DEPARTMENT OF DEFENSE
Department of the Navy

FINDING OF NO SIGNIFICANT IMPACT FOR THE PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR WEST COAST CIVILIAN PORT DEFENSE TRAINING, ALTERNATIVE 4 (JUNEAU PROPOSED ACTION AREA)

Attachment:

(1) Letter of Concurrence for Endangered Species Act and Magnuson-Stevens Fishery Conservation and Management Act Informal Consultation for March 2022 Activities in Juneau, Alaska

Pursuant to the United States (U.S.) Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) implementing the National Environmental Policy Act (NEPA) and Department of the Navy (DON) NEPA regulations (32 CFR Part 775), DON prepared a Programmatic Environmental Assessment (PEA) in February 2020. Concluding the PEA, DON made a finding of no significant impact (FONSI) from the proposed action and determined an Environmental Impact Statement (EIS) was not required for West Coast Civilian Port Defense (CPD) training activities described in Alternative 4 (conduct CPD training in Juneau, AK).

Proposed Action: The current Proposed Action, which is reduced in scope from the action described in the PEA, would include the placement, discovery, and recovery of eight to ten bottom-placed, non-explosive mine training shapes during a two-week timeframe in early March 2022. This does not include the time required to place mine shapes on the seafloor or retrieve any that may remain at the end of the training. Assets used during the Proposed Action would include unmanned underwater vehicles, remotely operated vehicles, and Navy and U.S. Coast Guard vessels.

Purpose and Need: The purpose of the Proposed Action is to train personnel in the skills necessary to ensure U.S. ports remain free of mine threats. Ultimately, these training activities are needed to support the Department of Defense mission to defend the U.S. territory from attack by State and Non-State entities. Naval forces are required to provide mine warfare capabilities to defend the homeland per the Maritime Operational Threat Response Plan (POTUS Nov 8, 2006).

Alternatives Considered: The PEA analyzes the potential environmental impacts of the following alternatives:

Under the **No Action Alternative**, CPD training activities would not occur in any areas considered within the PEA. This alternative required no analysis of potential consequences to environmental resources, as no new action would occur.

Under **Alternative 1**, CPD training activities would be conducted in the Kodiak, AK proposed action area, in the waters of Chiniak Bay.

Under **Alternative 2**, CPD training activities would be conducted in the Anchorage, AK proposed action area, in the waters of Cook Inlet.

Under **Alternative 3**, CPD training activities would be conducted in the Seward, AK proposed action area, in the waters of Resurrection Bay.

Under **Alternative 4**, CPD training activities would be conducted in the Juneau, AK proposed action area, in the waters of Stephens Passage and Gastineau Channel. This is the Action Alternative that was selected for a training exercise conducted in March 2020, and is again the location proposed for training to be conducted in March 2022.

Under **Alternative 5**, CPD training activities would be conducted in the San Francisco, CA proposed action area, in the waters of San Francisco Bay, with a beaching location in San Francisco, CA.

Under **Alternative 6**, CPD training activities would be conducted in the Richmond, CA proposed action area, in the waters of San Francisco Bay, with a beaching location in Richmond, CA.

Under **Alternative 7**, CPD training activities would be conducted in the Concord, CA proposed action area, in the waters of San Francisco Bay, with a beaching location in Concord, CA.

Under **Alternative 8**, CPD training activities would be conducted in the Port Hueneme, CA proposed action area, in the waters of the Pacific Ocean.

Under **Alternative 9**, CPD training activities would be conducted in the Los Angeles/Long Beach, CA proposed action area, in the waters of San Pedro Bay.

Under **Alternative 10**, CPD training activities would be conducted in multiple proposed action areas over the course of one year. Events under Alternative 10 could occur either simultaneously or at different times throughout the year, depending on asset availability and schedules.

Alternative locations were selected based on the following screening criteria:

- Water depths less than 300 feet (91 meters);
- Near shipping lanes proximate to major ports; and,
- Beaching locations outside of sensitive habitats.

Alternatives considered but not carried forward for detailed analysis included 17 additional port locations. However, these additional ports were eliminated from consideration because they did not meet all three screening criteria listed above.

A Preferred Alternative was not identified in the PEA due to the programmatic nature of the analysis. This FONSI; however, has been prepared exclusively for proposed CPD activities in Juneau, AK in March 2022 (Alternative 4).

Although Alternative 4 is the Action Alternative selected in support of the proposed 2022 CPD activity, other locations defined by Alternatives 1-10 may be selected in subsequent years. When additional future training activities are proposed, the Navy will review the PEA and prepare supplemental NEPA documentation as needed.

Environmental Effects: No significant direct, indirect, or cumulative environmental impacts would occur from implementing the Proposed Action under Alternative 4. Certain environmental resources (water quality, land use, visual resources, airspace, infrastructure, public health and safety, hazardous materials and wastes, and environmental justice) were not analyzed in detail in the PEA, because implementation of the Proposed Action would not be likely to result in any environmental impacts on these resources or if affected, impacts would be negligible. Potential impacts, as analyzed in the PEA, on physical resources, biological resources, and cultural and socioeconomic resources are summarized here. Not all stressors analyzed in the PEA apply to the implementation of Alternative 4 in Juneau, AK in March 2022, as not all military training assets considered are planned to be utilized for this particular exercise.

Physical Resources: Physical resources analyzed include air quality, benthic habitat, and ambient acoustic environment. Although the Juneau proposed action area is a maintenance area[1] under the Clean Air Act for particulate matter less than 10 microns in diameter, under no operating scenario would emissions associated with the Proposed Action reach or exceed the *de minimis* threshold. All mine shapes would be removed during or after the Proposed Action, so no materials would be expended, and the seafloor would not be permanently altered. As the Juneau proposed action area is primarily comprised of soft sediments, benthic habitat is expected to shift back in the same manner that it would following a disturbance of tidal energy, and no long-term increases in turbidity are anticipated. All sound associated with the Proposed Action would cease upon completion of the training event, and therefore any addition to the ambient noise environment would be temporary. Increases to the acoustic environment would be insignificant when compared to the typical industrial and commercial shipping traffic transiting in the Juneau proposed action area. Therefore, implementation of Alternative 4 would not result in significant impacts on physical resources.

Biological Resources: Biological resources analyzed include marine invertebrates, benthic communities, and marine vegetation, fish, Essential Fish Habitat (EFH), birds, and marine mammals. The Proposed Action would involve: the movement of vessels, Navy divers, in-water devices (i.e., unmanned underwater vehicles and remotely operated vehicles); seafloor device deployment and temporary presence for up to two weeks; and the noise associated with vessels, and active acoustic transmissions (i.e., high-frequency sonar).

Vessel movement, diving activities, seafloor device presence, in-water device use, and active acoustic transmissions were considered for their potential impacts to marine invertebrates, benthic communities, and marine vegetation; only short-term and localized disturbances are anticipated. Vessel movement, diving activities, seafloor device presence, in-water device use, vessel noise, and acoustic transmissions were considered for their potential impacts to fish species. No Endangered Species Act (ESA)-listed fish are present in the proposed action area, and any impacts to fishes would be negligible, short-term and temporary. Vessel movement, diving activities, in-water device use, and acoustic transmissions were considered for their potential impacts to salmon EFH designated in the Juneau proposed action area; the Navy prepared an EFH Assessment for the National Marine Fisheries Service (NMFS) under the

[1] An area that was in nonattainment for one or more criteria air pollutants but has subsequently achieved attainment status with a State Implementation Plan in place.

Magnuson-Stevens Fishery Management and Conservation Act, analyzing the impacts for in-water device use only. On January 31, 2022, NMFS concurred with the Navy's assessment that implementation of Alternative 4 would not adversely affect the quality and/or quantity of salmon EFH (Attachment 1). Vessel movement, diving activities, in-water device use, vessel noise, and acoustic transmissions were considered for their potential impacts to marine birds. No ESA-listed marine bird species are expected to be present in the Juneau proposed action area during the time of the Proposed Action. Any impacts associated with the implementation of Alternative 4 would be short-term and localized. Vessel movement, diving activities, seafloor device presence, in-water device use, vessel noise, and acoustic transmissions were considered for their potential impacts to marine mammals. Although any associated impacts would be short-term and localized, the Navy prepared an informal consultation under Section 7 of the ESA. ESA-listed species consulted on included humpback whale (*Megaptera novaeangliae*) and Steller sea lion (*Eumetopias jubatus*). On January 31, 2022, NMFS concurred with the Navy's assessment that Alternative 4 is not likely to adversely affect humpback whales or Steller sea lions (Enclosure 1). Due to the limited scope of the proposed activities, there are no predicted "takes" of marine mammals under the Marine Mammal Protection Act and therefore authorization under the Marine Mammal Protection Act is not required.

Implementation of Alternative 4 would not be expected to have any long-term or population-level effects to biological resources. Implementation of Alternative 4 would not result in significant impacts to biological resources.

Cultural and Socioeconomic Resources: Cultural resources analyzed include protected historic properties, Alaska heritage resources, and shipwrecks. Socioeconomic resources analyzed include transportation and shipping, commercial and recreational fishing, subsistence use, and tourism. Implementation of Alternative 4 would not impact any known historical sites or in any way compromise the integrity or physical condition of cultural resources. For identical activities conducted in this location in March 2020, the Navy received concurrence from Alaska State Historic Preservation Office (SHPO), that no historic properties would be affected by Alternative 4. The Navy sent letters (via email and U.S. Postal Service with voice follow-up) in February 2020 seeking any Alaska Native tribal information regarding properties that may have religious or cultural significance, as required under Section 106 of the National Historic Preservation Act. No areas of significance or tribal concern were identified. Additionally, letters dated February 3, 2022 were sent to the Central Council of the Tlingit and Haida Indian Tribes of Alaska, and the Douglas Indian Association, notifying the tribes of the proposed March 2022 exercise.

Issuance of a Notice to Mariners prior to the start of implementation of the March 2022 exercise (Alternative 4) would inform any vessels of military activity occurring in the proposed action area, allowing for local awareness and possible avoidance of the CPD training activity. However, the length of time for any restrictions would be limited to the duration of the Proposed Action. Thus, implementation of Alternative 4 would not result in significant impact to cultural and socioeconomic resources.

Mitigation Measures: The Navy will implement mitigation measures to specifically avoid or reduce potential impacts on marine species and socioeconomic resources. Mitigation measures

for marine species include use of one or more lookout on Navy vessels to visually observe for marine mammal presence while vessels are underway, and during use of towed in-water devices.

Public Outreach: The Navy prepared the Final PEA in 2020 with consideration of comments received during public review of the Draft PEA. The Navy solicited public and agency comments during a public outreach period from December 4, 2019 through January 3, 2020. Notification of Availability was provided via newspaper advertisements throughout each of the proposed action areas. The Draft PEA was made available for viewing at libraries throughout Alaska and California, and on a website hosted by the Naval Facilities Engineering Command Northwest. Digital copies were sent to 51 stakeholders and 10 regional tribal community leaders in total. The Navy received two agency comments in response regarding historic properties, from the National Parks Service and the Alaska SHPO; both comments were considered and addressed in the Final PEA.

Finding: Based on the analysis presented in the February 2020 PEA, prepared in accordance with the requirements of NEPA and DON policies and procedures (32 CFR Part 775), and in coordination with NMFS and the Alaska SHPO, DON finds that implementation of the Proposed Action as described in Alternative 4 (conduct CPD training in Juneau, AK) will not significantly impact the quality of the human or natural environment. Therefore, an EIS need not be prepared.

Electronic copies of the PEA and FONSI may be obtained by written request to: Commander, U.S. Pacific Fleet, ATTN: John Mosher, N465, 250 Makalapa Drive, Pearl Harbor, HI 96860.

18 Feb 2022

Date

D. A. VANDERLEY
Rear Admiral, U.S. Navy
Fleet Civil Engineer, U.S. Pacific Fleet

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

January 31, 2022

Captain A.K. Hutchinson
Deputy Fleet Civil Engineer
United States Pacific Fleet
Department of the Navy
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

Re: Navy Civilian Port Defense Training, Juneau, 2022, 5090 Ser N46/1277; xLOC AKRO-2021-03366

Dear Captain Hutchinson,

This letter responds to your request for an expedited consultation from the National Marine Fisheries Service (NMFS) pursuant to Section 7 of the Endangered Species Act (ESA) for the proposal to conduct a Civilian Port Defense training event in Juneau, Alaska, in March 2022. NMFS received a request for an informal consultation on December 13, 2021 and a modified request December 21, 2021. We reviewed the Biological Assessment and Essential Fish Habitat Assessment provided for the action. We requested needed information via email on December 29, 2021, and the Navy provided a response on January 7, 2022. The request with the additional information qualifies for expedited review and concurrence because it met our screening criteria and contained all required information on the proposed action, mitigation measures, and its potential effects to listed species and designated critical habitat. Expedited consultation for this proposed action commenced on January 7, 2022.

Importantly, the January 7 response from the Navy clarified that the proposed action will only occur in March 2022, no helicopters or drone aircraft will be used in the proposed action, and seafloor devices will be placed between the depths of 150 feet and 300 feet. In addition, the Navy provided a photo of the configuration of seafloor devices showing very short sections of line and stated that "There are only lines and cables used to lower/retrieve the seafloor devices from the vessel (Coast Guard cutter) during deployment and retrieval, but none are in place during the exercise."

We reviewed your consultation request document and related materials. Based on our knowledge, expertise, and the materials you provided, we concur with your conclusions that the proposed action is not likely to adversely affect Mexico distinct population segment (DPS) humpback whales (*Megaptera novaeangliae*) or western DPS Steller sea lions (*Eumetopias jubatus*). A complete administrative record of this consultation is on file at the Juneau NMFS office.

Reinitiation of ESA consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

In the event that the Navy discovers an injured, entangled, or dead marine mammal during the proposed activities, the Navy should immediately report the incident to the NMFS Alaska Region 24-hour Stranding Hotline at 1-877-925-7773.

Essential Fish Habitat

In accordance with Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act, the Navy is also required to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH). NMFS agrees with your determination that the proposed exercises are unlikely to adversely affect groundfish and salmon EFH identified in the training area (NPFMC 2020, NPFMC 2021). Specifically, NMFS agrees that all impacts associated with this project will be highly localized and temporary. The depths provided for the deployment of seafloor devices are beyond the range of eelgrass and kelp beds, so disturbance of those habitat components is unlikely. The location of the shore exercise, near Snowslide Creek in Gastineau Channel, is defined as a sand and gravel flat or fan coastal class and has dune grass, rockweed, barnacles, and blue mussels (Cook et al. 2017). Snowslide Creek is a coho salmon rearing stream (Giefer and Blossom 2021), however the stream itself will not be accessed during this exercise. NMFS appreciates the Navy's inclusion of mitigation measures to minimize impacts on water quality and benthic habitat. Should the project plan change in a manner that changes impacts to EFH, please inform us so that we can reassess our EFH determination.

Please direct any questions regarding the ESA consultation to Sadie Wright at sadie.wright@noaa.gov and any questions regarding the EFH consultation to Molly Zaleski at molly.zaleski@noaa.gov.

Sincerely,

Jonathan M. Kurland
Assistant Regional Administrator
for Protected Resources

cc: Andrea Balla-Holden, US Navy, andrea.ballaholden@navy.mil
Gretchen Harrington, NOAA, gretchen.harrington@noaa.gov

References

Cook, S., S. Daley, K. Morrow, and S. Ward. 2017. ShoreZone Coastal Imaging and Habitat Mapping Protocol. Prepared for NOAA NMFS, Juneau, Alaska. Prepared by Coastal and Ocean Resources, Victoria, BC. 78p. Accessed online at: https://alaskafisheries.noaa.gov/mapping/sz_js/

Giefer, J., and B. Blossom. 2021. Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Southeastern Region, effective June 1, 2021, Alaska Department of Fish and Game, Special Publication No. 21-04, Anchorage. Accessed online at: https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive

North Pacific Fishery Management Council. 2020. Fishery Management Plan for Groundfish of the Gulf of Alaska. NPFMC, Anchorage, AK. Accessed online at: https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

North Pacific Fishery Management Council. 2021. Fishery Management Plan for the Salmon Fisheries in the EEZ off Alaska. NPFMC, Anchorage, AK. Accessed online at: https://www.npfmc.org/wp-content/PDFdocuments/fmp/Salmon/SalmonFMP.pdf

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5090
Ser N46/1277
December 13, 2021

Mr. Jon Kurland
Assistant Regional Administrator
National Marine Fisheries Service
222 W 7th Avenue
Anchorage, AK 99513

Dear Mr. Kurland:

SUBJECT: REQUEST FOR INITIATION OF ENDANGERED SPECIES ACT SECTION 7 INFORMAL CONSULTATION AND FOR INITIATION OF MAGNUSON-STEVENS FISHERY MANAGEMENT AND CONSERVATION ACT SECTION 305(b)(2) CONSULTATION FOR THE CIVILIAN PORT DEFENSE TRAINING ACTIVITY

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) and Section 305(b)(2) of the Magnuson-Stevens Fishery Management and Conservation Act (MSA), the Department of the Navy (Navy) requests initiation of informal consultation for the proposed Civilian Port Defense (CPD) training event, planned for Juneau, Alaska in March 2022. Military training activities are naval undersea warfare exercises conducted in support of maritime homeland defense to ensure that strategic United States (U.S.) ports are cleared of navigational hazards. The Navy previously consulted with the National Marine Fisheries Service (NMFS) on a similar CPD training activity in 2020 (5090 Ser N465/1431; AKRO-2019-03752). That request qualified for NMFS expedited review and concurrence. We hope this request will as well since we updated those 2020 materials for this consultation.

