i>SURTASS LFA Sonar Vessel</i>	<i>Number of LFA Sonar Training/ Testing Events</i>	<i>Total Event Days</i>	<i>LFA Sonar Transmit Hours (hr)</i>	<i>Visual Monitoring Detections</i>	<i>Active Acoustic (HF/M3) Detections</i>	<i>Passive Acoustic Detections in Mitigation Zone</i>	<i>LFA Sonar Shutdowns/ Suspensions Due to Mitigation Monitoring Protocol</i>
USNS VICTORIOUS (T-AGOS 19)	0	0	0	0	0	0	0
USNS ABLE (T-AGOS 20)	1	7.9	11.1	0	6	0	8
USNS EFFECTIVE (T-AGOS 21)	0	0	0	0	0	0	0
USNS IMPECCABLE (T-AGOS 23)	0	0	0	0	0	0	0
Total	1	7.9	11.1	0	6	0	8 ²

2 Six of the LFA sonar shutdowns were due to HF/M3 detections, but the additional two LFA sonar shutdowns were due to temporary loss of mitigation monitoring systems.

Per mitigation monitoring protocol for SURTASS LFA sonar, LFA sonar transmissions were suspended/delayed eight times during the training event due to six detections by active acoustic (HF/M3) monitoring of possible marine mammals or sea turtles within the LFA mitigation zone and to two temporary losses of a mitigation system. No visual or passive acoustic detections of marine mammals in the mitigation zone were made during the one training event. Although no passive acoustic detections of vocalizing marine mammals were made within the mitigation zone for LFA sonar, 15 passive acoustic detections of vocalizing marine mammals were received and evaluated to represent marine mammals located outside the mitigation zone. Accordingly, these 15 passive acoustic detections of vocalizing marine mammals did not result in suspensions or delays of LFA sonar transmissions.

2.1 USNS VICTORIOUS (T-AGOS 19)

The USNS VICTORIOUS conducted no training or testing activities using LFA sonar during the annual August 2019 to August 2020 period.

2.2 USNS ABLE (T-AGOS 20)

The USNS ABLE conducted one training activity in the western North Pacific Ocean during the third quarter (12 February to 11 May 2020) of the annual LOA period. LFA sonar was transmitted for 11.1 hr (Table 2) during the 7.9-day training event. During the ABLE's one training event, no visual or passive acoustic detections of marine animals were reported within the LFA mitigation zone, but six active acoustic (HF/M3) detections resulted in suspensions/delays of LFA sonar transmissions, per mitigation monitoring protocol for SURTASS LFA sonar. Two additional suspensions/ delays of LFA sonar transmissions were due to the temporary loss of mitigation monitoring systems. Although no marine mammal vocalizations were detected within the LFA mitigation zone, 15 passive acoustic detections of marine mammal vocalizations were captured by SURTASS that were evaluated to be beyond the extent of the mitigation zone; two of the marine mammal vocalizations were identified as Bryde's whales. The classified annual report includes additional details about the ABLE's training event.

2.3 USNS EFFECTIVE (T-AGOS 21)

The USNS EFFECTIVE conducted no training or testing activities using LFA sonar during the annual August 2019 to August 2020 period.

2.4 USNS IMPECCABLE (T-AGOS 23)

The USNS IMPECCABLE conducted no training or testing activities using LFA sonar during the annual August 2019 to August 2020 period.

3 SUMMARY OF 2019 TO 2020 MITIGATION, MONITORING, AND REPORTING FOR SURTASS LFA SONAR TRAINING AND TESTING ACTIVITIES

3.1 MITIGATION AND MONITORING

As required in the 2019 LOA and ITS for SURTASS LFA sonar, the mitigation and monitoring measures of visual, passive acoustic, and active acoustic monitoring were implemented during the training event. These mitigation and monitoring measures were conducted by civilian and military personnel onboard

the USNS ABLE during the 11.1 hr of LFA sonar transmissions during the one 2019 to 2020 training event. Civilian observers on the bridge of the USNS ABLE monitored the sea surface during daylight hours of the training event for marine mammals or sea turtles. When LFA sonar was transmitting during the training event, military sonar operators and technicians monitored the HF/M3 sonar and the SURTASS passive systems for the presence of marine mammals or sea turtles within the LFA mitigation zone. Six HF/M3 detections of possible marine mammals or sea turtles led to the suspension or delay of LFA sonar transmissions. Although no marine mammal vocalizations were detected by SURTASS within the mitigation zone, 15 marine mammal vocalizations were detected in waters evaluated to lie beyond the mitigation zone extent (i.e., 2,000-yd [1.8-km]), two of which were identified as Bryde's whales. The HF/M3 sonar system was ramped up prior to use according to the mitigation monitoring protocol for SURTASS LFA sonar and was operated continuously during LFA sonar training transmissions.

In addition to these mitigation monitoring measures within the LFA mitigation zone and associated shut-down procedures, the Navy also employs the following mitigation measures:

- transmission of SURTASS LFA sonar such that no received levels (RLs) ≥ 180 dB re 1 μ Pa (rms) (sound pressure level [SPL]) occur in coastal waters within 12 nmi (22 km) of emergent land or within 0.54 nmi (1 km) of any offshore biologically important area (OBIA) boundary during biologically important seasons;
- use of no more than 25 percent of the authorized amount of SURTASS LFA sonar for training and testing activities within 10 nmi (18.5 km) of any single OBIA during any year;
- transmission of SURTASS LFA sonar such that RLs ≤ 145 dB re 1 μ Pa (rms) (SPL) would not occur at known recreational or commercial dive sites unless the following conditions are met: should national security present a requirement to transmit SURTASS LFA sonar during training or testing activities such that exposure at known recreational or commercial dive sites may exceed RLs ≤ 145 dB re 1 μ Pa (rms) (SPL), naval units would obtain permission from the appropriate designated Command authority prior to commencement of the activity. Prior to conducting training or testing activities, the designated Command authority shall conduct a risk assessment, considering the potential for exposure to SURTASS LFA sonar by divers.

OBIAs are marine areas where marine mammals conduct biologically important behaviors such as breeding, calving, foraging, or migration, either seasonally or year-round. The Navy developed the OBIA approach as a mitigation measure to further protect marine mammals when they are performing critical biological behaviors in specific marine areas. An effective period is associated with each OBIA, and it is only during this period that the Navy constrains LFA sonar transmission's RLs to ≤ 180 dB re 1 μ Pa (rms) (SPL) within 0.54 nmi (1 km) of an OBIA's geographic boundary. The Navy and the National Marine Fisheries Service (NMFS) have designated 39 OBIAs globally, 13 of which are located in the training/testing activity area for SURTASS LFA sonar in the western and central North Pacific and eastern Indian oceans (Table 3).

3.1.1 Visual Observer Training

Training, either in-person or by video, of the civilian bridge crews that conduct visual monitoring onboard SURTASS LFA sonar vessels is both a mitigation as well as a monitoring requirement of the LOA and ITS for SURTASS LFA sonar use during training/testing activities. The Navy has mandated an additional training requirement for the civilian crews that function as lookouts and

Table 3. Offshore Biologically Important Areas (OBIA) for SURTASS LFA Sonar Located Within the Training and Testing Activity Area of the Western and Central North Pacific and Eastern Indian Oceans and Their Annual Period of Effectiveness.

<i>OBIA Number</i>	<i>OBIA Name</i>	<i>Water Body/Location</i>	<i>Relevant Marine Mammal Species</i>	<i>Annual Effective Seasonal Period</i>
1	Main Hawaiian Islands	Central North Pacific	Humpback whale	November to April
2	Northwestern Hawaiian Islands	Central North Pacific	Humpback whale	December to April
3	Marianas Islands	Western North Pacific	Humpback whale	February to April
4	Ryukyu-Philippines	Western North Pacific	Humpback whale	January to April
5	Ogasawara Islands—Sperm Whale	Western North Pacific	Sperm whale	June to September
6	Ogasawara-Kazan Islands—Humpback Whale	Western North Pacific	Humpback whale	December to May
7	Honshu	Western North Pacific	Gray whale	January to May
8	Southeast Coastal Kamchatka	Western North Pacific	Humpback, fin, Western North Pacific gray, and North Pacific right whales	June to September
9	Gulf of Thailand	Eastern Indian Ocean	Bryde's whale	April to November
10	Western Australia—Blue Whale	Eastern Indian Ocean	Blue (pygmy) whale	May to November
11	Southern Bali	Eastern Indian Ocean	Bryde's, sei, humpback, Omura's, and sperm whales	October to November
12	Swatch-of-No-Ground (SoNG)	Northern Bay of Bengal	Bryde's whale	Year-round
13	Sri Lanka	Eastern Indian Ocean	Blue (pygmy) and sperm whales	October to April

visual monitors onboard each SURTASS LFA sonar vessel to annually train using the Navy's Marine Species Awareness Training (MSAT) video.

