UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OCEANIC AND ATMOSPHERIC RESEARCH
Office of Ocean Exploration and Research
Silver Spring, MD 20910

March 30, 2023
NOAA Fisheries
Office of Protected Resources
ESA Interagency Cooperation Division
1315 East-West Hwy
Silver Spring, MD 20910

Attn: Ms. Lisamarie Carrubba

Re: Request for Project Specific Review under section 7(a)(2) of the Endangered Species Act for NOAA's Office of Ocean Exploration and Research's Marine Operation Activities

Dear Ms. Carrubba,

The NOAA Office of Ocean Exploration and Research (OER) proposes to authorize and carry out marine operation activities in partnership with the Defense Prisoner of War/Missing in Action (POW/MIA) Accounting Agency (DPAA), to use a small, man-portable L3 OceanServer IVER Autonomous Underwater Vehicle (AUV) and remotely operated vehicle (ROV) to conduct survey operations in the vicinity of Tanaga Island and Tanaga Bay to locate a submerged WWII-era aircraft during an upcoming expedition aboard the NOAA Ship *Okeanos Explorer* (*EX*). We submitting a project specific review in accordance with NMFS' Programmatic Concurrence Letter for the Office of Ocean Exploration's Marine Operation Activities (OPR-2021-03453) for activities during EX2302 which falls outside the action area in OPR-2021-03453. We have determined that the expansion of the proposed action area may affect, but is not likely to adversely affect the ESA-listed species and critical habitat included in the **Table 1** and **Table 2** below.

The project-specific information presented herein is provided for review per the requirements described in Section 2.9 of OPR-2021-03453:

- A project description that details the operations
- Information on where and when operations will occur
- Any Project Design Criteria (PDCs) that may not be fully implemented from the original Letter of Concurrence (LOC) (or additional Best Management Practices (BMPs) that may be included during the action)
- Determination of effects to ESA-listed species and critical habitat that could result from the project.

Proposed Actions

The project covered in this action is planned during cruise EX2302. This is a 24/7 mapping cruise on NOAA Ship *Okeanos Explorer* with occasional CTD casts that has already been addressed under NOAA OER's Programmatic ESA Consultation (OPR-2021-03453). The actions covered by this project encompasses the marine environment of Tanaga Bay, and the small boat transit to and from NOAA Ship *Okeanos Explorer's* location in deep water. These areas are outside of the action area of NOAA OER's Programmatic ESA Consultation (OPR-2021-03453), because the Programmatic Consultation only addressed survey operations in marine environments 200 m and deeper. The planned survey area for this project is in water depths from ~20 to 150 m within Tanaga Bay.

Activities planned as part of this action are small boat operations to/from NOAA Ship *Okeanos Explorer* and Tanaga Bay where the survey area is located. In Tanaga Bay, a small, handheld AUV towing a magnetometer will be deployed in waters 200 meters and shallower for approximately 2 to 3 days in duration in May 2023. If the data from the AUV reveals the lost aircraft, a small, hand-held ROV may also be deployed from the small boat to ground-truth the sonar data or imagery acquired from the AUV. AUV and ROV operations using different systems are already addressed in OPR-2021-03453, however these vehicles will be outfitted with additional sensors and capabilities that have not been addressed in OER's Programmatic Consultation. In particular - the AUV will be towing a magnetometer array, and the ROV will use a side scan sonar. These vehicles will also be deployed and recovered via a small boat deployed from NOAA Ship *Okeanos Explorer*.

The data and information acquired by this survey can be used to meet multiple objectives:

- Locate and characterize underwater cultural heritage in Tanaga Bay
- Provide critical information to the Defense POW/MIA Accounting Agency to help determine whether these aircraft represent the final resting place for service persons lost during WWII, so they can provide relevant information to their families and the Nation.
- Acquire high resolution seafloor mapping data to understand the geology, ecology, biology, and types of habitats in the survey area.
- Acquire water quality data in the survey area to inform potential impacts on cultural, biological and ecological resources.
- Share information with ocean managers to ensure they understand the resources under their jurisdiction and are therefore able to make the most informed decisions.

IVER3 Autonomous Underwater Vehicle (AUV)

The NOAA Office of Ocean Exploration and Research (OER) is proposing in partnership with the Defense POW/MIA Accounting Agency (DPAA), to use a small, man-portable L3 OceanServer IVER Autonomous Underwater Vehicle (AUV) to conduct survey operations in the vicinity of Tanaga Island and Tanaga Bay to locate a submerged WWII-era aircraft during an upcoming expedition aboard the NOAA Ship *Okeanos Explorer* (*EX*). The purpose of conducting AUV operations during this project is to acquire higher resolution mapping data than can typically be acquired with the shipboard hull mounted sonars on NOAA Ship *Okeanos Explorer* in order to locate submerged aircraft lost during WWII. The AUV that will be used for this project is outfitted with a sensor payload customized for discovery of underwater cultural heritage.