The proposed CPD training event would occur near Juneau, Alaska for a period of two weeks during March 2022. The Proposed Action could happen anytime in March, and the two-week timeframe does not include the time required to tether training devices to the seafloor or retrieve any that may remain at the end of the training. Assets used during CPD training in Juneau could include unmanned underwater vehicles (UUVs), remotely operated vehicles (ROV), Explosive Ordnance Disposal (EOD) teams, and Navy vessels. Proposed training activities would be conducted near the port area of Juneau, near shipping lanes, and seaward to the 300 feet (91 meters) depth contour. Various underwater detection sensors would be employed for detection of underwater devices in and around the proposed action area.

A review of federally listed species under the jurisdiction of the NMFS indicates the following species potentially occur within the proposed action area:

a. Humpback whale, Mexico Distinct Population Segment (DPS) (*Megaptera novaeangliae*)

b. Steller sea lion, Western United States stock (*Eumetopias jubatus*)

There is no critical habitat designated in the Juneau action area.

The Navy's Biological Assessment (BA) (Enclosure 1) is the Navy's primary document that provides the required information pursuant to 50 C.F.R. §402.12(f). Based on the Navy's analyses, the Navy concluded "*may affect, not likely to adversely affect*" for these above-mentioned species that may occur within the proposed action area. The Navy requests NMFS concurrence with our determinations.

In accordance with 50 CFR §600.920(e), the Navy's Essential Fish Habitat (EFH) assessment was included as Chapters 5 and 6 of the BA (Enclosure 1). The Navy analyzed potential impacts of the proposed activity to EFH in the action area. The Navy concluded that effects from the Proposed Action *may adversely affect* Groundfish and Salmon Fisheries in the Exclusive Economic Zone of Alaska and therefore requests initiation of the MSA's EFH consultation process.

We appreciate your continued support in helping the U.S. Navy meet its environmental responsibilities. If there are any questions, my point of contact is Ms. Andrea Balla-Holden, andrea.ballaholden@navy.mil, (360) 396-0002.

Sincerely,

A. K. HUTCHISON, CAPT, USN
By direction

Enclosure: 1. Biological Assessment and Essential Fish Habitat Assessment for Civilian Port Defense Training in Juneau, Alaska

Copy to: Mr. Greg Balogh, NMFS Field Office Supervisor

Biological Assessment and Essential Fish Habitat Assessment for Civilian Port Defense Training in Juneau, Alaska

Submitted to:
National Marine Fisheries Service
222 W 7th Ave
Anchorage, AK 99513

Submitted by:
Commander, United States Pacific Fleet
Department of the Navy
250 Makalapa Drive (N465)
Pearl Harbor, HI 96860-3131

December 2021

Table of Contents

List of Figures

List of Tables

List of Acronyms and Abbreviations

Acronym	*Definition*
°W	degrees West
ALMDS	Airborne Laser Mine Detection System
CPD	Civilian Port Defense
dB re 1 µPa	decibels referenced to 1 microPascal
DPS	Distinct Population Segment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EGOA	Eastern Gulf of Alaska
EIS	Environmental Impact Statement
EOD	Explosive Ordnance Disposal
ESA	Endangered Species Act
FMP	Fishery Management Plans
FR	Federal Register
ft	feet
HSTT	Hawaii/Southern California Training and Testing
Hz	Hertz
kHz	kilohertz
km	kilometer(s)
LCS	Littoral Combat Ship
m	meters
MCM	Mine Countermeasures
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Management and Conservation Act
NAEMO	Navy Acoustic Effects Model
NMFS	National Marine Fisheries Service
NMSDD	Navy Marine Species Density Database
NPFMC	North Pacific Fishery Management Council
NWTT	Northwest Training and Testing
OEIS	Overseas Environmental Impact Statement
PTS	Permanent Threshold Shift
RHIB	rigid-hulled inflatable boat
ROV	Remotely Operated Vehicle
SEL	sound exposure level
TTS	Temporary Threshold Shift
U.S.	United States
UUV	Unmanned Underwater Vehicle
yd	yard

1 INTRODUCTION

The purpose of this informal consultation is to address the potential effects of currently planned, and future proposed Civilian Port Defense (CPD) training in Juneau Alaska, on Endangered Species Act (ESA)-listed species, critical habitat and essential fish habitat (EFH) under the purview of the National Marine Fisheries Service (NMFS). The United States Navy (Navy) intends to carry out the Proposed Action, as described in Section 2 below, in accordance with Sections 8013 and 8062 of Title 10, United States Code.

Civilian Port Defense training activities are naval mine warfare exercises conducted in support of maritime homeland defense to ensure that strategic United States (U.S.) ports are cleared of mine threats; therefore, the primary purpose of the Proposed Action is to train personnel in the skills necessary to ensure that U.S. ports remain free of mine threats. Naval forces provide mine warfare capabilities to defend the homeland per the Maritime Operational Threat Response Plan (POTUS Nov 8, 2006). Civilian Port Defense training events are typically conducted in ports or major surrounding waterways, near shipping lanes, and in waters with depths less than 300 feet (ft; 91 meters [m]). This informal consultation describes proposed Civilian Port Defense training activities near Juneau, Alaska planned for March 2022, and potentially scheduled in future[1] years.

In February 2020, the Navy prepared a Programmatic Environmental Assessment under the National Environmental Policy Act, documenting nine possible locations in Alaska and California at which Civilian Port Defense training activities could occur. Navy found no significant impact from the proposed action that was proposed in Juneau, Alaska in March 2020. Similar Civilian Port Defense training activities have been included within the Navy's comprehensive at-sea environmental planning documents when they overlap with those Study Areas (e.g., Hawaii-Southern California Training and Testing [HSTT] Environmental Impact Statement/ Overseas Environmental Impact Statement [EIS/OEIS], Northwest Training and Testing [NWTT] EIS/OEIS). The Proposed Action described herein would occur outside the Study Area of any existing Navy at-sea environmental planning documentation, but in proximity to the prior reviewed Juneau location.

This informal consultation addresses the Proposed Action in compliance with section 7(a)(2) of the ESA of 1973, as amended. Section 7 of the ESA assures that, through consultation with NMFS, federal actions do not jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of critical habitat.

The Navy also reviewed EFH designated within the proposed action area (Juneau) and determined that the project is not likely to adversely affect the essential fish habitat associated with Salmon or Groundfish Fisheries in the Exclusive Economic Zone (EEZ).

1.1 Consultation History

Navy consulted with NMFS on the Civilian Port Defense training activities on a single event occurring March 2020 (5090 Ser N465/1431; AKRO-2019-03752). On January 15, 2020, NMFS concurred with the Navy's determinations that CPD activities are not likely to adversely affect ESA-listed humpback whale or Steller sea lion. Activities authorized in that consultation remain the same, and there are no changes to the activity that changes the effects to listed species or critical habitat that was previously considered.

[1] Civilian Port Defense trainings activities routinely occur every year, typically alternating between the East and West Coasts of the United States. The proposed action would authorize activities to occur at the Juneau, AK location, if needed. CPD training on the West Coast can occur at nine various ports in California or Alaska (U.S. Navy, 2020), and any of the nine locations can be selected for the biennial event.

Furthermore, there is no new scientific information available that would indicate that the effects of the action may be greater than previously considered.

In the 2020 consultation, the Navy indicated that training would be a single event occurring March 2020, but would now like concurrence that CPD activities planned for March 2022, and possibly during future years into the reasonably foreseeable future in Juneau, Alaska, are not likely to adversely affect ESA-listed humpbacks or Steller sea lions.

The Navy modeled all acoustic stressors associated with Civilian Port Defense with updated marine mammal acoustic criteria and updated marine mammal densities (including ESA-listed humpback whale and Steller sea lion), based on best available science. To date, Navy Acoustic Effects Model (NAEMO) modeling has not resulted in any exposures to ESA-listed species and authorization of incidental take to ESA-listed species has not been required. Into the future, the Navy assumes that if updated modeling (which includes updated noise criteria and densities) continues to indicate zero exposures to ESA-listed humpbacks and Steller sea lions, and that no other reinitiation requirements (as defined in 50 CFR 402.16) are triggered, then the concurrence from NMFS will remain valid. If future acoustic modeling indicates there is the potential for acoustic exposures to an ESA-listed marine mammal, reinitiation of consultation would be warranted and additional Section 7 consultation would be required.

2 DESCRIPTION OF THE ACTION AREA AND PROPOSED ACTION

2.1 Proposed Action

Civilian Port Defense training activities are naval mine warfare exercises conducted in support of maritime homeland defense, per the Maritime Operational Threat Response Plan (POTUS Nov 8, 2006). These activities can be conducted in conjunction with other federal agencies, principally the Department of Homeland Security. The three components of mine warfare include airborne mine countermeasures (i.e., helicopter), surface mine countermeasures ships (i.e., vessels and unmanned vehicles), and undersea elements (i.e., divers, marine mammal systems, and unmanned vehicles), all of which are used in order to ensure that strategic U.S. ports are cleared of mine threats. Not all assets are used for every Civilian Port Defense activity depending on training goals, availability, and other logistics considerations. For instance, no Navy marine mammal systems or airborne mine countermeasures platforms are proposed for this action.

The Civilian Port Defense training event would occur near Juneau, Alaska for a period of two weeks during March 2022. Future activities could occur year round, although the training activity is typically scheduled around February/March timeframe. The Proposed Action two-week timeframe would not include the time required to tether mine shapes to the seafloor or retrieve any that may remain at the end of the training. Assets used during Civilian Port Defense training in Juneau would include unmanned underwater vehicles (UUVs), remotely operated vehicles (ROV), Explosive Ordnance Disposal (EOD) teams, and Navy vessels[2]. No in-water explosives are proposed as part of the proposed action.

Training activities would be conducted near the port area of Juneau, near shipping lanes, and seaward to the 300 ft (91.5 m) depth contour. Various mine detection sensors would be employed for detection of mine shapes in and around the proposed action area.

The Proposed Action would include the placement, discovery, and recovery of eight to ten bottom-placed, non-explosive mine training shapes in the proposed action area. These mine training shapes are relatively small and generally less than 8 ft (2.5 m) in length. Seafloor devices (non-explosive mine shapes) would be retrieved by Navy divers or unmanned vehicles, and may be brought to rocky or sandy shoreside locations (up to 100 ft [30 m] from the water) to ensure that the neutralization measures are effective and the shapes are secured. The final step in training would be a shoreside activity that involves EOD personnel assessing a retrieved mine shape to gather facts (intelligence) on its type and how it works, and then disassembling or disposing of it. This final step in the activities would take place on land (typically rocky or sandy shoreline), close to the high water mark (up to 100 ft [30 m] from the water's edge), and in areas where the activity would not pose environmental risk, including the avoidance of pinniped haulouts.

While the training activities would take place over approximately two weeks, this does not include the time required to tether mine shapes to the seafloor and to retrieve any remaining shapes at the end of the training period. The goal of the training exercise would be to identify and retrieve all mine shapes during the training event, and any mine shapes not located and removed from the environment would

[2] Availability of Navy surface vessels and helicopters for the Juneau Proposed Action can be highly variable depending on Pacific-wide operational requirements, training schedules, maintenance schedules, logistic considerations, and other variables. In actuality, these issues often preclude ship and aviation participation, often at the last minute. However, for the purpose of this informal consultation, the Propose Action is described and analyzed as if ship and aviation participation will occur. No helicopter activities would be included in the 2022 Juneau activities.

be collected at the end of the event; no materials would remain in the ocean after Civilian Port Defense training activities are completed.

High-frequency (greater than 10 kilohertz [kHz]) active acoustic transmissions would be used intermittently over approximately four days during training events in the Juneau proposed action area (see Section 2.1.2).

2.1.1 Mine Detection Systems

Mine detection systems are comprised of several surface vessel types, helicopters, and EOD teams working in concert to provide a layer approach searching for, rendering safe, and removing potential mines. Mine detection systems are either towed, flown, or autonomous, and are used to locate, classify, and map suspected mines. Each system is specialized to either locate mines on the surface, in the water column, or on the seafloor. Depending on the system type, mine detection systems may use acoustic transmissions, low-energy lasers, or video sensors to locate and classify mines. Appendix A shows examples of representative platforms and equipment.

2.1.1.1 Surface Ships and Aviation Platforms

One to two Littoral Combat Ships (LCS) and/or one Mine Countermeasures (MCM) ship may participate in Civilian Port Defense Exercises, but none are planned to participate in the Juneau exercise in March 2022.

Similarly aviation assets may be participate in some Civilian Port Defense Exercises, but none are planned to participate in the Juneau exercise in March 2022.

2.1.1.2 UUVs and ROVs

UUVs and ROVs provide mine warfare capabilities in nearshore littoral areas, surf zones, ports, and channels. UUVs are autonomous and programmed to conduct specific search patterns in a given water body. ROVs are controlled via direct cable to a surface operator. The active acoustic sources that would be used in the proposed action area are those associated with MK-18 UUVs (Appendix A). UUVs and ROVs are equipped with high-frequency and very-high frequency (>100 kHz) active sonar systems such as side scan sonars, imaging sonars, bottom-mapping sonars, and navigation sonars. ROVs typically also have advance underwater imaging camera(s) so that operators can visually inspect a suspected mine target.

2.1.1.3 EOD Assets

EOD assets would be comprised of various EOD personnel with expertise in particular mine warfare activities. The EOD teams use both dive boats (e.g., Zodiac inflatables) and 23 to 30 ft (7 to 9 m) rigid-hulled inflatable boats (RHIBs) to transport divers and equipment around the proposed action area. EOD actions can include deployment of UUVs such as the MK-18 Kingfish or smaller REMUS 100 (Appendix A). UUVs are used to provide wide-area surveys to search for mines. Mini-ROVs may be used to help localize and classify potential mines. EOD divers can be directed to suspected mine locations by either their own UUVs, or from other platforms such as the LCS, MCM, or helicopters. Alternatively, divers can be sent into the water to localize bottom or moored mines using the AN/PQS-2A hand-held sonar system, or visually. Following localization and classification, EOD divers would then simulate neutralization of the mine. Some testing may be conducted using mini-ROVs to simulate neutralization of mine. This entails the mini-ROV, immediately adjacent to a training mine shape, firing a projectile, air slug, or water slug at the mine shape which in a real-world situation would detonate an active mine; in a training event, no actual explosive detonations are part of the Proposed Action. Seafloor devices (non-explosive mine

shapes) will be retrieved by Navy divers, typically EOD personnel, or by ROVs as they are located, and one or more may be brought to rocky or sandy shoreside locations (up to 100 ft from the water) to ensure that the neutralization measures are effective and the shapes are secured. The final step in training is a shoreside activity that involves EOD personnel assessing one of the retrieved mine shapes to gather facts (intelligence) on its type and function, and then disassembling it. This final step in the activities would take place on land (typically rocky or sandy shoreline), close to the high water mark (up to 100 ft [30.5 m] from the water's edge), and in areas with limited environmental sensitivity. Regardless of neutralization procedure (diver, mini-ROV), no actual explosive detonations are part of the Proposed Action.

2.1.2 Active Acoustic Sources

All active acoustic sources that could be used during the Proposed Action are high-frequency sonar systems between 10 to 200 kHz. Exact source parameters for each system are classified, and may change in the future with technological upgrades. The majority of acoustic sources used during Civilian Port Defense Exercises are classified as *de minimis*[3] based on past consultations with the NMFS indicating these types of systems would have no potential impact on protected species. Almost all of the UUV acoustic sources would be *de minimis*.

2.1.3 Description of the Juneau Proposed Action Area

The Juneau proposed action area (Figure 2-1) surrounds the southern part of Douglas Island, in sections of the Gastineau Channel and part of Stephens Passage. The Port of Juneau has two private cruise ship docks, which are used regularly, and otherwise is home to limited commercial usage (City of Juneau 2016). The Proposed Action would include the use of a shoreside location near the outlet of Snowslide Creek, off of Thane Road (Figure 2-2). This plot of land is owned by the City and Borough of Juneau Lands and Resources Division. Land use would involve one or more devices being moved from a boat to higher ground (up to 100 ft [30 m] from the mean high water mark).

The waters within and around Juneau reach depths up to 530 ft (161.5 m) in Stephens Passage, and become shallower through the Gastineau Channel heading north to Juneau, up to 215 ft (66 m) towards the entrance and averaging below 120 ft (37 m) closer to the city; however, the Proposed Action would not occur in waters deeper than 300 ft (91.5 m). The Juneau proposed action area is composed predominantly of mud, with some silt (National Oceanic and Atmospheric Administration 2013). The shoreside location at the mouth of Snowslide Creek is mixed sand and gravel beach with tidal flats.

[3] *De minimis* sources: active acoustic sources with narrow beam widths, downward transmission, short pulse lengths, frequencies above known marine mammal and fish hearing ranges, low source levels, or combinations of these factors, which are not anticipated to result in takes of protected species.