The LOA requires that marine mammal biologists qualified in conducting at-sea marine mammal visual monitoring from surface vessels train the ship's lookouts to detect and identify, if possible, marine mammals (and sea turtles). An additional LOA training requirement is for the civilian lookouts to be trained to quickly and effectively communicate information about their marine mammal observations within their command structure so that the protective measure of shutting down or delaying LFA sonar transmissions can be swiftly implemented.

During the 2019 to 2020 LOA annual period, one in-person training of the civilian visual observers of one SURTASS LFA sonar vessel was conducted when the ship was in its homeport. The in-person visual training was conducted onboard the USNS EFFECTIVE (T-AGOS 21) by a Marine Acoustics, Inc. (MAI) senior marine mammal scientists. During the training, nine of the civilian bridge crew that would act as visual observers, including the ship's captain, were trained in overall visual mitigation procedures and those specific to SURTASS LFA sonar training and testing events. The crew were also trained on how to recognize and identify the potentially occurring marine mammal and sea turtle species and the importance of swiftly and accurately communicating information about visual detections to the senior bridge officer.

Due to the constraints of the in-port availability of the SURTASS LFA sonar vessels and their civilian bridge crews as well as the unique travel restrictions and quarantine requirements imposed on foreign travel due to the 2020 COVID pandemic, no additional visual trainings were conducted between January and August 2020. However, visual training materials, marine mammal identification guides, and a copy of the MSAT video were available onboard each SURTASS LFA sonar vessel. During the annual 2019 to 2020 LOA period, the civilian crews of all four LFA sonar vessels completed the Navy's annual MSAT video training.

To ensure the civilian crews of all SURTASS LFA sonar vessels maintain their visual training competence, the Military Sealift Command has determined the best process for delivering electronic versions of the visual training materials to all SURTASS LFA sonar vessels. Packets of updated electronic visual training materials, including the more recent version of the MSAT video, will be sent to each of the four SURTASS LFA sonar vessels by the end of calendar year 2020, for delivery to the ships when they are in port.

3.1.2 Passive Acoustic Training

A mitigation monitoring condition of the LOA and ITS requires the Navy to use the passive SURTASS array to monitor for the presence of marine mammal by detecting vocalizing cetaceans. To ensure that the military crew sonar-operators are capable of detecting and differentiating marine mammal vocalizations from other biological, natural, and anthropogenic sound signals received by the SURTASS array, the Navy authorized passive acoustic trainings to be conducted by marine acousticians experienced in identifying and classifying marine mammal vocalization signals. An experienced MAI marine acoustician typically conducts two annual passive acoustic trainings of the military crews responsible for conducting passive acoustic monitoring as part of their sonar operator duties onboard the USNS VICTORIOUS, ABLE, EFFECTIVE, and IMPECCABLE during SURTASS LFA sonar training and testing activities. Additionally, the military crew of the USNS LOYAL, an USNS T-AGOS vessel outfitted only with SURTASS, also receives the passive acoustic training to increase their ability as sonar operators to distinguish biological sounds from mission-directed signals. These passive acoustic trainings are

conducted at the Naval Ocean Processing Facility (NOPF) Whidbey Island, WA where the SURTASS LFA sonar military crews receive their training.

One passive acoustic training was conducted at NOPF Whidbey Island during the annual August 2019 to August 2020 period. Over two days in October 2019, 67 military crewmembers received passive acoustic training in detection and identification of marine mammal vocalizations, including species-specific characteristics for visual identification on spectrograms during passive acoustic monitoring. The training additionally included recommendations of the sonar display parameters that will facilitate the detection and identification of marine mammal species. However, during 2020, the passive acoustic training was similarly constrained by COVID-related travel restrictions and quarantine requirements for NOPF Whidbey Island, resulting in no passive acoustic trainings having been conducted between January and August 2020.

However, to ensure that the military crews maintain their proficiency in passive acoustic detection and identification of marine mammal vocalizations, additional acoustic spectrograms of vocalizing cetaceans and other pertinent acoustic data have been compiled and along with updated passive acoustic training materials, will be sent to NOPF Whidbey Island where the materials will be converted by their educational department to enable individual training by the SURTASS sonar operators to safely be conducted.

3.1.3 Monitoring to Increase Knowledge of Marine Mammals: Marine Mammal Monitoring (M3) Program

The Marine Mammal Monitoring (M3) program is a monitoring component of the SURTASS LFA sonar program that uses acoustic data collected from the Navy's fixed and mobile passive acoustic monitoring systems in the North Pacific and Atlantic oceans to enhance the Navy's collection of long-term data on individual and population levels of acoustically active marine mammals, principally baleen whales. The acoustic data the M3 program observes, collects, and analyzes are electronically archived and used to prepare reports on the behavioral range of vocalizing whales (calling and singing) and on the influences of anthropogenic activities on whale behaviors. These collected data also enable the Navy to measure trends in oceanic ambient noise levels over ecologically meaningful ocean scales and time periods under varying ocean noise conditions.

M3 program analysts have identified calls or transient acoustic signals from blue, fin, humpback, and minke whales in addition to sounds from Bryde's, gray, sei, Omura's, and sperm whales. Additionally, the M3 program has quantified the annual and inter-annual variation in baleen whale singing behavior. Based on over 19 years of collected data, M3 program analysts can describe the typical seasonal patterns of acoustic activities for blue, fin, humpback, and minke whales. Acoustic data from over seven years provides insights into the seasonal acoustic and behavior patterns of three additional species of baleen whales (Bryde's, gray, and sei whales) and one odontocete species (sperm whale). A large-scale collection of sounds, acoustic occurrence counts, and tracks at both individual and species levels for baleen whale and sperm whale is being assembled into a database, which will include increasingly detailed whale movement patterns that likely reflect migrations and possibly foraging.

Details of the M3 Program accomplishments for calendar year 2020 are provided in the M3 annual report, but several highlights are described here for the first three quarters of calendar year 2020. To

date in 2020, M3 analysts generated 3,064 marine mammal tracks³ of six large cetacean species, which included one presumed hybrid whale individual, and over 23,491 positions of acoustically active marine mammals, principally of North Atlantic large whales (Table 4). Additionally, to date (through October) during the annual calendar period, the M3 analysts counted 270+ acoustic whale occurrences (four counts per day of seven species every 10 days) over ~30 total days of this period from eight Navy Integrated Underwater Sensor System (IUSS) sensors. The annual 2020 report of the M3 program provides further details on the marine mammal acoustic data collection.

The M3 program's collected data are classified, as are the data reports and products created by M3 analysts, due to the inclusion of potentially sensitive national security information. The Navy assesses and analyzes M3 data collected from Navy passive acoustic monitoring systems and continues working to make some portion of that data, after appropriate security reviews, available to scientists with appropriate clearances, and ultimately to the public. The M3 program has had data declassified and produced one published scientific paper as well as provided declassified data on Western Pacific gray whale occurrences to an international scientific group. The M3 program currently has three scientific manuscripts based on M3 data that are in various stages of preparation. First, the 2016 Marine Mammal Acoustic Pilot Project final report, prepared for the Navy's N45 Energy and Environmental Readiness Division, has been updated to prepare it for submission and publication in a peer-reviewed scientific journal, pending security review in the fourth quarter of 2020. A manuscript on the occurrences and movements of Western Pacific gray whales has been outlined with data being compiled and analyzed. Additional independent recordings of Western Pacific gray whales have been solicited and received from non-navy sources to bolster the M3 data on the Western Pacific gray whale. Furthermore, Eastern Pacific gray whale recordings have been downloaded from the Macaulay and Watkins Sound Libraries for comparison. M3 analysts are requesting declassification of any additional locations where gray whales have been detected. Finally, all available recordings of humpback whales, principally from the North Atlantic but some North Pacific recordings, have been assembled, and analysis has begun of humpback swimming and acoustic behavior that will be compiled into a manuscript on humpback whale swim speeds and acoustic (singing) behavior.

3.1.3.1 Status of Ambient Noise Data

A long-standing MMPA LOA and Final Rule monitoring and reporting requirement for the SURTASS LFA sonar program has been the collection of underwater ambient noise data from IUSS sensors, with the Navy to consider the feasibility of declassifying the collected ambient noise data and ultimately making some portion of the data publicly available for input into global ocean noise budgets. The majority of IUSS ambient noise data are cross-spectral matrix (CSM), data which are classified since they may contain national security information. The Navy continues to consider the feasibility of eventually making some portion of these classified ambient noise data available.

Due to this ongoing interest and acknowledgment of the scientific need for additional ocean ambient noise data, M3 program analysts have derived ambient noise trend information from the Tactical Acoustic Intelligence Products Program (TAPP) data collected for their routine whale counts and tracks. Thus, North Atlantic ambient noise levels in four frequency bands have been measured every 10 days from eight IUSS sensors since January 2016 (Figures 3 to 10). For national security purposes, the eight IUSS sensors represented in the ambient noise data have been assigned a random identifier code. Also

3 The term "track" refers to a time series of successive acoustic locations for the same acoustically active whale (i.e., an acoustic track).

Table 4. Acoustic Tracking and Geographic Positions of Marine Mammals Acquired to Date (October) in Calendar Year 2020 by the Marine Mammal Monitoring (M3) Program.

