Offshore Information for Area Contingency Planning

Arctic and Western Alaska

Species Profiles and Best Management Practices (BMPs)

Technical Document #5

March 2024

Record of Changes

Change Number	Change Description	Section Number	Change Date	Name
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

ALASKA PROTECTED SPECIES IN THE OFFSHORE ENVIRONMENT

ARCTIC (CHUKCHI AND BEAUFORT SEAS) AND COOK INLET/GULF OF ALASKA (COOK INLET AND KODIAK ISLAND)

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Bureau of Safety and Environmental Enforcement

15 December 2023

Cover Photo Credits

Top left to right

Fin Whale - NOAA Fisheries
(Source: https://www.fisheries.noaa.gov/species/fin-whale)

Polar Bear - photograph taken by Susanne Miller/USFWS
(Source: http://www.publicdomainfiles.com/show_file.php?id=13963579218679)

Middle left to right

Spectacled Eider - photograph taken by Laura L. Whitehouse/USFWS
(Source: https://commons.wikimedia.org/wiki/File:Threatened_spectacled_eider_male_(Somateria_fischeri),_Alaska_SeaLife_Center,_Seward,_Alaska_(6750347735).jpg)

Sea Otter - National Oceanic and Atmospheric Association (NOAA) website
(Source: http://www.publicdomainfiles.com/show_file.php?id=13968757226577)

Bottom left to right

Walrus Cows - photograph taken by Joel Garlich-Miller/USFWS
(Source: http://www.publicdomainfiles.com/show_file.php?id=13977539429026)

Horned Puffin - USFWS
(Source: http://www.publicdomainfiles.com/show_file.php?id=13961958616629)

All images are public domain images.

ALASKA PROTECTED SPECIES IN THE OFFSHORE ENVIRONMENT

ARCTIC (CHUKCHI AND BEAUFORT SEAS) AND COOK INLET/GULF OF ALASKA (COOK INLET AND KODIAK ISLAND)

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

TABLE OF CONTENTS

THIS PAGE INTENTIONALLY LEFT BLANK

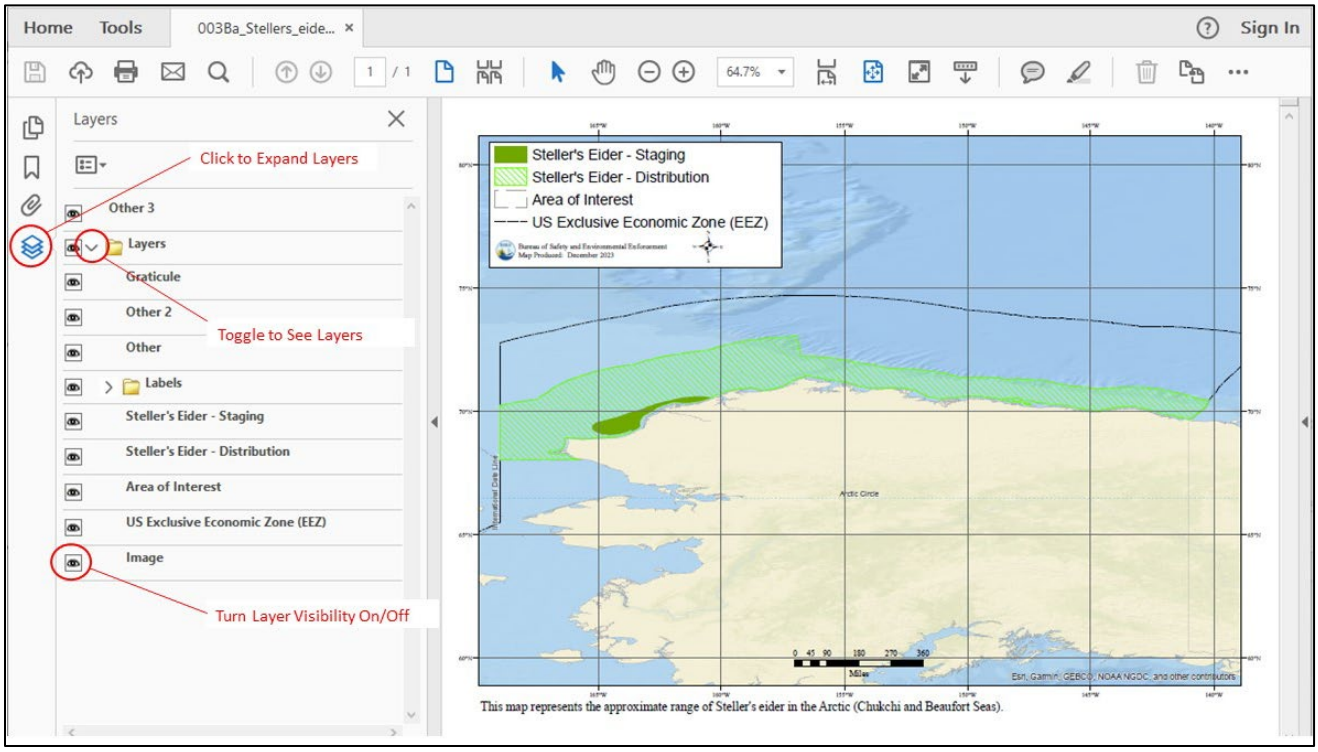
SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES USER GUIDE

Spatial and temporal profiles were developed to describe the abundance and distribution of sensitive protected species in the offshore environment of Arctic Alaska – Chukchi and Beaufort Seas and Cook Inlet/Gulf of Alaska – Cook Inlet and Kodiak Island. Each species profile includes a description of the species' vulnerabilities and sensitivities to oiling in the event of an oil spill.

Species profiles are outlined as follows. A single species profile was developed for each USFWS and NMFS federally listed threatened or endangered species. Each summary includes: 1) scientific and common names; 2) status, if federally threatened or endangered or proposed; 3) description of critical habitat, if designated; 4) descriptions of appearance, diet, population trends, and distribution/ habitat/migration; 5) vulnerabilities and sensitivities to oiling; 6) Best Management Practices (BMPs) for offshore operations; and 7) a table that provides a quick reference of potential presence within each Outer Continental Shelf (OCS) Area (Beaufort Sea, Chukchi Sea, and Cook Inlet and Kodiak Island).

Finally, maps are included at the end of each narrative species/taxa profile. Maps were generated from the Arctic Alaska and/or Cook Inlet/Gulf of Alaska Offshore Environmental Sensitivity Index Atlas geospatial data, a separate deliverable for this effort. The maps are not meant to depict the entire range or distribution of each protected species in Alaska; rather they depict the Offshore ESI data that were compiled for each mapped species in each of the two Offshore ESI Areas of Interest (AOIs). The maps in the species profiles are layered PDF files, which allow the user to turn on or off selected data layers. For example, the map for Steller's eider has polygons showing a staging area and species distribution. The user can turn on/off each layer to get a better visualization of specific life history stages and concentration areas.

Example Species Profile Map – Layered PDFs



THIS PAGE INTENTIONALLY LEFT BLANK

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Birds

- Short-tailed Albatross
- Spectacled Eider
- Steller's Eider

THIS PAGE INTENTIONALLY LEFT BLANK

Short-tailed Albatross		ESA Status*	Endangered (2000)	65 FR 147
Scientific Name	*Phoebastria albatrus*	**Critical Habitat**		None

Appearance: The short-tailed albatross is a large pelagic bird, with a body averaging 36 inches (100 cm) in length (ADF&G 2023). They have long, narrow wings with an average wingspan of 7.5 feet (2 m). It has pale blue feet, and a large pink bill with a blue tip. In adult plumage it has a white back with a golden head and black and white wings. In juvenile plumage its feathers are uniformly chocolate brown. In between juvenile and adult plumages, the short-tailed albatross has several sub-adult plumages with a white face and neck and brown body.

Diet: Short-tailed albatross feed at the water surface during the day or night. Target prey includes squid, crustaceans, and various fishes. Chicks are fed a mixture of stomach oil and partially digested, regurgitated food by adults. The short-tailed albatross visits and follows commercial fishing vessels in Alaska; commercial, longline bait is now a notable source of food (ADF&G 2023).

Population: Historically the short-tailed albatross was abundant in the North Pacific; however, by 1949 the species was thought to be extinct due to hunting. According to the 2020 5-year Review, the population of short- tailed albatross population is growing, with a current estimate of 7,365 individuals and a population growth rate of 8.9% (USFWS 2020).

Distribution/Habitat/Migration (see map for distribution in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOI): Short-tailed albatrosses can be found along the Pacific Rim from southern Japan to the west coast of Canada and the United States, primarily along continental shelf margin. Short-tailed albatrosses are highly mobile and can move 80-100 miles (130-160 km) per day. Although the highest concentrations of short-tailed albatross in the U.S. are found in the Aleutian Islands and Bering Sea regions, primarily along the outer shelf, sub-adults travel further than adults, and are distributed along the west coast of the United States. Subadults were recorded in at-sea observations in the Gulf of Alaska in spring and summer months, and the waters south/southwest of Kodiak Island were considered an autumn core area (Orben at al. 2018; Piatt et al. 2006). They are colonial breeders, with only a few colonies existing on remote islands in the Pacific. The short-tailed albatross breeds annually; each breeding cycle lasts about eight months (October-June). Post-fledging juvenile birds range widely throughout the North Pacific Rim, with some individuals spending time in the oceanic waters between Hawaii and Alaska (USFWS 2020).

Vulnerabilities and Sensitivities to Oiling: Birds are exposed to oil through several routes, including adsorption, ingestion, inhalation, fouling, and aspiration (Michel 2021). Pelagic seabirds are especially vulnerable because they spend most of their life at sea, only returning to land to breed (O'Hara and Morandin 2010). Diving birds are at risk of oil spill impacts while feeding at the surface of the water.

External contamination/fouling of feathers is the most common, and typically most damaging, form of exposure to birds and is the main cause of immediate mortalities of marine birds following oil spills (Leighton 1993). When feathers absorb oil, the plumage becomes matted and compressed, which results in the loss of the feathers' capacity to repel water and insulate the birds (Paruk et al. 2020). Birds in cold water environments are highly susceptible to hypothermia when their insulation is compromised due to feather oiling (Jenssen and Ekker 1991; O'Hara and Morandin 2010).

Oiled feathers also result in losses to buoyancy and flight capability (Leighton 1993). Once exposed to oil by fouling, birds often rapidly die from hypothermia (regardless of water and/or air temperatures), starvation, and/or drowning (Paruk et al. 2020).

In addition to direct fouling, birds also may ingest oil when preening, consuming oil-contaminated food, water, or sediments, and potentially inhaling volatile compounds (Leighton 1993; NRC 2003). Consumption of contaminated prey can lead to accumulation of oil in birds, and effects of ingested oil are wide ranging. Though less is known about oil inhalation as an exposure pathway, Hughes et al. (1996) found pulmonary congestion and pneumonia, resulting in severe inflammation of the respiratory tract, in 43% of sampled birds during the *Sea Empress* spill. Oil brought back to nests can reduce hatching and fledging success. Avian embryos, especially very young ones, are highly sensitive to oil that contaminates the eggshell; amounts as little as 1–10 microliters may result in eggs failing to develop (Leighton 1993; NRC 2003).

Direct exposure to dispersants and dispersed oil can cause effects similar to oil on the plumage of marine birds (Osborne et al. 2022).

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed or dead birds. Avoid hovering or landing of aircraft near bird concentration areas. Observers expected to notify vessel captains/pilots about minimizing impacts and to record sightings. All responders and wildlife observers shall report all sightings of healthy, oiled, or injured wildlife in or near the response area in real time to Wildlife Branch or Environmental Unit. Adhere to incident-specific flight restrictions over sensitive habitats and avoid hovering or landing aircraft in these areas. Adhere to flight altitude restrictions over wildlife management areas and other managed lands.

Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for walruses, sea otters, polar bears, or birds: USFWS Alaska Region Spill Response Team (907) 242-6893 or fwsakspillresponse@fws.gov.

Booming and Skimming: If birds become trapped or entangled in boom, anchor lines, or other response equipment, notify wildlife agency representatives for instructions. Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife.

Burning: Avoid burning near bird concentration areas and minimize bird exposure from wind drift of smoke.

Surface Dispersant: Comply with the short-tailed albatross Avoidance Areas in the Dispersant Use Plan and the short-tailed albatross Concentration Areas in the Arctic Western Alaska - Area Contingency Plan.

Dispersant applications will maintain a minimum of 500 meters (1,640 feet) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by FWS and/or National Marine Fisheries Service for Endangered Species Act Section 7 compliance will be conducted.

Atypical Dispersant[1]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with USFWS to understand incident-specific protection measures regarding UAS use. Do not conduct flights at an altitude less than 150 feet (50 m) over birds; do not use predator (raptor)-shaped UASs when flying near birds; do not fly within 300 feet (100 m) of bald eagle nests; ground or move aircraft away if perched or flying eagles are encountered.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Fixed

[1] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

wing aircrafts and helicopters should maintain aircraft flying altitudes of 457 m (1,500 ft) or more above ground level (except during takeoff and landing or for safety considerations), or as specified by the USFWS and/or NMFS and enacted by the Unified Command and stay inland of the coasts as much as possible to minimize disturbance of birds and potential collisions with birds.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
		X

References:

Alaska Department of Fish and Game. 2023. "Short-tailed albatross (*Phoebastria albatrus*) species profile." Available at https://www.adfg.alaska.gov/index.cfm?adfg=shorttailedalbatross.main.

Hughes B, Stewart B, Brown, MJ, Hearn, RD. 1997. Studies of Common Scoter *Melanitta nigra nigra* killed during the *Sea Empress* oil spill. WWT Wetlands Advisory Service Report to Sea Empress Environmental Evaluation Committee, pp. 1-65.

Jenssen, BM, Ekker M. 1991. Dose dependent effects of plumage-oiling on thermoregulation of common eiders *Somateria mollissima* residing in water. Polar Research, 10(2):579-584.

Leighton FA, Peakall DB, Butler RG. 1983. Heinz-Body hemolytic anemia from the ingestion of crude oil: A primary toxic effect in marine birds. Science, 220:871-873.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 020-058. 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press, doi: https://doi.org/10.17226/25161.