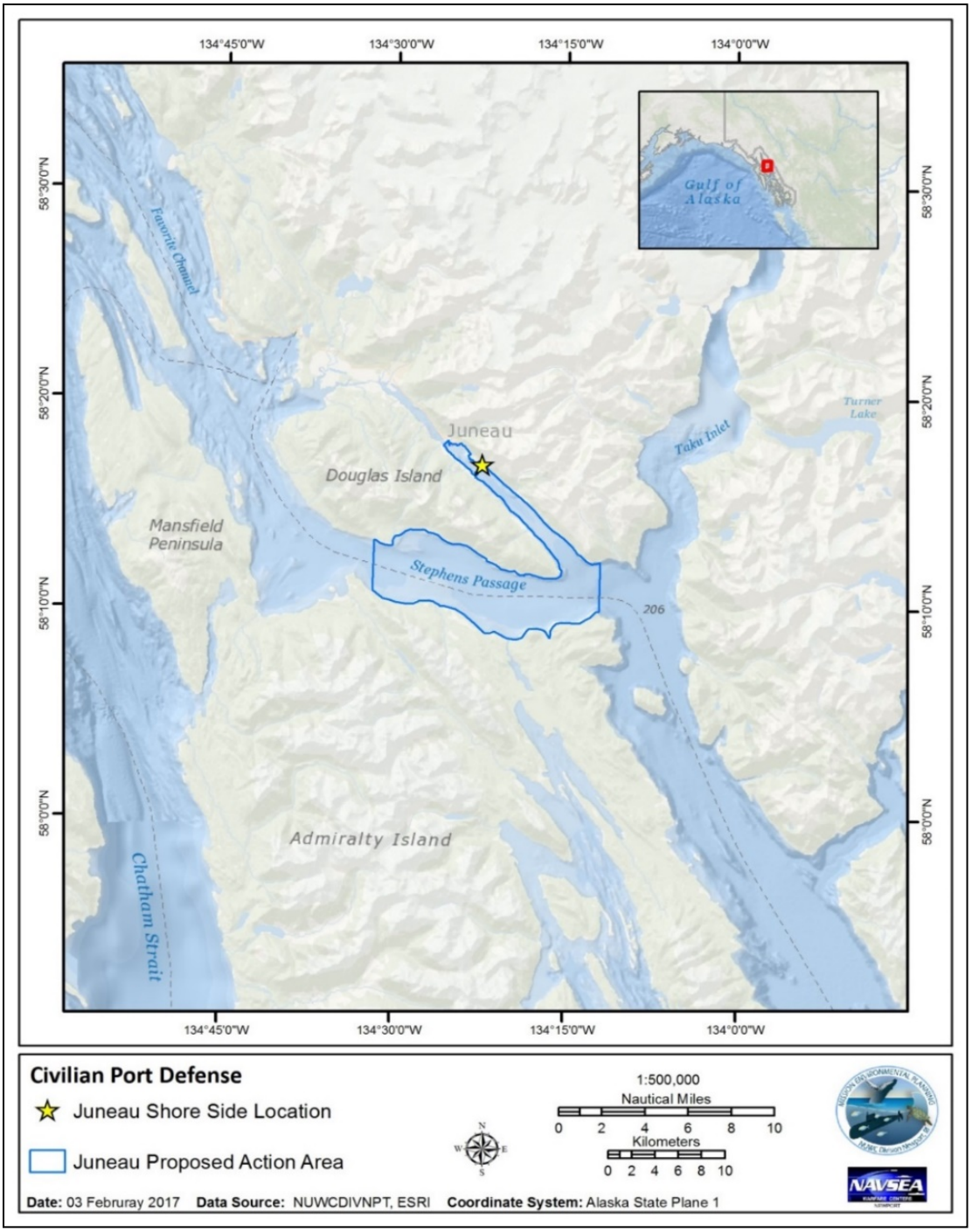


Figure 2-1. Juneau Proposed Action Area

Figure 2-2. Shoreside Location for Activities in the Juneau Proposed Action Area

3 LISTED SPECIES

The Navy has determined that the Proposed Action has the potential affect two ESA-listed marine mammal species:

- Humpback whale (*Megaptera novaeangliae*), Threatened Mexican Distinct Population Segment (DPS)
- Steller sea lion (*Eumetopias jubatus*), Endangered Western DPS

There is no critical habitat designated in the Juneau proposed action area.

3.1 Humpback Whale

The Mexico DPS of the humpback whale is listed as threatened under the ESA and as depleted under the Marine Mammal Protection Act (MMPA). Humpback whales that could reasonably be expected to occur in the proposed action area belong to two DPSs: the Hawaii DPS (not ESA-listed) and Mexico DPS (threatened) (National Marine Fisheries Service 2021). The Hawaii DPS is the primary humpback whale population found in Alaska (likely to be 98 percent), followed by Mexico DPS (2 percent) (National Marine Fisheries Service, 2021); therefore, most humpback whales encountered would be expected to be non-ESA listed. There is no designated critical habitat for humpback whales within the proposed action area (86 Federal Register 21082). Humpback whales could be present in the Juneau proposed action area year round, but likely at low density given the March time-frame for the Proposed Action (when majority of humpbacks would be expected at breeding grounds).

Humpback whales often migrate amongst different feeding grounds, although some site fidelity does occur. Most humpback whale sightings are in nearshore and continental shelf waters, though humpback whales frequently travel through deep oceanic waters during migration (Calambokidis et al. 2001; Clapham 2000; Clapham and Mattila 1990; Lagerquist et al. 2008; Mate et al. 2018). Although feeding areas are broadly distributed and range widely in terms of latitude, they are usually over the continental shelf or near the shelf edge at shallow (~10 m) to moderate water depths (~ 50 -200 m) and in cooler waters (Becker et al. 2016; Becker et al. 2017; Zerbini et al. 2016). Often, feeding areas are also associated with oceanographic, topographic, or biological features (e.g., spawning runs) that serve to concentrate or aggregate prey (e.g., (Chenoweth et al. 2017; Dalla Rosa et al. 2012; Straley et al. 2018; Thompson et al. 2012; Tynan et al. 2005)).

In Southeast Alaska, migrating humpback whales typically arrive in late spring and reach peak abundances around late August through early October (Baker et al. 1985; Dahlheim et al. 2009) or November (Straley et al. 2018), although humpback whales can be found in Southeast Alaska in all months of the year (Baker et al. 1985; Baker et al. 1992; Straley 1990; Straley et al. 1994; Straley et al. 2018). There is also evidence that a very small number of whales have overwintered in Southeast Alaska and did not undergo winter migrations to breeding areas (Straley et al. 2018).

In general, euphausiids appear to comprise the bulk of the humpback diet in Southeast Alaska (Krieger and Wing 1986; Witteveen et al. 2011), but Pacific herring, as well as capelin, juvenile walleye pollock are also important components of the diet (Krieger and Wing 1986; Straley et al. 2018).

3.2 Steller Sea Lion

Steller sea lions range along the North Pacific Rim from Japan to California. Steller sea lions are split into two separate DPSs based on demographic and genetic differences; the Eastern DPS is no longer listed under the ESA nor considered depleted under the Marine Mammal Protection Act (MMPA), while the Western DPS is listed as endangered (62 Federal Register [FR] 30772; June 5, 1997) under the ESA and

depleted under the MMPA. The two populations are divided at 144 degrees West longitude (°W) (i.e., Cape Suckling, Alaska). The Western DPS includes Steller sea lions that reside in the central and western Gulf of Alaska, and the Eastern DPS includes animals that are distributed along southeast Alaska, British Columbia, Oregon, and California (National Marine Fisheries Service 2013).

Steller sea lions do not migrate, but they often disperse widely outside of the breeding season (Loughlin and York 2000). There is regular movement of Western DPS Steller sea lions across the 144 °W longitude boundary, especially due to the wide-ranging seasonal movements of juveniles and adult males (Fritz et al. 2016; Jemison et al. 2013; Jemison et al. 2013; Jemison et al 2018; Raum-Suryan et al. 2002; Hastings et al., 2019; National Marine Fisheries Sercice, 2020). The Juneau Study Area is outside of the core "Mixing Zone" of the Eastern and Western DPS's but overlaps with the "extended" Mixing Zone of the two DPSs (Jefferson et al., 2018; Hastings et al 2019). Therefore, Steller sea lions encountered in the Juneau proposed Action Area could be from either DPS.

During the breeding season, sea lions, especially adult females, typically return to their natal rookery or a nearby breeding rookery to breed and pup (Hastings et al. 2017). However, movement data (Jemison et al. 2012, 2018) and genetic analyses (O'Corry-Crowe et al. 2014), indicate that a mixing zone exists of mostly breeding females occurs in the northern region of the Eastern DPS from Prince William Sound to Southeast Alaska (Gelatt et al. 2004; Jemison et al. 2013; O'Corry-Crowe et al. 2014; National Marine Fisheries Service, 2020). Recent analysis by Hastings et al. (2020) provides estimates of Western DPS Steller sea lion occurrence east of the 144 degree boundary which estimated the minimum portions of Steller sea lions with genetic material associated with the Western DPS within the mixing zone of Southeast Alaska. The Navy's Juneau Study Area overlaps with the Lynn Canal Region of Southeast Alaska (National Marine Fisheries Service, 2020). In the Lynn Canal Region, it is estimated that 0.014 (or 1.4%) of Steller sea lions would be characterized as the ESA-listed Western DPS (Hastings et al., 2020; National Marine Fisheries Service, 2020).

Critical habitat for Steller sea lions in Alaska is defined east of 144° W longitude as the aquatic zone that extends 3,000 ft (915 m) seaward from the baseline or basepoint of each major rookery and major haulout in Alaska. There is no Steller sea lion critical habitat in the Juneau proposed action area.

Steller sea lion distribution extends from the coast to the outer continental shelf. An area of high occurrence extends from the shore to the 1,640 ft (500 m) depth. Haulouts and rookeries include beaches, ledges, and reefs. Steller sea lions form large rookeries during late spring when adult males arrive and establish territories (Pitcher and Calkins 1981). They are gregarious animals that often haul out in large groups. At sea, 93 percent of sightings were solitary animals (Keple 2002); adult males at sea are usually solitary while groups typically consist of females and subadult males. Foraging habitat is primarily shallow, in either nearshore or continental shelf waters. Steller sea lions are also known to feed in deep waters past the continental shelf break (Loughlin et al. 2003; National Marine Fisheries Service 2015; Raum-Suryan et al. 2002). Haulout and rookery sites are located on isolated islands, rocky shorelines, and jetties. Most births occur from mid-May through mid-July at rookeries, and breeding takes place shortly thereafter (Pitcher and Calkins 1981; Raum-Suryan et al. 2002).

Steller sea lions are opportunistic predators, feeding primarily on a wide variety of fishes (e.g., capelin, cod, herring, mackerel, pollock, rockfish, salmon, sand lance, etc.), bivalves, cephalopods (e.g., squid and octopus) and gastropods (National Marine Fisheries Service 2015).

3.3 Marine Mammal Hearing and Vocalization

All marine mammals studied use sound to forage, orient, socially interact with others, and detect and respond to predators. Measurements of marine mammal sound production and hearing capabilities

provide some basis for assessment of whether exposure to a particular sound source may affect a marine mammal behaviorally or physiologically.

3.3.1 Humpback Whale

Direct measurements of mysticete (i.e., baleen whales) hearing are lacking. Thus, hearing predictions for mysticetes are based on other methods, including: anatomical studies and modeling (Cranford and Krysl 2015; Houser et al. 2001b; Parks et al. 2007; Tubelli et al. 2012)); vocalizations (see reviews in (Au and Hastings 2008; Richardson et al. 1995; Wartzok and Ketten 1999); taxonomy; and behavioral responses to sound (Dahlheim and Ljungblad 1990); see review in (Reichmuth et al. 2007). It is generally assumed that most animals hear well in the frequency ranges similar to those used for their vocalizations (songs or calls). Anatomical and paleontological evidence suggests that the inner ears of mysticetes are well adapted for hearing at lower frequencies (Ketten 1998; Richardson et al. 1995). Although auditory frequency range and vocalization frequencies do not always perfectly align, caution should be taken when considering vocalization frequencies along in predicting hearing capabilities of species for which no data exists, like mysticetes. Estimation of hearing ability based on inner ear morphology was completed for humpback whales (700 Hz to 10 kHz; (Houser et al. 2001a), and functional hearing in low-frequency cetaceans is conservatively estimated to be between about 7 Hz and 22 kHz (Southall et al. 2007; Southall et al. 2019).

Humpback whale song ranges in frequency between approximately 50 Hz and 3 kHz, although tonal harmonics can extend beyond 24 kHz (Au et al. 2006). As a result, there has been speculation that humpback whales may hear frequencies as high as 24 kHz (Au et al. 2006), but empirical hearing evidence is lacking to support or refute this hypothesis. Most vocal social sounds have peak frequencies below 1 kHz, but can range as high as 6 kHz (Stimpert et al. 2012). These sounds vary by feeding context and location. D'Vincent et al. (1985) described whales feeding on schools of krill and herring in Southeast Alaska while producing extended bouts of tonal sounds centered around 500 Hz. In Southeast Alaska, mean foraging humpback whale source levels were reported as 137 dB re 1 µPa (range 113-157 dB) (Fournet et al. 2018).

3.3.2 Steller Sea Lion

Pinnipeds produce sounds both in air and in water that range in frequency from approximately 100 Hz to several tens of kHz and it is believed that these sounds only serve social functions (Miller 1991) such as male-male vocal boundary displays, mother-pup recognition, and reproduction. Source levels for pinniped vocalizations in-water range from approximately 95 to 190 dB re 1 µPa at 1 m (Richardson et al. 1995). Hearing in otariid seals, such as Steller sea lions, is adapted to low frequency sound and less auditory bandwidth than phocids. Hearing in otariid seals has been tested in two species present in the proposed action area: California sea lion (Kastak and Schusterman 1998; Moore and Schusterman 1987; Schusterman et al. 1972; Southall 2005) and northern fur seal (Babushina et al. 1991; Moore and Schusterman 1987). The otariid's hearing ranges of 50 Hz–75 kHz in air and 50 Hz–50 kHz in water was based on these studies.

When the underwater hearing sensitivity of two Steller sea lions was tested, the hearing threshold of the male was significantly different from that of the female. The range of best hearing for the male was from 1 to 16 kHz, with maximum sensitivity (77 dB re 1 uPa at 1 m) at 1 kHz. The range of best hearing for the female was from 16 kHz to above 25 kHz, with maximum sensitivity (73 dB re 1 uPa at 1 m) at 25 kHz. However, because of the small number of animals tested, the findings could not be attributed to individual differences in sensitivity or sexual dimorphism (Kastelein et al. 2005).

4 POTENTIAL EFFECTS OF THE PROPOSED ACTION TO LISTED SPECIES

Civilian Port Defense training activities, as analyzed in the West Coast Civilian Port Defense Programmatic Environmental Assessment, include the potential for biological resources to be directly affected by physical stressors (vessel movement, in-water devices, seafloor devices) and acoustic stressors (vessel noise acoustic transmissions). Not all stressors analyzed in the Programmatic Environmental Assessment apply to the Proposed Action. Based on impact analysis in the Programmatic Environmental Assessment, low-energy lasers (i.e., ALMDS) have been determined to have no effect on any ESA-listed species.

The potential effects of the Proposed Action on humpback whales and Steller sea lions are analyzed by stressor; each stressor is analyzed to determine how that aspect of the Proposed Action has the potential to affect any of the resources. Effects to ESA-listed species could be due to: physical stressors (vessel movement, in-water devices, seafloor devices) or acoustic stressors (vessel noise, acoustic transmissions [high-frequency sonar]). Any indirect effects to ESA-listed species, such as availability of prey, are considered throughout where applicable.

4.1 Physical Stressors

Evaluation of potential physical disturbance or strike risk considered the spatial overlap of species presence and objects or platforms that could potentially strike an ESA-listed species. Analysis of impacts from physical disturbance or strike stressors focuses on the activities associated with the Proposed Action which cause an organism to be struck or harassed by an object moving through the water, or devices placed onto the seafloor. Analysis of potential physical disturbance or strike risk also considered the speed of vessels and devices as a measure of intensity.

4.1.1 Vessel Movement

Vessels associated with the Proposed Action include soft-bottom rubber craft (i.e., RHIB, dive boat) in the proposed action area. Typical speeds are less than 10 knots when conducting Civilian Port Defense activities.

Vessels have the potential to affect marine mammals by altering their behavior patterns or causing injury due to strike. Marine species are frequently exposed to vessel movement due to commercial shipping and fishing, research, tourism, private vessels, and personal watercraft. It is difficult to differentiate between behavioral responses to vessel sound and visual cues associated with the presence of a vessel; thus, it is assumed that both play a role in prompting reactions from animals.

The impact of a vessel's movements on marine mammal behavior can vary because marine mammals can react to vessels in a variety of ways. Some respond negatively, by retreating or engaging in antagonistic responses, while other animals may ignore the stimulus all together (Terhune and Verboom 1999; Watkins 1986). Silber et al. (2010) concludes that large whales that are in close proximity to a vessel may not regard the vessel as a threat, or may not be aware of vessel presence while they are involved in a vital activity (i.e., mating or feeding), which may not allow them to have an appropriate avoidance response. Cetacean species generally pay little attention to transiting vessel traffic as it approaches, although they may engage in last minute avoidance maneuvers (Laist et al. 2001). Baleen whale responses to vessel traffic range from avoidance maneuvers to disinterest in the presence of vessels (Nowacek et al. 2007; Scheidat et al. 2004). In some circumstances, marine mammals respond to vessels with the same behavioral repertoire and tactics they employ when they encounter predators.

The size of a vessel and speed of travel affect the probability of collision and the likelihood of lethality due to possible collision. Reviews of stranding and collision records indicate that larger ships (262 ft [80

m] or larger), and ships travelling at or above 14 knots, have a much higher instance of collision with whales that result in mortality or serious injury (Laist et al. 2001). Vessel speeds within the proposed action area would not exceed 10 knots during training; vessels would operate at 3 knots unless transiting, which would decrease the likelihood of vessel collisions with marine mammals. The vessels associated with the Proposed Action would follow the standard operating procedures and mitigation measures outlined in Section 5 in order to avoid impacting marine mammals. Therefore, collision with vessels is not expected to occur; however, in the unlikely event that a collision did occur, the Navy would follow all necessary reporting procedures and contact the NMFS Alaska Region and any other necessary agencies. Additionally, due to the existing use of the Juneau proposed action area by military, recreational, commercial, and tourist vessels, the temporary addition of several small boats from the Proposed Action would not contribute to a noticeable increase in vessel presence in the action area.