		<i>Acoustic Tracks</i>						<i>Geographic Positions</i>					
<i>Marine Mammal Species*</i>		<i>HW</i>	<i>SW</i>	<i>BW</i>	<i>FW</i>	<i>SP</i>	<i>HYW</i>	<i>HW</i>	<i>SW</i>	<i>BW</i>	<i>FW</i>	<i>SP</i>	<i>HYW</i>
Quarter 1:	North Atlantic Ocean	857	21	136	191	47		3,652	117	1,957	1,117	3,652	
Quarter 2:	North Atlantic Ocean	115	46	63	161	209		570	278	412	875	1,631	
Quarter 3:	North Atlantic Ocean	2	275	250	170	194	4	12	1,733	2,178	776	1,540	236
	North Pacific			3						212			
Quarter 4:	North Atlantic (October)	11	107	79	83	38	2	48	846	806	434	260	149
Totals (October 2020)		985	449	531	605	488	6	4,282	2,974	5,565	3,202	7,083	385

* HW=humpback whale; SW=sei whale; BW=blue whale; FW=fin whale; SP=sperm whale; HYW=hybrid blue/fin whale

+ Four counts/day of seven cetacean species from eight IUSS sensors for one day every 10 days or nine days/quarter

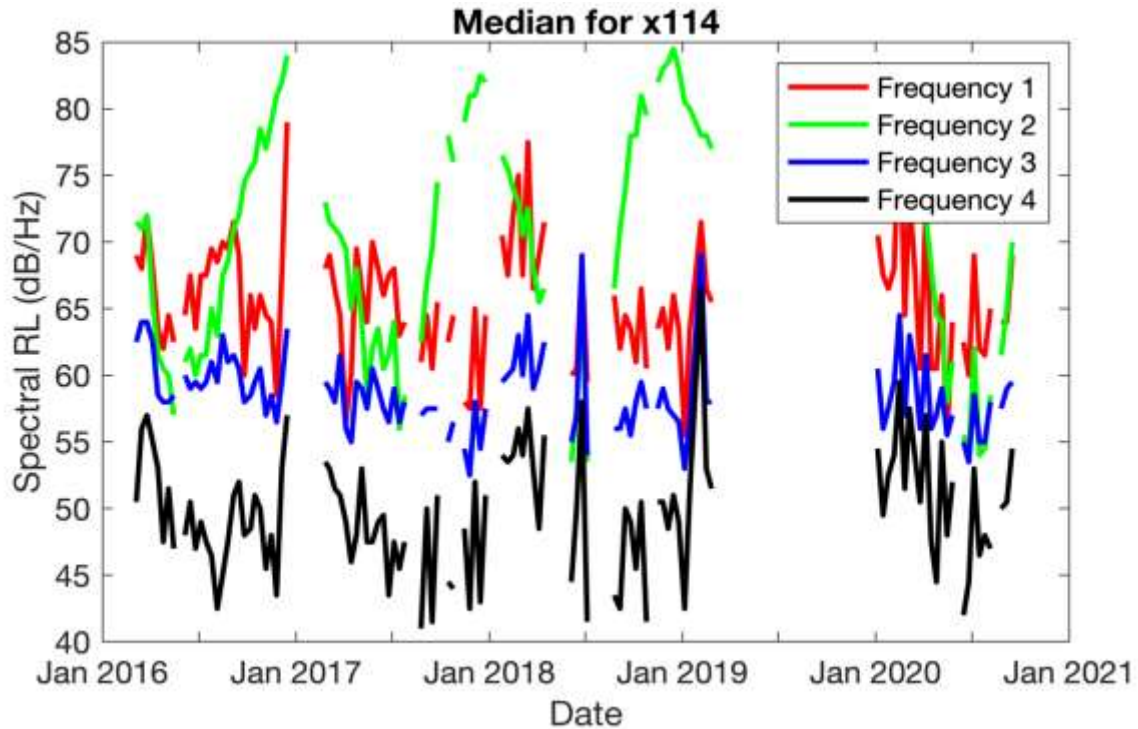


Figure 3. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x114.

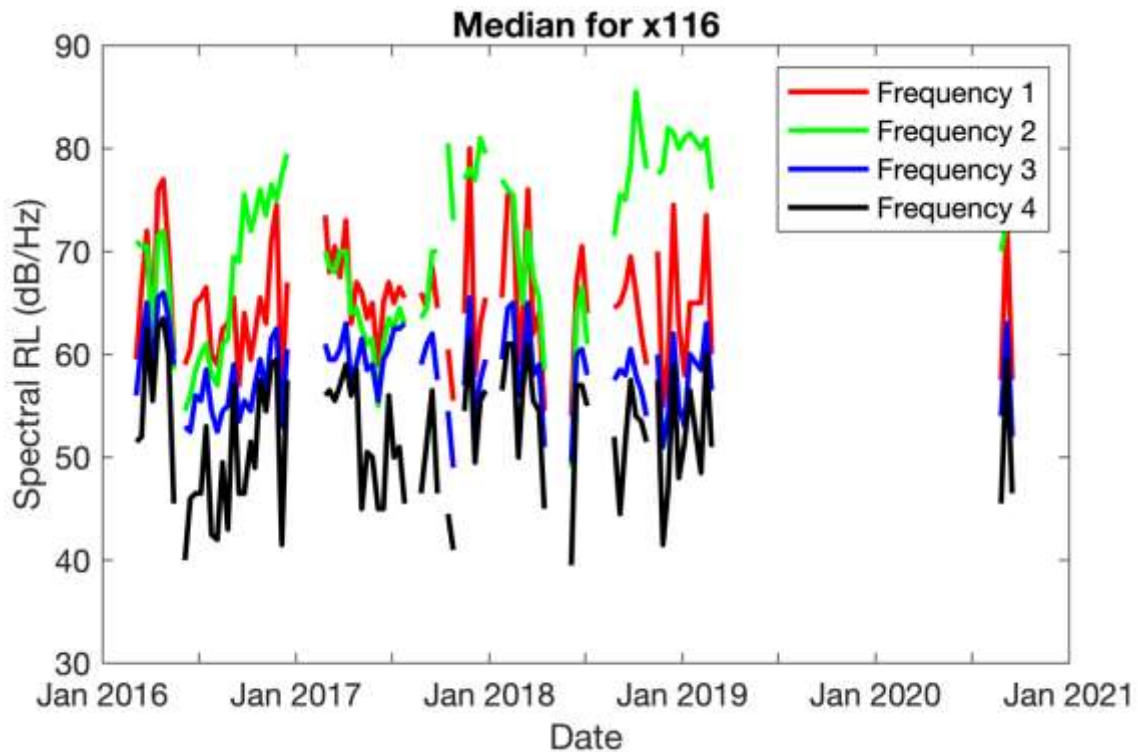


Figure 4. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x116.

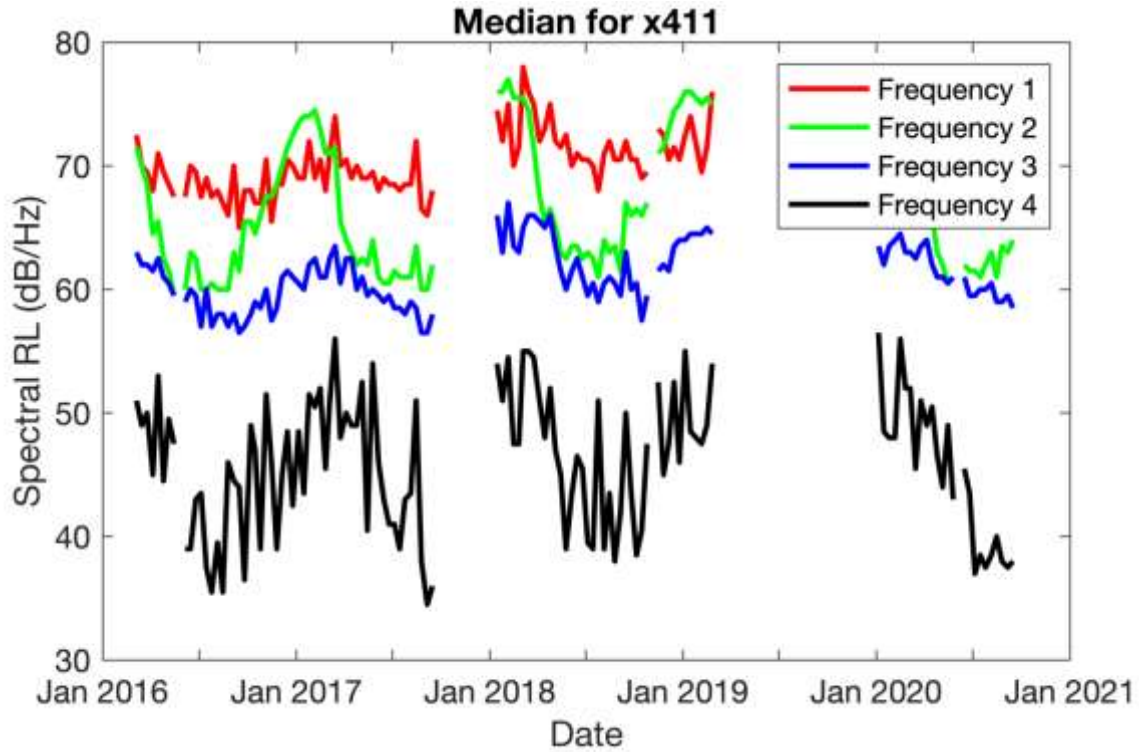


Figure 5. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x411.