O'Hara PD, Morandin LA. 2010. Effects of sheens associated with offshore oil and gas development on the feather microstructure of pelagic seabirds. Marine Pollution Bulletin, 60(5):672-678.

Orben RA, O'Connor AJ, Suryan RM, Ozaki K, Sato F, Deguchi T. 2018. Ontogenetic changes in at-sea distributions of immature short-tailed albatrosses *Phoebastria albatrus*. Endangered Species Research, 35:23-37.

Osborne OE, Willie MMC, O'Hara PD. 2023. The effects of oil spill dispersant use on marine birds: a review of scientific literature and identification of information gaps. Environ Rev, Jun 31(2):243-55.

Paruk JD, Long D, Perkins C, East A, Sigel BJ, Evers DC. 2020. Polycyclic aromatic hydrocarbons detected in common loons (*Gavia immer*) wintering off coastal Louisiana. Waterbirds 37 (Special Publication 1):85-93.

Piatt JF, Wetzel J, Bell K, DeGange AR, Balogh GR, Drew GS, Geernaert T, Ladd C, Byrd V. 2006. Predictable hotspots and foraging habitat of the endangered short-tailed albatross (*Phoebastria albatrus*) in the North Pacific: implications for conservation. Deep-Sea Research II, 53:387-398

USFWS (U.S. Fish and Wildlife Service). 2015. Biological Opinion for the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases: Consultation with the U.S. Coast Guard and Environmental Protection Agency, 148 pp + appendices. Available at: https://alaskarrt.org/PublicFiles/USFWS%20BiOp%2027Feb2014.FINAL.pdf

USFWS (U.S. Fish and Wildlife Service). 2020. Short-tailed albatross (*Phoebastria albatrus*) 5-Year review: summary and evaluation. USFWS Anchorage Fish and Wildlife Field Office, Anchorage, AK, 47 p.

O'Hara PD, Morandin LA. 2010. Effects of sheens associated with offshore oil and gas development on the feather microstructure of pelagic seabirds. Marine Pollution Bulletin, 60(5):672-678.

Orben RA, O'Connor AJ, Suryan RM, Ozaki K, Sato F, Deguchi T. 2018. Ontogenetic changes in at-sea distributions of immature short-tailed albatrosses *Phoebastria albatrus*. Endangered Species Research, 35:23-37.

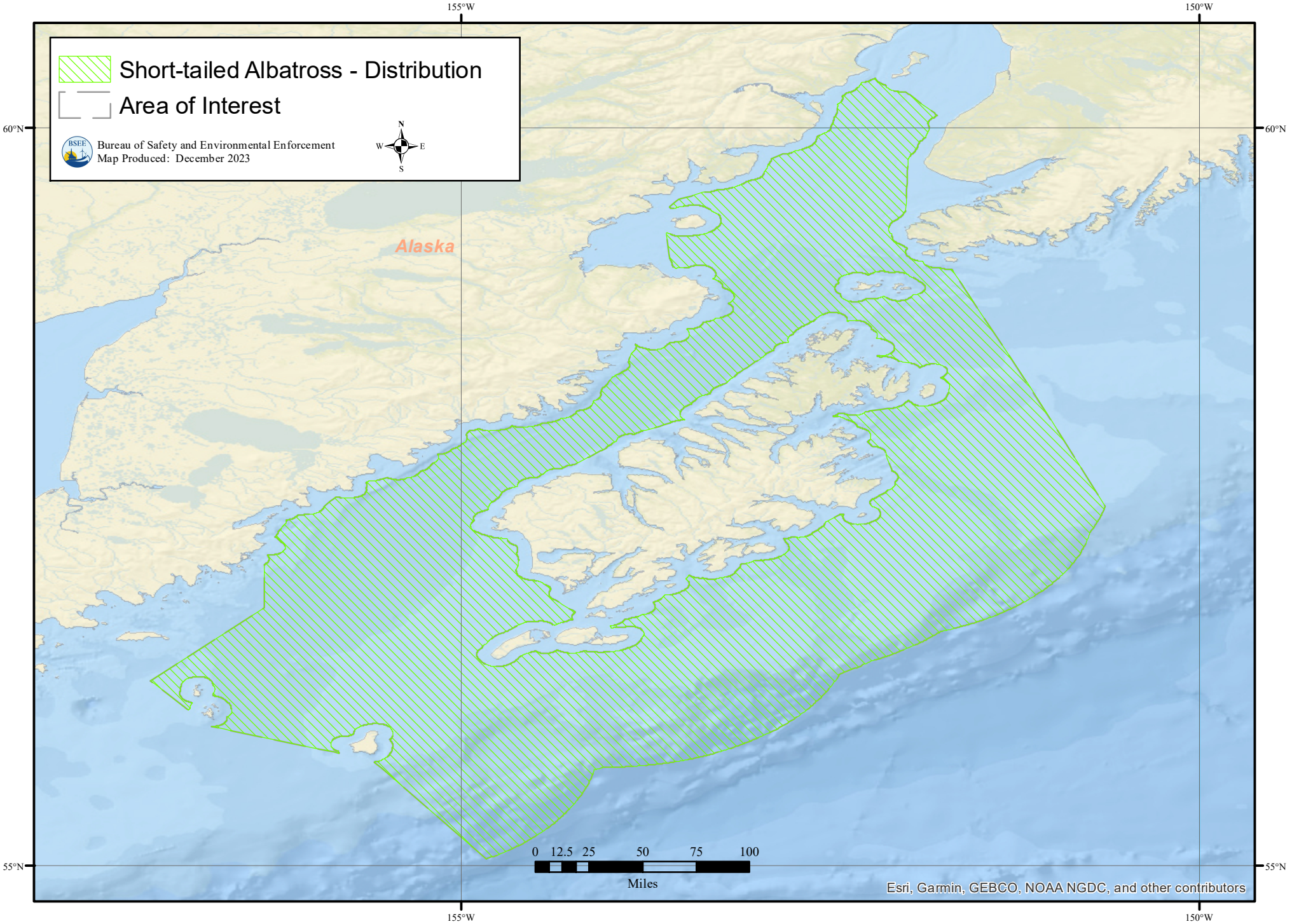
Osborne OE, Willie MMC, O'Hara PD. 2023. The effects of oil spill dispersant use on marine birds: a review of scientific literature and identification of information gaps. Environ Rev, Jun 31(2):243-55.

Paruk JD, Long D, Perkins C, East A, Sigel BJ, Evers DC. 2020. Polycyclic aromatic hydrocarbons detected in common loons (*Gavia immer*) wintering off coastal Louisiana. Waterbirds 37 (Special Publication 1):85-93.

Piatt JF, Wetzel J, Bell K, DeGange AR, Balogh GR, Drew GS, Geernaert T, Ladd C, Byrd V. 2006. Predictable hotspots and foraging habitat of the endangered short-tailed albatross (*Phoebastria albatrus*) in the North Pacific: implications for conservation. Deep-Sea Research II, 53:387-398

USFWS (U.S. Fish and Wildlife Service). 2015. Biological Opinion for the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases: Consultation with the U.S. Coast Guard and Environmental Protection Agency, 148 pp + appendices. Available at: https://alaskarrt.org/PublicFiles/USFWS%20BiOp%2027Feb2014.FINAL.pdf

USFWS (U.S. Fish and Wildlife Service). 2020. Short-tailed albatross (*Phoebastria albatrus*) 5-Year review: summary and evaluation. USFWS Anchorage Fish and Wildlife Field Office, Anchorage, AK, 47 p.



This map represents the approximate range of short-tailed albatross in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

THIS PAGE INTENTIONALLY LEFT BLANK

Spectacled Eider		ESA Status*	Threatened (1993)	58 FR 27474
Scientific Name	*Somateria fischeri*	**Critical Habitat**		66 FR 9146 (2001)

Appearance: Medium-sized sea duck—average total length 52.8 cm for males, 49.8 cm for females; characterized in downy and all subsequent plumages by a distinctive, large, round patch of feathers around eye, which differ in color and/or texture from surrounding areas (hence the name "spectacled"). Presence of "spectacle" easily distinguishes this species from all other ducks. In Spectacled eider, frontal process is absent and feathering of forehead and lores extends evenly, far forward onto culmen of bill, terminating just behind nostril. Eclipse (definitive basic) male resembles alternate male in plumage pattern and color, but white and green areas of body (not wing coverts) are replaced by dark gray to gray-brown, with some white feather-bases showing on some feathers. Subadult alternate males are like adults, but with alternate plumage pattern less fully developed. Female plumages do not vary significantly throughout year. No geographic variation in plumage or size. https://birdsoftheworld.org/bow/species/speeid/cur/introduction.

Diet: Spectacled eiders feed by diving and dabbling. In the nonbreeding season, they are found in marine waters diving to feed on benthic mollusks and crustaceans in shallow waters (less than 80 m) or free-floating amphipods in deeper waters (ADF&G 2023). During the nesting season, they forage in ponds by diving and dabbling, feeding on aquatic insects, crustaceans, mollusks, and vegetation.

Population: Two of three breeding populations occur in Alaska. The Yukon-Kuskokwim Delta (Y-K Delta) breeding population likely has more than 12,000 eiders. The estimated mean population growth rate from 2007 – 2019 is positive, but the lower 95 percent confidence interval bound is not greater than one percent per year, suggesting that the population is stable. The Arctic Coastal Plain (ACP) breeding population is likely greater than 3,500 individuals. USFWS has limited information on the historical abundance of spectacled eiders in the ACP breeding population; however, the available information suggests that the breeding population has been stable since listing in 1993 (USFWS 2021).

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) ESI AOI): Spectacled eiders inhabit marine waters for most of their annual cycle. In the winter, spectacled eiders use areas in the open ocean, polynyas, or open leads in the sea ice at water depths of less than 80 m. In the winter, the entire global population of spectacled eiders congregates in polynyas in the Bering Sea between St. Lawrence and St. Matthew Islands (Audubon 2007). They use the sea ice as a roosting platform when resting and can be found in large flocks. During their nesting period (mid-May to early September), breeding pairs are found in coastal tundra, near fresh or brackish water lakes or ponds. After nesting, spectacled eiders migrate and molt in shallow coastal water with sand or gravel substrates, typically less than 18 m deep. Spectacled eiders use molting areas from July to late October/early November. Migration corridors between nesting, molting, and wintering areas occur over marine waters up to 64 km offshore of Alaska and northeastern Russia. The coastal waters of Ledyard Bay provide critical staging habitat for all four eider species, including important staging and molting habitat for spectacled eiders (FT) breeding on the Arctic coastal plain of Alaska (Bowman et al. 2022). Critical habitat was designated in 2001 to protect molting areas in Norton Sound and Ledyard Bay, nesting areas on the Yukon-Kuskokwim Delta (Y-K Delta), and the wintering area south of St. Lawrence Island (USFWS 2021).

Vulnerabilities and Sensitivities to Oiling: Birds are exposed to oil through several routes, including adsorption, ingestion, inhalation, fouling, and aspiration (Michel et al. 2021). Diving birds are at high risk of oil spill impacts because they are often at the surface of the water. External contamination/fouling of feathers is the most common, and typically most damaging, form of exposure to birds and is the main cause of immediate mortalities of marine birds following oil spills (Leighton 1993). When feathers absorb oil, the plumage becomes matted and compressed, which results in the loss of the feathers' capacity to repel water and insulate the birds

(Paruk et al. 2020). Birds in cold water environments are highly susceptible to hypothermia when their insulation is compromised due to feather oiling (Jenssen and Ekker 1991; O'Hara and Morandin 2010). Oiled feathers also result in losses to buoyancy and flight capability (Leighton 1993). Once exposed to oil by fouling, birds often rapidly die from hypothermia (regardless of water and/or air temperatures), starvation, and/or drowning (Paruk et al. 2020).

In addition to direct fouling, birds also may ingest oil when preening, consuming oil-contaminated food, water, or sediments, and potentially inhaling volatile compounds (Leighton 1993; NRC 2003). Effects of ingested oil from consumption of contaminated prey are wide ranging. There was substantial acute mortality of shorebirds and sea ducks that foraged on shoreline invertebrates and seabirds that fed on coastal forage fish during the *Exxon Valdez* spill (Peterson 2001). Following the *Exxon Valdez* spill, numbers of species in each of three guilds of birds that fed near shore in oiled areas exhibited immediate reductions. If not cleaned up, oil persisting in shoreline environments can continue to affect nearshore bird populations long after a spill, as was the case for harlequin ducks following *Exxon Valdez*, which showed indicators of exposure for over two decades following the spill (Esler et al. 2015). Though less is known about oil inhalation as an exposure pathway, Hughes et al. (1996) found pulmonary congestion and pneumonia, resulting in severe inflammation of the respiratory tract, in 43% of sampled birds during the *Sea Empress* spill.

Oil brought back to nests can reduce hatching and fledging success. Avian embryos, especially very young ones, are highly sensitive to oil that contaminates the eggshell; amounts as little as 1–10 microliters may result in eggs failing to develop (Leighton 1993; NRC 2003).

Direct exposure to dispersants and dispersed oil can cause effects similar to oil on the plumage of marine birds (Osborne et al. 2022).

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed or dead birds. Avoid hovering or landing of aircraft near bird concentration areas. Observers expected to notify vessel captains/pilots about minimizing impacts and to record sightings. All responders and wildlife observers shall report all sightings of healthy, oiled, or injured wildlife in or near the response area in real time to Wildlife Branch or Environmental Unit. Adhere to incident-specific flight restrictions over sensitive habitats and avoid hovering or landing aircraft in these areas. Adhere to flight altitude restrictions over wildlife management areas and other managed lands.

Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for walruses, sea otters, polar bears, or birds: USFWS Alaska Region Spill Response Team (907) 242-6893 or fwsakspillresponse@fws.gov.

Booming and Skimming: If birds become trapped or entangled in boom, anchor lines, or other response equipment, notify wildlife agency representatives for instructions. Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife.

Burning: Avoid burning near bird concentration areas and minimize bird exposure from wind drift of smoke.

Surface Dispersant: Dispersant applications will maintain a minimum of 500 meters (1,640 feet) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by FWS and/or National Marine Fisheries Service for Endangered Species Act Section 7 compliance will be conducted.