Although risk of ship strike has not been identified as a significant concern for Steller sea lions (Loughlin and York 2000), the recovery plan for this species (National Marine Fisheries Service 2008) states that Steller sea lions may be more susceptible to ship strike mortality or injury in harbors or near rookeries or haulouts, where animals are concentrated. Vessel speeds associated with the Proposed Action would not exceed 10 knots to minimize any potential risk. Furthermore, there are no known Steller sea lion rookeries in the proposed action area. Hauled-out pinnipeds can be disturbed when approached at close distance, and response ranges from alerting to flushing (i.e., temporarily abandoning the haulout) depending on context of approach (Curtin et al. 2009; Hoover-Miller et al. 2013; Johnson and Acevedo-Gutiérrez 2007; Kucey and Trites 2006; Suryan and Harvey 1998; Weiss and Morrill 2017; Young et al. 2014). The variability of possible responses observed are related to the context of the situation and by the animal's prior experience with vessels (Ellison et al. 2012; Richardson et al. 1995; Southall et al. 2007; Southall et al. 2019). Response by animals in the water is generally less than those on land, but can be very variable, ranging from avoidance to approach to ignoring the vessel (Johnson and Acevedo-Gutiérrez 2007; Mathews et al. 2016; Mikkelsen et al. 2019; Richardson et al. 1995; Southall et al. 2007). Reactions can widely range on a spectrum from avoidance and alert to cases where animals in the water are attracted to a vessel, while there have been cases on land where there is lack of significant reaction at all, suggesting habituation to or tolerance of vessels (Mathews et al. 2016; Mikkelsen et al. 2019; Richardson et al. 1995). For example, one study showed that harbor seals were disturbed by tourism-related vessels, small boats, and kayaks that stopped or lingered by haulout sites, but that the seals "do not pay attention to" passing vessels at closer distances (Johnson and Acevedo-Gutiérrez 2007). Mikkelsen et al. (2019) documented avoidance of commercial shipping reactions from gray seal. Matthews et al. (2016) documented variable reactions of harbor seals in Southeast Alaska to various classes of vessels. Correspondingly, California sea lions in Southern California have been observed approaching and interacting with EOD dive boats in near-shore coastal waters off San Diego.

The way that the presence of a vessel may affect a marine mammal would depend, in part, on the relative size of the vessel, the speed of the object, the location of the mammal in the water column, and reactions of marine mammals to anthropogenic activity, which may include avoidance or attraction. It is not known at what point or through what combination of stimuli (visual, acoustic, or through detection of pressure changes) an animal becomes aware of a vessel or other potential physical disturbance prior to either reacting or being struck.

Naval vessels (e.g., ships and small craft) and civilian vessels (e.g., commercial ships, tugs, work boats, pleasure craft) produce low-frequency, broadband underwater sound, though the exact level of noise produced varies by vessel type. The Navy implements a "Buy Quiet" policy for equipment aboard ships which requires designers and engineers to obtain noise emission data before purchasing to choose the

quietest available. The Navy also researches and implements technology improvements that minimize noise.

In conclusion, any change to an individual's behavior from vessel use is expected to be short-term in nature and is not expected to result in long-term or population-level effects. As discussed above, response of marine mammals to vessel movement in the Juneau proposed action area would likely be short-term, minimal, and limited to temporary avoidance. Indirect effects associated with vessel movement are discountable. Furthermore, humpback whale presence is likely to be lowest during the time of year (March) the Proposed Action would occur, in addition to there being low densities of humpback whales from the Mexico-DPS year round.

Due to low vessel speeds, the probability of strike is negligible. Furthermore, the Navy has standard operating procedures and mitigation measures to minimize vessel interaction with marine mammals (Section 7). These include maneuver to maintain a mitigation zone of 500 yards (yd; 457 m) around observed whales, and 200 yd (183 m) around all other marine mammals. Since 1995, the U.S. Navy has reported all known or suspected vessel collisions with whales to NMFS, and to date there have been no known collisions between Navy vessels and whales in Alaska, including in the Juneau area.

Therefore, vessel movement associated with the Proposed Action may affect, but is not likely to adversely affect, ESA-listed humpback whales and Steller sea lions.

4.1.2 In-water Devices

In-water devices associated with the Proposed Action include UUVs and ROVs. These devices would be either self-propelled or operated in the water column by surface craft. In-water devices for the Proposed Action are 12 feet or less in length. In-water devices can operate anywhere within the water column.

UUVs are slow moving (typically less than 4 knots) through the water column and have very limited potential to strike or entangle marine species because these species could avoid a slow moving object. UUVs would be closely monitored by observers manning other platforms in use during the training event.

Marine mammals would likely respond to in-water devices in a manner similar to how they interact with vessels (Section 4.1.1), though the in-water devices that would be used during the Proposed Action are generally smaller than most Navy vessels. Physical disturbance from the use of in-water devices is not expected to result in more than a momentary behavioral response. Some marine mammals respond negatively, by retreating or engaging in antagonistic responses, while other animals may ignore the stimulus all together (Terhune and Verboom 1999; Watkins 1986). Silber et al. (2010) concludes that large whales that are in close proximity to a small vessel may not regard the vessel as a threat, or may not be aware while they are involved in a vital activity (i.e., mating or feeding), which may not allow them to have an appropriate avoidance response. Cetacean species generally pay little attention to transiting vessel traffic as it approaches, although they may engage in last minute avoidance maneuvers (Laist et al. 2001), so similar behavior would be expected with respect to UUVs. Baleen whale responses to vessel traffic range from avoidance maneuvers to disinterest in the presence of vessels (Nowacek et al. 2007; Scheidat et al. 2004). Thus, response to UUVs is likely to be similar and range from disinterest to avoidance.

UUVs move slowly through the water column, and have limited potential to strike a marine mammal because a mammal could easily avoid the object. UUV speeds within either proposed action area would not exceed 4 knots, which would decrease the likelihood and injury potential of collisions or entanglements with marine mammals. It is possible that a marine mammal present in area of in-water

device use associated with the Proposed Action may experience some level of physical disturbance, but it is not expected to result in more than a momentary behavioral response. The implementation of standard operating procedures and mitigation measures (Section 7) would reduce the likelihood of collision. In the unlikely event that a collision did occur, the Navy would follow all necessary reporting procedures and contact the NMFS Alaska Region and any other necessary agencies. Any change to an individual's behavior from vessel use is expected to be short-term in nature and is not expected to result in long-term or population-level effects.

As discussed above, response of marine mammals to in-water device movement in the proposed action area would likely be short-term, minimal, and limited to temporary avoidance. Due to low speeds, the probability of strike is negligible. Indirect effects associated with in-water device movement are discountable. Therefore, in-water device movement associated with the Proposed Action may affect, but is not likely to adversely affect, ESA-listed humpback whales and Steller sea lions.

4.1.3 Seafloor Devices

Seafloor devices (i.e., non-explosive mine training shapes) are generally less than 8 ft (2.5 m) in length (Appendix A). Eight to ten non-explosive mine training shapes would be deployed within the proposed action area, and deployment would be temporary (7 to 30 days, based on the set up and preparations for the actual training event). Because of the short duration of their interaction with the seafloor, no corrosion of the devices would be anticipated and, therefore, no metals would be expected to be introduced into the environment. Seafloor devices would be stationary and would not pose a threat to highly mobile organisms, such as marine mammals. The placement and removal of objects on the seafloor, however, could result in a minor sediment disruption in the immediate deployment areas. The sediment disruption would be limited to the area surrounding the object placed on the seafloor. The potential impact would be temporary and localized due to the minimal number of objects, and soft sediment is expected to shift back in a manner similar to after a disturbance from tidal energy. No long-term increases in turbidity would be anticipated. Seafloor devices would not be deployed onto or directly adjacent to hard bottom habitat. The localized disturbance would not alter the function or habitat provided by marine substrates.

Short-term behavioral disturbance to an individual marine mammal could occur during the deployment of seafloor devices. The primary concern is the potential for a marine mammal to be hit with a seafloor device at or near the water's surface, which could result in injury or death. The potential for a marine mammal to be close to a seafloor device during its deployment, or as it sits on the seafloor, is low due to the small geographic area within which the seafloor devices would be deployed as well as the wide distribution and seasonally low density of marine mammals in the proposed action area. While disturbance or strike from an item falling through the water column is possible, it is not reasonably certain to occur since objects generally sink slowly through the water column (based on the weight of the seafloor device) and can be avoided by most marine mammals by changing swim direction; changes in swim direction occur regularly, and would not impact an individual's fitness. Exposure to seafloor devices, or the sediment plume arising from device deployment is not expected to change an individual's behavior, growth, survival, annual reproductive success, or lifetime reproductive success (fitness). No long-term or population-level effects on marine mammals due to collision or interaction with seafloor devices would be expected. Responses by marine mammals to seafloor devices in the proposed action area would be short-term, minimal, and would likely be limited to temporary avoidance behavior. Indirect effects associated with seafloor devices are discountable.

Therefore, seafloor devices associated with the Proposed Action may affect, but are not likely to adversely affect, ESA-listed humpback whales and Steller sea lions.

4.2 Acoustic Stressors

Acoustic stressors associated with the Proposed Action include acoustic signals emitted into the water from a specific source such as incidental sources of broadband sound produced as a byproduct of vessel movement and high-frequency sonar used.

In assessing the potential for impacts to biological resources from acoustic stressors, a variety of factors must be considered, including source characteristics, animal presence and associated density, duration of exposure, and thresholds for injury and harassment for the species that may occur in the Study Area. Neither auditory nor non-auditory injury are anticipated due to the Proposed Action. The most current detailed explanation of the science behind the Navy's framework for acoustic analysis can be found in Department of the Navy (2018).

The types of potential consequences to biological resources that could occur from acoustic sources associated with the Proposed Action can be grouped in the following categories which are briefly described:

Hearing Loss— sounds of sufficient loudness can cause a temporary condition impairing an animal's hearing in a particular frequency band for a period of time, called a Temporary Threshold Shift (TTS). After termination of the sound, it is characterized by a normal hearing ability returning over a period of time that may range anywhere from minutes to days (i.e. the animal's hearing returns to zero or pre-exposure value), depending on many factors including the intensity and duration of exposure to the intense sound. The precise physiological mechanism for TTS is not well understood. It may result from fatigue of the sensory hair cells as a result of over-stimulation, or from some small damage to the cells that are repaired over time. Hair cells may be temporarily affected by exposure to the sound, but they are not permanently damaged. Thus, TTS is not considered to be an injury, although animals may be at some disadvantage in terms of detecting predators or prey in affected frequency bands while the TTS persists. If the threshold shift does not return to zero, but leaves some finite amount of threshold shift, then that remaining threshold shift is Permanent Threshold Shift (PTS).

The relationship between TTS and PTS is complicated and poorly understood, even in humans and terrestrial mammals, where numerous studies failed to delineate a clear relationship between the two. Relatively small amounts of TTS (e.g., less than 40–50 dB measured two minutes after exposure) will recover with no apparent permanent effects; however, terrestrial mammal studies revealed that larger amounts of threshold shift can result in permanent neural degeneration, despite the hearing thresholds returning to normal (Kujawa and Liberman, 2009). The amounts of threshold shift induced by Kujawa and Liberman (2009) were described as being "at the limits of reversibility." It is unknown whether smaller amounts of threshold shift can result in similar neural degeneration, or if effects would translate to other species such as marine animals.

Masking— the presence of intense sounds or sounds within a mammal's hearing range in the environment can potentially interfere with an animal's ability to hear relevant sounds. This effect, known as "auditory masking," could interfere with the animal's ability to detect biologically relevant sounds such as those produced by predators or prey, thus increasing the likelihood of the animal not finding food or being preyed upon. Masking only occurs in the frequency band of the sound that causes the masking condition. Other relevant sounds with frequencies outside of this band would not be masked. Masking can lead to vocal changes such as the Lombard effect (increasing amplitude), or other noise-induced vocal modifications such as changing frequency (Hotchkin and Parke, 2013), and behavioral changes (e.g., cessation of foraging, leaving an area) to both signalers and receivers, in an attempt to compensate for noise levels (Erbe et al. 2016). It should be noted that the high-frequency

sonar that would be used in the Proposed Action is a very narrow bandwidth source across one or two frequencies, and not broad band like shipping noise.

Physiological disruption—an adaptive process that helps an animal cope with changing external and internal environmental conditions. Marine mammals naturally experience physiological stress as part of their normal life histories, but sound-producing activities have the potential to cause additional stress. However, too much of a stress response can be harmful to an animal, resulting in physiological dysfunction.

The generalized stress response is characterized by a release of hormones (Reeder & Kramer, 2005) and other chemicals (e.g., stress markers) associated with noise-induced hearing loss (Henderson et al., 2006). Elevated stress levels may occur whether or not an animal exhibits a behavioral response. Even while undergoing a stress response, competing stimuli (e.g., food or mating opportunities) may overcome any behavioral response. Regardless of whether the animal displays a behavioral response, this tolerated stress could incur a cost to the animal. Reactive oxygen compounds produced during normal physiological processes are generally counterbalanced by enzymes and antioxidants; however, excess stress can lead to damage of lipids, proteins, and nucleic acids at the cellular level (Berlett & Stadtman, 1997; Sies, 1997; Touyz, 2004).

Behavioral disruption— marine animals may exhibit short-term behavioral reactions such as cessation of feeding, resting, or social interaction, and may also exhibit alertness or avoidance behavior in response to noise (Southall et al. 2007; Southall et al. 2019).

A study commissioned in Juneau, Alaska documented vessel noise in approximately 59 percent of underwater sound samples during summer months (May through September), with the largest contributor in terms of deviation from ambient background noise being cruise ships. During a study in Glacier Bay National Park, the maximum ambient noise measured at 95 ft (29 m) depth at the mouth of Glacier Bay was around 115 dB re 1µPa, and the average baseline value was around 90 dB re 1µPa (Gabriele et al. 2010). Although Glacier Bay is also located in southeastern Alaska, Juneau would be expected to have higher levels of commercial and industrial boat traffic in addition to tourism-based vessel traffic anticipated in the National Park; therefore, the small number and infrequent movements of Navy boats and UUVs for the Proposed Action would be indistinguishable from background ambient levels. Additionally, the short duration of the Proposed Action would not lead to a chronic increase in existing ambient noise in the proposed action area.

4.2.1 Vessel Noise

Marine species within the proposed action area may be exposed to vessel noise during the Proposed Action. In assessing the potential for impacts to biological resources from vessel noise, a variety of factors must be considered, including source characteristics, animal presence and associated density, duration of exposure, and thresholds for injury and harassment for the species that may occur in the proposed action area. The potential consequences anticipated from vessel noise associated with the Proposed Action would be masking or behavioral disruption. Vessel noise could disturb fish and marine mammals, and potentially elicit an alert, avoidance, or other behavioral response. Some marine species may have habituated to vessel noise, and may be more likely to respond to the sight of a vessel rather than the sound of a vessel, although both may play a role in prompting reactions (Hazel et al. 2007). Small craft types will emit higher-frequency noise (between 1 kHz and 50 kHz) than larger ships (below 1 kHz) (Hermannsen et al. 2014). Naval vessels (including ships and small craft) would produce low-frequency, broadband underwater sound, though the exact level of noise produced varies by vessel type. Radiated noise from ships varies depending on the nature, size, and speed of the ship. Sound

produced by vessels will typically increase with speed. Vessels associated with the Proposed Action would not operate at speeds greater than 10 knots.

Given elevated ambient noise levels in the proposed action area due to baseline vessel presence throughout, the additional vessel noise from the Proposed Action would likely be minimally detectable above the ambient sound levels in the proposed action area. Thus, marine species would not likely be impacted by the sounds associated with the Proposed Action, but a response could perhaps be caused instead by the sight of an approaching vessel; it would be difficult or impossible to distinguish whether an individual were reacting to vessel noise or presence. It is likely that native marine species are already significantly habituated to vessel noise and that additional noise from the Proposed Action would be mostly masked, and if detected by marine organisms, would not be above the level of anthropogenic noise to which they are already accustomed.

Vessel noise expected to be produced by the Proposed Action is expected to only minimally add to current ambient noise levels in the proposed action area. Noise from vessels generally lacks the amplitude and duration to cause any hearing loss in marine mammals under realistic conditions. Noise from vessels is generally low-frequency (tens to hundreds Hertz), although at closer range or in shallow water it can extend above 100 kHz at received levels above 100 dB re 1 µPa (Hermannsen et al. 2014). Although periods of broadband noise would tend to be brief, occurring only as a vessel is passing within a few hundred meters, vessel noise could lead to short-term masking for all marine mammal species. Vessel noise has been linked to behavioral responses, although it is difficult to separate responses to the noise from reactions to the physical presence of the vessel.

Many studies of behavioral responses by marine mammals to vessels have been focused on the short- and long-term impacts of whale watching vessels. In short-term studies, researchers noted changes in the resting and surfacing behavioral states of cetaceans when whale watching vessels were present (Acevedo-Gutiérrez 1991; Au and Green 2000; Christiansen et al. 2010; Erbe 2002; Noren et al. 2009; Soto et al. 2006; Stockin et al. 2008; Williams et al. 2009); received levels were often not reported, so it is difficult to distinguish responses to the sight of the vessel from responses to the vessel noise. Most studies examined the short-term response to vessel sound and vessel traffic (Magalhães et al. 2002; Richardson et al. 1995; Watkins 1981), with behavioral and vocal responses occurring when received levels were over 20 dB greater than ambient noise levels. Other research has attempted to quantify the effects of whale watching using focused experiments (Meissner et al. 2015; Pirotta et al. 2012). The impact of vessel noise has received more consideration, particularly as tourism and shipping traffic has increased (McKenna et al. 2013; Pirotta et al. 2015; Veirs et al. 2016). While there has been increased interest in impacts to mysticetes by vessel noise, not all species in all taxonomic groups have been studied. Therefore, results do have to be extrapolated across these broad categories in order to assess potential impacts to all species.