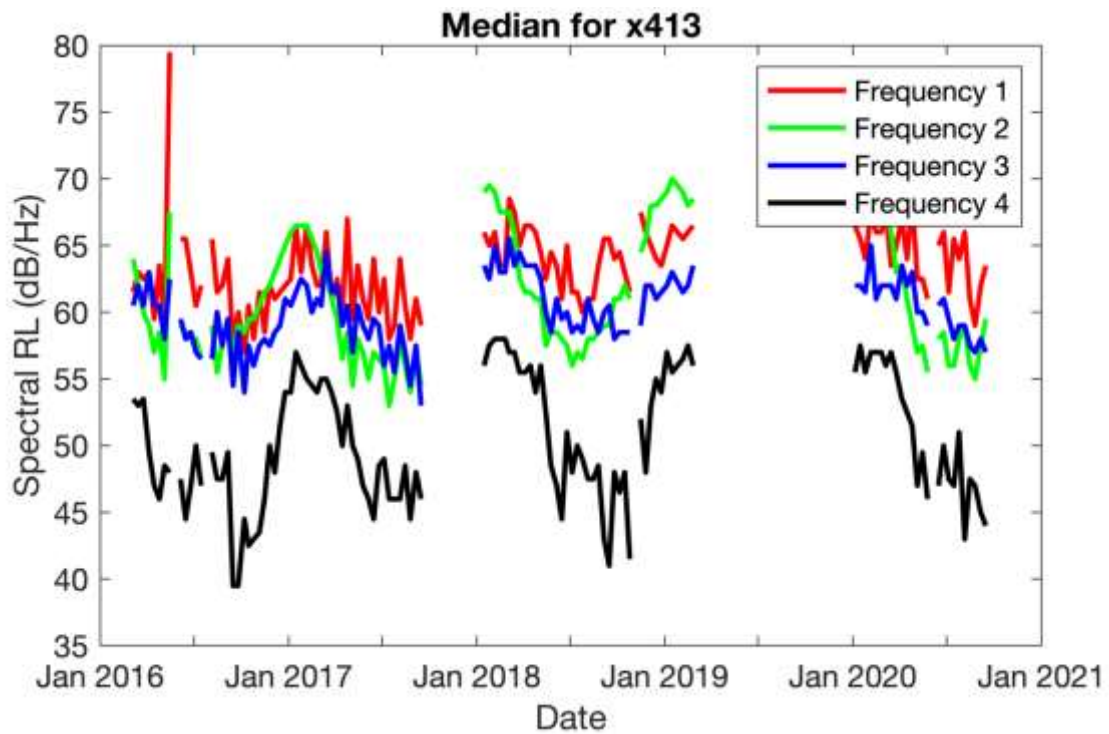


Figure 6. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x413.

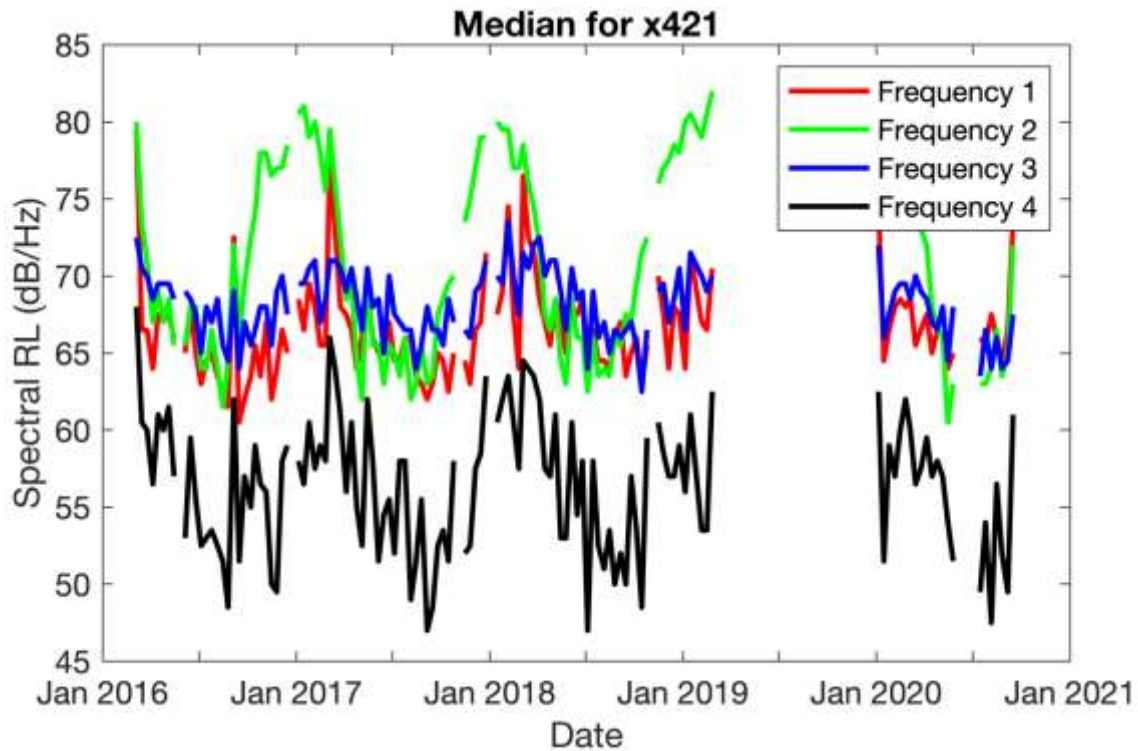


Figure 7. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x421.

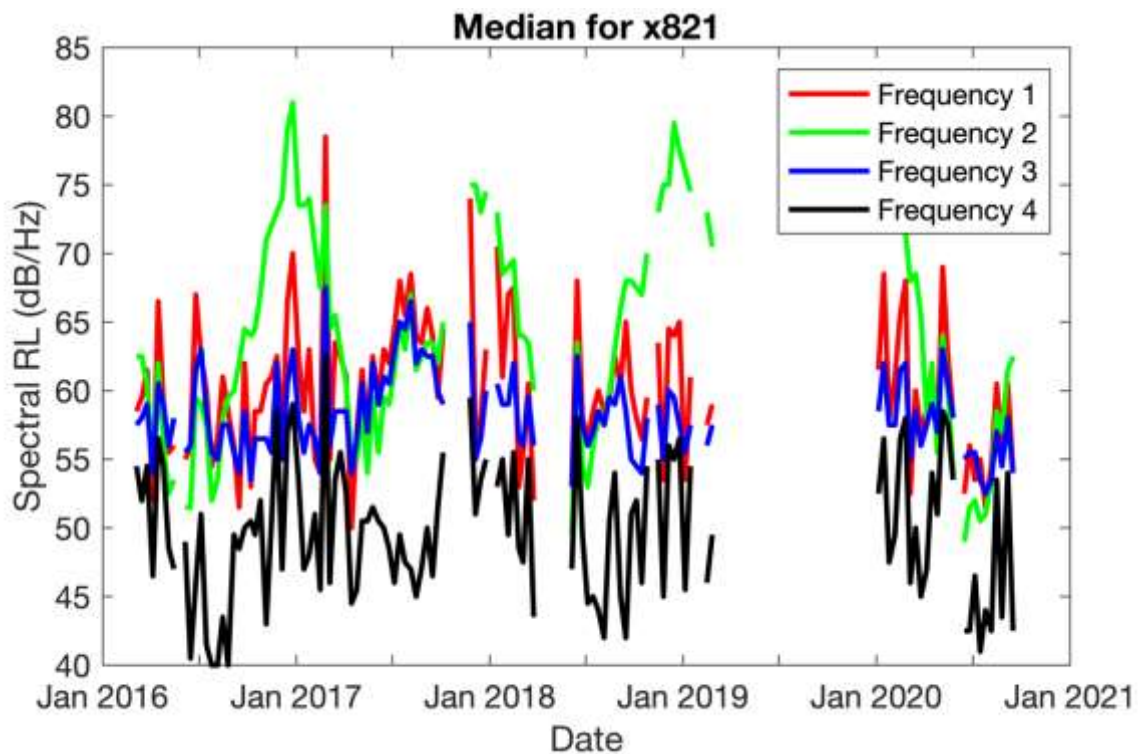


Figure 8. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x821.