AUVs on OER supported projects will be deployed and recovered from a small boat off of the NOAA Ship *Okeanos Explorer*. These operations would adhere to the same guidance identified for ROV and AUV operations deployed off of NOAA Ship *Okeanos Explorer* (or related vessels) whenever that guidance is also relevant for project activities.

The AUV that will be used for this project is the L3Harris OceanServer (IVER3). The IVER3 is similar to, but a smaller AUV than those described in OPR-2021-03453. IVER2 is a small, hand-portable, torpedo style AUV that is a highly mobile system configured to collect high resolution side scan sonar (SSS) swath bathymetry, magnetometer, and water quality data. This AUV is approximately 86 inches (218 cm) long with a diameter of 5.8 inches (15cm) with an in-air weight of 85lbs (39 kg). The IVER3 is equipped with an EdgeTech 2205 sonar that can collect side scan data at 600 kHz/1600kHz simultaneously. The dual frequency SSS is effective at ranges from 15 meters to 100 meters for bottom mapping coverage.

IVER3 is capable of operating at a maximum depth of 200 meters, the operations taken during the EX2302 will occur within waters 20 to 150 meters deep off the western side of Tanaga Island beyond 1 nm from shore. During operations, speed will range from 2 to 3 knots for a duration of up to 4.5 hours of operation, depending on the mode of operation, with sonar surveys having an average of 4 hours of endurance for each deployment. The endurance of the AUV when towing an additional system like a magnetometer, is significantly reduced to around 3 hours. During the mission, the IVER3 is monitored from a laptop control station from the *EX*. Like other AUV's described in OPR-2021-03453, the IVER3 has object avoidance systems to detect the presence of objects, including marine mammals in the area. IVER3 also maintains a continuous altitude off the bottom will be ~5 m (+/- 1-2 m) - 12 m during operations within the target area. Failures will automatically bring the vehicle to the surface where it will then transit to a designated point before being remotely driven to the pick up location.

Towed Magnetometer

A magnetometer is a scientific instrument used to passively measure the strength and direction of the magnetic field in the vicinity of an instrument. Due to the Earth's magnetic field magnetism varies from place to place which allows geophysical researchers to conduct surveys to measure variations in the magnetic field that is locally altered due to the presence of ferrous objects.

Magnetometers can be used to detect shipwrecks and other submerged objects that contain iron and other ferrous materials. A passive towed magnetometer like the Mini Marine Magnetics Explorer is light weight (3.8 kg in air / 1.2kg in water) 6 cm in diameter with low power consumption (2W), making it highly suitable for AUV towed operations. The length of the tow cable is expected to be about ~10 m in length. The

cable is copper, 1 cm (0.4 in) in diameter, and coated with a neutrally buoyant polyurethane (or similar) outer jacket. The cable weighs 122 g/m (8 lb/100 ft) in the air and 24 g/m (2 lb/100 ft) in the water, the cable is attached from either the tail or mast when being towed by an AUV. The cable itself is neutrally buoyant allowing the towed magnetometer to remain taut at the same altitude as the AUV during each dive operation to ensure that there is no entanglement. Sensors on the Marine Magnetics explorer total field magnetometer are omnidirectional allowing them to be unaffected by earth's magnetic field so that in the data collected there are no dead zones of data.

Deep Trekker ROV

If AUV/magnetometer operations detect underwater cultural heritage sites, the science team will deploy a ROV from the small boat to investigate and ground-truth these targets. This ROV is similar to the ROVs described in OPR-2021-03453, however are much smaller with less capability. This small, handheld ROV is a single body system and will be operated so as not to touch the seafloor. No samples will be collected. ROV operations will focus on acquiring video of the target being investigated. Image data will only be acquired of the targets. During operation, the ROV will be monitored by researchers on the small boat via the main camera on the vehicle (there are no task cameras due to the small vehicle size). The small boat used will be just off to the side of the dive target area to ensure that the systems used during operations follow standard procedures when diving.

Deep Trekker PIVOT NAV: is a versatile ROV that is equipped with 6 thrusters that provide stability, speed, and control for the researchers controlling the vehicle. Operating at a depth range of 305 meters (1000 feet) this small 14.2 by 12.2 by 22.7 inch ROV comes fully assembled and tested out of the box. The body material is made of an Anodized Machined Aluminum, Carbon Fiber, & Stainless Steel Buoyancy Foam that allows the vehicle to weigh approximately 37 lbs (16.8 kg) in air. Researchers will operate the ROV from one of NOAA Ship *Okeanos Explorer*'s small boats, and use a handheld controller to maneuver the ROV within the target area. The cable attached to the ROV will be between 4.5 mm (0.18 inches) to 6.5 mm (0.26 inches) and will range in length from 100 to 500 meters (328 - 1640 feet). The ROV is outfitted with a doppler velocity log (DVL) operated at 1 mHz to enable navigation. A USBL operated at a range of 24 - 32 kHz will also be used for positioning.