Critical ratios have been determined for pinnipeds (Southall et al. 2000, 2003). These studies provide baseline information from which the probability of masking can be estimated. Clark et al. (2009) developed a methodology for estimating masking effects on communication signals for low-frequency cetaceans (e.g., mysticetes) including calculating the cumulative impact of multiple noise sources. This technique was used in the Stellwagen Bank National Marine Sanctuary (off the coast of Massachusetts) and showed when two commercial vessels pass through a North Atlantic right whale's optimal communication space (estimated as a sphere of water with a diameter of 12 mi [20 km]), that space is decreased by 84 percent. This methodology relies on empirical data on source levels of calls, and makes many assumptions about ambient noise conditions and simplifications of animal behavior, but it is an important step in determining the impact of anthropogenic noise on animal communication. Vocal changes in response to anthropogenic noise can occur across the repertoire of sound production modes

used by marine mammals, such as calling and singing. Changes to vocal behavior and call structure may result from a need to compensate for an increase in background noise (Erbe 2016), though no major increases in ambient noise are expected due to the Proposed Action. In cetaceans, vocalization changes have been reported from exposure to anthropogenic sources such as sonar, vessel noise, and seismic surveying, including studies on right whales (Parks et al. 2007), and blue whales (McDonald et al. 2008). Parks et al. (2007) found that right whales increased their call amplitude linearly as background noise levels rose.

Vessel noise could elicit an alerting, avoidance, or other behavioral reaction. Based on studies of a number of species, mysticetes (i.e., humpback whales) are not expected to be disturbed by vessels that maintain a reasonable distance from them. For pinnipeds (i.e., Steller sea lions), data indicate tolerance of vessel approaches, especially for animals in the water. Navy vessels would not purposefully approach marine mammals and are not expected to elicit significant behavioral responses. The implementation of mitigation measures as described in Section 5 would further reduce any potential impacts from vessel noise. Broadband sound would be generated by all vessels. With the ambient noise levels within the proposed action area being elevated due to existing uses (e.g., military, recreational, commercial, and tourist vessel use), the vessel noise from the few vessels associated with the Proposed Action would be indistinguishable from other sources and not have a significant contribution to ambient noise levels, and therefore would not impact marine mammals. With the ambient noise levels within the proposed action area already elevated due to existing uses (e.g., military, recreational, commercial, and tourist vessel use), the vessel noise from the Proposed Action would have no significant additional masking effect to the environment, and therefore would not impact marine mammals.

Marine mammals are either not likely to respond to vessel noise, or are not likely to measurably respond in ways that would significantly disrupt normal behavior patterns which include, but are not limited to, breeding, migrating, feeding or sheltering. Therefore, the effects of vessel noise on marine mammals are expected to be insignificant, and not likely to have any long-term or population-level effects during the short duration of the Proposed Action. Impacts to marine mammals from vessel noise would be short term and minimal; likely limited to temporary avoidance behavior. Indirect effects associated with vessel noise are discountable.

Therefore, vessel noise associated with the Proposed Action may affect, but is not likely to adversely affect, ESA-listed humpback whales and Steller sea lions.

4.2.2 Acoustic Transmissions

Mine warfare sonar often employs high frequencies (above 10 kHz) that attenuate rapidly in the water, thus producing only a small area of potential acoustic exposure. The only active acoustic source that would be used in the Juneau proposed action area is an acoustic modem associated with the use of MK-18 UUV. All active acoustic sources that would be used are high-frequency (between 10 and 200 kHz) sonar systems.

A variety of factors must be considered to assess the potential impacts of acoustic transmissions on marine mammals, including source characteristics, animal presence, animal hearing range, duration of exposure, and impact thresholds for species that may be present.

4.2.2.1 Quantitative Analysis

The Navy performed a quantitative analysis to estimate the number of mammals that could be exposed to underwater acoustic transmissions during the Proposed Action using the NAEMO. A detailed description of NAEMO acoustic modeling methods and analysis can be found in the technical report

titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy 2018).

Inputs to the quantitative analysis included marine mammal density estimates obtained from the Navy Marine Species Density Database (NMSDD) and/or site specific estimates based on best available science, marine mammal depth occurrence distributions (U.S Department of the Navy 2017), oceanographic and environmental data, marine mammal hearing data, and criteria and thresholds for levels of potential effects. Environmental characteristics (i.e., bathymetry, wind speed, and sound speed profiles) and source characteristics (i.e., source level, source frequency, transmit length and interval, and horizontal and vertical beam width) are used to determine the propagation loss of the acoustic energy, which was completed using the Comprehensive Acoustic System Simulation/Gaussian Ray Bundle propagation model. The quantitative analysis consists of computer modeled estimates and a post-model analysis to determine the number of potential animal exposures. The model calculates sound energy propagation from the proposed sonar, the sound received by animat (virtual animal) dosimeters representing marine mammals distributed in the area around the modeled activity, and whether the sound received by a marine mammal exceeds the thresholds for effects.

Criteria and thresholds for measuring these effects induced from underwater acoustic energy have been established for marine mammals. The thresholds established for physiological effects (non-impulsive sound exposure levels for permanent threshold shift [PTS] and TTS) and behavioral effects are provided in Table 4-1. See the technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* (U.S. Department of the Navy 2017) for detailed information on how the criteria and thresholds were derived.

Table 4-1. Functional Hearing Ranges, Criteria, and Thresholds for Marine Mammal Analysis

Group	***Species***	***Behavioral Criteria***	***Physiological Criteria***	
			Onset TTS	***Onset PTS***
Low-Frequency Cetaceans	Humpback whale	Low-Frequency dose-response Behavioral Response Function	179 decibels (dB) Sound Exposure Level (SEL) (weighted)	199 dB SEL (weighted)
Otariid Pinnipeds (in-water)	Steller sea lion	Pinniped dose-response Behavioral Response Function	199 dB SEL (weighted)	219 dB SEL (weighted)

In NAEMO, animats are distributed nonuniformly based on species-specific density, depth distribution, and group size information, and animats record energy received at their location in the water column. A fully three-dimensional environment is used for calculating sound propagation and animat exposure in NAEMO. Site-specific bathymetry, sound speed profiles, wind speed, and bottom properties are incorporated into the propagation modeling process. NAEMO calculates the likely propagation for various levels of energy (sound or pressure) resulting from sonar used during the Proposed Action.

NAEMO then records the energy received by each animat within the energy footprint of the event and calculates the number of animats having received levels of energy exposures that fall within defined impact thresholds. Predicted effects on the animats within a scenario are then tallied and the highest order effect (based on severity of criteria; e.g., PTS over TTS) predicted for a given animat is assumed. Each 24-hour period is independent of all others, and therefore, the same individual marine animal could be impacted during each 24-hour period. In few instances, although the activities themselves all occur within the proposed action area, sound may propagate beyond the boundary of the proposed action area. Any exposures occurring outside the boundary of the proposed action area are counted as if

they occurred within the proposed action area boundary. NAEMO provides the initial estimated impacts on marine species with a static horizontal distribution. There are limitations to the data used in the acoustic effects model, and the results must be interpreted within this context. While the most accurate data and input assumptions have been used in the modeling, when there is a lack of definitive data to support an aspect of the modeling, modeling assumptions believed to overestimate the number of exposures have been chosen:

- Animats are modeled as being underwater, stationary, and facing the source and therefore always predicted to receive the maximum sound level (i.e., no porpoising or pinnipeds' heads above water).
- Animats do not move horizontally (but change their position vertically within the water column), which may overestimate physiological effects such as hearing loss, especially for slow moving or stationary sound sources in the model.
- Animats are stationary horizontally and therefore do not avoid the sound source, unlike in the wild where animals would most often avoid exposures at higher sound levels, especially those exposures that may result in PTS.
- Multiple exposures within any 24-hour period are considered one continuous exposure for the purposes of calculating the temporary or permanent hearing loss, because there are not sufficient data to estimate a hearing recovery function for the time between exposures.
- Mitigation measures that are implemented were not considered in the model. In reality, sound-producing activities would be reduced, stopped, or delayed if marine mammals are detected within the mitigation zones around sound sources.
- Because of these inherent model limitations and simplifications, model-estimated results must be further analyzed, considering such factors as the range to specific effects, avoidance, and the likelihood of successfully implementing mitigation measures.

4.2.2.2 Potential Impacts to Marine Mammals from Acoustic Transmissions

The quantitative analysis is conservatively designed which likely overestimates the numbers of behavioral reactions due to the underlying nature of the data used to derive the behavioral response functions; NAEMO modeling does not take into account the response of an animal (i.e., avoidance, flushing) to acoustic or visual stimuli of vessels or in-water devices approaching. Outputs from NAEMO determined that there would be no estimated acoustic exposures above the thresholds presented in Table 4-1 to humpback whales; therefore, acoustic transmissions associated with the Proposed Action would have no effect on ESA-listed humpback whales. NAEMO outputs predicted one behavioral acoustic exposure to Steller sea lions within the Juneau proposed action area, which is assigned to the de-listed Eastern DPS (National Marine Fisheries Service, 2021). Based on tagging data presented in Hastings et al. (2020), it is estimated that only 1.4 percent of Steller sea lions in the proposed action area would be characterized as the ESA-listed Western DPS.

Research indicates that pinnipeds in the water are generally tolerant of human made sound and activity. For non-impulsive sounds (i.e., similar to the acoustic transmissions used during the Proposed Action), data suggest that exposures of pinnipeds to sources between 90 and 140 dB re 1 µPa do not elicit strong behavioral responses; no data were available for exposures at higher received levels for Southall et al. (2007) and (2019) to include in the severity scale analysis. The severity scale, as described in Southall et al. (2007) and (2019), quantifies the severity of behavioral response in a marine mammal, ranked 0-9. Low severity responses (a response score of 0-3) are those that fall within an animal's range of baseline

behaviors and are unlikely to disrupt an individual to a point where natural behavior patterns are significantly altered or abandoned. Moderate severity responses (a response score of 4-6) could become significant if sustained over a long duration; what constitutes long duration is both species and situationally variable. High severity responses (a response score of 7-9) are those with immediate consequences (e.g., stranding, mother-calf separation), and are considered significant behavioral reactions regardless of duration.

Pinnipeds may experience some limited masking at closer ranges from high-frequency sonars and other sound sources; however, the frequency band of the sonar is narrow, limiting the likelihood of masking. Furthermore, high frequencies (above 10 kHz) attenuate more rapidly in the water due to absorption than do lower frequency signals, thus producing only a small zone of potential masking. Potential costs to marine mammals from masking are similar to those discussed above for mild to moderate levels of TTS, with the primary difference being that the effects of masking are only present when the sound source (i.e., sonar) is actively pinging, so the effect is over the moment the sound has ceased. By contrast, hearing loss lasts beyond the exposure period.

Behavioral disturbance to invertebrates and fish that are prey species to Steller sea lions and humpback whales would not decrease the availability of prey (i.e. would not lead to mortality of the prey); therefore, there are no indirect effects associated with acoustic transmissions to prey.

Therefore, acoustic transmissions associated with the Proposed Action may affect, but are not likely to adversely affect, ESA-listed Steller sea lions or ESA-listed humpback whales[4].

[4] NAEMO modeling currently predicts zero exposures to humpback whale, indicating that acoustic sources have no effect to humpback whale. Navy's request for NLAA is due to assumptions that it is possible that changes in sonar systems, species criteria, species density, etc., could result in an exposure to humpback whale. NMFS MMPA assigns exposures to DPS based on NMFS 2021, Occurrence of ESA-Listed Humpback Whales off Alaska, which currently assigns 98% of exposures to the Hawaii DPS and 2% of the exposures to the Mexico DPS based on information adapted from Wade, 2021.

5 ESSENTIAL FISH HABITAT

In 1996, the Magnuson-Stevens Fishery Conservation and Management Plan (MSA) was reauthorized and amended by the Sustainable Fisheries Act (Public Law 104-267). The reauthorized MSA mandated numerous changes to the existing legislation designed to prevent overfishing, rebuild depleted fish stocks, minimize bycatch, enhance research, improve monitoring, and protect fish habitat. One of the most significant mandates in the MSA that came out of the reauthorization was the EFH provision, which provides the means to conserve fish habitat.

The EFH mandate requires that the regional Fishery Management Councils, through federal Fishery Management Plans (FMPs), do the following: describe and identify EFH for each federally managed species; minimize, to the extent practicable, adverse impacts on such habitat caused by fishing, and; identify other actions to encourage the conservation and enhancement of such habitats. Congress defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802(10)). The term "fish" is defined in the MSA as "finfish, mollusks, crustaceans, and all other forms of marine animals and plant life other than marine mammals and birds" (16 U.S.C. § 1802(12)). The regulations for implementing EFH clarify that "waters" include all aquatic areas and their biological, chemical, and physical properties, while "substrate" includes the associated biological communities that make these areas suitable fish habitats (50 Code of Federal Regulations [CFR] § 600.10). EFH is described for FMP-managed species by life stage as general distribution using guidance from the EFH Final Rule (50 CFR 600.815). Habitats used at any time during a species' life cycle (i.e., during at least one of its lifestages) must be accounted for when describing and identifying EFH (National Marine Fisheries Service 2002).

Authority to implement the MSA is given to the Secretary of Commerce and has been delegated to NMFS. The MSA requires that EFH be identified and described for each federally managed species. The MSA also requires federal agencies to consult with NMFS on activities that may adversely affect EFH. The implementing regulations define an adverse effect as "any impact that reduces quality and/or quantity of EFH." If such modifications reduce the quality and/or quantity of EFH, adverse impacts may include direct or indirect physical, chemical, or biological alterations of the waters, substrate, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse impacts to EFH may result from actions occurring within EFH or outside of EFH, and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR § 600.810). The regional Fishery Management Councils can also designate habitat area of particular concern (HAPC) within EFH. These areas are discrete subsets of EFH that provide extremely important ecological functions, or are especially vulnerable to degradation (50 CFR § 600.815). These areas are identified based on one or more of the following considerations: the importance of the ecological function provided by the habitat; the extent to which the habitat is sensitive to human-induced environmental degradation; whether, and to what extent, development activities are or will be stressing the habitat type; and the rarity of the habitat type.

Within the proposed action area, the North Pacific Fishery Management Council (NPFMC) manages fishery species under the MSA. The Pacific Fishery Management Council also manages some species that occur within Alaska's waters, but that Council defers to NPFMC in its designation of EFH within Alaska (Pacific Fishery Management Council 2016). The NPFMC has prepared and implemented two FMPs that designate EFH within the proposed action areas; the Gulf of Alaska Groundfish FMP and the Salmon FMP. To determine which EFH species, and their respective lifestages, occur within the Action Area, a site-specific EFH Report was downloaded from the NMFS EFH mapper (https://www.habitat.noaa.gov/apps/efhmapper/).

In addition to EFH designations, HAPCs are also designated by the regional Fishery Management Councils. Designated HAPCs are discrete subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation (50 C.F.R. §600.805–§600.815).

5.1 Description of Essential Fish Habitat Regions

To appropriately assess the effects of the proposed action of designated EFH, a review of Limpinsel et al. (2017) *Impacts to Essential Fish Habitat from Non-fishing Activities in Alaska* was conducted. Within this report, activities that may adversely affect EFH are grouped into four broad environmental categories to which impacts usually occur: (1) wetlands and woodlands; (2) headwaters, streams, rivers, and lakes; (3) marine estuaries and nearshore zones; and (4) open water marine and offshore zones. Nearshore marine EFH is generally defined as waters from the 20 m (60 ft) contour to the high tide line and is characterized as supratidal, intertidal, and subtidal habitats (Limpinsel et al., 2017). As a result, the EFH analysis is appropriately characterized as occurring within *marine estuaries and nearshore zones* and *marine and offshore zones*.

Nearshore Marine and Estuarine Habitats

As described for nearshore marine and estuarine habitats in Limpinsel et al. (2017), water flow processes, both vertical and horizontal, is a primary factor for of estuarine and nearshore marine habitat productivity and associated food webs. Water flow dynamics influence the physical, chemical, and biological connectivity between these ecosystems (Limpinsel et al. 2017). For example, although some species of Alaska groundfish spawn in offshore waters, coastal currents transport eggs and larvae to nearshore habitats, which act as nurseries. Within nearshore marine and estuarine habitats, numerous combinations of substrate compositions exist including combinations of muds, sands, pebbles, gravels, and cobble and boulder beaches. These substrates are what comprise the inorganic components of healthy benthic habitats. Much like estuaries, nearshore marine habitats serve as nurseries for a variety of species, including salmonids and walleye pollock (Ormseth et al. 2016). Of the 15 *Sources of Potential Impact* to nearshore marine and estuarine habitats (Limpinsel et al. 2017), only one activity in the proposed action is potentially included; *Vessel Operations, Transportation, and Navigation*.

Marine and Offshore Zones

The Marine and Offshore Zones category includes four Large Marine Ecosystems (LMEs): (1) the Gulf of Alaska; (2) the East Bering Sea; (3) the Chuckchi Sea, and; (4) the Beaufort Sea. The Gulf of Alaska LME includes both coastal and deepwater habitats. Pelagic and coastal currents are an important mechanism for cross-shelf transport in the GOA. The Alaska Coastal Current provides a large, ecologically important narrow zone (<40 km [<25 mi]) between the nearshore (within 35 km [22 mi] of the shore) and oceanic communities (Limpinsel et al. 2017). These currents connect the moderately productive offshore zones with the nearshore estuaries, fjords, and bays used as nurseries for EFH species. Of the seven *Sources of Potential Impact* to marine and offshore zones (Limpinsel et al. 2017), only one activity in the proposed action is potentially included; *Increasing Vessel Traffic*.

5.2 Essential Fish Habitat in the Action Area

5.2.1 Alaska Salmon in the Action Area

All five species of salmon managed under the NPFMC's Salmon FMP: Chinook (*Oncorhynchus tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), pink (*O. gorbuscha*), and sockeye (*O. nerka*), occur within the proposed action area, and all have EFH designated within the Gulf of Alaska, including the Alexander Archipelago and the proposed action area (North Pacific Fishery Management Council 2018b, 2021).