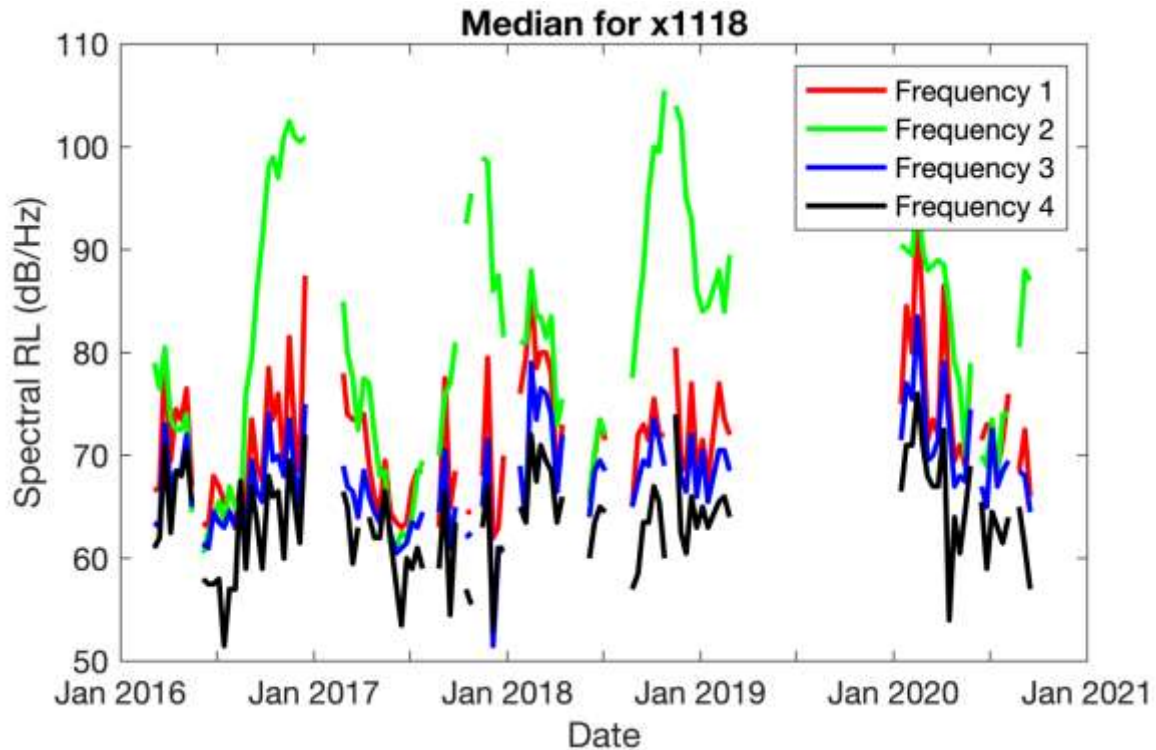


Figure 9. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x1118.

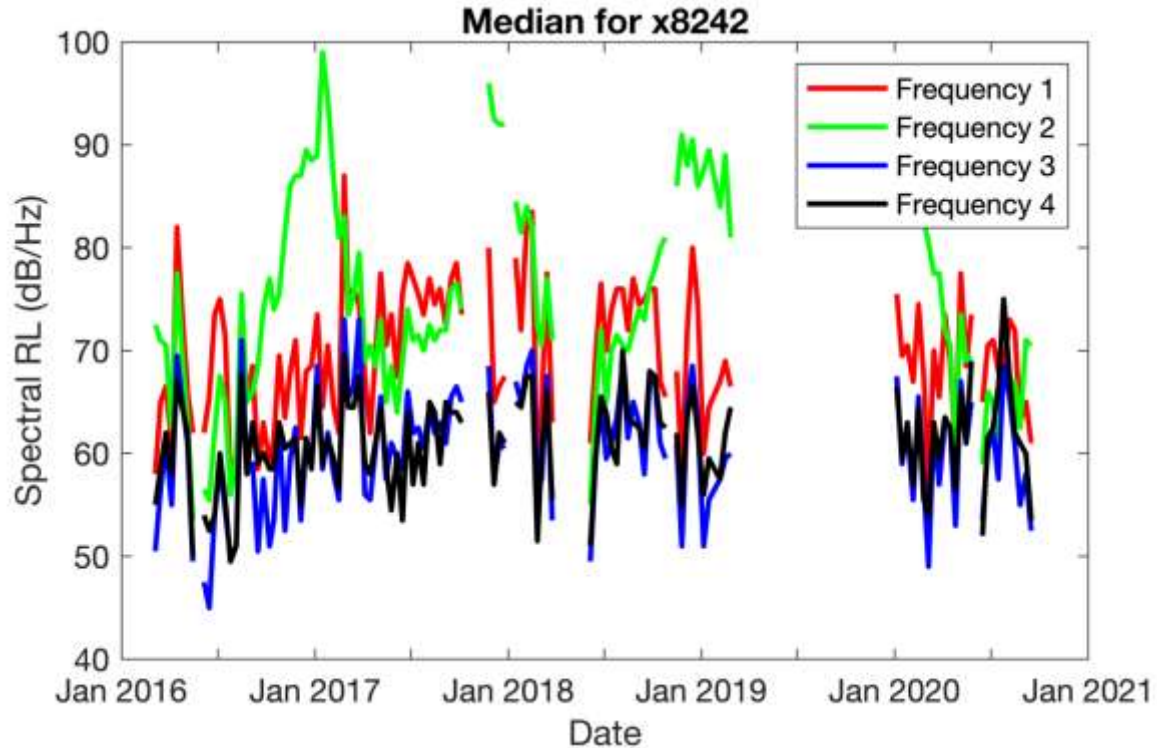


Figure 10. Trends in the January 2016 Through October 2020 Median Ambient Noise Data at IUSS Sensor x8242.

note that the amplitude values for the ambient noise data are spectral values reported by the Integrated Common Processor (ICP⁴) (1 Hz bandwidth). These unclassified data have not been corrected for any signal processing procedures that are incorporated into the ICP system. Therefore, the values are reported as decibels (dB)/Hz since the absolute values are not known.

The nearly five years of compiled ambient noise data show an annual cycle in ambient noise levels, notably with ambient noise levels dropping from winter to spring. Also notable is that since February 2020, when commercial shipping and recreational cruise travel restrictions related to the COVID pandemic began, the deep ocean ambient noise levels appear to be unchanged from previous levels. This contrasts with the widely reported decreases in ambient noise levels in near-shore waters during the COVID pandemic.

3.2 REPORTING

In years one through six of the LOA effective period, per the reporting provisions of the LOA for SURTASS LFA sonar training and testing, the Navy must prepare unclassified and classified annual reports that summarize the training and testing activities of each annual period, while in year seven, the Navy must submit a final comprehensive report that summarizes all training and testing activities over the seven-year LOA period. This unclassified annual report as well as the associated classified annual report are prepared in accordance with the LOA reporting requirements.

In accordance with the Notification and Reporting Plan for SURTASS LFA sonar, during the 2019 to 2020 LOA period, no marine mammal stranding or milling events or ship strikes of marine mammals were reported by any of the SURTASS LFA sonar vessels.

The last reporting requirement of SURTASS LFA sonar is that the Navy continue to assess the data collected by its “undersea arrays” (i.e., IUSS fixed and mobile assets) and work toward making some portion of those data, after appropriate security reviews, available to scientists with appropriate clearances. An assessment of a specific subset of classified acoustic data collected from the Navy’s passive underwater acoustic assets and intended for use in an M3 publication on marine mammals will be completed during the last quarter of this calendar year. Once the Navy deems the compiled data to be unclassified and suitable for release to the public, the report/paper based on those data will be finalized and is intended to be submitted for publication to a peer-reviewed scientific publication in the next calendar year. The Navy continues to assess the potential to release any of its collected classified ambient noise data.

4 LITERATURE CITED

NMFS (Nation Marine Fisheries Services). (2019). *Biological opinion on (1) United States Navy’s Surveillance Towed Array Sensor System Low Frequency Active sonar routine training and testing activities in the western and central North Pacific and eastern Indian Oceans from August 2019 and continuing into the reasonably foreseeable future (2) National Oceanic and Atmospheric Administration’s National Marine Fisheries Service, Office of Protected Resources, Permits and Conservation Division’s promulgation of regulations and issuance of a Letter of Authorization for*

⁴ The Integrated Common Processor (ICP) has the capability to process and display data from all IUSS fixed and mobile underwater systems, taking advantage of automation advancements, array technology improvements, hardware insertions, and the common software components of the Navy’s submarine and surface undersea warfare systems.

the United States Navy to "take" marine mammals incidental to Surveillance Towed Array Sensor System Low Frequency Active sonar routine training and testing activities in the western and central North Pacific and eastern Indian Oceans from August 2019 to August 2026. Silver Spring, MD: National Marine Fisheries Service. 382 pages.

NOAA (National Oceanic and Atmospheric Administration). (2019a). *Letter of authorization for Navy operation of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) sonar, August 2019 to August 2026.* Silver City, MD: NOAA, National Marine Fisheries Service. 19.

NOAA (National Oceanic and Atmospheric Administration). (2019b). Takes of marine mammals incidental to specified activities: Taking marine mammals incidental to U.S. Navy Surveillance Towed Array Sensor System Low Frequency Active sonar training and testing in the central and western North Pacific Ocean and eastern Indian Ocean; Final rule. *Federal Register*, 84(156), 40132-40213.