Atypical Dispersant[2]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with USFWS to understand incident-specific protection measures regarding UAS use. Do not conduct flights at an altitude less than 150 feet (50 m) over birds; do not use predator (raptor)-shaped UASs when flying near birds; do not fly within 300 feet (100 m) of bald eagle nests; ground or move aircraft away if perched or flying eagles are encountered.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Fixed wing aircrafts and helicopters should maintain aircraft flying altitudes of 457 m (1,500 ft) or more above ground level (except during takeoff and landing or for safety considerations), or as specified by the USFWS and/or NMFS and enacted by the Unified Command and stay inland of the coasts as much as possible to minimize disturbance of birds and potential collisions with birds.

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	

References:

Alaska Department of Fish and Game. 2023. Spectacled eider (*Somateria fischeri*) species profile. Available at https://www.adfg.alaska.gov/index.cfm?adfg=spectacledeider.main.

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Audubon Alaska. 2007. Alaska Important Bird Areas, vector digital data.

Bowman, TD, Churchill JL, Lepage C, Badzinski SS, Gilliland SG, McLellan N, Silverman E. 2022. Atlas of sea duck key habitat sites in North America. Sea Duck Joint Venture March 2022. https://seaduckjv.org/science-resources/sea-duck-key-habitat-sites-atlas/.

Esler D, Bowen L, Miles AK, Ballachey BE, Bodkin J. 2015. Long-term monitoring: lingering oil, evaluating chronic exposure of harlequin ducks and sea otters to lingering *Exxon Valdez* oil in Western Prince William Sound. Restoration Project 12120114-Q Final Report. Anchorage (AK): Exxon Valdez Oil Spill Trustee Council. 50 p.

Hughes B, Stewart B, Brown MJ, Hearn RD. 1997. Studies of Common Scoter *Melanitta nigra nigra* killed during the Sea Empress oil spill. WWT Wetlands Advisory Service Report to *Sea Empress* Environmental Evaluation Committee, 65 p.

Jenssen BM, Ekker M. 1991. Dose dependent effects of plumage-oiling on thermoregulation of common eiders *Somateria mollissima* residing in water. Polar Research 10(2):579-584.

Leighton FA, Peakall DB, Butler RG. 1983. Heinz-Body hemolytic anemia from the ingestion of crude oil: A primary toxic effect in marine birds. Science 220:871-873.

[2] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25161.

National Research Council (NRC). 2003. Oil in the sea III: inputs, fates, and effects. Washington (DC): The National Academies Press. 265 p.

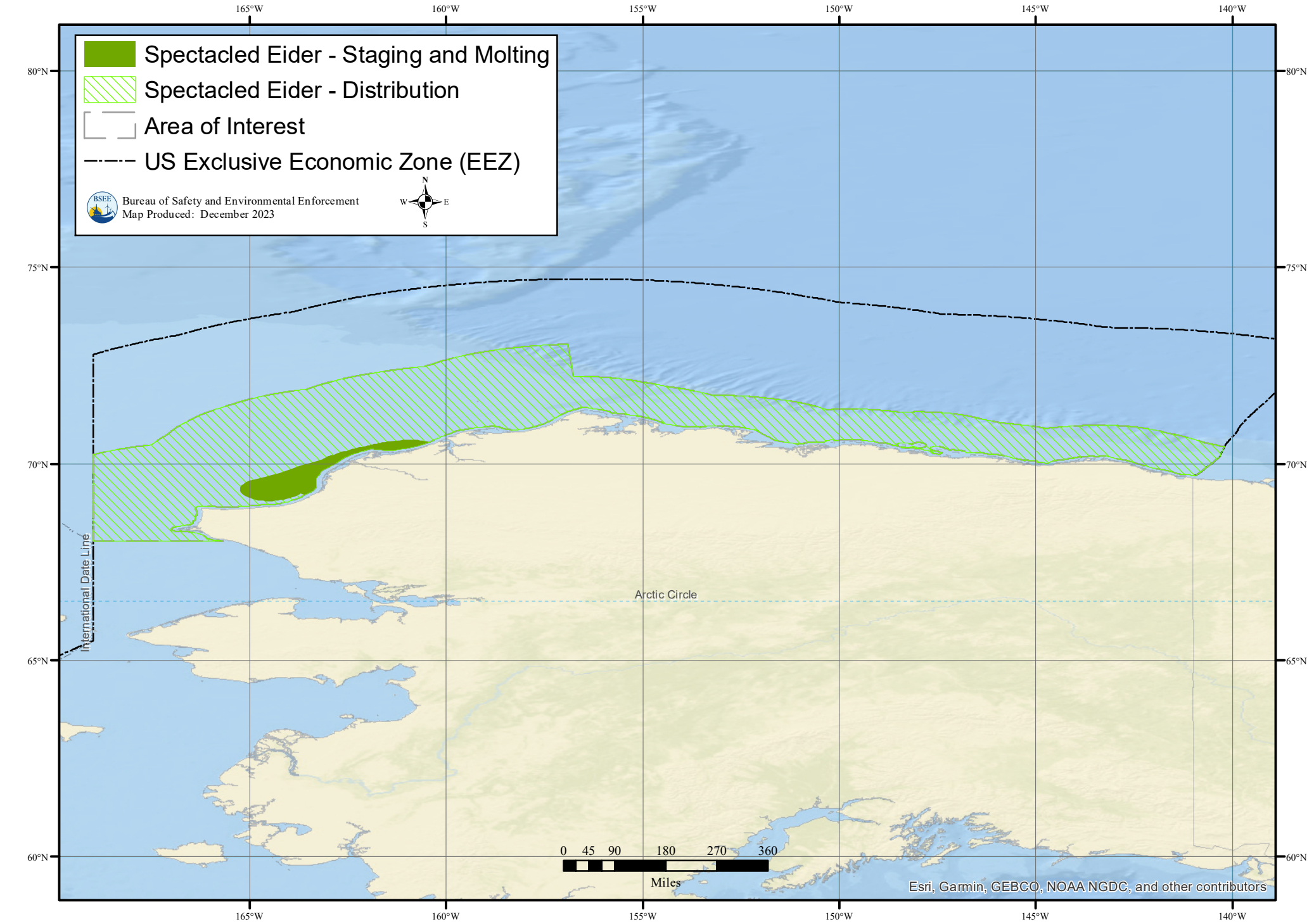
O'Hara PD, Morandin LA. 2010. Effects of sheens associated with offshore oil and gas development on the feather microstructure of pelagic seabirds. Marine Pollution Bulletin 60(5):672-678.

Osborne OE, Willie MMC, O'Hara PD. 2023. The effects of oil spill dispersant use on marine birds: a review of scientific literature and identification of information gaps. Environ Rev. 31(2):243-255.

Paruk JD, Long D, Perkins C, East A, Sigel BJ, Evers DC. 2020. Polycyclic aromatic hydrocarbons detected in common loons (*Gavia immer*) wintering off coastal Louisiana. Waterbirds 37 (Special Publication 1):85-93.

USFWS (U.S. Fish and Wildlife Service). 2021. Species status assessment for the spectacled eider. USFWS Fairbanks Fish and Wildlife Field office, Fairbanks, AK. 150 pp.

USFWS (U.S. Fish and Wildlife Service). 2015. Biological Opinion for the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases: Consultation with the U.S. Coast Guard and Environmental Protection Agency. 148 pp + appendices. Available at: https://alaskarrt.org/PublicFiles/USFWS%20BiOp%2027Feb2014.FINAL.pdf.



This map represents the approximate range of spectacled eider in the Arctic (Chukchi and Beaufort Seas).

THIS PAGE INTENTIONALLY LEFT BLANK

Steller's Eider		ESA Status*	Threatened (1997)	62 FR 31748
Scientific Name	*Polysticta stelleri*	**Critical Habitat**		66 FR 8850 (2001)

Appearance: Smallest, and most Anas-like of the eiders due to its comparatively small size (43-48 cm; male 690-1010 g, female 625-970 g), lesser bulk, relatively flat crown and small head. In flight, appears heavy at rear; rather long, pointed tail usually carried clear of water and noticeably long tertials. Speculum of both sexes distinctive, with bluish color between white borders. Alternate (breeding)-plumaged unmistakable with white, green feathers on lores, forehead and crown-sides. Distinct black spot surrounding the eye and a second black spot in front of wings. In eclipse plumage, becomes female-like, but is blackish with grayish-brown head and neck, and brown-barred upper breast. Female slightly smaller than male and is mainly reddish brown with darker feather centers (obvious on upperparts), becoming slightly paler rufous on head, with pale buff eye-ring. Juvenile resembles female but is paler and more reddish, mottled below (Fredrickson 2020).

Diet: Steller's eiders forage by diving or dabbling in shallow water. On the breeding habitats, Steller's eiders primarily eat insect larvae associated with freshwater wetlands but may also eat aquatic plants. In marine habitats they eat small fish and saltwater invertebrates, including snails, clams, worms, and echinoderms found in the bottom sediment. They forage singly or in large flocks that often dive and surface in unison. Foraging dives are frequent and generally in water 5-10 m deep.

Population: Steller's eiders are divided into Atlantic and Pacific populations; the Pacific population is further divided into the Russia-breeding population, which nests along the Russian eastern arctic coastal plain, and the Alaska-breeding population. The Alaskan population is divided into subpopulations based on breeding grounds. The western Alaska subpopulation is considered nearly extirpated. The northern Alaska subpopulation breeds on the Arctic Coastal Plain (ACP). As of 2009, the breeding population on the ACP was estimated to be 600 or fewer animals. More recent estimates are not available but are considered low and highly variable (USFWS 2019).

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) and Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Steller's eider has a circumpolar distribution. Almost all Steller's eiders nest in northeastern Siberia, with less than 1% of the population breeding in North America. The Alaska breeding population of Steller's eider breeds on the western Arctic Coastal Plain and in extremely low numbers on the Yukon-Kuskokwim Delta. Migration northward to the breeding grounds begins in late April. They reach their nesting sites in the Arctic tundra in late May to early June. Males leave the breeding areas by early July to travel to molting areas, where they undergo a three-week flightless molt. Females remain on the breeding grounds until the chicks fledge, and then they travel to molting areas or directly to wintering grounds further south. In the winter, most of the world's Steller's eiders are found in the Alaska Peninsula and the Aleutian Islands, but they can be found as far west as the Commander and Kuril Islands of Russia and as far east as Kodiak Island and Cook Inlet, Alaska (USFWS 2019). Aggregations of over 15,000 have been observed at Kuskokwim Bay at one time. Wintering Steller's eiders usually occur in shallow waters (<30 feet deep), generally within a quarter mile of shore or at offshore shallows. Habitat use can shift to deeper offshore areas based on availability of prey. Steller's eiders migrate long distances each year (up to 3,000 miles) between their breeding and wintering grounds, moving north as the ice recedes. Critical habitat was designated in 2001 and includes historic breeding areas on the Yukon-Kuskokwim Delta, a molting and staging area in the Kuskokwim Shoals, and molting and wintering areas in marine waters at Seal Islands, Nelson Lagoon, and Izembek Lagoon (USFWS 2023).

Vulnerabilities and Sensitivities to Oiling: Birds are exposed to oil through several routes, including adsorption, ingestion, inhalation, fouling, and aspiration (Michel 2021). Diving birds are at high risk of oil spill impacts because they are often at the surface of the water. External contamination/fouling of feathers is the most common, and typically most damaging, form of exposure to birds and is the main cause of immediate mortalities of marine birds following oil spills (Leighton 1993). When feathers absorb oil, the plumage becomes matted and compressed, which results in the loss of the feathers' capacity to repel water and insulate the birds (Paruk et al. 2020). Birds in cold water environments are highly susceptible to hypothermia when their insulation is compromised due to feather oiling (Jenssen and Ekker 1991; O'Hara and Morandin 2010). Oiled feathers also result in losses to buoyancy and flight capability (Leighton 1993). Once exposed to oil by fouling, birds often rapidly die from hypothermia (regardless of water and/or air temperatures), starvation, and/or drowning (Paruk et al. 2020). In addition to direct fouling, birds also may ingest oil when preening, consuming oil-contaminated food, water, or sediments, and potentially inhaling volatile compounds (Leighton 1993; NRC 2003).

Consumption of contaminated prey can lead to accumulation of oil in birds, and effects of ingested oil are wide ranging. There was substantial acute mortality of shorebirds and sea ducks that foraged on shoreline invertebrates and seabirds that fed on coastal forage fish during the *Exxon Valdez* spill (Peterson 2001). Following the *Exxon Valdez* spill, numbers of species in each of three guilds of birds that fed near shore in oiled areas exhibited immediate reductions. If not cleaned up, oil persisting in shoreline environments can continue to affect nearshore bird populations long after a spill, as was the case for harlequin ducks following *Exxon Valdez*, which showed indicators of exposure for over two decades following the spill (Esler et al. 2015). Though less is known about oil inhalation as an exposure pathway, Hughes et al. (1996) found pulmonary congestion and pneumonia, resulting in severe inflammation of the respiratory tract, in 43% of sampled birds during the *Sea Empress* spill. Oil brought back to nests can reduce hatching and fledging success. Avian embryos, especially very young ones, are highly sensitive to oil that contaminates the eggshell; amounts as little as 1–10 microliters may result in eggs failing to develop (Leighton 1993; NRC 2003). Direct exposure to dispersants and dispersed oil can cause effects similar to oil on the plumage of marine birds (Osborne et al. 2022).

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed or dead birds. Avoid hovering or landing of aircraft near bird concentration areas. Observers expected to notify vessel captains/pilots about minimizing impacts and to record sightings. All responders and wildlife observers shall report all sightings of healthy, oiled, or injured wildlife in or near the response area in real time to Wildlife Branch or Environmental Unit. Adhere to incident-specific flight restrictions over sensitive habitats and avoid hovering or landing aircraft in these areas. Adhere to flight altitude restrictions over wildlife management areas and other managed lands.

Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for walruses, sea otters, polar bears, or birds: USFWS Alaska Region Spill Response Team (907) 242-6893 or fwsakspillresponse@fws.gov.

Booming and Skimming: If birds become trapped or entangled in boom, anchor lines, or other response equipment, notify wildlife agency representatives for instructions. Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife.