Oculus MD-Series: The Oculus MD series side scan sonar is a compact imaging sonar that offers operations to occur at a depth rating of 500 meters at frequencies from 375 kHz to 3.0 MHz. At 122 mm (4.8 inch) x 62 mm 92.4 inch) x 125 mm 94.9inch) this small sonar made of anodised aluminum will be attached to the small Deep Trekker PIVOT ROV. Weight in air is approximately 980 g (2.1 lbs) and in water the sonar will weigh 360 g (0.79 lbs) which would not impact the ROV capabilities. Oculus MD series side scan sonar low frequency is 750 kHz and 1.2 MHz at higher frequency. Resolution ranges for the MD series are 4mm/2.5mm and 2.5mm/2.5mm depending on the range parameters. The number of beams range from 256 in the lower models of the Oculus M series going up to 512 at maximum. As a part of the M series oculus system configuration is a wide 130 degree horizontal and 20 degree vertical aperture.

Source Vessel Specifications

The small boat for this survey will be deployed from the source vessel, NOAA (OMAO) Ship *Okeanos Explorer*. NOAA Ship *Okeanos Explorer* will loiter at the western entrance to Tanaga Bay during the activity (see map in the "Action Area" section). NOAA Ship *Okeanos Explorer* operations and all other project activities have already been covered under NOAA OER's Programmatic ESA Consultation (OPR-2021-03453).

Conservation Measures and BMPs

All of the Project Design Criteria that have been identified in NOAA OER's Programmatic ESA Consultation (OPR-2021-03453) that are relevant for this project will be adhered to. Where relevant, PDCs will be followed during small boat operations, not just from onboard NOAA Ship *Okeanos Explorer*. Additional PDCs that will be implemented that are specific to this project are below. PDCs that will not be followed (because they are not relevant to project activities) are in Appendix 1.

1. **Minimize Exposure to Elevated Noise**

OER's original PDC are focused on hull-mounted sonars which are irrelevant for this project-specific consultation. They will not be implemented (see Appendix 1). Relevant project specific BMPs being incorporated into this action are as follows:

- **a.** PSO's will continuously monitor the surrounding environment from the small boat (the USBL will be operated from the small boat).
- **b.** We will postpone or shut down USBL operations if Dall's porpoises are sighted within 900 m of the small boat. The USBL will only be turned back on once the animal has departed the 900 m safety zone for at least 15 minutes.
- **c.** We will postpone or shut down USBL operations if any other marine mammals are sighted within 50 m of the small boat. The USBL will only be turned back on once the animal has departed the 50 m safety zone for at least 15 minutes.

Steller Sea Lion Best Management Practices:

This project is in the vicinity of several Steller Sea Lion haul-out locations, but not rookeries. Therefore we will follow the relevant BMPs below provided by the NMFS Alaska Regional Office.

1. Do not conduct transit or operation within 3 nautical miles (nm) of buffer areas of Steller sea lion rookeries. If transit or operation is required within 3 nm and has been approved by NOAA permit, follow these best practices:
    - **a.** Ensure you have an updated map of all Steller sea lion haulout and rookery sites https://www.fisheries.noaa.gov/resource/document/spatial-delineation-western-distinct-population-segment-steller-sea-lion including buffer areas around each rookery; https://www.ecfr.gov/current/title-50/chapter-II/subchapter-C/part-224/section-224.103 .
    - **b.** Conduct all transit and operation at the furthest distance from each rookery that is technologically possible to complete the mission. Sea lions have a keen sense of hearing and smell, and can be startled by vessels a great distance from land.
    - **c.** Avoid conducting all vessel-based work within 3 nm of any rookery from May 15 to July 15. Disturbing endangered Steller sea lion rookeries during this critical pup rearing time can cause stampeding, disturbance, and mortality to pups.
    - **d.** From May 15 to July 15, minimize the amount of time spent within 3 nm of any rookery. Conduct the operation, then transit outside the 3 nm area immediately when finished.
    - **e.** If transit or operation is critical to the mission within 1 nm of rookeries, minimize disturbance by:
        - **i.** Approaching the rookery parallel to shore from > 1 nm away and SLOWLY (< 10 knots) getting closer each time the vessel parallels shore (this alerts the sea lions to your presence from a greater distance and gives them more time to acclimate);
        - **ii.** keep all noise to a minimum (no shouting or use of outdoor speakers, keep voices calm and low);
        - **iii.** do not approach the rookery straight on and do not change vessel speed or rev the engine;
        - **iv.** contact akr.prd.section7@noaa.gov for more information.
    - **f.** Do not approach any Steller sea lions in the water or hauled out on land
    - **g.** Do not feed Steller sea lions - https://www.fisheries.noaa.gov/resource/outreach-materials/take-lead-do-not-feed-steller-sea-lions-signage-and-brochure