**APPENDIX A: AUGUST 2019 TO AUGUST 2026 LETTER OF AUTHORIZATION FOR
OPERATION OF SURVEILLANCE TOWED ARRAY SENSOR SYSTEM LOW
FREQUENCY ACTIVE (SURTASS LFA) SONAR DURING TRAINING AND TESTING
ACTIVITIES**

**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 individuals operating under their authority (*i.e.*, Navy), are authorized to take marine mammals incidental to Navy operation 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 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 Letter of Authorization (Authorization or LOA) is valid for the period August 12, 2019, through August 11, 2026.
2. This Authorization is valid only for the unintentional taking of the species and stocks of marine mammals identified in 50 CFR § 218.230 and Condition 5 of this Authorization governing the taking of these animals incidental to the activities specified in Condition 3. This authorization shall be valid only for takes consistent with the provisions in 50 CFR § 218.232 and the terms of this Authorization as specified herein.
3. This Authorization is valid only for training and testing activities using SURTASS LFA sonar onboard Navy surveillance ships in the central and western North Pacific and eastern Indian Oceans (Study Area). 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 of 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. LFA sonar transmission hours must not exceed 496 total hours per year across all SURTASS LFA sonar equipped vessels in years 1 through 4 (August 12, 2019 through August 11, 2023), and must not exceed 592 total hours across all SURTASS LFA sonar equipped vessels in years 5 through 7 (August 12, 2023 through August 11, 2026).
4. This Authorization is valid only if the Holder of the Authorization or any person(s) operating under their authority implements the mitigation, monitoring, and reporting required pursuant to 50 CFR §§ 218.234, 218.235, and 218.236 and implements the Terms and Conditions of this Authorization.

SPECIES AUTHORIZED AND LEVEL OF TAKE

5. The incidental take of marine mammals under the activity identified in Condition 3 of this Authorization is limited to the species and stocks identified in 50 CFR § 218.230 listed in Table 1.

Table 1. Species/Stocks Authorized for Take by Level B Harassment by SURTASS LFA Sonar Training and Testing Activities.

Species	Stock ¹
Antarctic minke whale	ANT
Blue whale	CNP
	NIND
	WNP
	SIND
	ECS
Bryde's whale	Hawaii
	WNP
	NIND
	SIND
	Hawaii
Common minke whale	IND
	WNP JW
	WNP OE
	YS
	ECS
Fin whale	Hawaii
	IND
	SIND
	WNP
	CNP stock and Hawaii DPS
Humpback whale	WAU stock and DPS
	WNP stock and DPS
	WNP
North Pacific right whale	NIND
Omura's whale	SIND
	WNP
	Hawaii
Sei whale	SIND
	NP
	NIND
	WNP stock and Western DPS
Western North Pacific gray whale	WNP
Baird's beaked whale	Hawaii
Blainville's beaked whale	

Species	Stock ¹
Common bottlenose dolphin	WNP
	IND
	4-Islands
	Hawaii Island
	Hawaii Pelagic
	IA
	IND
	Japanese Coastal
	Kauai/Niihau
	Oahu
	WNP Northern Offshore
	WNP Southern Offshore
	WAU
	IND
	WNP
Common dolphin	Hawaii
Cuvier's beaked whale	IND
	SH
	WNP
	SOJ <i>dalli</i> type
Dall's porpoise	WNP <i>dalli</i> ecotype
	WNP <i>truei</i> ecotype
	IND
Deraniyagala's beaked whale	NP
	Hawaii
Dwarf sperm whale	IND
	WNP
	Hawaii Pelagic
False killer whale	IA
	IND
	Main Hawaiian Islands Insular stock and DPS
	Northwestern Hawaiian Islands
	WNP
	CNP
Fraser's dolphin	Hawaii
	IND
	WNP
	IND
Ginkgo-toothed beaked whale	IND

Species	Stock ¹
	NP
Harbor porpoise	WNP
Hubbs' beaked whale	NP
Indo-Pacific bottlenose dolphin	IND
Killer whale	Hawaii
	IND
	WNP
<i>Kogia</i> spp.	WNP
Longman's beaked whale	Hawaii
	IND
	WNP
Melon-headed whale	Hawaiian Islands
	IND
	Kohala Resident
	WNP
<i>Mesoplodon</i> spp.	WNP
Northern right whale dolphin	NP
Pacific white-sided dolphin	NP
Pantropical spotted dolphin	4-Islands
	Hawaii Island
	Hawaiian Pelagic
	IND
	Oahu
	WNP
Pygmy killer whale	Hawaii
	IND
	WNP
Pygmy sperm whale	Hawaii
	IND
	WNP
Risso's dolphin	Hawaii
	IA
	WNP
	IND
Rough-toothed dolphin	Hawaii
	IND
	WNP
Short-finned pilot whale	Hawaii

Species	Stock ¹
	IND
	WNP Northern Ecotype
	WNP Southern Ecotype
Southern bottlenose whale	IND
Spade-toothed beaked whale	IND
Sperm whale	Hawaii
	NIND
	NP
	SIND
Spinner dolphin	Hawaii Island
	Hawaii Pelagic
	IND
	Kauai/Niihau
	Kure/Midway Atoll
	Oahu/4-Islands
	Pearl and Hermes Reef
	WNP
Stejneger's beaked whale	WNP
Striped dolphin	Hawaii
	IND
	Japanese Coastal
	WNP Northern Offshore
	WNP Southern Offshore
Hawaiian monk seal	Hawaii
Northern fur seal	Western Pacific
Ribbon seal	NP
Spotted seal	Alaska stock/Bering Sea DPS
	Southern stock and DPS
Steller sea lion	Western/Asian stock and Western DPS

¹ ANT=Antarctic; CNP=Central North Pacific; NP=North Pacific; NIND=Northern Indian; SIND=Southern Indian; IND=Indian; WNP=Western North Pacific; ECS=East China Sea; WP=Western Pacific; SOJ=Sea of Japan; IA=Inshore Archipelago; WAU=Western Australia; YS=Yellow Sea; OE=Offshore Japan; OW=Nearshore Japan; JW=Sea of Japan/Minke; JE=Pacific coast of Japan; SH=Southern Hemisphere; DPS=distinct population segment

- The taking of marine mammals by the Holder of this Authorization is limited to the incidental taking of marine mammal species and stocks identified in Condition 5 by Level B harassment (as defined in the MMPA and 50 CFR § 216.3) within those areas authorized under Condition 3. The take, by Level B harassment, that occurs during any single year covered by this Authorization must not exceed the amount authorized for each marine mammal stock listed in Condition 5 (see Authorized Take in Table 1 in Attachment 1).

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

MITIGATION

8. The Holder of this Authorization, and any individuals operating under their 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 uses.

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

- (a) *Personnel training - lookouts.* The Holder of this Authorization, and any individuals operating under their authority must utilize one or more trained marine biologists qualified in conducting at-sea marine mammal visual monitoring to conduct at-sea marine mammal visual monitoring training and qualify designated ship personnel to conduct at-sea visual monitoring. Training will ensure quick and effective communication within the command structure in order to facilitate implementation of protective measures if they detect marine mammals and may be accomplished either in-person, or via video training.
- (b) *General operating procedures.*
 - i. Prior to SURTASS LFA sonar activities, the Holder of this Authorization, and any individuals operating under their authority, must promulgate executive guidance for the administration, execution, and compliance with the environmental regulations under these regulations and LOA.
 - ii. The SURTASS LFA sonar signal must not be transmitted at a frequency greater than 500 Hz.
- (c) *2,000-yard LFA sonar mitigation zone; suspension and delay.* If a marine mammal is detected, through monitoring required under § 218.235 and Condition 9, within or about to enter within 2,000 yards of the SURTASS LFA source (*i.e.*, the LFA sonar mitigation zone), the Holder of this Authorization, and any individuals operating under their authority must immediately delay or suspend SURTASS LFA sonar transmissions.
- (d) *Resumption of SURTASS LFA sonar transmissions.* The Holder of this Authorization, and any individuals operating under their authority may not resume SURTASS LFA sonar transmissions earlier than 15 minutes after:

- i. All marine mammals have left the area of the 2,000-yard LFA sonar mitigation zone; and
 - ii. There is no further detection of any marine mammal within the 2,000-yard LFA sonar mitigation zone as determined by the visual, passive acoustic, and active acoustic high frequency monitoring described in § 218.235 and Condition 9.
- (e) Ramp-up procedures for the high-frequency marine mammal monitoring (HF/M3) sonar required under § 218.235 and Condition 9(c).
 - i. The Holder of this Authorization, and any individuals operating under their authority, must ramp up the High Frequency Marine Mammal Monitoring (HF/M3) power level beginning at a maximum source sound pressure level of 180 dB re 1 μ Pa at 1 meter in 10-dB increments to operating levels over a period of no less than five minutes:
 - 1. At least 30 minutes prior to any SURTASS LFA sonar transmissions; and
 - 2. Anytime after the HF/M3 source has been powered down for more than two minutes.
 - ii. The Holder of this Authorization, and any individuals operating under their authority, must not increase the HF/M3 sonar sound pressure level once a marine mammal is detected; ramp-up may resume once marine mammals are no longer detected.
- (f) Geographic restrictions on the SURTASS LFA sonar sound field. LFA sonar training and testing activities must be conducted such that:
 - i. The received level of SURTASS LFA sonar transmissions will not exceed 180 dB re: 1 μ Pa rms within 22 kilometers (km) (12 nautical miles (nmi)) from any emergent land, including offshore islands;
 - ii. The received level of SURTASS LFA sonar transmissions will not exceed 180 dB re: 1 μ Pa rms at a distance of 1 km (0.5 nmi) seaward of the outer perimeter of any Offshore Biologically Important Area (OBIA) designated in the Study Area for SURTASS LFA sonar (Table 2), or subsequently identified through the Adaptive Management process specified in § 218.238, during the period specified. The boundaries and periods of such OBIA's will be kept on file in NMFS' Office of Protected Resources and on its website at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities>.