Burning: Avoid burning near bird concentration areas and minimize bird exposure from wind drift of smoke.

Surface Dispersant: Dispersant applications will maintain a minimum of 500 meters (1,640 feet) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by USFWS and/or National Marine Fisheries Service for Endangered Species Act Section 7 compliance will be conducted.

Atypical Dispersant[3]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with USFWS to understand incident-specific protection measures regarding UAS use. Do not conduct flights at an altitude less than 150 feet (50 m) over birds; do not use predator (raptor)-shaped UASs when flying near birds; do not fly within 300 feet (100 m) of bald eagle nests; ground or move aircraft away if perched or flying eagles are encountered.

Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Fixed wing aircrafts and helicopters should maintain aircraft flying altitudes of 457 m (1,500 ft) or more above ground level (except during takeoff and landing or for safety considerations), or as specified by the USFWS and/or NMFS and enacted by the Unified Command and stay inland of the coasts as much as possible to minimize disturbance of birds and potential collisions with birds.

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	**X**

References:

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Esler D, Bowen L, Miles AK, Ballachey BE, Bodkin J. 2015. Long-term monitoring: lingering oil, evaluating chronic exposure of harlequin ducks and sea otters to lingering *Exxon Valdez* oil in Western Prince William Sound. Restoration Project 12120114-Q Final Report. Anchorage (AK): *Exxon Valdez* Oil Spill Trustee Council, 50 p.

Fredrickson LH. 2020. Steller's Eider (*Polysticta stelleri*), version 1.0. In Birds of the World (Billerman S, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.steeid.01.

Hughes B, Stewart B, Brown MJ, Hearn RD. 1997. Studies of Common Scoter *Melanitta nigra nigr*a killed during the Sea Empress oil spill. WWT Wetlands Advisory Service Report to Sea Empress Environmental Evaluation Committee, pp. 1-65.

Jenssen BM, Ekker M. 1991. Dose dependent effects of plumage-oiling on thermoregulation of common eiders *Somateria mollissima* residing in water. Polar Research, 10(2):579-584.

Leighton FA, Peakall DB, Butler RG. 1983. Heinz-Body hemolytic anemia from the ingestion of crude oil: A primary toxic effect in marine birds. Science, 220:871-873.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill

[3] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

Response. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25161.

National Academies of Sciences, Engineering, and Medicine. 2022. Oil in the Sea IV: Inputs, Fates, and Effects. Washington (DC): The National Academies Press.

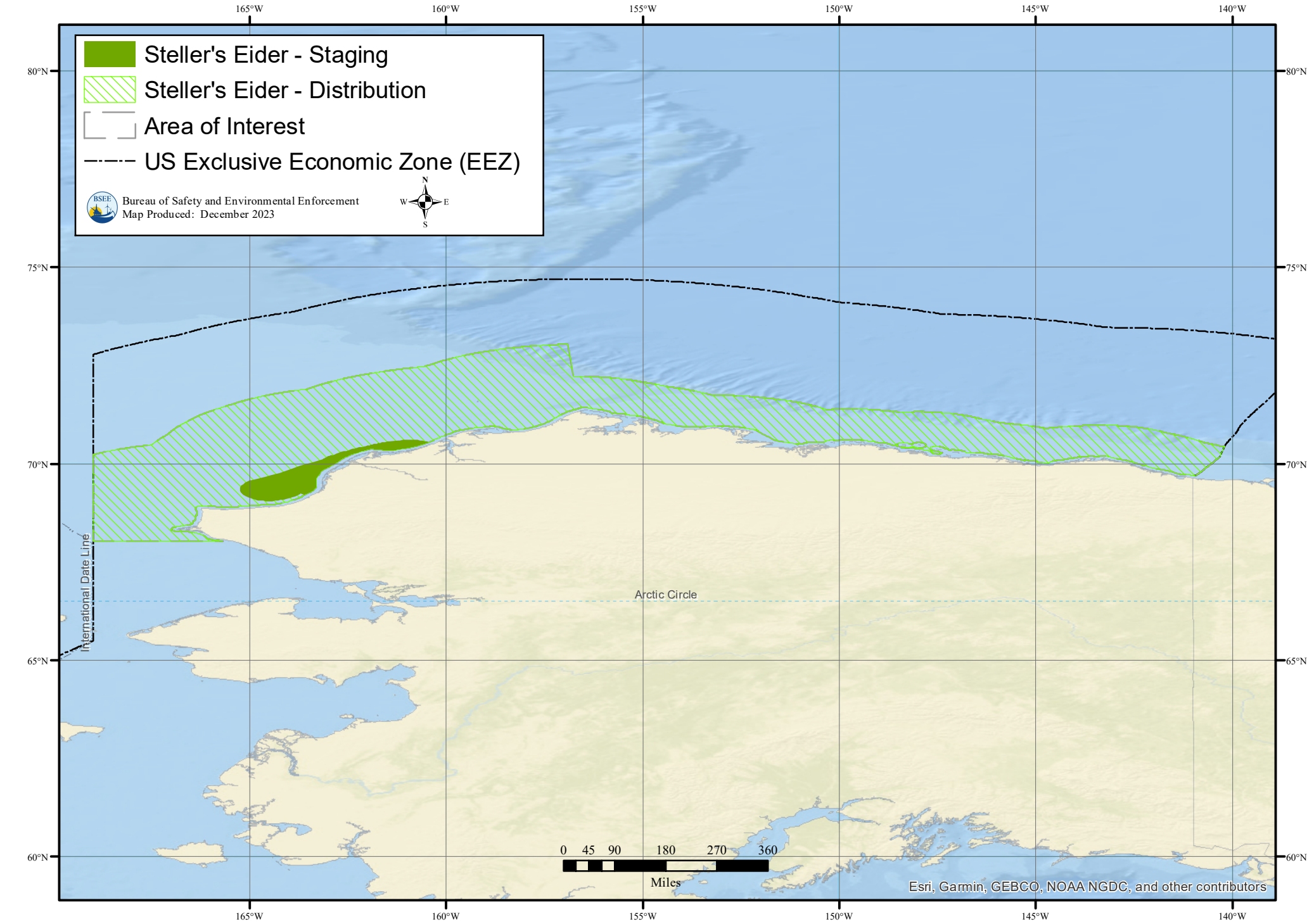
O'Hara PD, Morandin LA. 2010. Effects of sheens associated with offshore oil and gas development on the feather microstructure of pelagic seabirds. Marine Pollution Bulletin, 60(5):672-678.

Osborne OE, Willie MMC, O'Hara PD. The effects of oil spill dispersant use on marine birds: a review of scientific literature and identification of information gaps. Environ Rev. 2023 Jun;31(2):243–55.

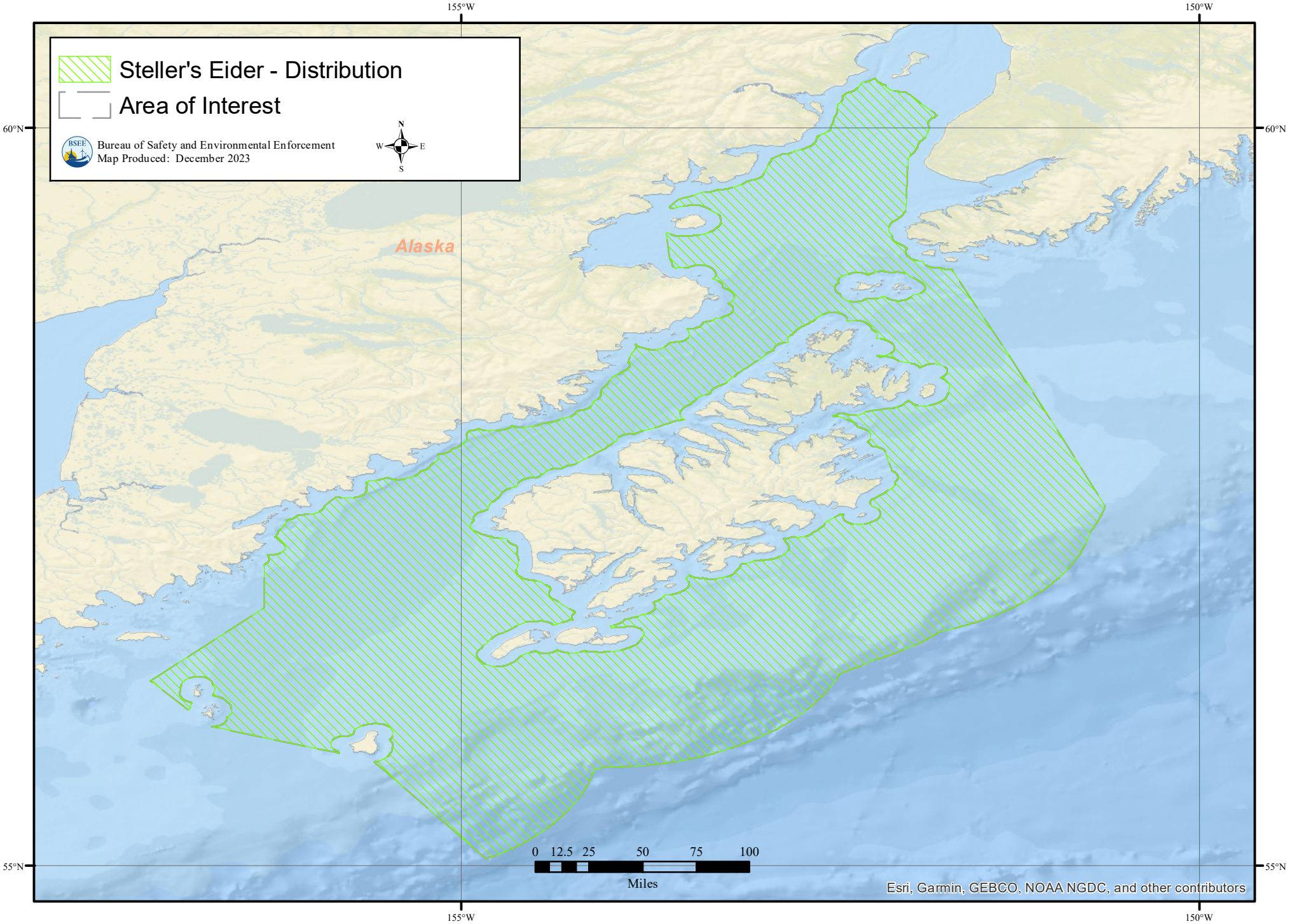
Paruk JD, Long D, Perkins C, East A, Sigel BJ, Evers DC. 2020. Polycyclic aromatic hydrocarbons detected in common loons (*Gavia immer*) wintering off coastal Louisiana, Waterbirds 37 (Special Publication 1):85-93.

USFWS (U.S. Fish and Wildlife Service). 2015. Biological Opinion for the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases: Consultation with the U.S. Coast Guard and Environmental Protection Agency, 148 pp + appendices. Available at: https://alaskarrt.org/PublicFiles/USFWS%20BiOp%2027Feb2014.FINAL.pdf.

USFWS (U.S. Fish and Wildlife Service). 2019. Species status assessment for the Steller's eider. USFWS Fairbanks Fish and Wildlife Field office, Fairbanks, AK. 149 p.



This map represents the approximate range of Steller's eider in the Arctic (Chukchi and Beaufort Seas).



This map represents the approximate range of Steller's eider in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Invertebrates

- Sunflower Sea Star (*Pycnopodia*)

THIS PAGE INTENTIONALLY LEFT BLANK

Sunflower Sea Star		ESA Status	Proposed-Threatened	88 FR 16212
Scientific Name	*Pycnopodia helianthoides*	**Critical Habitat**	None	

Appearance: The sunflower sea star is among the largest sea stars in the world and can reach over one meter in total diameter from ray tip to ray tip across the central disk (Lowry et al. 2022). Juveniles have five arms after metamorphosis but by maturity they can have up to 24. They range in color from purple to brown, orange or yellow. They have over 15,000 tube feet and can move over one meter per minute to capture prey.

Diet: Adults are carnivores that eat benthic and mobile epibenthic invertebrates, including sea urchins, snails, crab, sea cucumbers, and other sea stars (Lowry et al. 2022). Larvae are planktonic and consume zooplankton.

Population: There is no single, systematically collected data set that provides population size or long-term trend data for sunflower sea stars throughout their range. However, from 2013-17, an outbreak of sea star wasting syndrome contributed to precipitous population declines in several areas, with impacts largely progressing sequentially from south to north (Lowry et al. 2022).

Distribution/Habitat/Migration (see map for distribution in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): The sunflower sea star occurs throughout intertidal and subtidal coastal waters of the Northeast Pacific Ocean from the Aleutian Islands, Alaska, to at least northern Baja California, Mexico. They are found from the low intertidal to depths of 435 meters (1,427 feet) on various substrate types but are most common in waters less than 120 m (394 feet). This species has no clear habitat associations and can occur in habitats from rocky kelp forests to sand and mud flats. Sunflower sea stars are broadcast spawners that require close proximity to mates for successful fertilization. Anchorage is the northern extent of their range; they are most common from the Alaska Peninsula to Monterey, California. Typically, sea stars with planktotrophic larval development from the temperate nearshore Northwest Pacific Ocean spawn in late winter or early spring (Lowry et al. 2022).

Vulnerabilities and Sensitivities to Oiling: Sea stars are sensitive to oil exposure however the exact impacts vary by species and oil type (Michel 2021). Juvenile and adult sea stars are vulnerable to oil exposure in intertidal shoreline habitats. Subtidal sea stars can come into contact with oil that sinks or becomes trapped in subtidal vegetation. Lab experiments and field observations have shown that contact with oil can cause narcosis in adults and juveniles (summarized in Dean et al. 1983). Larval sea stars are planktonic and are vulnerable to oil in the water column. Larvae could come into contact with oil in the water column or by ingesting oil while feeding, either adhered to planktonic prey or free- floating in the water column. Exposure to fresh oil in the water column has been shown to have adverse effects on the larval development of other species of sea star (Stefansson et al. 2016). Larvae could also be susceptible to a lack of prey if a spill leads to decreases in available prey (plankton). Following the *Exxon Valdez* oil spill, sea stars (especially *Pycnopodia*) were observed overturned in the intertidal zone in heavily oiled areas, indicating narcosis or possible death (Dean et al. 1983). Surveys in the years following the spill observed lower densities of *Pycnopodia* in oiled eelgrass beds compared to nonoiled eelgrass beds; however, declines were not evident in other habitats sampled, and two of the four years sampled had very high juvenile recruitment.