Salmon are anadromous, spawning in freshwater habitats and moving downstream after emerging from eggs to spend most of their lives in marine environments (North Pacific Fishery Management Council 2018b). During the spawning season, spawning salmon can be found in most coastal streams Alaska, and most species die after spawning (North Pacific Fishery Management Council 2018b). Upon emerging from eggs, salmon parr remain in the river systems and become territorial (Peake and McKinley 1998). In the next stage of development, smolts will move downstream, making their way to marine waters (North Pacific Fishery Management Council 2021; Peake and McKinley 1998). After spending time in coastal waters, mature adults will move further offshore, although they tend to occupy the surface waters, rarely going deeper than 300 m (934 ft) (North Pacific Fishery Management Council 2021). Eventually, mature salmon return to coastal rivers to spawn (North Pacific Fishery Management Council 2021). However, the timing of these different life stages varies considerably among salmon species (Laufle et al. 1986; North Pacific Fishery Management Council 2021).

Fry and juveniles are opportunistic feeders who primarily feed during the day (North Pacific Fishery Management Council 2021). As they grow, they transition from feeding on plankton and surface insects to benthic and epibenthic invertebrates and eventually to pelagic invertebrates and fish, although some species feed upon a wider variety of prey throughout their life cycle (Groot and Margolis 1991; Laufle et al. 1986). Fry are common food sources for aquatic invertebrates, larger fish, birds, and small mammals (North Pacific Fishery Management Council 2021). Adult salmon are eaten by marine mammals, sharks, and larger fish (North Pacific Fishery Management Council 2021). As adults move upriver to spawn, they are also eaten by birds and terrestrial mammals, such as bears and mink (North Pacific Fishery Management Council 2021). Carcasses remaining after spawning salmon die provide an important food source for scavengers such as eagles, ravens, and wolves (North Pacific Fishery Management Council 2021).

5.2.2 Alaska Salmon EFH in the Action Area

Identified freshwater EFH for salmon includes streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon (North Pacific Fishery Management Council 2021). Until Amendment 13 to the FMP in 2018, marine EFH for salmon included “all estuarine and marine areas used by Pacific salmon of Alaska origin” reaching to the limits of the U.S. Exclusive Economic Zone (North Pacific Fishery Management Council 2018b). Amendment 13 narrowed the scope of salmon EFH, relying on an extensive survey of the life histories of each salmon species (North Pacific Fishery Management Council 2021).

Early life stages of salmon (i.e., eggs and larvae) have only freshwater EFH designated. As the proposed action area does not overlap with freshwater habitats, these habitats are not considered further in this EFH Analysis. In a review of the NMFS EFH Mapper, estuarine EFH also does not occur within the proposed action area, and is not considered further. However, within the marine environment, *juvenile salmon EFH generally consist of the water over the continental shelf within the Bering Sea extending north to the Chukchi Sea, and over the continental shelf throughout the Gulf of Alaska and within the inside waters of the Alexander Archipelago. Immature and mature Pacific salmon EFH includes nearshore and oceanic waters, often extending well beyond the shelf break, with fewer areas within the inside waters of the Alexander Archipelago and Prince William Sound* (North Pacific Fishery Management Council 2021). To appropriately address species- and lifestage-specific EFH concerns, a site-specific EFH Report (Table 5-1) was downloaded from the NMFS EFH mapper and organized by species and lifestage per the specific habitat associations described in (North Pacific Fishery Management Council 2021).

Table 5-1. Salmon Species, Lifestages, & Habitat Associations for EFH in the Action Area

Salmon Species*	Lifestage(s) at Location*	Season**	Water Column**	Bottom Type**
Chinook	Marine Immature Adult	Year-Round	Neustonic, pelagic	All bottom types
	Marine Mature Adult	Year-Round	Neustonic, pelagic	All bottom types
Chum	Marine Juvenile	Summer, fall, and winter, prior to annulus formation in Jan.-Mar.	Generally migrating in upper portion of water column	Varied: kelp, subquatic vegetation
	Marine Immature Adult	Spring, summer, and early fall	Pelagic, neustonic	N/A
	Marine Mature Adult	Spring, summer, and early fall	Pelagic, neustonic	N/A
Pink	Marine Juvenile	Summer, fall, and early, pre-annulus winter	Generally migrating in upper portion of water column	Varied: kelp, subaquatic vegetation
	Marine Mature Adult	Spring, summer, and early fall	Pelagic, neustonic	N/A
Sockeye	Marine Juvenile	Early summer to late winter	Pelagic, neustonic	N/A
	Marine Immature Adult	Immature: year round 1 to 3 years	Pelagic, neustonic	N/A
	Marine Mature Adult	Spawning migration (May – August)	Pelagic, neustonic	N/A
Coho	Marine Juvenile	June – September	Pelagic, neustonic	N/A
	Marine Mature Adult	Migration - fall	Pelagic, neustonic	N/A

*Salmon Species-Specific Lifestages for the Action Area Derived from the NMFS EFH Mapper Report (https://www.habitat.noaa.gov/apps/efhmapper/)

**Species-Specific Salmon FMP Seasonal Occurrence and Habitat Associations (North Pacific Fishery Management Council 2021)

5.2.3 Gulf of Alaska Groundfish in the Action Area

Groundfish species (i.e., flatfish, rockfish, roundfish, skates, sharks and chimeras) support important commercial and recreational fisheries in the Gulf of Alaska, including the Alexander Archipelago. Groundfish range throughout the U.S. EEZ and occupy diverse habitats at all stages in their life histories. Some species are broadly dispersed during specific life stages, especially those with pelagic eggs and larvae. The distribution of other species and/or life stages may be relatively limited, as with adults of many nearshore rockfish which show strong affinities to a particular location or substrate type.

As site-specific groundfish survey data is limited within the proposed action area, the EFH Habitat Mapper was relied upon for deriving the list of GOA groundfish FMP species, and their respective life stages by season, expected to occur in the Action Area. As noted in Table 5-2, the groundfish species for which EFH is designated in these waters, occur in their earliest lifestages (eggs and larvae). Those 11 groundfish species that occur within the proposed action area (Table 5-2) are just a subset of the total number of Alaska groundfish with designated EFH. However, even within this subset, the life histories are varied.

Three of the eight species that comprise the shallow water flatfish management complex in the GOA occur in the proposed action area: northern rock sole (*Lepidopsetta polyxystra*), southern rock sole (*Lepidopsetta bilineata*), yellowfin sole (*Limanda aspera*). However, four other flatfish species that are not in this management unit also occur within the proposed action area: Dover sole (*Microstomus pacificus*), flathead sole (*Hippoglossoides elassodon*), rex sole (*Glyptocephalus zachirus*), and arrowtooth flounder (*Atheresthes stomias*). Four other species with EFH in the proposed action area include: Pacific cod (*Gadus macrocephalus*), walleye pollock (*Theragra chalcogramma*), sablefish (*Anoplopoma fimbria*), and Pacific ocean perch (*Sebastes alutus*).

5.2.4 Gulf of Alaska Groundfish EFH in the Action Area

The Action Area occurs within the purview of the GOA Groundfish FMP. Stephens Passage and the Gastineau Channel occur within the Eastern Gulf of Alaska (EGOA) regulatory area for groundfish management (North Pacific Fishery Management Council 2020). The EGOA encompasses all waters from Dixon Entrance (54°30'N latitude) northwestward along the outer coast to 144° W. Within this management area, the Gastineau Channel occurs within the Northern Southeast Inside Subdistrict. The Alaska Department of Fish and Game has management jurisdiction over all groundfish resources within state waters in the EGOA area (Ehresmann et al. 2021). State waters include all internal waters of Southeast Alaska and Yakutat Bay, and waters within three miles of shore along the outer coast. In addition, an amendment to the Gulf of Alaska Federal Groundfish FMP defers management of demersal shelf rockfish in both state and federal waters in the SEO district (outer coastal waters east of 140°W longitude) to the state.

Table 5-2. Groundfish Species and their Lifestages with EFH in the Action Area

Species/Management Unit*	Spawning Type**	Lifestage(s) and Season Found at Location*	Water Column Location**	Substrate Association**
Dover sole	Batch spawner	Egg (Summer) Larvae (Summer)	epipelagic	-
Flathead sole	Batch spawner	Egg (Summer) Larvae (Summer)	epipelagic	-
Rex sole	-	Egg (Summer) Larvae (Summer)	epipelagic	-
Yellowfin sole	Batch spawner	Egg (Summer)	epipelagic	-
Arrowtooth flounder	-	Larvae (Summer)	epipelagic	-
Northern rock sole	Batch spawner	Larvae (Summer)	epipelagic	-
Southern rock sole	Batch spawner	Larvae (Summer)	epipelagic	-
Walleye pollock	Broadcast spawner	Egg (Summer) Larvae (Summer)	near surface, semi demersal, epipelagic near surface, semi demersal, demersal, epipelagic	-
Pacific cod	Broadcast spawner	Larvae (Summer)	demersal	all listed non-organic demersal substrates
Pacific ocean perch	Batch spawner	Larvae (Summer)	near surface, semi demersal, epipelagic, mesopelagic	-
Sablefish	Broadcast spawner	Larvae (Summer)	demersal, mesopelagic	-

*Groundfish Species-Specific Lifestages for the Action Area Derived from the NMFS EFH Mapper Report (https://www.habitat.noaa.gov/apps/efhmapper/)

** North Pacific Fishery Management Council (2020) Appendix D, Life History Features and Habitat Requirements of Fishery Management Plan

5.2.5 Conservation Areas/Zones and HAPCs in the Action Area

As stated within NPFMC (2018b), HAPCs are specific sites within EFH that are of particular ecological importance to the long-term sustainability of managed species, are of a rare type, or are especially susceptible to degradation or development. They are intended to provide an increased emphasis on conservation and management efforts and may require additional protection from adverse effects. The NPFMC established the Aleutian Islands Habitat Conservation Area, the Aleutian Islands Coral Habitat Protection Areas, and the GOA Slope Habitat Conservation Areas to protect EFH from fishing threats (North Pacific Fishery Management Council 2018b). The Council also established HAPCs within EFH to protect those areas from fishing threats: the Alaska Seamount Habitat Protection Areas, the Bowers Ridge Habitat Conservation Zone, and the GOA Coral Habitat Protection Areas. Further, six areas in the eastern Bering Sea where relatively high concentrations of skate eggs occur was identified as an HAPC. Maps of these areas are provided in North Pacific Fishery Management Council (2018b). As none of the Salmon Conservation Areas/Zones or HAPCs overlap with the Proposed Action Area, they are not considered further.

6 POTENTIAL IMPACTS ON EFH

6.1 Essential Fish Habitat Effects Analysis

Of the stressors analyzed with the Civilian Port Defense training activities (vessel movement, in-water devices, seafloor devices), energy stressors, and acoustic stressors (vessel noise, acoustic transmissions), only the in-water devices and seafloor devices have the potential to effect EFH. Noise, low-energy lasers, and acoustic transmissions have been determined to have no impact on EFH.

Although small vessel movement is included as part of the proposed activity, it does not rise to the level of *port facilities, vessel/ferry operations, and recreational marinas* activities as described as a potential adverse impact under *Nearshore Marine and Estuarine Habitats* (Limpinsel et al. 2017). Likewise, it does not rise to the level of *Bering Sea, Bering Strait and Arctic* or large volume ships, barges, or tanker traffic, described as a potential adverse impact under *Marine and Offshore Zones*. As a result, the small vessel movement included as part of the proposed action has been determined to have no impact on EFH. In-water devices and seafloor devices used during the Proposed Action may have the potential to impact EFH and are analyzed below.

6.1.1 In-Water Devices

In-water devices associated with the Proposed Action include UUVs, ROVs. These self-propelled devices are generally smaller than most Navy vessels, reaching lengths of up to 12 ft (4 m) for the Proposed Action, though most would be smaller. UUVs are autonomous and programmed to conduct specific search patterns in a given water body, whereas ROVs are controlled via direct cable to a surface operator. Slow-moving UUVs typically do not exceed 4 knots.

6.1.1.1 Potential Impacts from In-Water Devices

EFH present within the proposed action area is designated for juvenile and/or adult of all five salmon species, and the eggs and/or larvae of 11 groundfish species. No federally-designated HAPC exists within the proposed action area. As multiple in-water devices will be deployed and operate throughout the water column in an area designated as EFH, the Navy has determined that in-water devices *may adversely affect EFH*. However, the very slow speeds (typically <4 kt) of the proposed in-water devices would only have temporary, minor, and very localized disturbance on the water column, and would not alter the local current patterns within the Gastineau Channel or Stephens Passage. Even in the immediate proximity of an in-water device, the water temporarily disturbed by propulsion would quickly return to normal conditions, with no long-term alteration of the water quality, quantity, or current patterns.

6.1.2 Seafloor Devices

Seafloor device activities associated with the Proposed Action include the placement, discovery, and recovery of eight to ten bottom-placed, non-explosive mine training shapes in the proposed action area. They would be retrieved by Navy divers or unmanned vehicles, and may be brought to rocky or sandy shoreside locations to be secured. Marine vegetation on the site appears to be limited to brown algae (*Fucus distichus*) which sparsely occurs at the site. This final step in the activities would take place on land (typically rocky or sandy shoreline), close to the high water mark (up to 100 ft [30 m] from the water's edge). The shoreside location at the mouth of Snowslide Creek (Figure 2-2) is a mixed sand and gravel beach with tidal flats.

6.1.2.1 Potential Impacts from Seafloor Devices

As eight to ten seafloor devices will be placed on benthic habitats, and retrieved through intertidal habitats in an area designated as EFH, the Navy has determined that in-water devices *may adversely affect EFH*. However, seafloor devices would not be deployed onto or directly adjacent to hard bottom habitat. The soft-bottom benthic habitats would be expected to quickly recover following device retrieval. Although intertidal sediments would be disturbed if the seafloor devices were pulled ashore, the Snowslide Creek location is comprised of mixed sand and cobble in an energetic area where wind wave-driven nearshore sediment transport is powered by the long fetch of the Gastineau Channel and the strong Taku Winds.

6.2 Essential Fish Habitat Determinations

Based on the Proposed Action, the quality and quantity of the EFH in the area, and the incorporation of standard operating procedures and mitigation measures, the Navy has determined that the Proposed Action *may adversely affect* designated EFH in the action area, but the effects will be temporary and minimal, as shown in Table 6-1 (by stressor). Table 6-2 shows the overall determination of effect.

Table 6-1. Potential Effects to EFH by Stressor

Essential Fish Habitat					
Alaska Salmon					
Stressor	**Water Column**	**Prey Species**	**Substrate**	**Biogenic**	**HAPC***
In-Water Devices	May adversely affect (minimal and temporary)	No effect	May adversely affect (minimal and temporary)	No effect	N/A
Seafloor Devices	May adversely affect (minimal and temporary)	No effect	May adversely affect (minimal and temporary)	No effect	N/A
Alaska Groundfish					
Stressor	**Water Column**	**Prey Species**	**Substrate**	**Biogenic**	**HAPC***
In-Water Devices	May adversely affect (minimal and temporary)	No effect	May adversely affect (minimal and temporary)	No effect	N/A
Seafloor Devices	May adversely affect (minimal and temporary)	No effect	May adversely affect (minimal and temporary)	No effect	N/A

*No overlap with Habitat Areas of Particular Concerns (HAPCs) (North Pacific Fishery Management Council 2018b)

Table 6-2. EFH Effect Determination

EFH	Effect Determination
Alaska Salmon EFH	May adversely affect (minimal and temporary)
Alaska Groundfish EFH	May adversely affect (minimal and temporary)

7 STANDARD OPERATING PROCEDURES AND MITIGATION MEASURES

7.1 Standard Operating Procedures

Standard operating procedures serve the primary purpose of providing for safety and mission success, and are implemented regardless of their secondary benefits (e.g., to a resource).

7.1.1 Vessel Safety

For the purposes of this section the term "ship" is inclusive of surface ships. The term "vessel" is inclusive of ships and small boats (e.g., rigid-hull inflatable boats).

Ships operated by or for the Navy have personnel assigned to stand watch at all times, day and night, when moving through the water (underway) in accordance with Navy navigation instruction. Watch personnel undertake extensive training in accordance with the U.S. Navy Lookout Training Handbook or civilian equivalent, including on-the-job instruction and a formal Personal Qualification Standard program (or equivalent program for supporting contractors or civilians), to certify that they have demonstrated all necessary skills (such as detection and reporting of floating or partially submerged objects). Watch personnel are composed of officers, enlisted personnel, and civilian personnel. Their duties may be performed in conjunction with other job responsibilities, such as navigating the ship or supervising other personnel. While on watch, personnel employ visual search techniques, including the use of binoculars, using a scanning method in accordance with the U.S. Navy Lookout Training Handbook or civilian equivalent. After sunset and prior to sunrise, watch personnel employ night visual search techniques, which could include the use of night vision devices.

A primary duty of watch personnel is to detect and report all objects and disturbances sighted in the water that may be indicative of a threat to the ship and its crew, such as debris, a periscope, surfaced submarine, or surface disturbance. Per safety requirements, watch personnel also report any marine mammals sighted that have the potential to be in the direct path of the ship as a standard collision avoidance procedure. Because watch personnel are primarily posted for safety of navigation, range clearance, and man-overboard precautions, they are not normally posted while ships are moored to a pier. When anchored or moored to a buoy, a watch team is still maintained, but with fewer personnel than when underway. When moored or at anchor, watch personnel may maintain security and safety of the ship by scanning the water for any indications of a threat (as described above).

While underway, watch personnel are alert at all times and have access to binoculars. Due to limited manning and space limitations, small boats do not have dedicated watch personnel, and the boat crew is responsible for maintaining the safety of the boat and surrounding environment.

All vessels proceed at a "safe speed" in accordance with applicable international and domestic regulations so they can take proper and effective action to avoid a collision with any sighted object or disturbance, and can be stopped within a distance appropriate to the prevailing circumstances and conditions.