- iii. No more than 25 percent of the authorized amount (transmission hours) of SURTASS LFA sonar for training and testing will be conducted within 10 nmi (18.5 km) of any single OBIA during any year (no more than 124 hours in years 1 - 4 and 148 hours in years 5 - 7) unless the following conditions are met: Should national security present a requirement to conduct more than 25 percent of authorized hours of SURTASS LFA sonar within 10 nmi (18.5 km) of any single OBIA during any year, naval units will obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Holder of this Authorization, and any individuals operating under their authority, must provide NMFS with notification as soon as is practicable and include the information (e.g., sonar hours) in its annual activity reports submitted to NMFS.
- iv. No activities with the SURTASS LFA system will occur within territorial seas of foreign nations, which are areas from 0 up to 12 nmi from shore, depending on the distance that individual nations claim; and
- v. No activities with the SURTASS LFA sonar system will occur in the waters of Penguin Bank, Hawaii (defined as water depth of 600 feet (ft) (183 m)), and ensonification of Hawaii state waters (out to 3 nmi) will not exceed 145 dB re: 1 μ Pa rms.

Table 2. Offshore Biologically Important Areas (OBIA)s.

OBIA Name	Ocean Area	Effective Seasonal Period
Main Hawaiian Islands	Central North Pacific	November to April
Northwestern Hawaiian Islands	Central North Pacific	December to April
Mariana Islands	Western North Pacific	February to April
Ryukyu-Philippines	Western North Pacific	January to April
Ogasawara Islands (Sperm Whale)	Western North Pacific	June to September
Ogasawara-Kazin Islands (Humpback Whale)	Western North Pacific	December to May
Honshu	Western North Pacific	January to May
Southeast Kamchatka	Western North Pacific	June to September
Gulf of Thailand	Eastern Indian Ocean	April to November
Western Australia (Blue Whale)	Eastern Indian Ocean	May to November
Western Australia (Humpback Whale)	Eastern Indian Ocean	May to December
Southern Bali	Eastern Indian Ocean	October to November
Swatch-of-No-Ground (SoNG)	Northern Bay of Bengal	Year-round
Sri Lanka	Eastern Indian Ocean	October to April

- (g) Minimization of additional harm to live-stranded (or milling) mammals. The Navy must consult the Notification and Reporting Plan, which sets out the requirements for when live stranded marine mammals are reported in the Study Area. The Stranding and Notification Plan is available at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-navy-operations-surveillance-towed-array-sensor-system-0>

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 ship's command structure to facilitate implementation of protective measures if they observe marine mammals.
 - iii. Conduct visual monitoring from the ship's bridge during all daylight hours (30 minutes before sunrise until 30 minutes after sunset). During training and testing activities that employ SURTASS LFA sonar in the active mode, the SURTASS vessels must have Lookouts to maintain a topside watch with standard binoculars (7x) and with the naked eye. If the lookout sights a possible marine mammal, the lookout will use big-eye binoculars (25x) to confirm the sighting and potentially identify the marine mammal species.
- (b) Perform the following for passive acoustic mitigation monitoring:
- i. Use the low frequency, passive SURTASS sonar system to listen for vocalizing marine mammals.
- (c) Perform the following for active acoustic mitigation 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 at least 15 minutes after completion of SURTASS LFA sonar training and testing transmission (30 minutes after sunset for visual monitoring), or, if marine mammals are exhibiting unusual changes in behavioral patterns, until behavior patterns return to normal or conditions prevent continued observations.

11. The Holder of this Authorization and any individuals operating under their 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 reporting activities specified in this LOA.

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

- (a) 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 will be made publically available; and
- (b) Collect ambient noise data and will 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 their authority, must:

- (a) Submit classified and unclassified annual training and testing activity reports to the Director, Office of Protected Resources, NMFS, no later than 90 days after the end of each year covered by the LOA beginning on the date of effectiveness of the LOA. Each annual training and testing activity report will include a summary of all active-mode training and testing activities completed during that year. At a minimum, each training and testing activity report must contain the following information:
 - i. Dates, times, and location of each vessel during each training and testing activity;

- ii. Information on sonar transmissions during each training and testing activity and records of any delays or suspensions of activity;
 - iii. Results of the marine mammal monitoring program. 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, unusual behavior (if any), and remarks/narrative (as necessary); and
 - iv. Estimates of the percentages of marine mammal stocks affected (both for the year and cumulatively for each successive year) by SURTASS LFA sonar operations (both within and outside the LFA sonar mitigation zone), using predictive modeling based on mission locations, dates/times of operations, system characteristics, LFA sonar transmission durations, oceanographic environmental conditions, and animal demographics (classified report only).
- (b) The seventh annual report must be prepared as a final comprehensive report, which will include information for the final year as well as the prior six years of activities under the rule, and be submitted to the Director, Office of Protected Resources, NMFS. In addition to the information described in Condition 13(a), the comprehensive report must include:
- i. An unclassified analysis of new passive sonar technologies and an assessment of whether such a system is feasible as an alternative to SURTASS LFA sonar;
 - ii. An analysis of the effectiveness of the mitigation measures with recommendations for improvements, where applicable;
 - iii. An assessment of any long-term effects from SURTASS LFA sonar operations; and
 - iv. Any discernible or estimated cumulative impacts from SURTASS LFA sonar operations.
- (c) Continue to assess the data collected by its undersea arrays 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 will be made publically available.
- (d) Consult the Notification and Reporting Plan, which sets out notification, reporting, and other requirements for when dead, injured, or live stranded marine mammals are reported in the Study Area. The Stranding and Notification Plan is available at: <https://www.fisheries.noaa.gov/action/incidental-take-authorization-us-navy-operations-surveillance-towed-array-sensor-system-0>

14. Prohibitions. Notwithstanding the takings identified in Condition 5 of this LOA and authorized under this LOA and 50 CFR Part 218, Subpart X, no person in connection with the activities described in Condition 3 of this Authorization may take any marine mammal specified in Condition 5 of this Authorization other than by incidental take and in the course of conducting the activities specified in Condition 3; take any marine mammal other than a species or stock identified in Condition 5; take a marine mammal specified in Condition 5 if such taking results in more than a negligible impact on the species or stock of such marine mammal; or violate, or fail to comply with, the terms, conditions, and requirements of the regulations or this LOA.

15. Renewals and modification of a Letter of Authorization.

(a) An LOA issued under 50 CFR §§ 216.106 and 218.237 for the activities identified in Condition 3 of this Authorization and § 218.70 of the regulations may be renewed or modified upon request by the applicant, provided that:

- i. The planned specified activity and mitigation, monitoring, and reporting measures, as well as the anticipated impacts, are the same as those described and analyzed for the regulations (excluding changes made pursuant to the adaptive management provision in Condition 16(a) of this Authorization); and
- ii. NMFS determines that the mitigation, monitoring, and reporting measures required by the previous LOA(s) were implemented.

(b) For LOA modification or renewal requests by the applicant that include changes to the activity or to the mitigation, monitoring, or reporting measures (excluding changes made pursuant to the adaptive management provision of this Authorization) that do not change the findings made for the regulations or result in no more than a minor change in the total estimated number of takes (or distribution by species or stock or years), NMFS may publish a notice of planned LOA in the *Federal Register*, including the associated analysis of the change, and solicit public comment before issuing the LOA.