Action Area Habitat

Alaska - Tanaga Bay

During EX2302 mapping operations, *EX*'s presence in the far western Aleutian Islands place NOAA Ocean Exploration in a unique position to work with DPAA in investigating the crash area of a WW-II era B-25 Mitchell Bomber with the remains of 9 crew members still on board. The operation would use a small, man-portable L3 OceanServer IVER AUV launched from one of the small boats to survey a 1.25 x 1.50

nautical mile box with side scan and magnetometer to locate the wreck for follow on DPAA recovery operations **(Figure 1**). The project will incorporate an interdisciplinary approach,with attention paid to the offshore bathymetry and ecology. Project objectives include identifying underwater cultural heritage associated with the WW-II era B-25 Mitchell Bomber, compliment side scan sonar and magnetometer coverage of the primary survey area, surveying nearby contingency area to better characterize Tanaga Bay as it relates to its WWII heritage, and creates outreach products in the region during WW-II. Throughout the project, the research team will work to ensure that the findings are properly disseminated amongst the public, while remaining committed to the inclusion of interests and collaborations with stakeholders during this project.

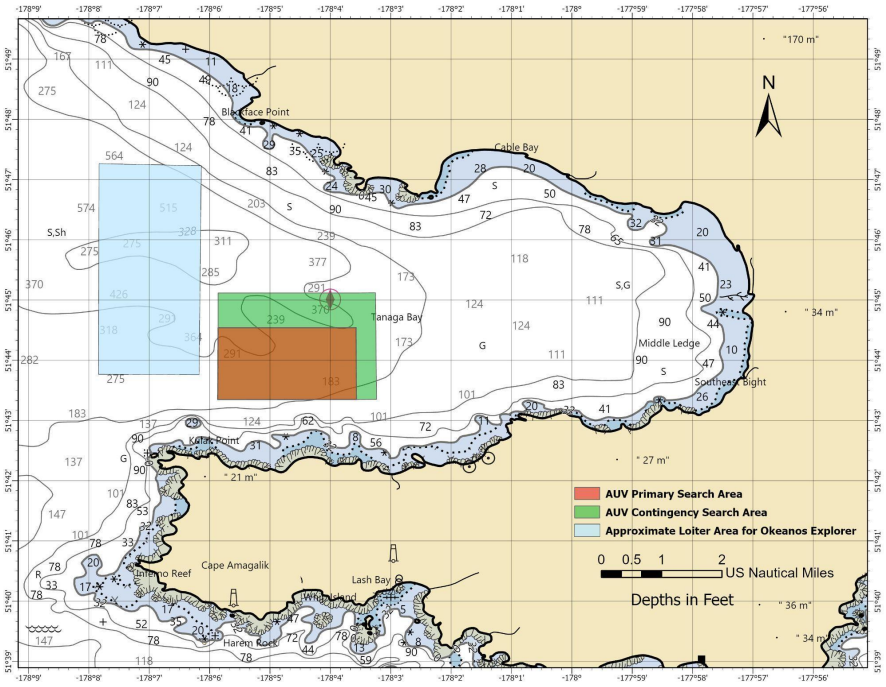

Figure 1. Areas of interest during EX2302 UCH operations by the NOAA Ship *Okeanos Explorer (EX)*

<u>Potentially Affected NMFS ESA-Listed Species and Critical Habitat</u>

We have assessed the listed species that may be present in the action area and our determination of the project's potential effects to them as shown in **Table 1** and **Table 2** below.

Please note abbreviations used in **Table 1 and Table 2**: E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect; N/A = not applicable; DPS = Distinct Population Segment

Table 1. ESA-listed Species in the Action Area and Effect Determination(s)

Species	ESA Status	Critical Habitat	Recovery Plan	Effect Determination (Species)
Steller Sea Lion (Eumetopias jubatus) – Western DPS	E – 55 FR 49204	58 FR 45269	73 FR 11872 2008	NLAA

Table 2. Designated and Proposed Critical Habitat in the Action Area and Effect Determination(s)

Critical Habitat	Federal Register Notice	Units/Areas	Effect Determination (Critical Habitat)
Steller Sea Lion (Eumetopias jubatus) – Western DPS Critical Habitat	58 FR 45269	Alaska rookeries, haulouts, and associated areas, California and Oregon rookeries and associated areas, Three special aquatic foraging areas in Alaska.	NLAA

Effects Determination

Our analysis of potential effects is in accordance with NMFS' Programmatic Letter of Concurrence for the Office of Ocean Exploration's Programmatic ESA Section 7 Consultation (OPR-2021-03453). The same stressors identified in OPR-2021-03453 (pollution, vessel surveys, gear entanglement, and active acoustics) apply to this action, and the same rationale for why these potential effects are either insignificant or discountable apply to these project activities.