7.1.2 Laser Procedures

The following procedures are applicable to lasers of sufficient intensity to cause human eye damage.

Only properly trained and authorized personnel operate lasers.

Prior to commencing activities involving lasers, the operator ensures that the area is clear of unprotected or unauthorized personnel in the laser impact area by performing a personnel inspection or

a flyover. The operator also ensures that any personnel within the area are aware of laser activities and are properly protected.

7.1.3 Underwater Vehicle Procedures

For activities involving unmanned underwater vehicles, the Navy evaluates the need to publish a Notice to Mariners based on the scale, location, and timing of the activity. This need would be addressed as needed after the selection of a Proposed Action Alternative for implementation.

7.1.4 Towed In-Water Device Procedures

Prior to deploying a towed device from a manned platform, there is a standard operating procedure to search the intended path of the device for any floating debris (e.g., driftwood) or other potential obstructions (e.g., concentrations of floating vegetation [kelp paddies] and animals), which have the potential to cause damage to the device.

7.2 Mitigation Measures

The mitigation measures applicable to Civilian Port Defense activities in the Proposed Action are the same as those identified for other Navy at-sea documentation (i.e., HSTT EIS/OEIS). Mitigation measures are used to avoid or reduce potential impacts. Impact avoidance and minimization measures are presented in Table 7-1.

Table 7-1. Impact Avoidance and Minimization Measures

Measure	*Anticipated Benefit*	*Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
The Navy will have one Lookout on ships or aircraft conducting high-frequency active sonar activities associated with the Proposed Action. Mitigation will include visual observation from a vessel or aircraft (with the exception of platforms operating at high altitudes) immediately before and during active transmission within a mitigation zone of 200 yards (yd, 183 m] from the active sonar source. If the source can be turned off during the activity, active transmission will cease if a marine mammal is sighted within the mitigation zone. Active transmission will recommence if any one of the following conditions is met: (1) the animal is observed exiting the mitigation zone, (2) the animal is thought to have exited the mitigation zone based on a determination of its course and speed and the relative motion between the animal and the source, (3) the mitigation zone has been clear from any additional sightings for a period of 10 minutes for an aircraft-deployed source, (4) the mitigation zone has been clear from any additional sightings for a period of 30 minutes for a vessel-deployed source, (5) the active sonar source has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.	Avoidance of marine species exposure to active sonar, minimizing risk of acoustic stressors.	Efficacy of applied mitigation in limiting acoustic exposures to marine species.	Mitigation requirements will be disseminated and briefed to all personnel associated with the Proposed Action.	Technical project lead will ensure implementation of the measures.	Duration of Proposed Action.

Measure	*Anticipated Benefit*	*Evaluating Effectiveness*	*Implementing and Monitoring*	*Responsibility*	*Estimated Completion Date*
While underway, vessels will have a minimum of one to three Lookouts (depending upon the vessel). Vessels will avoid approaching marine mammals head on and will maneuver to maintain a mitigation zone of 200 yd (183 m) around all other marine mammals (except bow riding dolphins), provided it is safe to do so.	Avoidance of marine mammals while in transit and during deployment, minimizing risk of vessel disturbance or interaction.	Efficacy of applied mitigation in limiting interactions with marine species.	Mitigation requirements will be disseminated and briefed to all personnel associated with the Proposed Action.	Technical project lead will ensure implementation of the measures.	Duration of Proposed Action.
The Navy will have one Lookout during activities using towed in-water devices when towed from a manned platform. The Navy will ensure that towed in-water devices being towed from manned platforms avoid coming within a mitigation zone of 250 yd (229 m) around any observed marine mammal, providing it is safe to do so.	Avoidance of marine mammals during use of towed in-water devices, minimizing risk of in-water device disturbance or interaction.	Efficacy of applied mitigation in limiting interactions with marine species.	Mitigation requirements will be disseminated and briefed to all personnel associated with the Proposed Action.	Technical project lead will ensure implementation of the measures.	Duration of Proposed Action.

8 CONCLUSION

Based on the analysis provided above, direct and indirect effects from vessel movement, in-water device movement, seafloor devices, vessel noise, and acoustic transmissions associated with the Proposed Action *may affect, but are not likely to adversely affect*, the ESA-listed Steller sea lion and ESA-listed humpback whales within the proposed action area.

In-water and seafloor devices associated with the Proposed Action may result in localized and temporary changes to the quality of EFH in the proposed action area. An adverse effect under the MSA is defined as "any impact that reduces the quality and/or quantity of EFH," regardless of duration or scale. Therefore, the Proposed Action *may have a temporary and localized adverse effect on salmon and groundfish EFH* within the proposed action area due to the presence of in-water devices. However, the overall impacted area in the proposed action area would be small physically and temporally compared to the overall amount of designated EFH.

9 REFERENCES

Acevedo-Gutiérrez, A. (1991). Interactions between boats and bottlenose dolphins, Tursiops truncatus, in the entrance to Ensenada de La Paz, Mexico. *17*(3), 120-124.

Au, W. W., Pack, A. A., Lammers, M. O., Herman, L. M., Deakos, M. H., & Andrews, K. (2006). Acoustic properties of humpback whale songs. *The Journal of the Acoustical Society of America, 120*(2), 1103-1110.

Au, W. W. L., & Green, M. (2000). Acoustic interaction of humpback whales and whale watching boats. *49*, 469-481.

Au, W. W. L., & Hastings, M. C. (2008). *Principles of Marine Bioacoustics*. New York: Springer Science + Business Media, LLC.

Babushina, E. S., Zaslavsky, G. L., & Yurkevich, L. I. (1991). Air and underwater hearing of the northern fur seal audiograms and auditory frequency discrimination. *Biofizika, 36*(5), 904-907.

Baker, C. S., Herman, L. M., Perry, A., Lawton, W. S., Straley, J. M., & Straley, J. H. (1985). Population characteristics and migration of summer and late-season humpback whales (Megaptera novaeangliae) in southeastern Alaska. *Marine Mammal Science, 1*(4), 304-323.

Baker, C. S., Straley, J. M., & Perry, A. (1992). Population characteristics of individually identified humpback whales in southeastern Alaska: summer and fall 1986. *Fishery Bulletin, 90*(3), 429-437.

Becker, E. A., Forney, K. A., Fiedler, P. C., Barlow, J., Chivers, S. J., Edwards, C. A., Moore, A. M., & Redfern, J. V. (2016). Moving Towards Dynamic Ocean Management: How Well Do Modeled Ocean Products Predict Species Distributions? *Remote Sensing, 8*(2), 149. doi: 10.3390/rs8020149.

Becker, E. A., Forney, K. A., Thayre, B. J., Debich, A. J., Campbell, G. S., Whitaker, K., Douglas, A. B., Gilles, A., Hoopes, R., & Hildebrand, J. A. (2017). Habitat-based density models for three cetacean species off Southern California illustrate pronounced seasonal differences. *Frontiers in Marine Science, 4*, 121.

Bousman, W. G., & Kufeld, R. M. (2005). *UH-60A Airloads Catalog*. Moffett Field, California: National Aeronautics and Space Administration

Calambokidis, J., Steiger, G. H., Straley, J. M., Herman, L. M., Cerchio, S., Salden, D. R., Urban, J., Jacobsen, J. K., Von Ziegesar, O., Balcomb, K. C., Gabriele, C. M., Dahlheim, M. E., Uchida, S., Ellis, G., Mlyamura, Y., Ladron de Guevara, P., Yamaguchi, M., Sato, F., Mizroch, S. A., Schlender, L., Rasmussen, K., & Barlow, J. (2001). Movements and population structure of humpback whales in the North Pacific. *Marine Mammal Science, 17*, 769-794.

Chenoweth, E. M., Straley, J. M., McPhee, M. V., Atkinson, S., & Reifenstuhl, S. (2017). Humpback whales feed on hatchery-released juvenile salmon. *Royal Society open science, 4*(7), 170180.

Christiansen, F., Lusseau, D., Stensland, E., & Berggren, P. (2010). Effects of tourist boats on the behaviour of Indo-Pacific bottlenose dolphins off the south coast of Zanzibar. *11*, 91-99.

City of Juneau. (2016). Juneau Harbors Website. Retrieved from http://www.juneau.org/harbors/ as accessed on 2/26.

Clapham, P. J. (2000). The humpback whale: Seasonal feeding and breeding in a baleen whale. In. Mann, J., Connor, R. C., Tyack, P. L. & Whitehead, H. (Eds.), *Cetacean Societies: Field Studies of Dolphins and Whales* (pp. 173-196). Chicago, Illinois: University of Chicago Press.

Clapham, P. J., & Mattila, D. K. (1990). Humpback whale songs as indicators of migration routes. *Marine Mammal Science, 6*(2), 155-160.

Clark, C. W., Ellison, W. T., Southall, B. L., Hatch, L., Parijs, S. M. V., Frankel, A., & Ponirakis, D. (2009). Acoustic masking in marine ecosystems: Intuitions, analysis and implication. *Marine Ecology Progress Series, 395*, 201-222. doi: 10.3354/meps08402.

Cranford, T. W., & Krysl, P. (2015). Fin whale sound reception mechanisms: skull vibration enables low-frequency hearing. *PloS one, 10*(1), e0116222.

Curtin, S., Richards, S., & Westcott, S. (2009). Tourism and grey seals in south Devon: management strategies, voluntary controls and tourists' perceptions of disturbance. *Current Issues in Tourism, 12*(1), 59-81.

D'Vincent, C. G., Nilson, R. M., & Hanna, R. E. (1985). Vocalization and coordinated feeding behavior of the humpback whale in southeastern Alaska. *Scientific Reports of the Whales Research Institute, 36*, 41-47.

Dahlheim, M. E., & Ljungblad, D. K. (1990). Preliminary hearing study on gray whales (Eschrichtius robustus) in the field. In *Sensory abilities of cetaceans* (pp. 335-346): Springer.

Dahlheim, M. E., White, P. A., & Waite, J. M. (2009). Cetaceans of Southeast Alaska: Distribution and seasonal occurrence. *Journal of Biogeography, 36*, 410-426.

Dalla Rosa, L., Ford, J. K., & Trites, A. W. (2012). Distribution and relative abundance of humpback whales in relation to environmental variables in coastal British Columbia and adjacent waters. *Continental Shelf Research, 36*, 89-104.

Department of the Navy. (in prep). *Draft West Coast Civilian Port Defense Programmatic Environmental Assessment*.

Efroymson, R. A., Rose, W. H., Nemeth, S., & Suter II, G. W. (2000). Ecological risk assessment framework for low-altitude overflights by fixed-wing and rotary-wing military aircraft. *Oak Ridge National Laboratory, Oak Ridge, Tennessee*.

Ehresmann, R., A. Baldwin, M. Bargas, E. Ebert, M. Lesseberg, E. Teodori, and K. Wood. 2021. Management Report for the Southeast and Yukutat Commercial Groundfish Fisheries, 2017-2020. Fishery Management Report No. 21-02. Divisions of Sport and Commercial Fisheries. Alaska Department of Fish and Game. 56 pp.

Ellison, W. T., Southall, B. L., Clark, C. W., & Frankel, A. S. (2012). A New Context-Based Approach to Assess Marine Mammal Behavioral Responses to Anthropogenic Sounds. *Conservation Biology, 26*(1 DOI - 10.1111/j.1523-1739.2011.01803.x), 21-28.

Erbe, C. (2002). Underwater noise of whale-watching boats and potential effects on killer whales (Orcinus orca), based on an acoustic impact model. *18*(2), 394-418.

Erbe, C., Colleen, R., Kane, C., Klaus, L., & Robert, D. (2016). Communication masking in marine mammals: A review and research strategy. *Marine Pollution Bulletin, 103*, 15-38.

Fournet, M. E. H., Matthews, L. P., Gabriele, C. M., Mellinger, D. K., & Klinck, H. (2018). Source levels of foraging humpback whale calls. *The Journal of the Acoustical Society of America, 143*(2), EL105-EL111.

Fritz, L. W., Sweeney, K., Towell, R., & Gelatt, T. S. (2016). *Aerial and ship-based surveys of Steller sea lions (Eumetopias jubatus) conducted in Alaska in June-July 2013 through 2015, and an update on the status and trend of the western distinct population segment in Alaska*. U.S. Dep. Commer. p. 72.

Gabriele, C. M., Clark, C. W., Frankel, A. S., & Kipple, B. (2010). Glacier Bay's underwater sound environment: The effects of cruise ship noise on humpback whale habitat. *Alaska Park Science, 9*(2), 13-17.

Gelatt, T., Trites, A. W., Hastings, K., Jemison, L., Pitcher, K., & O'Corry-Crowe, G. (2004). *Population trends, diet, genetics, and observations of Steller sea lions in Glacier Bay National Park.* Paper presented at the Proceedings of the Fourth Glacier Bay Science Symposium.

Groot, C., & Margolis, L. (1991). Pacific salmon life histories: UBC press.

Hastings, K., Jemison, L., Pendleton, G., Raum-Suryan, K. L., & Pitcher, K. W. (2017). Natal and breeding philopatry of female Steller sea lions in southeastern Alaska. *PLoS ONE, 12*(6), e0176840.

Hazel, J., Lawler, I. R., Marsh, H., & Robson, S. (2007). Vessel speed increases collision risk for the green turtle Chelonia mydas. *Endangered Species Research, 3*, 105-113.

Helfman, G. S., Collette, B. B., Facey, D. E., & Bowen, B. W. (2009). The Diversity of Fishes: Biology, Evolution, and Ecology (Second Edition ed.): Wiley-Blackwell.

Hermannsen, L., Beedholm, K., Tougaard, J., & Madsen, P. T. (2014). High frequency components of ship noise in shallow water with a discussion of implications for harbor porpoises (Phocoena phocoena). *Journal of the Acoustical Society of America*.

Hoover-Miller, A., Bishop, A., Prewitt, J., Conlon, S., Jezierski, C., & Armato, P. (2013). Efficacy of voluntary mitigation in reducing harbor seal disturbance. *Journal of Wildlife Management*.

Houser, D. S., Helweg, D. A., & Moore, P. W. B. (2001a). A bandpass filter-bank model of auditory sensitivity in the humpback whale. *27*(2), 82-91.

Houser, D. S., Howard, R., & Ridgway, S. H. (2001b). Can diving-induced tissue nitrogen supersaturation increase the chance of acoustically driven bubble growth in marine mammals? *, 213*, 183-195.

Jemison, L. A., Pendleton, G. W., Fritz, L. W., Hastings, K. K., Maniscalco, J. M., Trites, A. W., & Gelatt, T. S. (2013). Inter-Population Movements of Steller Sea Lions in Alaska with Implications for Population Separation. *PLoS ONE, 8*(8), e70167. doi: 10.1371/journal.pone.0070167.

Johnson, A., & Acevedo-Gutiérrez, A. (2007). Regulation compliance by vessels and disturbance of harbour seals (Phoca vitulina). *Canadian Journal of Zoology*.

Kaschner, K., Watson, R., Trites, A. W., & Pauly, D. (2006). Mapping World-Wide Distributions of Marine Mammal Species Using a Relative Environmental Suitability (RES) Model. *Marine Ecology Progress Series, 316*, 285-310.

Kastak, D., & Schusterman, R. J. (1998). Low-frequency amphibious hearing in pinnipeds: methods, measurements, noise, and ecology. *Journal of the Acoustical Society of America, 103*(4), 2216-2228.

Kastelein, R. A., Schie, R. V., Verboom, W. C., & Haan, D. d. (2005). Underwater hearing sensitivity of a male and a female steller sea lion (Eumetopias jubatus). *118*(3 Pt.1), 1820-1829.

Keple, A. R. (2002). *Seasonal abundance and distribution of marine mammals in the southern Strait of Georgia, British Columbia.* University of British Columbia.

Ketten, D. R. (1998). *Marine mammal auditory systems: A summary of audiometric and anatomical data and its implications for underwater acoustic impacts*. (NOAA Technical Memorandum NMFS-SWFSC-256). La Jolla, CA: U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

Krieger, K. J., & Wing, B. L. (1986). Hydroacoustic monitoring of prey to determine humpback whale movements.

Kucey, L., & Trites, A. W. (2006). A review of the potential effects of disturbance on sea lions: assessing response and recovery. *Sea Lions of the World, Alaska Sea Grant Program AK-SG-06-01*.

Lagerquist, B. A., Mate, B. R., Ortega-Ortiz, J. G., Winsor, M., & Urbán-Ramirez, J. (2008). Migratory movements and surfacing rates of humpback whales (Megaptera novaeangliae) satellite tagged at Socorro Island, Mexico. *Marine Mammal Science, 24*(4 DOI - 10.1111/j.1748-7692.2008.00217.x), 815-830.

Laist, D. W., Knowlton, A. R., Mead, J. G., Collet, A. S., & Podesta, M. (2001). Collisions Between Ships and Whales. *Marine Mammal Science, 17*(1), 35-75.

Laufle, J. C., Pauley, G. B., & Shepard, M. F. (1986). Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Pacific Northwest). Coho Salmon. Washington Cooperative Fishery Reasearch Unit Seattle.

Limpinsel, D. E., M. P. Eagleton, and J. L. Hanson. 2017. Impacts to Essential Fish Habitat from Non-Fishing Activities in Alaska. EFH 5 Year Review: 2010 through 2015. U.S. Dep Commer. NOAA Tech. Memo. NMFS-F/AKR-14, 229 p.

Loughlin, T. R., Sterling, J. T., Merrick, R. L., Sease, J. L., & York, A. E. (2003). Diving behavior of immature Stellar sea lions (Eumetopias jubatus). *101*(3), 566-582.

Loughlin, T. R., & York, A. E. (2000). An accounting of the sources of Steller sea lion, Eumetopias jubatus, mortality. *62*(4), 40-45.