16. An LOA issued under 50 CFR §§ 216.106 and 218.237 may be modified by NMFS under the following circumstances:

- (a) Adaptive management. After consulting with the Navy regarding the practicability of the modifications, NMFS may modify (including adding or removing measures) the existing mitigation, monitoring, or reporting measures if doing so creates a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring.
 - i. Possible sources of data that could contribute to the decision to modify the mitigation, monitoring, or reporting measures in an LOA include:

1. Results from the Navy's monitoring from the previous year(s);
 2. Results from other marine mammal and/or sound research or studies;
or
 3. Any information that reveals marine mammals may have been taken in a manner, extent, or number not authorized by the regulations LOAs.
- ii. If, through adaptive management, the modifications to the mitigation, monitoring, or reporting measures are substantial, NMFS will publish a notice of planned LOA in the *Federal Register* and solicit public comment.
- (b) Emergencies. If NMFS determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in LOAs issued pursuant to §§ 216.106 and 218.237, an LOA may be modified without prior notice or opportunity for public comment. Notice would be published in the *Federal Register* within thirty days of the action.
17. The Holder of this Authorization and any person operating under their authority must comply with the Terms and Conditions of the Incidental Take Statement corresponding to NMFS' Biological Opinion for the activities identified in Condition 3 as they pertain to Endangered Species Act listed marine mammals.
18. A copy of this Authorization or a document containing the equivalent requirements specified in this Authorization and the 50 CFR Part 218, Subpart X regulations, must be in the possession of the on-site Commanding Officer in order to take marine mammals under the authority of this Authorization and Incidental Take Statement while conducting the specified activities.


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

AUG 12 2019

Date

Attachment 1 – Authorized Take

The Holder of this Authorization must maintain a running calculation/estimation of takes of each species/stock over the effective period of this Authorization. The take, by Level B harassment, that occurs during the year covered by this Authorization may not exceed the amount authorized for any marine mammal stock as described in Table 1 below.

Table 1. Maximum Total Annual MMPA Level B Harassment Take Authorized for Years 1 - 4 and 5 - 7, and Total for the Seven-year Period of the Final Rule by SURTASS LFA Sonar Training and Testing Activities.

Species	Stock ¹	Maximum Annual Level B Harassment, Years 1-4	Maximum Annual Level B Harassment, Years 5-7	Total Overall Level B Harassment for 7-year Period
Antarctic minke whale	ANT	0	0	0
Blue whale	CNP	3	4	24
	NIND	0	1	3
	WNP	90	123	729
	SIND	1	1	7
Bryde's whale	ECS	14	19	113
	Hawaii	5	6	38
	WNP	378	437	2,823
	NIND	8	10	62
	SIND	7	9	55
Common minke whale	Hawaii	572	682	4,334
	IND	1,271	1,748	10,328
	WNP JW	3	5	27
	WNP OE	2,127	2,404	15,720
	YS	189	250	1,506
Fin whale	ECS	9	12	72
	Hawaii	3	4	24
	IND	0	0	0
	SIND	22	30	178
	WNP	2,558	3,455	20,597
Humpback whale	CNP stock and Hawaii DPS	487	611	3,781
	WAU stock and DPS	1	1	7
	WNP stock	3,103	4,266	25,210

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Species	Stock ¹	Maximum Annual Level B Harassment, Years 1-4	Maximum Annual Level B Harassment, Years 5-7	Total Overall Level B Harassment for 7-year Period
	and DPS			
North Pacific right whale	WNP	89	122	722
Omura's whale	NIND	8	10	62
	SIND	5	7	41
	WNP	14	16	104
Sei whale	Hawaii	19	22	142
	SIND	0	0	0
	NP	3,172	4,361	25,771
	NIND	4	5	31
Western North Pacific gray whale	WNP stock and Western DPS	0	1	3
Baird's beaked whale	WNP	2,747	3,777	22,319
Blainville's beaked whale	Hawaii	35	47	281
	WNP	269	311	2,009
	IND	47	65	383
Common bottlenose dolphin Common bottlenose dolphin	4-Islands	5	6	38
	Hawaii Island	0	0	0
	Hawaii Pelagic	95	114	722
	IA	104	140	836
	IND	1,128	1,551	9,165
	Japanese Coastal	1,686	1,789	12,111
	Kauai/Niihau	13	16	100
	Oahu	38	46	290
	WNP Northern Offshore	581	799	4,721
	WNP Southern Offshore	2,726	3,063	20,093
	WAU	635	873	5,159
	IND	52	72	424
Common dolphin	WNP	203,871	275,079	1,640,721
Cuvier's beaked whale	Hawaii	22	26	166
	IND	231	317	1,875
	SH	77	106	626

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Species	Stock ¹	Maximum Annual Level B Harassment, Years 1-4	Maximum Annual Level B Harassment, Years 5-7	Total Overall Level B Harassment for 7-year Period
	WNP	6,946	8,980	54,724
	SOJ dalli type	614	845	4,991
	WNP dalli ecotype	22,056	30,327	179,205
	WNP truei ecotype	487	670	3,958
	IND	158	217	1,283
	NP	342	412	2,620
	Hawaii	655	782	4,966
	IND	3	4	24
	WNP	486	635	3,849
	Hawaii Pelagic	58	69	439
	IA	252	341	2,031
	IND	12	16	96
	Main Hawaiian Islands Insular stock and DPS	1	1	7
	Northwestern Hawaiian Islands	0	0	0
	WNP	1,350	1,596	10,188
	CNP	546	686	4,242
	Hawaii	1,944	2,320	14,736
	IND	93	128	756
	WNP	2,287	2,559	16,825
	IND	12	16	96
	NP	476	568	3,608
	WNP	366	503	2,973
	NP	26	36	212
	IND	11	16	92

Species	Stock ¹	Maximum Annual Level B Harassment, Years 1-4	Maximum Annual Level B Harassment, Years 5-7	Total Overall Level B Harassment for 7-year Period
Killer whale	Hawaii	6	8	48
	IND	397	546	3,226
	WNP	10,470	14,387	85,041
<i>Kogia</i> spp.	WNP	1,317	1,494	9,750
Longman's beaked whale	Hawaii	739	882	5,602
	IND	325	447	2,641
	WNP	471	574	3,606
Melon-headed whale	Hawaiian Islands	181	216	1,372
	IND	402	552	3,264
	Kohala Resident	9	11	69
	WNP	1,605	1,823	11,889
<i>Mesoplodon</i> spp.	WNP	10	14	82
Northern right whale dolphin	NP	0	0	0
Pacific white-sided dolphin	NP	9,530	12,890	76,790
Pantropical spotted dolphin	4-Islands	32	38	242
	Hawaii Island	23	27	173
	Hawaiian Pelagic	297	355	2,253
	IND	311	428	2,528
	Oahu	23	28	176
	WNP	5,105	5,883	38,069
Pygmy killer whale	Hawaii	393	469	2,979
	IND	60	82	486
	WNP	901	1,035	6,709
Pygmy sperm whale	Hawaii	266	318	2,018
	IND	0	0	0
	WNP	203	265	1,607
Risso's dolphin	Hawaii	414	494	3,138
	IA	1,045	1,374	8,302
	WNP	4,347	4,914	32,130
	IND	4,621	6,354	37,546
Rough-toothed	Hawaii	213	254	1,614

Species	Stock ¹	Maximum Annual Level B Harassment, Years 1-4	Maximum Annual Level B Harassment, Years 5-7	Total Overall Level B Harassment for 7-year Period
dolphin	IND	41	57	335
	WNP	1,439	1,732	10,952
Short-finned pilot whale	Hawaii	396	473	3,003
	IND	1,526	2,098	12,398
	WNP Northern Ecotype	525	721	4,263
	WNP Southern Ecotype	5,683	6,303	41,641
Southern bottlenose whale	IND	22	31	181
Spade-toothed beaked whale	IND	16	22	130
Sperm whale	Hawaii	106	126	802
	NIND	33	46	270
	NP	1,429	1,855	11,281
	SIND	16	22	130
Spinner dolphin	Hawaii Island	1	1	7
	Hawaii Pelagic	192	229	1,455
	IND	240	330	1,950
	Kauai/Niihau	83	99	629
	Kure/Midway Atoll	0	0	0
	Oahu/4-Islands	20	24	152
	Pearl and Hermes Reef	0	0	0
	WNP	574	721	4,459
Stejneger's beaked whale	WNP	201	276	1,632
Striped dolphin	Hawaii	269	321	2,039
	IND	5,059	6,957	41,107
	Japanese Coastal	3,366	3,571	24,177
	WNP Northern Offshore	267	367	2,169
	WNP Southern Offshore	3,282	3,729	24,315
Hawaiian monk	Hawaii	10	13	79

Species	Stock ¹	Maximum Annual Level B Harassment, Years 1-4	Maximum Annual Level B Harassment, Years 5-7	Total Overall Level B Harassment for 7-year Period
seal				
Northern fur seal	Western Pacific	8,475	11,653	68,859
Ribbon seal	NP	15,705	21,595	127,605
Spotted seal	Alaska stock/Bering Sea DPS	80,722	110,993	655,867
	Southern stock and DPS	0	1	3
Steller sea lion	Western/Asian stock, Western DPS	2	3	17

¹ ANT=Antarctic; CNP=Central North Pacific; NP=North Pacific; NIND=Northern Indian; SIND=Southern Indian; IND=Indian; WNP=Western North Pacific; ECS=East China Sea; WP=Western Pacific; SOJ=Sea of Japan; IA=Inshore Archipelago; WAU=Western Australia; YS=Yellow Sea; OE=Offshore Japan; OW=Nearshore Japan; JW=Sea of Japan/Minke; JE=Pacific coast of Japan; SH=Southern Hemisphere; DPS=distinct population segment