Sidescan sonar and magnetometer technologies are not already addressed in OER's Programmatic ESA Consultation (OPR-2021-03453). The EdgeTech 2205 sonar is the only active acoustic on the AUV. It operates at 600 kHz/1600 kHz simultaneously. This is above the hearing range for marine mammals (7 Hz to 160 kHz), sea turtles (50 Hz to 1.6 kHz) and fish (0.5 to 1.5 kHz) and therefore has no impact on these types of ESA-listed species. The magnetometer has no active acoustics and therefore has no impact.

NOAA OER has reviewed the proposed project for its effects on ESA-listed species and their critical habitat. Based on the analysis covered under NMFS' Programmatic Concurrence Letter (OPR-2021-03453), and with adherence to relevant PDCs, we have determined that the proposed marine operation activities are not likely to adversely affect any listed species or critical habitat under NMFS's jurisdiction. We have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

David Turner

April 3, 2023

Sincerely,
David Turner
Acting Deputy Director
NOAA Ocean Exploration & Research

cc: Amanda Maxon
Environmental Compliance Contractor
NOAA Ocean Exploration & Research

Appendix 1: Best Management Practices that will not be implemented because they are irrelevant for this project.

1. Minimize Exposure to Elevated Noise Levels

a. Maintain watch for the presence of marine protected species. Immediately notify the survey department of the proximity of cetaceans and sea turtles. When marine mammals are able to be identified by Bridge Officers or Watch Standers, these observations are noted in the NOAA fleet marine mammal observation log as part of standard practice.

a. If a **sea turtle** is present within 400 m of the ship, the survey department will respond by stopping the pinging of the subbottom sonar. The subbottom shall remain off until the sea turtle has departed the 400 m safety zone.

b. If a **cetacean** is within 400 m (460 m/500 yards for **large Whales**) and is not in danger of collision, reduce speed and seek to avoid the animal as much as possible.

c. If cetaceans are present within 400 m of the ship (460 m/500 yards for large Whales), the vessel should stop (see section 4a below on vessel strike avoidance for clearer guidance on stopping vs. slowing down vs. avoiding the animal) if the animal is in danger of colliding with the ship but the mapping sonars would continue transmitting to avoid startle responses. If an observed animal is unable or unwilling to depart the immediate area, the Survey Department will respond by stopping the pinging of the sub-bottom sonar and switching the multibeam sonar into "mammal protection" mode (keeps it pinging but at a source level reduced by 20 decibels). No change will occur to the EK 60s. Note: the ADCPs are never run simultaneously with the multibeam and sub-bottom, so they would already be off. The ADCPs are mostly run when the ship is stationary at a dive site and risk to marine mammals is minimal.

b. Minimize turning all sonar sound sources on and off as a precautionary measure to avoid possible startling of animals.

c. When the systems have been shut down for any reason, the multibeam mammal protection mode would be used to turn the multibeam back on first. Only after the multibeam has been brought from mammal protection mode to full power would the sub-bottom profiler and EK 60 sonars then be turned back on.

d. If the multibeam sonar is not being used, but other sonar systems are being turned on, they will be started in lower power settings and will gradually (over a 15 minute time period) be adjusted to higher power settings as appropriate for the water depths to essentially mimic the approach of the "mammal protection" mode of the multibeam.

e. We will postpone start-up and operation of the USBL, if porpoises, dolphins or Koiga are sighted within 1000 meters of the ship *(this is based on a different USBL than this project)*.

6. Avoid or Minimize Impacts to Habitat and Species During In-Water Work

a. ROVs/AUVs/ASV in operation will use onboard cameras and detection devices to avoid possible interactions with animals. This includes when operating all sonar sound sources.

b. Sample collections would be limited (typically 4 - 11 total rocks and primary biological specimens per dive) that represent new species, new records, the dominant morphotype animal in a community, or species to support connectivity studies. These specimens would be collected using the ROV's manipulator arms or scoop. Whenever possible, sample collections will be made using the cutting implementation tool on the ROV, and only portions of organisms (<50 cm) will be collected to avoid mortality. Clonal biological specimens (corals, sponges) would be subsampled;

c. When possible, rock samples will be selected in a way to minimize disturbance to the surrounding environment and to minimize the take of attached organisms.;

d. Instruments deployed to collect water samples and current data (except for expendable instruments) would not be allowed to contact the seafloor;

8. Minimize Risk During Buoy Deployment, Operations, and Retrieval

a. Any mooring systems used during survey activities prevent any potential entanglement or entrainment of listed species, and in the unlikely event that entanglement does occur, ensure proper reporting of entanglement events according to the measures specified below.

a. Ensure that any buoys attached to the seafloor use the best available mooring systems. Buoys, lines (chains, cables, or coated rope systems), swivels, shackles, and anchor designs must prevent any potential entanglement of listed species while ensuring the safety and integrity of the structure or device.