BMPs for Offshore Operations:

General: Secure all materials on vessels to prevent inadvertent loss overboard.

Skimming and Booming: Maintain control of all materials to prevent inadvertent release and sinking.

Burning: If incident specific RRT approval allows burning over nearshore habitat for the sunflower sea star, recover any floating burn residue as quickly and efficiently as possible.

Aerial Dispersant: Follow any spill specific RRT guidance.

Atypical Dispersants[4]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.		
Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
		X

References:

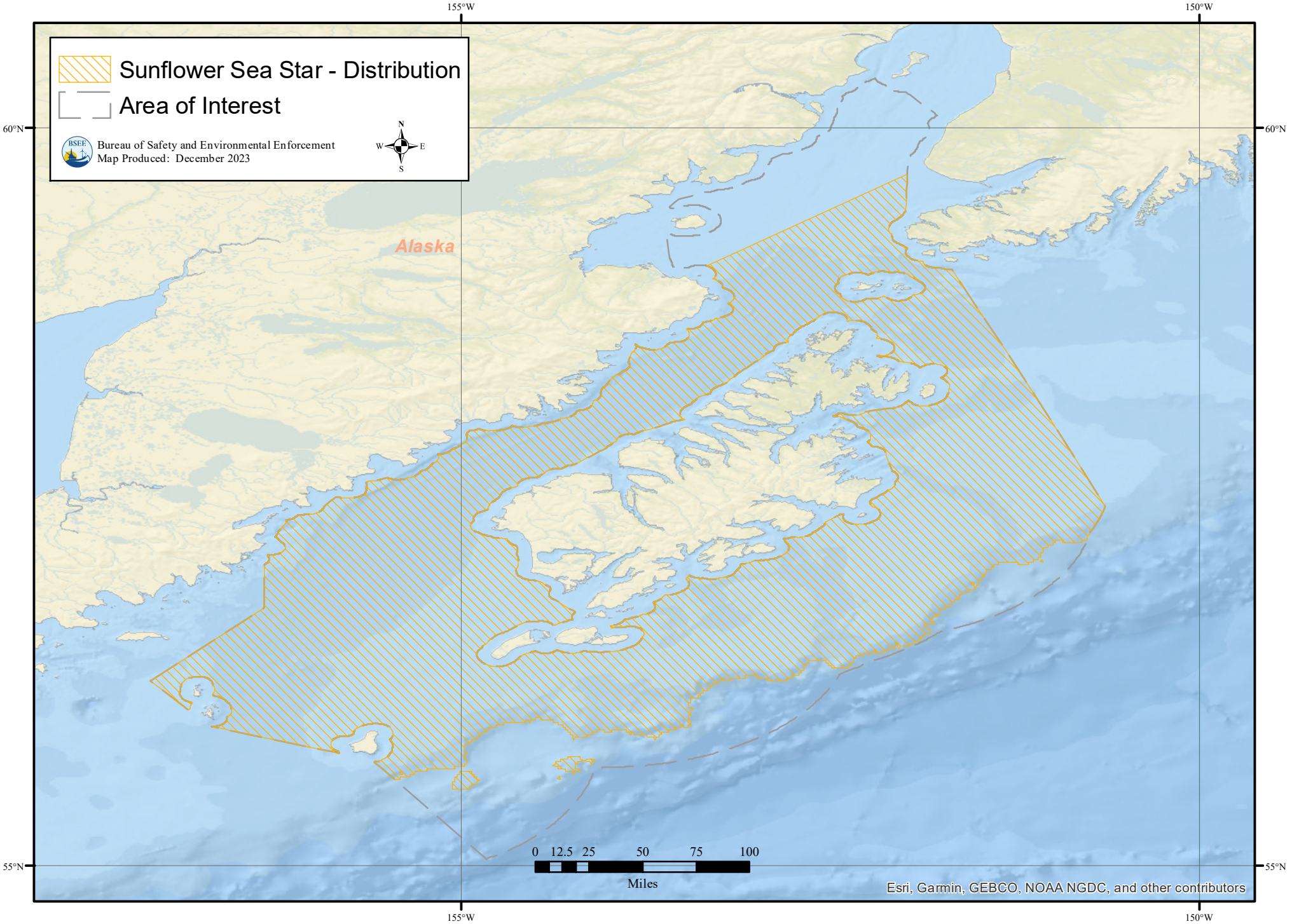
Dean TA, Jewett SC, Laur DR, Smith R. 1996. Injury to epibenthic invertebrates resulting from the *Exxon Valdez* oil spill. *Exxon Valdez* Oil Spill Restoration Project Final Report. Available at: https://evostc.state.ak.us/media/2390/1995-95106-final.pdf.

Lowry D, Wright S, Neuman M, Stevenson D, Hyde J, Lindeberg M, Tolimieri N, Lonhard S, Traiger S, Gustafson R. 2022. Endangered Species Act Status Review Report: Sunflower Sea Star (*Pycnopodia helianthoides*). Final Report to the National Marine Fisheries Service, Office of Protected Resources. October 2022. 89 pp. + app.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 p.

Stefansson ES, Langdon CJ, Pargee SM, Blunt SM, Gage SJ, Stubblefield WA. 2016. Acute effects of non-weathered and weathered crude oil and dispersant associated with the Deepwater Horizon incident on the development of marine bivalve and echinoderm larvae: Acute toxicity of oil and dispersant to invertebrate larvae. Environmental Toxicology and Chemistry, 35:2016–2028.

[4] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.



This map represents the approximate range of sunflower sea star in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

THIS PAGE INTENTIONALLY LEFT BLANK

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Marine Mammals

- Cetaceans
  - Beluga Whale
  - Bowhead Whale
  - Fin Whale
  - Gray Whale
  - Humpback Whale
  - North Pacific Right Whale
  - Sperm Whale
- Pinnipeds
  - Bearded Seal
  - Arctic Ringed Seal
  - Steller Sea Lion
  - Pacific Walrus
- Polar Bear
- Northern Sea Otter

THIS PAGE INTENTIONALLY LEFT BLANK

Beluga Whale		ESA Status*	Endangered (2008) – Cook Inlet DPS	73 FR 62919
Scientific Name	*Delphinapterus leucas*	**Critical Habitat**		76 FR 20179
Appearance: Small, toothed whales with round heads. Belugas lack a dorsal fin but have a tough dorsal ridge instead to aid in ice swimming (Citta and Lowry 2008). The calves are dark grey, and adults are white.				
Diet: Belugas eat a variety of species, including octopus, squid, crabs, shrimp, snails, cod, and herring (NOAA Fisheries 2023). Pacific salmon and eulachon are particularly important to the diet of Cook Inlet Belugas. The presence of belugas increases with proximity to rivers with Chinook Salmon such as the Susitna River. The Susitna River delta supports major spawning locations of eulachon.				
Population: Five stocks of beluga whale are found in Alaskan waters: Beaufort Sea, Eastern Chukchi Sea, Eastern Bering Sea, Bristol Bay, and Cook Inlet (Young et al. 2023). For the Beaufort Sea beluga whale stock, the minimum population estimate would be 32,453 whales. However, because the survey data are more than 8 years old, it is not considered a reliable minimum population estimate. For the Eastern Chukchi Sea beluga whale stock, the minimum population estimate is 8,875 whales; however, this may be positively biased due to possible overlap between the Eastern Chukchi Sea and Beaufort Sea stocks of beluga whales during the survey in late July to late August. The Cook Inlet Distinct Population Segment (DPS) is listed as Endangered and has an MMPA status of 'depleted' (NOAA 2022). The Cook Inlet DPS showed an 80% decline in abundance from 1,300 whales in 1979 to 279 whales in 2018. The most recent population estimate is between 290 and 386 whales, which is potentially a slight increase from 2018 estimates (Goetz et al. 2023). A sub-population of the Cook Inlet Stock is found in Icy Bay to the east of Cook Inlet. This poorly studied group most likely consists of between 10 and 12 individuals. Population levels for the other stocks of beluga whales found in Alaskan waters are all stable or increasing.				
Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) and Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Beluga whales are globally distributed throughout ice-covered waters in the Arctic and subarctic areas of the northern hemisphere. Belugas are social animals, hunting and migrating in groups (NOAA Fisheries 2023). Beluga whales make seasonal migrations to take advantage of prey aggregations in the summer. The Beaufort Sea and Eastern Chukchi Sea stock of belugas migrate between the Bering, Chukchi, and Beaufort seas, moving north during the summer and south during the winter (Young et al. 2023). In the Cook Inlet DPS, large groups of both sexes and across all age classes congregate to rear calves and feed near river mouths in specific areas of northern Cook Inlet such as the Susitna River delta, Chickaloon Bay, and Turnagain Arm (Goetz et al. 2023). Fall and winter distributions are poorly understood but tagging data from 1999-2002 suggest year-round usage of upper Cook Inlet areas, primarily in the upper inlet, north of east and west foreland, with a few whales briefly using the lower Cook Inlet during fall, then returning to the upper Inlet (Shelden et al. 2018). Sighting data indicate few sightings in the Gulf of Alaska outside of Cook Inlet (Young et al. 2023). Winter foraging occurred almost exclusively in Tuxedni Bay (NMFS 2022). Designated Critical Habitat for the Cook Inlet belugas includes two areas: Area 1 - all marine waters of Cook Inlet north of a line connecting Threemile Creek to Point Possession; Area 2 - all marine waters of Cook Inlet south of a line connecting Threemile Creek to Point Possession and north of the 60° latitude including waters within 2 nm seaward of the MHW mark along the western shore of Cook Inlet between the 60° latitude and the mouth of the Douglas River (NMFS 2011).				

Vulnerabilities and Sensitivities to Oiling: Cetaceans that are exposed to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes, resulting in long-term population impacts (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive bottlenose dolphins that had crude oil added to their tank; skin lesions in a number of captive delphinid species where oil was applied to their skin; and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990).

Carnivorous cetaceans such as beluga whales will suffer from an oil spill that results in effects on fish and invertebrate populations. Because they feed at depth, belugas are less likely to be exposed to oil via consumption of prey than surface-feeding cetaceans.

Studies focused on the health or survival of cetaceans following oil spills are limited with the exception of the *Exxon Valdez* and *Deepwater Horizon* spills (Michel 2021). Evidence from past spills has indicated that cetaceans do not avoid oil slicks; during the *Deepwater Horizon* spill, 11 species of cetaceans were documented swimming through oil and sheen (Dias et al. 2017) and killer whales were observed swimming through oil slicks following the *Exxon Valdez* oil spill (Matkin et al. 2008).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of whales are not likely because the dermal shield is considered to be a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on whales. Only prey entrained within the top few meters of the water column in the approximate footprint of the treatment area may be affected by chemically dispersed surface oil, likely representing a small fraction of the available food source.

The above considerations would apply in areas of open ocean where exposure would be relatively short-term. However, oil trapped within an ice lead could lead to an increased duration of exposure and associated effects for whales (such as bowheads or belugas) that use the ice lead as a migration pathway. BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 meters) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 meters). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Whales - Deterrence/Hazing Methods: It is essential for appropriately trained individuals to conduct hazing/deterrence activities not only for the safety of all responders, but also to minimize impacts to the animals being hazed/deterred and to prevent inadvertently disturbing non-target species. Wildlife can respond in unpredictable ways to disturbance; therefore, it is imperative that responders conducting hazing/deterrence activities are trained to understand animal behavior. In situations where immediate action is necessary to prevent Cook Inlet beluga whales from entering oil, managers may choose to use the deterrence/hazing methods that have been pre- approved for the Southern Resident Killer Whale population. Deterrence

techniques have been developed for killer whales in Washington State and may be appropriate for other cetacean species in Alaska. Supporting information may be found in the Killer Whale section of the Northwest Wildlife Response Plan, Chapter 9970 of the Northwest Area Contingency Plan, available at https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/resources/oil-spill-response-and-killer-whales.html. These pre-approved methods are wholly reproduced from the Southern Resident Killer Hazing Plan and briefly recounted below:

For the Southern Resident Killer Whale population, NOAA Fisheries has pre-approved; helicopters, oikomi pipes**, and underwater firecrackers (seal bombs) deployed from vessels; for use by response personnel under the direction of the Branch Director and Unified Command to attempt to herd/move whales.

Pre-approved deterrents should be deployed if the risk of entering oil exceeds the risk of disturbing the whales through hazing techniques. Risk to the whales should be assessed based on the proximity of the whales to the oil and their likelihood of entering the oil as well as the type and condition of the oil. The Branch Director will determine whether to activate the Marine Mammal Hazing Unit to implement hazing activities or, if exposure is imminent, to order "on-scene" personnel to attempt hazing. Selection of the most appropriate hazing technique will depend on the particular spill conditions, location of whales, level of risk to the whales, and available assets.

Banging pipes, called oikomi pipes, are metal pipes about eight feet long which are lowered into the water and struck with a hammer to make a loud noise. These pipes have been used to drive or herd marine mammals. For killer whales, pipes were successfully used to help move several whales that were trapped in a freshwater lake in Alaska.

Helicopter hazing may be the most immediately available technique, particularly if there are aircraft available and in use for reconnaissance. Multiple pre-approved techniques may be implemented in combination (i.e., oikomi pipes and firecrackers deployed from the same vessels) or in sequence based on observations of the whales and time needed to mobilize hazing teams. The incident-specific deterrence plan should explicitly evaluate how deterrence measures might contribute additional risk to marine mammals and to subsistence uses of those marine mammals and should outline mechanisms for minimizing risk.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[5]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	**X**

References:

Citta J and Lowry L. 2008. Beluga Whale (*Delphinapterus leucas*) species profile. Available at https://www.adfg.alaska.gov/static/education/wns/beluga_whale.pdf.

DWH NRDA Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2016. *Deepwater Horizon* oil spill: final programmatic damage assessment and restoration plan and final programmatic environmental impact statement. https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology 4(3):199-217.