Magalhães, S., Prieto, R., Silva, M. A., Goncalves, J. M., Afonso-Dias, M., & Santos, R. S. (2002). Short-term reactions of sperm whales (Physeter macrocephalus) to whale-watching vessels in the Azores. *28*(3), 267-274.

Mate, B., Palacios, D. M., Baker, C. S., Lagerquist, B., Irvine, L., Follet, T., Steel, D., Hayslip, C. E., & Winsor, M. (2018). *Humpback Whale Tagging in Support of Marine Mammal Monitoring Across Multiple Navy Training Areas in the Pacific Ocean: Final Report for Feeding Areas off the US West Coast in Summer-Fall 2017, Including Historical Data from Previous Tagging Efforts. Prepared for Commander, Pacific Fleet and Naval Sea Systems Command. Submitted to Naval Facilities Engineering Command Southwest, San Diego, California, under Cooperative Ecosystem Studies Unit, Department of the Navy Cooperative Agreement*. San Diego, CA. p. 135.

Mathews, E. A., Jemison, L. A., Pendleton, G. W., Blejwas, K. M., Hood, K. E., & Raum-Suryan, K. L. (2016). Haul-out patterns and effects of vessel disturbance on harbor seals (Phoca vitulina) on glacial ice in Tracy Arm, Alaska.(Report). *Fishery Bulletin, 114*(2 DOI - 10.7755/FB.114.2.6), 186-202.

McDonald, M. A., Hildebrand, J. A., Wiggins, S. M., & Ross, D. (2008). A 50 year comparison of ambient ocean noise near San Clemente Island: A bathymetrically complex coastal region off Southern California. *Journal of the Acoustical Society of America, 124*(4), 1985-1992. doi: 10.1121/1.2967889.

McKenna, M. F., Wiggins, S. M., & Hildebrand, J. A. (2013). Relationship between container ship underwater noise levels and ship design, operational and oceanographic conditions. [Article]. *Scientific Reports, 3*, 1760. doi: 10.1038/srep01760 http://www.nature.com/articles/srep01760#supplementary-information.

Meissner, A. M., Christensen, F., Martinez, E., Pawley, M. D. M., Orams, M. B., & Stockin, K. A. (2015). Behavioral Effects of Tourism on Oceanic Common Dolphins, Delphinus sp., in New Zealand: The Effects of Markov Analysis Variations and Current Tour Operator Compliance with Regulations. *PLoS ONE, 10*(1). doi: 10.1371/journal.pone.0116962.

Mikkelsen, L., Johnson, M., Wisniewska, D. M., van Neer, A., Siebert, U., Madsen, P. T., & Teilmann, J. (2019). Long-term sound and movement recording tags to study natural behavior and reaction to ship noise of seals. *Ecology and evolution, 9*(5), 2588-2601.

Miller, E. H. (1991). *Communication in pinnipeds, with special reference to non-acoustic signalling*. London: Chapman and Hall.

Misund, O. A. (1997). Underwater acoustics in marine fisheries and fisheries research. Reviews in Fish Biology and Fisheries, 7(1), 1-34. Moore, P. W. B., & Schusterman, R. J. (1987). Audiometric Assessment of Northern Fur Seals, Callorhinus ursinus. *Marine Mammal Science, 3*(1), 31-53.

National Marine Fisheries Service. (2002). Magnuson-Stevens Act Provisions; Essential Fish Habitat. Final Rule, 67(12), 2343-2383.

National Marine Fisheries Service. (2005). Record of Decision and Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska. Juneau, AK.

National Marine Fisheries Service. (2008). *Recovery Plan for the Steller Sea Lion (Eumetopias jubatus). Revision.* Silver Spring, MD: National Marine Fisheries Service. p. 325.

National Marine Fisheries Service. (2015). Steller Sea Lion (*Eumetopias jubatus*). Retrieved from http://www.fisheries.noaa.gov/pr/species/mammals/sealions/steller-sea-lion.html as accessed on 30 November 2015.

National Marine Fisheries Service. (2019). *Draft Biological Report for the Proposed Designation of Critical Habitat for the Central America, Mexico, and Western North Pacific Distinct Population Segments of Humpback Whales (Megaptera novaeangliae).*

National Marine Fisheries Service, A. R. (2013). *Occurrence of western distinct population segment Steller sea lions east of 144° w. longitude*. National Marine Fisheries Service (NMFS).

National Marine Fisheries Service, Alaska Region. (2020) Occurrence of Western and Eastern Distinct Population Segment Steller Sea Lions East of 144 deg. W. Longitude. June 2020.

National Marine Fisheries Service, Alaska Region. (2021). Occurrence of Endangered Species Act (ESA) Listed Humback Whales off Alaska. Revised August 6, 2021.

National Oceanic and Atmospheric Administration (Cartographer). (2013). Gastineau Channel and Taku Inlet; Juneau Harbor (Soundings in Fathoms).

Noren, D. P., Johnson, A. H., Rehder, D., & Larson, A. (2009). Close approaches by vessels elicit surface active behaviors by southern resident killer whales. *8*(3), 179-192.

North Pacific Fishery Management Council. (2019). Fishery Management Plan for Groundfish of the Gulf of Alaska. Anchorage, AK: NPFMC

North Pacific Fishery Management Council, N. M. F. S., and Alaska Region State of Alaska Department of Fish and Game. (2021). Fishery Management Plan for the Salmon Fisheries in the EEZ off Alaska. Anchorage, AK.

Nowacek, D. P., Thorne, L. H., Johnston, D. W., & Tyack, P. L. (2007). Responses of Cetaceans to Anthropogenic Noise. *Mammal Review, 37*(2), 81-115.

O'Corry-Crowe, G., Gelatt, T., Rea, L., Bonin, C., & Rehberg, M. (2014). Crossing to safety: dispersal, colonization and mate choice in evolutionarily distinct populations of Steller sea lions, Eumetopias jubatus. *Molecular ecology, 23*(22), 5415-34.

Ormseth, O., K. Rand, and A. DeRobertis. 2016. Fishes and invertebrates in Gulf of Alaska bays and islands: results from nearshore ecosystem surveys in 2011 and 2013. Resources Ecology and Fisheries Management Division, Alaska Fisheries Science Center, NOAA Fisheries.

Pacific Fishery Management Council. (2016). Pacific Coast Salmon Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California. Portland, OR.

Parks, S. E., Clark, C. W., & Tyack, P. L. (2007). Short- and long-term changes in right whale calling behavior: The potential effects of noise on acoustic communication. *122*(6), 3725-3731.

Peake, S., & McKinley, R. (1998). A re-evaluation of swimming performance in juvenile salmonids relative to downstream migration. Canadian Journal of Fisheries and Aquatic Sciences, 55(3), 682-687.

Pepper, C. B., Nascarella, M. A., & Kendall, R. J. (2003). A review of the effects of aircraft noise on wildlife and humans, current control mechanisms, and the need for further study. *Environmental Management, 32*(4), 418-432. doi: 10.1007 /s00267 -003-3024-4.

Pirotta, E., Merchant, N. D., Thompson, P. M., Barton, T. R., & Lusseau, D. (2015). Quantifying the effect of boat disturbance on bottlenose dolphin foraging activity. *181*, 82-89.

Pirotta, E., Milor, R., Quick, N., Moretti, D., Marzio, N. D., Tyack, P., Boyd, I., & Hastie, G. (2012). Vessel noise affects beaked whale behavior: Results of a dedicated acoustic response study. *7*(8), e42535.

Pitcher, K. W., & Calkins, D. G. (1981). Reproductive biology of steller sea lions in the Gulf of Alaska. *Journal of Mammalogy, 62*(3), 599-605.

Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., Ellison, W. T., Gentry, R. L., & Halvorsen, M. B. (2014). ASA S3/SC1. 4 TR-2014 Sound exposure guidelines for fishes and sea turtles: A technical report prepared by ANSI-Accredited standards committee S3/SC1 and registered with ANSI: Springer.

POTUS. (Nov 8, 2006). The National Strategy for Maritime Security. Retrieved from https://www.state.gov/t/pm/rls/othr/misc/255321.htm as accessed on 28 June 2017.

Raum-Suryan, K. L., Pitcher, K. W., Calkins, D. G., Sease, J. L., & Loughlin, T. R. (2002). Dispersal, rookery fidelity, and metapopulation structure of Steller sea lions (Eumetopias jubatus) in an increasing and a decreasing population in Alaska. *Marine Mammal Science, 18*(3), 746-764.

Raytheon Company. (2015). *Airborne Mine Neutralization System (AMNS): Alternative Optical Fiber Engineering Study Final Report*. Portsmouth, RI.

Reichmuth, C., Mulsow, J., Finneran, J. J., Houser, D. S., & Supin, A. Y. (2007). Measurement and response characteristics of auditory brainstem responses in pinnipeds. *Aquatic Mammals, 33*(1), 132.

Richardson, W. J., Greene Jr., C. R., Malme, C. I., & Thomson, D. H. (1995). *Marine Mammals and Noise*. San Diego, CA: Academic Press.

Røstad, A., Kaartvedt, S., Klevjer, T. A., & Melle, W. (2006). Fish are attracted to vessels. ICES Journal of Marine Science, 63(8), 1431-1437.

Scheidat, M., Castro, C., Gonzalez, J., & Williams, R. (2004). Behavioral Responses of Humpback Whales (*Megaptera novaeangliae*) to Whalewatching Boats Near Isla de la Plata, Machalilla National Park, Ecuador. *Journal of Cetacean Research and Management, 6*(1), 63-68.

Schusterman, R. J., Balliet, R. F., Nixon, J. S., R. J., Balliet, R. F., & Nixon, J. (1972). Underwater audiogram of the California sea lion by the conditioned vocalization technique. *Journal of the Experimental Analysis of Behavior, 17*, 339-350.

Schwarz, A. L. (1985). The behavior of fishes in their acoustic environment. Environmental Biology of Fishes, 13(1), 3-15.

Silber, G. K., Slutsky, J., & Bettridge, S. (2010). Hydrodynamics of a Ship/Whale Collision. *Journal of Experimental Marine Biology and Ecology, 391*, 10-19.

Soto, N. A. d., Johnson, M., Madsen, P. T., Tyack, P. L., Bocconcelli, A., & Borsani, J. F. (2006). Does intense ship noise disrupt foraging in deep-diving Cuvier's beaked whales (Ziphius cavirostris)?*, 22*(3), 690-699.

Southall, B. L. (2005). *Final Report of the National Oceanic and Atmospheric Administration (NOAA) International Symposium: "Shipping Noise and Marine Mammals: A Forum for Science, Management, and Technology," 18-19 May 2004, Arlington, Virginia, U.S.A*. National Oceanic and Atmospheric Administration (NOAA).

Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Jr., C. R. G., Kastak, D., Ketten, D. R., Miller, J. H., Nachtigall, P. E., Richardson, W. J., Thomas, J. A., & Tyack, P. L. (2007). Marine mammal noise exposure criteria: initial scientific recommendations. *Aquatic Mammals, 33*(4), 411-521.

Southall, B. L., Finneran, J. J., Reichmuth, C., Nachtigall, P. E., Ketten, D. R., Bowles, A. E., Ellison, W. T., Nowacek, D. P., & Tyack, P. L. (2019). Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. *Aquatic Mammals, 45*(2), 125-232.

Southall, B. L., Schusterman, R. J., & Kastak, D. (2000). Masking in three pinnipeds: Underwater, low-frequency critical ratios. *The Journal of the Acoustical Society of America, 108*(3), 1322-1326.

Southall, B. L., Schusterman, R. J., & Kastak, D. (2003). Auditory masking in three pinnipeds: Aerial critical ratios and direct critical bandwidth measurements. *The Journal of the Acoustical Society of America, 114*(3), 1660-1666.

Stimpert, A. K., Peavey, L. E., Friedlaender, A. S., & Nowacek, D. P. (2012). Humpback whale song and foraging behavior on an Antarctic feeding ground. *PLoS One, 7*(12), e51214.

Stockin, K. A., Lusseau, D., Binedell, V., Wiseman, N., & Orams, M. B. (2008). Tourism affects the behavioural budget of the common dolphin Delphinus sp. in the Hauraki Gulf, New Zealand. *355*, 287-295.

Straley, J. M. (1990). Fall and winter occurrence of humpback whales (*Megaptera novaeangliae*) in southeastern Alaska. *Reports of the International Whaling Commission*(Special Issue 12), 319-323.

Straley, J. M., Gabriele, C. M., & Baker, C. S. (1994). *Seasonal characteristics of humpback whales(Megaptera novaeangliae) in southeastern Alaska.* University of Alaska Fairbanks.

Straley, J. M., Moran, J. R., Boswell, K. M., Vollenweider, J. J., Heintz, R. A., Quinn Ii, T. J., Witteveen, B. H., & Rice, S. D. (2018). Seasonal presence and potential influence of humpback whales on wintering Pacific herring populations in the Gulf of Alaska. *Deep Sea Research Part II: Topical Studies in Oceanography, 147*, 173-186. doi: https://doi.org/10.1016/j.dsr2.2017.08.008.

Suryan, R. M., & Harvey, J. T. (1998). Tracking Harbor Seals (*Phoca Vitulina Richardsi*) to Determine Dive Behavior, Foraging Activity, and Haulout Site Use. *Marine Mammal Science, 14*(2), 361-372.

Terhune, J. M., & Verboom, W. C. (1999). Right Whales and Ship Noises. *Marine Mammal Science, 15*(1), 256-258.

Thompson, S. A., Sydeman, W. J., Santora, J. A., Black, B. A., Suryan, R. M., Calambokidis, J., Peterson, W. T., & Bograd, S. J. (2012). Linking predators to seasonality of upwelling: using food web indicators and path analysis to infer trophic connections. *Progress in Oceanography, 101*(1), 106-120.

Tubelli, A., Zosuls, A., Ketten, D., & Mountain, D. C. (2012). Prediction of a mysticete audiogram via finite element analysis of the middle ear. In *The Effects of Noise on Aquatic Life* (pp. 57-59): Springer.

Tynan, C. T., Ainley, D. G., Barth, J. A., Cowles, T. J., Pierce, S. D., & Spear, L. B. (2005). Cetacean distributions relative to ocean processes in the northern California Current System. *Deep Sea Research Part Ii: Topical studies in Oceanography, 52*(1-2), 145-167.

U.S. Department of Commerce, & National Oceanic and Atmospheric Administration. (2005). Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska. National Marine Fisheries Service, Alaska Region.

U.S Department of the Navy. (2017). *Dive Distribution and Group Size Parameters for Marine Species Occurring in the U.S. Navy's Atlantic and Hawaii-Southern California Training and Testing Areas*. Technical report prepared by Naval Undersea Warfare Center, Newport.

U.S. Department of the Navy. (2017). *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)*. p. 180.

U.S. Department of the Navy. (2018). *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing*. Technical report prepared by Space and Naval Warfare Systems Center Pacific and Naval Undersea Warfare Center, Newport.

Urick, R. J. (1983). *Principles of Underwater Sound*. New York, NY: McGraw-Hill.

Veirs, S., Veirs, V., & Wood, J. D. (2016). Ship noise extends to frequencies used for echolocation by endangered killer whales. *4*(e1657).

Wade, P. R. 2021. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. International Whaling Commission. SC/68c/IA/03. 32 pp. https://archive.iwc.int/.

Wartzok, D., & Ketten, D. R. (1999). *Marine mammal sensory systems*. Washington, DC: Smithsonian Institution Press.

Watkins, W. A. (1981). Reaction of three species of whales Balaenoptera physalus, Megaptera novaeangliae, and *Balaenoptera edeni* to implanted radio tags. *28*(6), 589-599.

Watkins, W. A. (1986). Whale Reactions to Human Activities in Cape Cod Waters. *Marine Mammal Science, 2*(4), 251-262.

Weiss, E. W., & Morrill, R. P. (2017). *Walrus Islands State Game Sanctuary Annual Management Report 2016 (Special Areas Management Report)*. Anchorage, AK: Alaska Department of Fish and Game.

Williams, R., Bain, D. E., Smith, J. C., & Lusseau, D. (2009). Effects of vessels on behaviour patterns of individual southern resident killer whales Orcinus orca. *6*, 199-209.

Witteveen, B. H., Worthy, G. A., Wynne, K. M., Hirons, A. C., Andrews, A. G., & Markel, R. W. (2011). Trophic levels of North Pacific humpback whales (*Megaptera novaeangliae*) through analysis of stable isotopes: implications on prey and resource quality. *Aquatic Mammals, 37*(2), 101.

Young, C., Gende, S., & Harvey, J. (2014). Effects of Vessels on Harbor Seals in Glacier Bay National Park. *Tourism in Marine Environments, 10*(1-2), 5-20.

Zerbini, A. N., Friday, N. A., Palacios, D. M., Waite, J. M., Ressler, P. H., Rone, B. K., Moore, S. E., & Clapham, P. J. (2016). Baleen whale abundance and distribution in relation to environmental variables and prey density in the Eastern Bering Sea. *Deep Sea Research Part II: Topical Studies in Oceanography, 134*, 312-330.

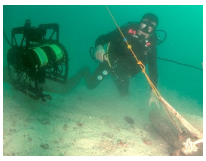
APPENDIX A. REPRESENTATIVE SHIPS AND OTHER EQUIPMENT

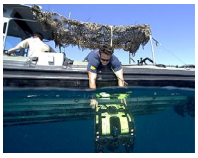
REPRESENTATIVE EXPLOSIVE ORDNANCE DISPOSAL (EOD) ASSETS

Zodiac dive boat

Rigid-hull inflatable boat (RHIB) 7m or 9m

EOD AN/PQS-2A handheld sonar





Mini-Remotely Operated Vehicles (ROV)- various modified commercial models

MK-18 Kingfish Unmanned Underwater Vehicle (UUV)

EOD Remote Environmental Measuring Units (REMUS) 100 small UUV

REPRESENTATIVE INERT TRAINING MINE SHAPES

Bottom mine shapes

Floating and mid-water mine shapes

EOD mine recovery