b. All mooring lines and ancillary attachment lines must use one or more of the following measures to reduce entanglement risk: shortest practicable line length, rubber sleeves, weak-links, chains, cables or similar equipment types that prevent lines from looping, wrapping, or entrapping protected species.

c. Any equipment must be attached by a line within a rubber sleeve for rigidity. The length of the line must be as short as necessary to meet its intended purpose.

d. During all buoy deployment and retrieval operations, buoys should be lowered and raised slowly to minimize risk to listed species and benthic habitat. Additionally, PSOs or trained project personnel (if PSOs are not required) should monitor for listed species in the area prior to and during deployment and retrieval and work should be stopped if listed species are observed in the area to minimize entanglement risk.

e. If a live or dead marine protected species becomes entangled, you must immediately contact the applicable NMFS stranding coordinator using the reporting contact details (see Reporting Requirements section) and provide any on-water assistance requested.

All buoys must be properly labeled with owner and contact information.

10. Species' Specific PDCs

a. Vessels entering North Atlantic right whale critical habitat are required to report into the Mandatory Ship Reporting System;

b. While conducting marine operation activities in the Atlantic, mariners shall check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard (USCG) NAVTEX broadcasts, and Notices to

Mariners; Commercial mariners calling on U.S. ports should view the most recent version of the NOAA/USCG-produced training CD entitled “A Prudent Mariner’s Guide to Right Whale Protection” (contact the NMFS Southeast Region, Protected Resources Division for more information regarding the CD);

c. When in Washington inland waters, all vessels (including NOAA ships, R/Vs, ROVs, AUVs, and ASVs) approaching Southern Resident killer whales within 182.9 meters (200 yards) is prohibited (76 FR 20870);

d. Avoid transit through North Pacific right whale critical habitat **(Appendix 1: Figure 6**); If unavoidable, please follow the guidance in this section (11) as appropriate and modified for Right Whales and Right Whale habitats in the Pacific (Atlantic Right Whale BMPs are more advanced than in the Pacific).

e. Vessel transit and research activities (e.g., mapping) in the Rice’s [formerly Bryde’s] whale core habitat distribution area is restricted. If unavoidable, maintain a vessel speed of 10 knots or less during research activities and when transiting through the area. Vessel transit and non-stationary research activities must occur during daylight hours only (no nighttime transit or other non-stationary research activities to occur overnight in this area);

f. Vessel transit and research activities are also restricted within the boundaries of the currently known distribution of Rice’s whales in the western and central Gulf of Mexico, between the 100 to 400 meter (328 to 1,312 foot) isobaths. If unavoidable, maintain a vessel speed of 10 knots or less during research activities and when transiting through the distribution area. Vessel transit and non-stationary research activities must occur only during daylight hours (no nighttime transit or other research activities to occur overnight in this area);

g. Avoid the use of High-Resolution Geophysical (HRG) sound sources (e.g., echosounders and sub-bottom profilers) in all areas north of the Forelands in Cook Inlet, Alaska;

h. Avoid the use of HRG sound sources that are <24 kHz in humpback whale feeding areas for the months of March through June (**Appendix 2: Figure 1** and **Figure 2**). These include nearshore areas around Kodiak Island, Portlock Bank, Prince William Sound, Sitka Sound, Hoonah Sound, Tenakee Inlet, Craig, Ernest Sound, and Seymour Canal, Frederick Sound, Chatham Strait, Point Adolphus, Stephens Passage, and the Shumagin Islands;

i. To avoid disruption of bowhead whale foraging, while in the Beaufort and Chukchi Seas, avoid the use of HRG sound sources in areas where bowheads may be feeding (e.g., krill traps in Barrow Canyon)

Appendix 2: Best Management Practices Maps

Figure 1:

Humpback Whale Feeding Areas in Western Alaska

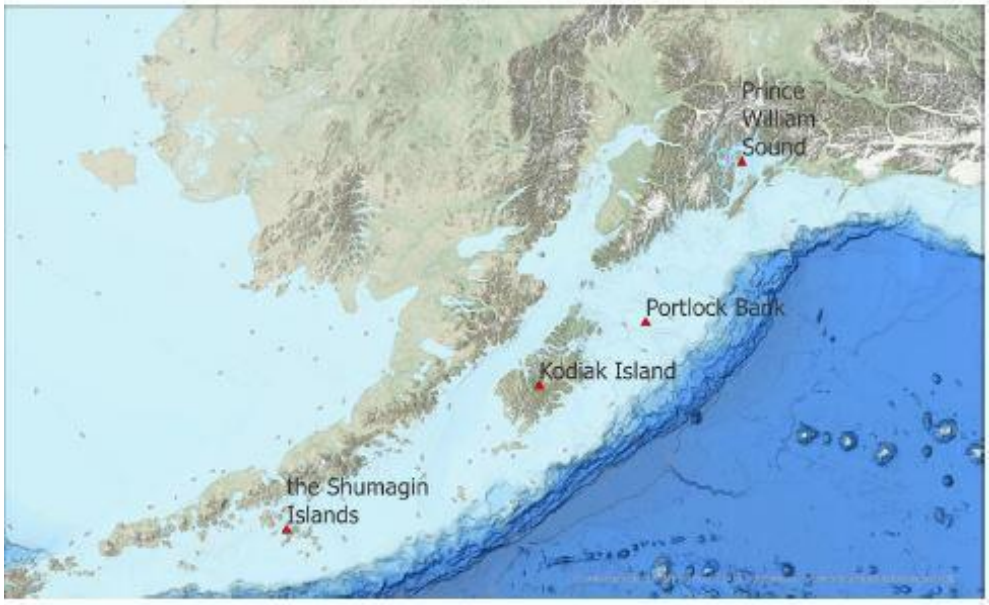

Figure 2:

Humpback Whale Feeding Areas in Southeast Alaska

Figure 3:

Map of Barrow Canyon (bowhead whale feeding area) in the Beaufort and Chukchi Seas in Alaska

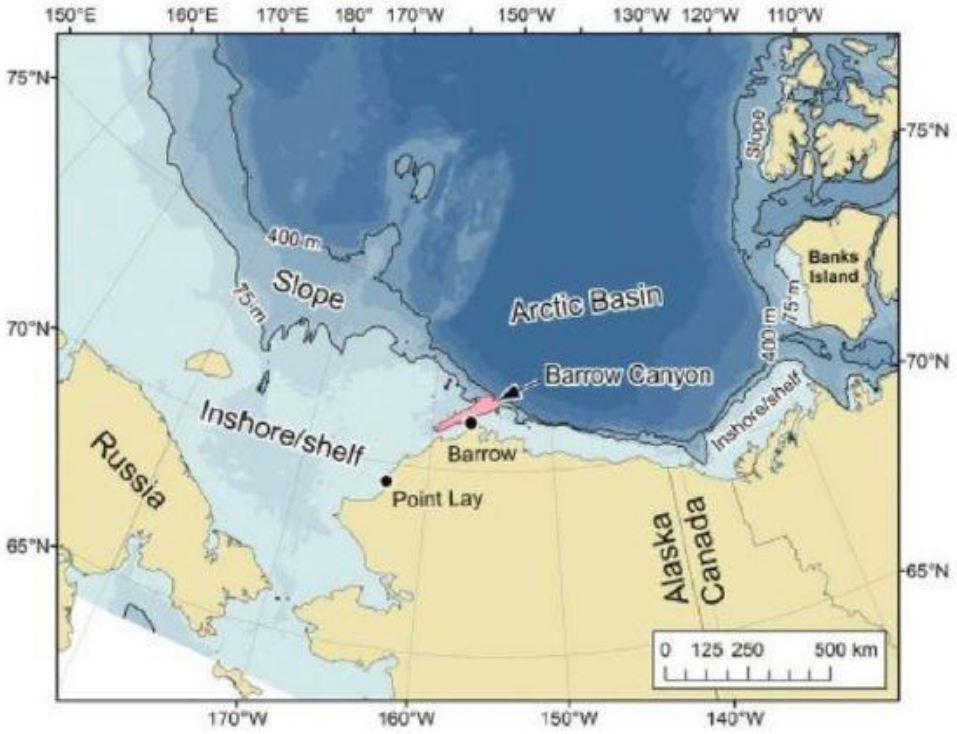

Figure 6:

North Pacific right whale critical habitat

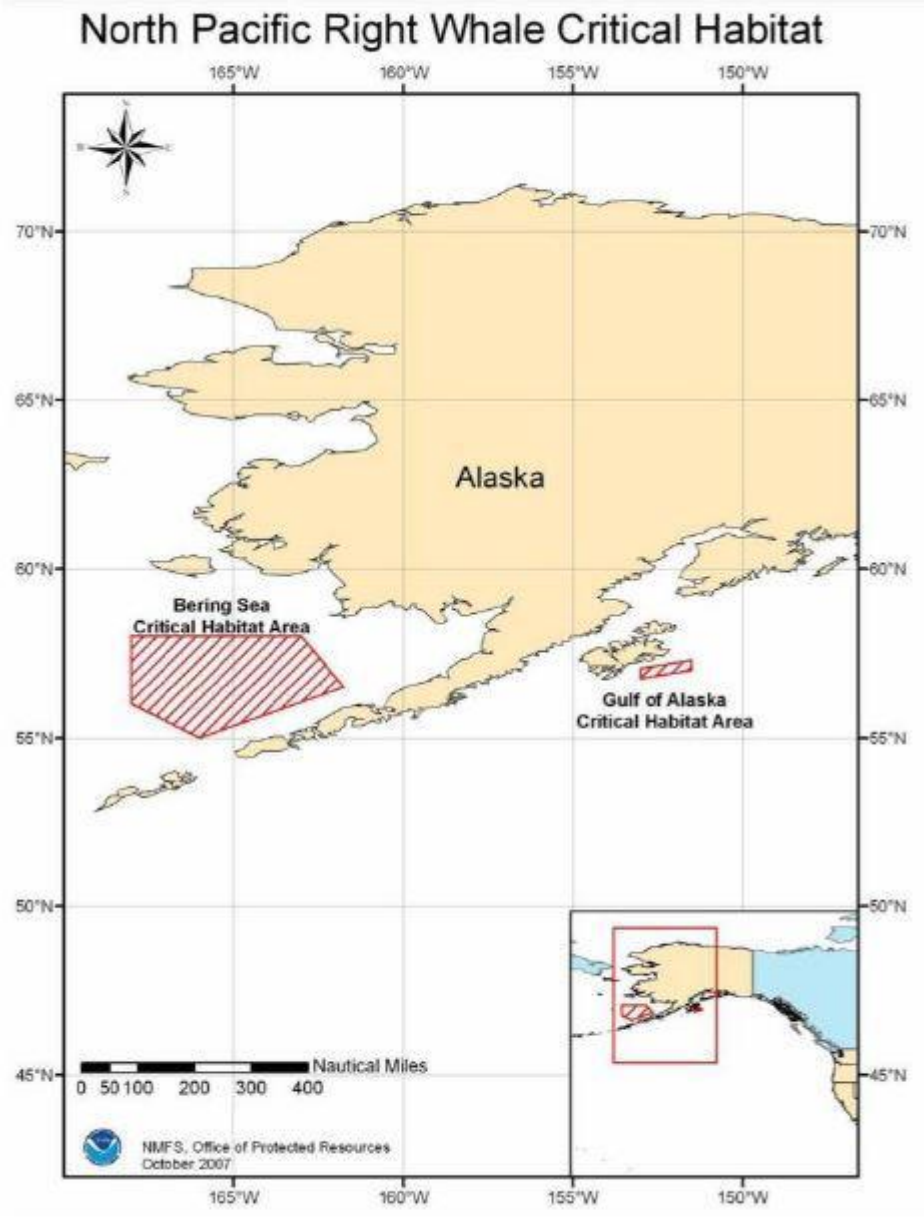

Figure 7:

Steller sea lion critical habitat in Western Alaska

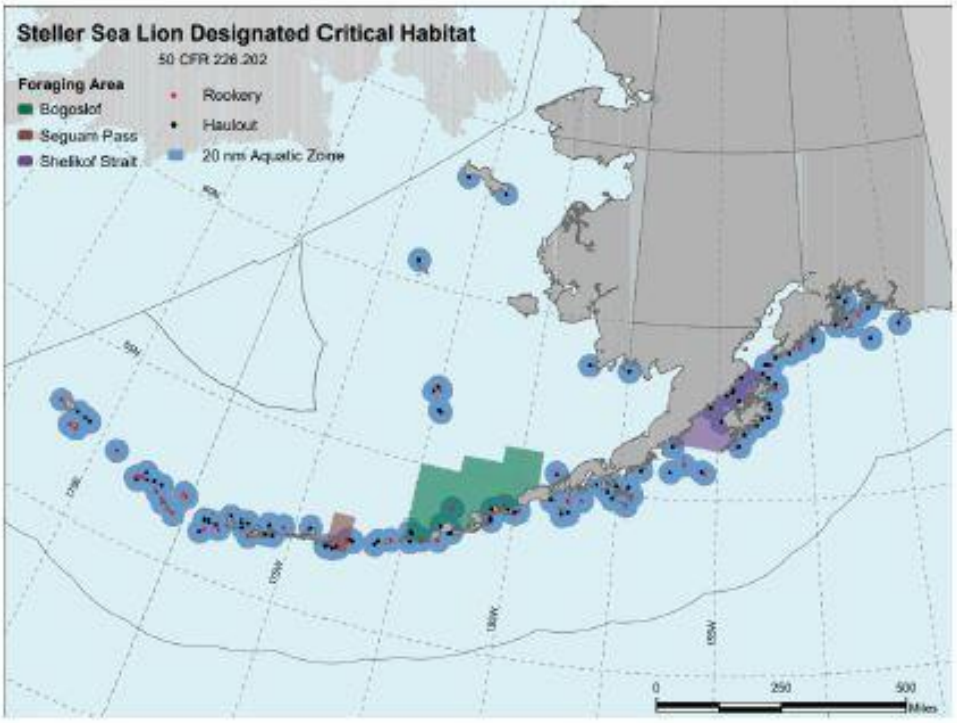

Figure 8:

Steller sea lion critical habitat in Southeast Alaska