Frasier KE, Solsona-Berga KE, Stokes L, Hildebrand JA. 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski SA, et al. (editors), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci, J.R. and D.J. St Aubin (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press. 211-122 p.

Geraci JR, St. Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review, 42:1-12.

Geraci JR, St. Aubin DJ. 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press, Inc.

Goetz K, Sheldon T, Simes KEW, Waite JM, Wade PR. 2023. Abundance of belugas (*Delphinapterus leucas*) in Cook Inlet, Alaska, June 2021 and June 2022. AFSC Processed Rep. 2023-03, 47 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA.

Matkin C, Saulitis E, Ellis G, Olesiuk P, Rice S. 2008. Ongoing population-level impacts on killer whales Orcinus orca following the *Exxon Valdez* oil spill in Prince William Sound, Alaska. MEPS. 356:269–81.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25161.

[5] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

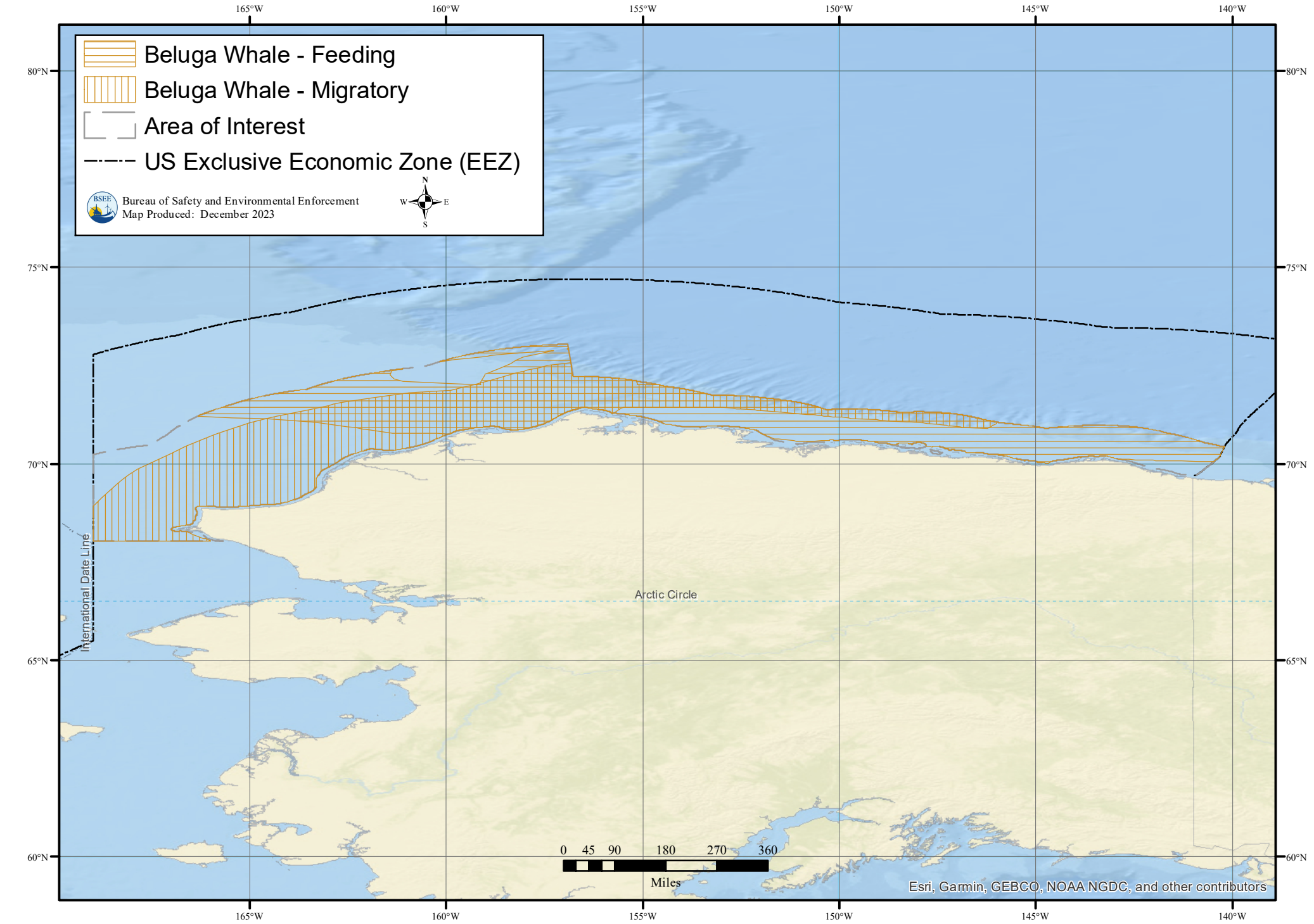
NOAA Fisheries. 2023. Species Directory: Beluga Whale (*Delphinapterus leucas*). Available at https://www.fisheries.noaa.gov/species/beluga-whale.

NMFS. 2022. Beluga Whale (Cook Inlet DPS) 5-Year Review: Status and Evaluation. National Marine Fisheries Service, Alaska Fisheries Science Center, Marine Mammal Laboratory, Seattle WA.

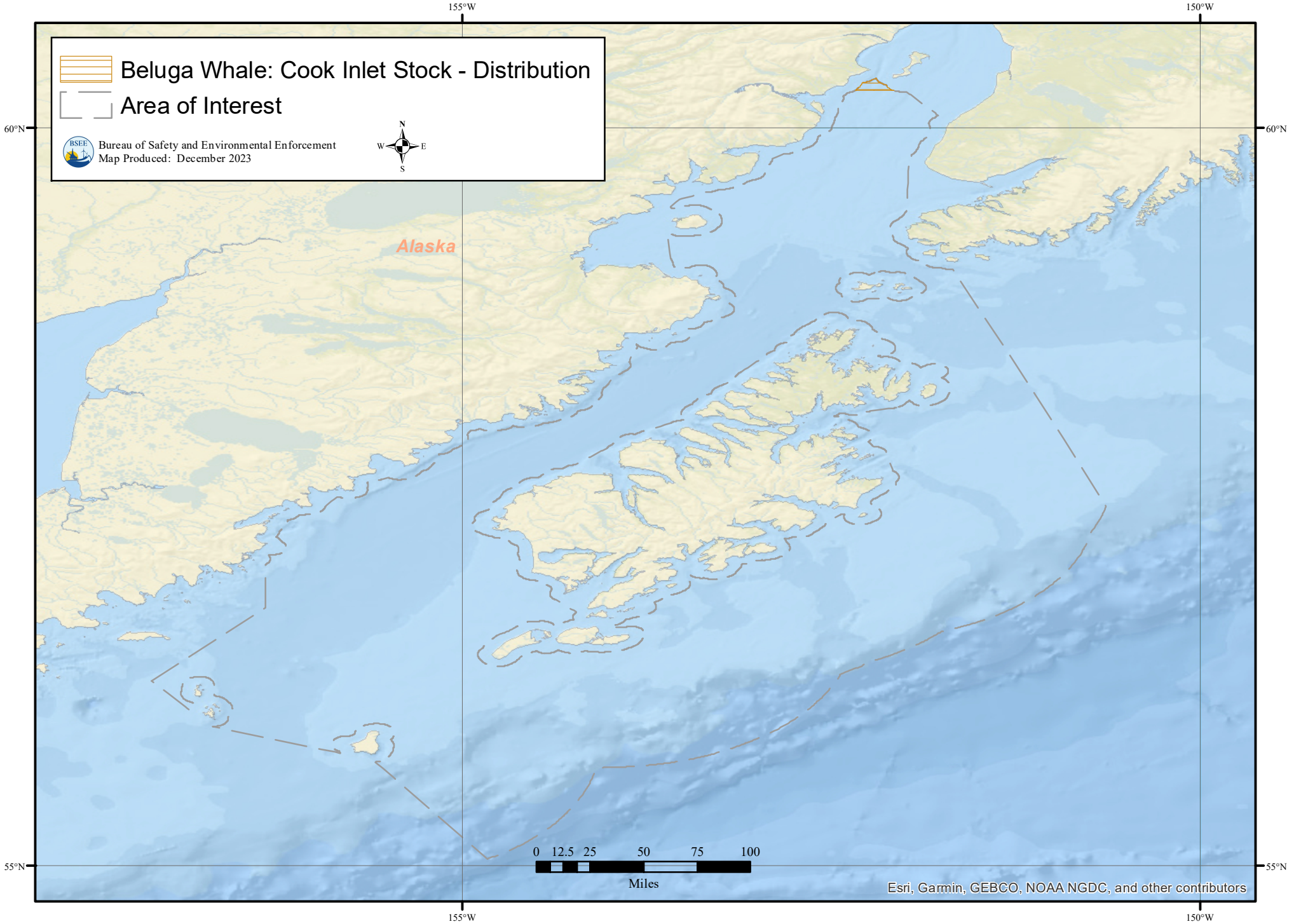
NMFS. 2011. Endangered and Threatened Species: Designation of Critical Habitat for Cook Inlet Beluga Whale. Final Rule. 50 CFR Part 226. Vol 76 (20180 - 20214).

Shelden KEW, Goetz KT, Hobbs RC, Hoberecht LK, Laidre KL, Mahoney BA, McGuire TL, Norman SA, O'Corry-Crowe G, Vos DJ, Ylitalo GM, Mizroch SA, Atkinson S, Burek-Huntington KA, Garner C. 2018. Beluga whale, Delphinapterus leucas, satellite-tagging and health assessments in Cook Inlet, Alaska, 1999 to 2002. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-AFSC-369. 227 p.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, Friday NA, Boveng PL, Brost BM, Cameron MF, Crance JL, Dahle SP, Fadely BS, Ferguson MC, Goetz, KT, et al. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.



This map represents the approximate range of beluga whale in the Arctic (Chukchi and Beaufort Seas).



This map represents the approximate range of beluga whale – Cook Inlet Stock in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

THIS PAGE INTENTIONALLY LEFT BLANK

Bowhead Whale		ESA Status*	Endangered (1970)	35 FR 18319
Scientific Name	*Balaena mysticetus*	**Critical Habitat**	None	

Appearance: Baleen whale with a dark body, notable white chin, with the absence of a dorsal fin. Sizeable head with bow-shaped skull, almost one-third of its total length, with a stocky body (NOAA Fisheries 2023).

Diet: Filter feeder foraging almost exclusively on marine invertebrates, such as krill and copepods, but may prey on other invertebrates and fish. Solitary feeders or feed in small groups. When foraging at depth they have been observed continuously fluking while swimming slowly (Simon et al. 2009) at depths typically reaching 656 feet (200 meters) (Finley 2001).

Population: According to a 2019 IWC abundance estimate for the Bering-Chukchi-Beaufort Seas bowhead whale population, there were approximately 12,505 individuals; this population estimate does not indicate a decline from the 2011 survey (Givens et al. 2021). From Young et al. (2023), regarding the western Arctic bowhead whales, the updated best estimate of abundance, derived from ice-based counts in 2019, is 14,025 bowhead whales. This is a decrease from the previous estimate of 16,820; however, it is considered to be an underestimate and not a true decline in abundance due to the abnormal ice conditions and migration route during the 2019 survey.

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) ESI AOIs): Bowhead whales reside exclusively in the Arctic and subarctic waters typically between 60o-75o latitudes (Young et al. 2023). Their large skull is adapted to break through the icy waters they inhabit. The western Arctic stock is found in the Chukchi and Beaufort Seas. Calves are born from April to June during the spring migration when the whales move through the Chukchi Sea into the Beaufort Sea following breaks in the pack ice. Bowheads are thought to winter in the pack ice outside of the Chukchi and Beaufort Seas in the western portion of the north Bering Sea (Branham et al. 1980).

Vulnerabilities and Sensitivities to Oiling: Cetaceans that experience exposure to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive bottlenose dolphins that had crude oil added to their tank; skin lesions in a number of captive delphinid species where oil was applied to their skin; and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990).

Studies have shown that oil does not adhere to baleen so oil would not foul the baleen or reduce filtering capabilities (Werth et al. 2018). However, baleen whales may be at increased risk of oil ingestion. Studies focused on the health or survival of cetaceans following oil spills are limited with the exception of the Exxon Valdez and Deepwater Horizon spills (Michel 2021). Evidence from past spills has indicated that cetaceans do not avoid oil slicks; during the Deepwater Horizon spill, 11 species of cetaceans were documented swimming through oil and sheen (Dias et al. 2017) and killer whales were observed swimming through oil slicks following the Exxon Valdez oil spill (Matkin et al. 2008).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of whales are not likely because the dermal shield is considered to be a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on whales. Only prey entrained within the top few meters of the water column in the approximate footprint of the treatment area may be affected by chemically dispersed surface oil, likely representing a small fraction of the available food source.

The above considerations would apply in areas of open ocean where exposure would be relatively short-term. However, oil trapped within an ice lead could lead to an increased duration of exposure and associated effects for whales (such as bowheads or belugas) that use the ice lead as a migration pathway.

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <91-152 meters) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 meters). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[6]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the

[6] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	

References:

Braham HW, Fraker MA, Krogman BD. 1980. Spring migration of the Western Arctic Population of Bowhead Whales. Marine Fisheries Review 42(9):36-46.

DWH NRDA Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2016. *Deepwater Horizon* oil spill: final programmatic damage assessment and restoration plan and final programmatic environmental impact statement. https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology. 4(3):199-217.

Finley KJ. 2001. Natural history and conservation of the Greenland whale, or bowhead, in the Northwest Atlantic. Arctic 54:55-76.

Frasier KE, Solsona-Berga A, Stokes L, Hildebrand JA. 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski SA, Ainsworth CH, Gilbert S, Hollander DJ, Paris CB, Schlüter M, and Wetzel DL (eds.), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci JR, St Aubin DJ (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press, 167-197 p.

Geraci JR, St Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review. (November) 42:1-12.

Geraci JR, St Aubin DJ. 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press Inc.

Givens G, George JC. Suydam R, and Tudor B. 2021. Bering-Chukchi-Beaufort Seas bowhead whale (*Balaena mysticetus*) abundance estimate from the 2019 ice-based survey. J. Cetacean Res. Manage. 22(1):61-73.

Matkin C, Saulitis E, Ellis G, Olesiuk P, and Rice S. 2008. Ongoing population-level impacts on killer whales Orcinus orca following the *Exxon Valdez* oil spill in Prince William Sound, Alaska. Marine Ecology Progress Series, 356:269–81.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 p.

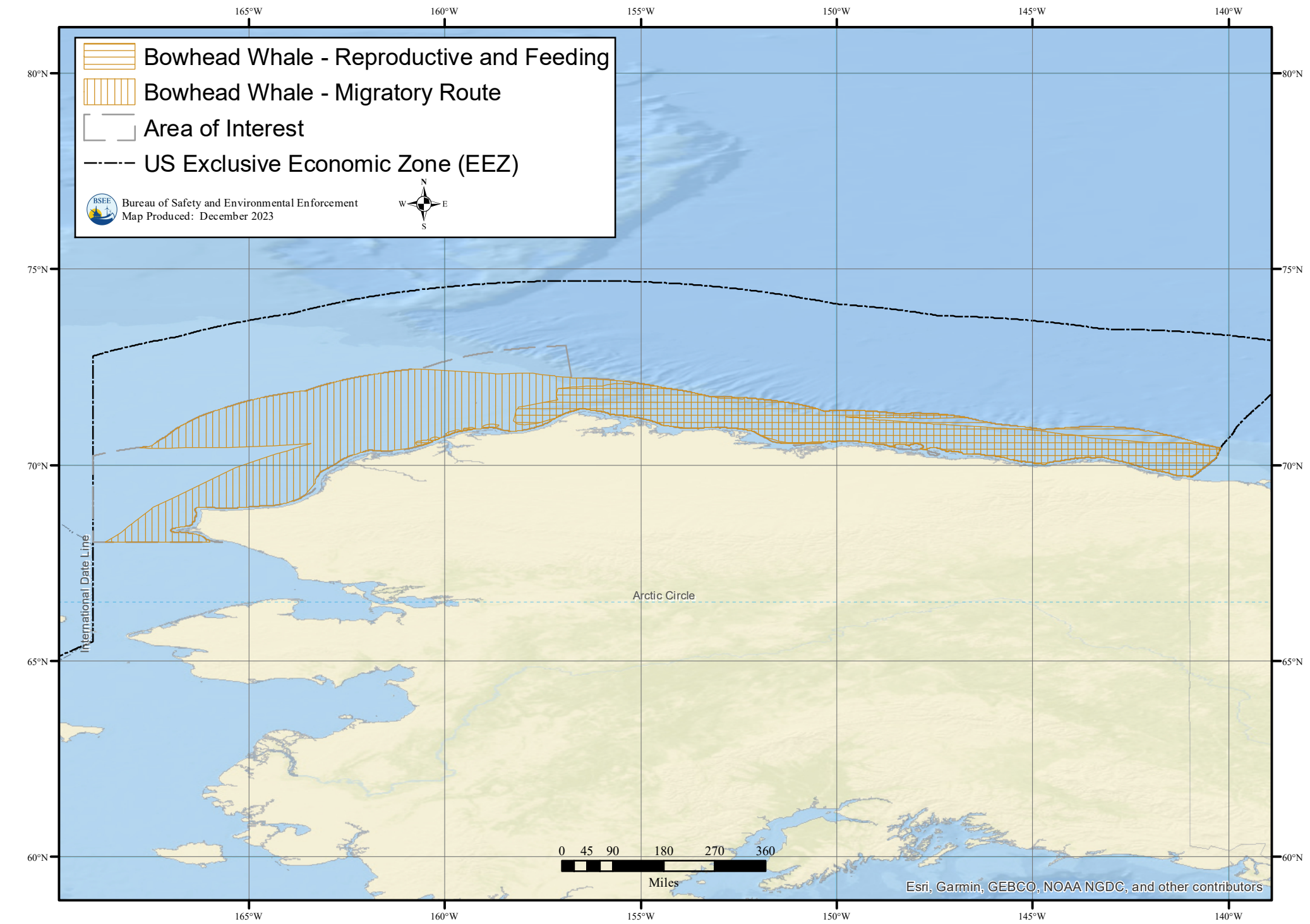
National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25161.

NOAA Fisheries. 2023. Species Directory: Bowhead Whale (*Balaena mysticetus*). Available at: https://www.fisheries.noaa.gov/species/bowhead-whale.

Simon M, Johnson M, Tyack P, Madsen PT. 2009. Behaviour and kinematics of continuous ram filtration in bowhead whales (*Balaena mysticetus*). Proc Biol. Sci. 2009 276(1674):3819-28.

Werth AJ, Rita D, Rosario MV, Moore MJ, Sformo TL. 2018. How do baleen whales stow their filter? A comparative biomechanical analysis of baleen bending. J. Exp. Biol. 2018 221(23): 1-11.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, et al. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.



This map represents the approximate range of bowhead whale in the Arctic (Chukchi and Beaufort Seas).

Fin Whale		ESA Status*	Endangered (1970)	35 FR 18319
Scientific Name	*Balaenoptera physalus*	**Critical Habitat**	None	

Appearance: Baleen whale with a sleek, streamlined body, V-shaped head, and notable hooked dorsal fin two-thirds down on body (NOAA Fisheries 2022). Dark grey dorsal coloration, white ventral, with possible V-shaped chevron patterns behind the head. Tail flukes white with gray border. Asymmetrical coloration with dark gray on left of jaw and light on the right of the jaw. Fin whales are the second-largest species by length (NMFS 2010).

Diet: Summer feeder almost exclusively on krill, but also known to prefer copepods and schooling fish such as herring, walleye pollock, and capelin. In winter, thought to reduce food intake or fast during migration (NOAA Fisheries 2022).

Population: According to the 2022 NMFS Northeast Pacific Stock Assessment, no reliable estimate of abundance is available for the overall NE Pacific stock; however, a minimum population estimate of abundance in the Gulf of Alaska is estimated at approximately 3,168 individuals.

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) and Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Cosmopolitan in distribution, the fin whale, although hard to track, is reported to inhabit deep, offshore waters of all major oceans and is less common in the tropics. Migratory patterns are also complex and poorly understood, with occurrences in any season at many different latitudes. Resident populations have also been observed in some areas. Fin whales generally follow a pattern of high latitudes (Arctic and Antarctic) in summer, reported as far north as the Chukchi Sea, and low latitudes in winter (Young et al. 2023). Winter breeding grounds are uncertain. Fin whales have been observed in both summer and fall in the Gulf of Alaska. Movements of the fin whale show variability but is suggested that northern North Pacific fin whale concentrations are associated with mixing zones and a general correlation with the 200-m isobath/shelf edge area (NMFS 2010). A 2009-2015 transect study of cetacean abundance in the Gulf of Alaska showed fin whales concentrated at the shelf edge and slope waters south of Kodiak Island (Rone et al. 2017).

Vulnerabilities and Sensitivities to Oiling: Cetaceans that experience exposure to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive bottlenose dolphins that had crude oil added to their tank; skin lesions in a number of captive delphinid species where oil was applied to their skin; and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990).

Studies have shown that oil does not adhere to baleen so oil would not foul the baleen or reduce filtering capabilities (Werth et al. 2018). However, baleen whales may be at increased risk of oil ingestion. Studies focused on the health or survival of cetaceans following oil spills are limited with the exception of the *Exxon Valdez* and *Deepwater Horizon* spills (Michel 2021). Evidence from past spills has indicated that cetaceans do not avoid oil slicks; during the *Deepwater Horizon* spill, 11 species of cetaceans were documented swimming through oil and sheen (Dias et al. 2017) and killer whales were observed swimming through oil slicks following the *Exxon Valdez* oil spill (Matkin et al. 2008).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of whales are not likely because the dermal shield is considered to be a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on whales. Only prey entrained within the top few meters of the water column in the approximate

footprint of the treatment area may be affected by chemically dispersed surface oil, likely representing a small fraction of the available food source.

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 meters) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 meters). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[7]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue

[7] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

marine mammals.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
	X	**X**

References:

DWH NRDA Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2016. *Deepwater Horizon* oil spill: final programmatic damage assessment and restoration plan and final programmatic environmental impact statement. https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology 4(3):199-217.

Frasier KE, Solsona-Berga A, Stokes L, Hildebrand JA 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski SA et al. (editors), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci JR, St Aubin DJ (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press. pp. 167-197.

Geraci JR, St Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review, 42:1-12.

Geraci JR, St Aubin DJ. 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press Inc.

Matkin C, Saulitis E, Ellis G, Olesiuk P, Rice S. 2008. Ongoing population-level impacts on killer whales Orcinus orca following the Exxon Valdez oil spill in Prince William Sound, Alaska. Marine Ecology Progress Series, 356:269–81.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press, doi: https://doi.org/10.17226/25161.

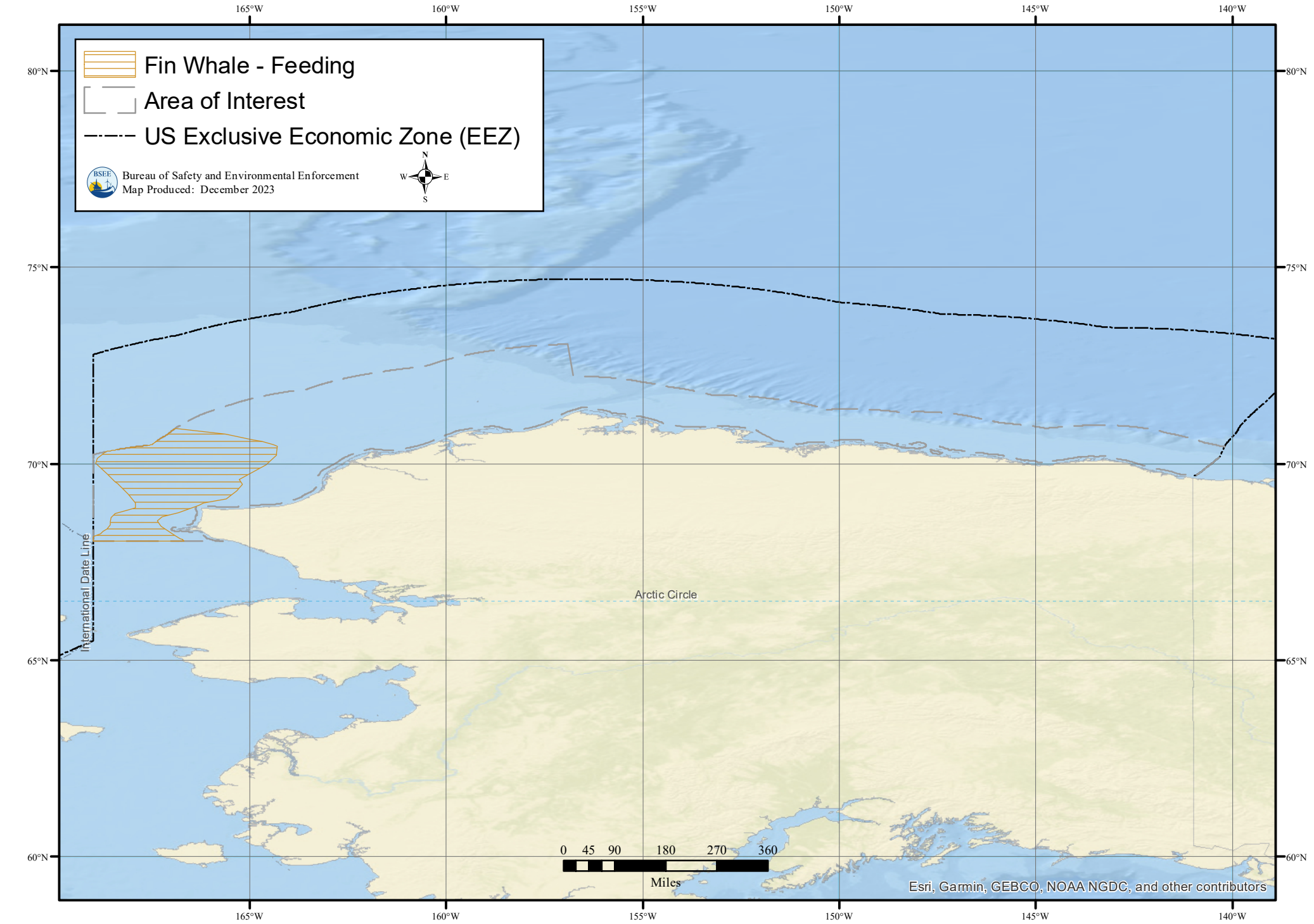
NMFS. 2010. Recovery plan for the fin whale (*Balaenoptera physalus*). NMFS, Silver Spring, MD. 121 pp.

NOAA Fisheries. 2022. Species Directory: Fin Whale (*Balaenoptera physalus*). Available at https://www.fisheries.noaa.gov/species/fin-whale.

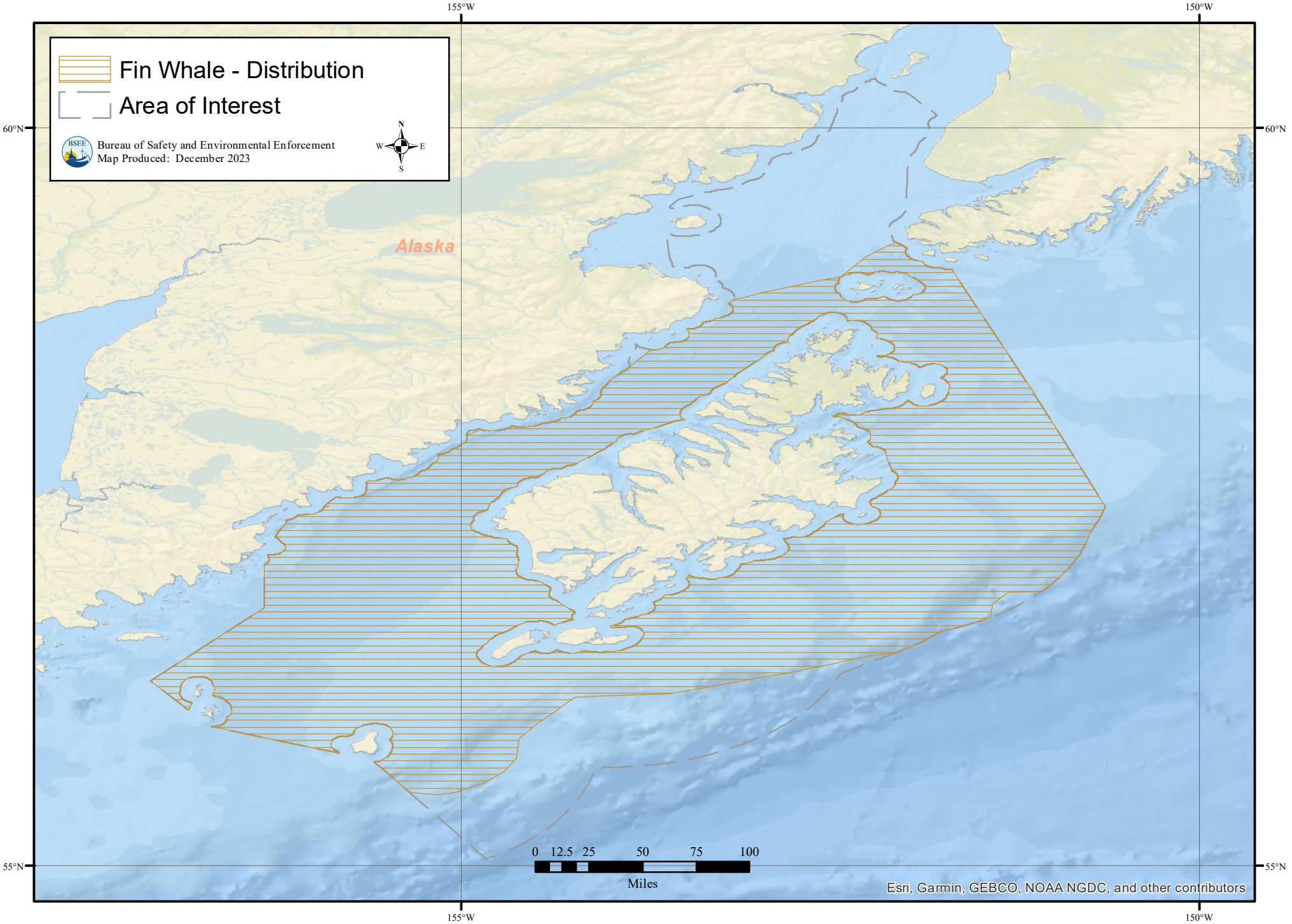
Rone BK, Zerbini AN, Douglas AB, Weller DW, Clapham PJ. 2017. Abundance and distribution of cetaceans in the Gulf of Alaska. Marine Biology, 164(1)1-23.

Werth AJ, Rita D, Rosario MV, Moore MJ, Sformo TL. 2018. How do baleen whales stow their filter? A comparative biomechanical analysis of baleen bending. Journal of Experimental Biology, 221(23):1-11.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, Friday NA, Boveng PL, Brost BM, Cameron MF, Crance JL, Dahle SP, Fadely BS, Ferguson MC, Goetz, KT, London EM, Oleson JM, Ream RR, Richmond EL, Shelden KEW, Sweeney KL, Towell RG, Wade PR, Waite JM, Zerbini AN. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.



This map represents the approximate range of fin whale in the Arctic (Chukchi and Beaufort Seas).



This map represents the approximate range of fin whale in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

THIS PAGE INTENTIONALLY LEFT BLANK

Gray Whale		ESA Status	Endangered (1970) eastern NP DPS Delisted (1994)	35 FR 18319, 59 FR 31094
Scientific Name	*Eschrichtius robustus*	**Critical Habitat**		None
Appearance: Baleen whale with mottled gray body, small eyes just above mouth corners with broad, paddle-shaped pectoral flippers with pointed tips. Lacking a dorsal fin, instead presenting a dorsal hump two-thirds down the body followed by a series of bumps before reaching the fluke (NOAA Fisheries 2023). The fluke has s-shaped edges with a notch down the middle. Calves are dark gray fading to light gray with age.				
Diet: Gray whales are the only baleen whales that are mainly bottom feeders, getting their food by scraping the side of their head along the ocean floor and scooping up sediment (ADF&G 2023). Gray whales prefer benthic or epibenthic invertebrates. Their primary prey item is the ampeliscid amphipod, *Ampelisca macrocephala*. Feeding is done by diving to depths of 130-165 feet (43-55 m) and sucking up benthic infauna.				
Population: Estimated total abundance of Eastern North Pacific (ENP) gray whales during the 2021/2022 observed southbound migration was 16,650 individuals. Trend estimates suggest a continued decrease in numbers of ENP gray whales since 2016 by approximately 23.7% (Eguchi et. al. 2022). Fewer than 300 individuals are estimated from the western North Pacific Distinct Population Segment (DPS), which continues to retain its endangered status.				
Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) and Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Gray whales occur in shallow waters in the North Pacific, although they may use deeper waters during migration. Gray whales have one of the longest annual migrations of any mammal ranging up to as far as 14,000 miles (22,531 km) round-trip. Gray whales of the Eastern North Pacific (ENP) stock migrate each spring from Baja California, Mexico, along the west coast of the U.S. and Canada, across the Gulf of Alaska and into the Bering, Chukchi, and extreme western Beaufort seas. Gray whales remain in the U.S. Arctic throughout summer and early autumn before making a return migration south (Clarke et al. 2023). This species has also been found in the Canadian Arctic during summer months. The predominant behavior of gray whales in Arctic waters is feeding. The ASAMM project documented gray whale feeding in the eastern Chukchi Sea from summer through autumn (May – November) with moderate variability in feeding location within these seasons (Clarke et al. 2020). The two main areas for gray whale feeding were in the northeastern Chukchi Sea within about 120 km of shore from Icy Cape to Point Barrow, Alaska, (Moore et al. 2022) and in the southern Chukchi Sea southwest of Point Hope, Alaska. While most gray whales migrate to the Bering and Chukchi seas, some whales spend summer months in feeding aggregations throughout the GOA (Calambokidis et al. 2002). Individuals and small groups of this species periodically travel into Cook Inlet. Southward migration occurs from December to February towards wintering and calving lagoons of Baja California, Mexico (Eguchi et al. 2022). Gray whales from the ENP stock calve mainly in the protected lagoons of Baja California from early January through mid-February. The eastern and western North Pacific DPS stocks of gray whales are generally accepted to be isolated from one another yet tagging information along with genetic matching indicates potential mixing particularly in the northern Gulf of Alaska within the Cook Inlet study area. A 2009-2015 transect study of cetacean abundance in the Gulf of Alaska showed gray whale siting on the shelf just east of Kodiak Island (Rone et. al. 2017).				
Vulnerabilities and Sensitivities to Oiling: Cetaceans that experience exposure to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. Because they forage at or near the sea floor, they could be exposed to oil deposited in sediments. Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive				

bottlenose dolphins that had crude oil added to their tank; skin lesions in a number of captive delphinid species where oil was applied to their skin; and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990).

Studies have shown that oil does not adhere to baleen so oil would not foul the baleen or reduce filtering capabilities (Werth et al. 2018). However, baleen whales may be at increased risk of oil ingestion. Studies focused on the health or survival of cetaceans following oil spills are limited with the exception of the *Exxon Valdez* and *Deepwater Horizon* spills (Michel 2021). Evidence from past spills has indicated that cetaceans do not avoid oil slicks; during the *Deepwater Horizon* spill, 11 species of cetaceans were documented swimming through oil and sheen (Dias et al. 2017) and killer whales were observed swimming through oil slicks following the *Exxon Valdez* oil spill (Matkin et al. 2008).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of whales are not likely because the dermal shield is considered to be a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on whales. Only prey entrained within the top few meters of the water column in the approximate footprint of the treatment area may be affected by chemically dispersed surface oil, likely representing a small fraction of the available food source.

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 meters) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 meters). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal

haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[8]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	**X**

References:

Alaska Department of Fish and Game. 2023. Gray whale (*Eschrichtius robustus*) species profile. Available at https://www.adfg.alaska.gov/index.cfm?adfg=graywhale.

Calambokidis J, Darling JD, Deecke V, Gearin P, Gosho M, Megill W, et al. 2002. Abundance, range and movements of a feeding aggregation of gray whales *(Eschrichtius robustus*) from California to southeastern Alaska in 1998. J. Cetacean Res. Mgmt. 4 (3):267–276.

Clarke JT, Brower AA, Ferguson MC, Willoughby AL, Rotrock AD. 2020. *Distribution and relative abundance of marine mammals in the eastern Chukchi Sea, eastern and western Beaufort Sea, and Amundsen Gulf 2019. annual report, OCS study BOEM 2020-027* (7600 Sand Point Way NE, F/AKC3, Seattle, WA 98115-6349: Marine Mammal Laboratory, Alaska Fisheries Science Center, NMFS, NOAA). Available at: https://www.fisheries.noaa.gov/alaska/marine-mammal-protection/aerial-surveys-arctic-marine-mammals.

Clarke JT, Ferguson MC, Brower AA, Fujioka E, Deland S. 2023. Biologically important areas II for cetaceans in U.S. and adjacent waters-Arctic region. Front. Mar. Sci. 10:1040123. doi: 10.3389/fmars.2023.1040123.

DWH NRDA Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2016a. *Deepwater Horizon* oil spill: final programmatic damage assessment and restoration plan and final programmatic environmental impact statement. https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Eguchi T, Lang AR, Weller DW. 2022. Abundance and migratory phenology of eastern North Pacific gray whales 2021/2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-668. https://doi.org/10.25923/x88y-8p07.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology 4(3):199-217.

Frasier KE, Solsona-Berga A, Stokes L, Hildebrand JA 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski SA et al. (editors), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise.

[8] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci JR, St Aubin DJ (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press. pp. 167-197.

Geraci JR, St Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review 42:1-12.

Geraci JR, St Aubin DJ. 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press Inc.

Matkin C, Saulitis E, Ellis G, Olesiuk P, Rice S. 2008. Ongoing population-level impacts on killer whales Orcinus orca following the *Exxon Valdez* oil spill in Prince William Sound, Alaska. MEPS. 356:269–81.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 p.

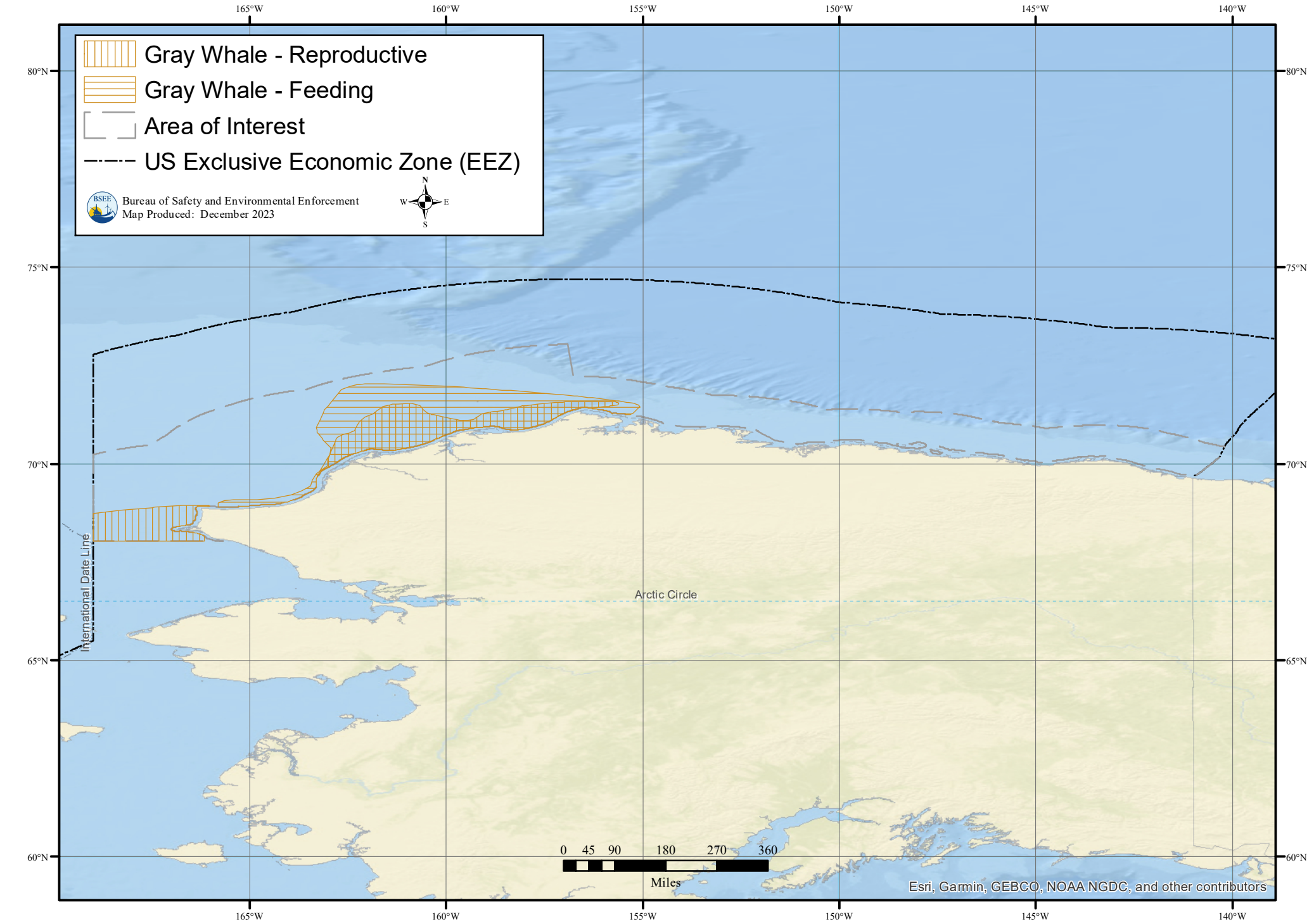
Moore SE, Clarke JT, Okkonen SR, Grebmeier JM, Berchok CL, Stafford KM. 2022. Changes in gray whale phenology and distribution related to prey variability and ocean biophysics in the northern Bering and eastern Chukchi seas. *PloS One* 17 (4), e0265934. doi: 10.1371/journal.pone.0265934.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press, doi: https://doi.org/10.17226/25161.

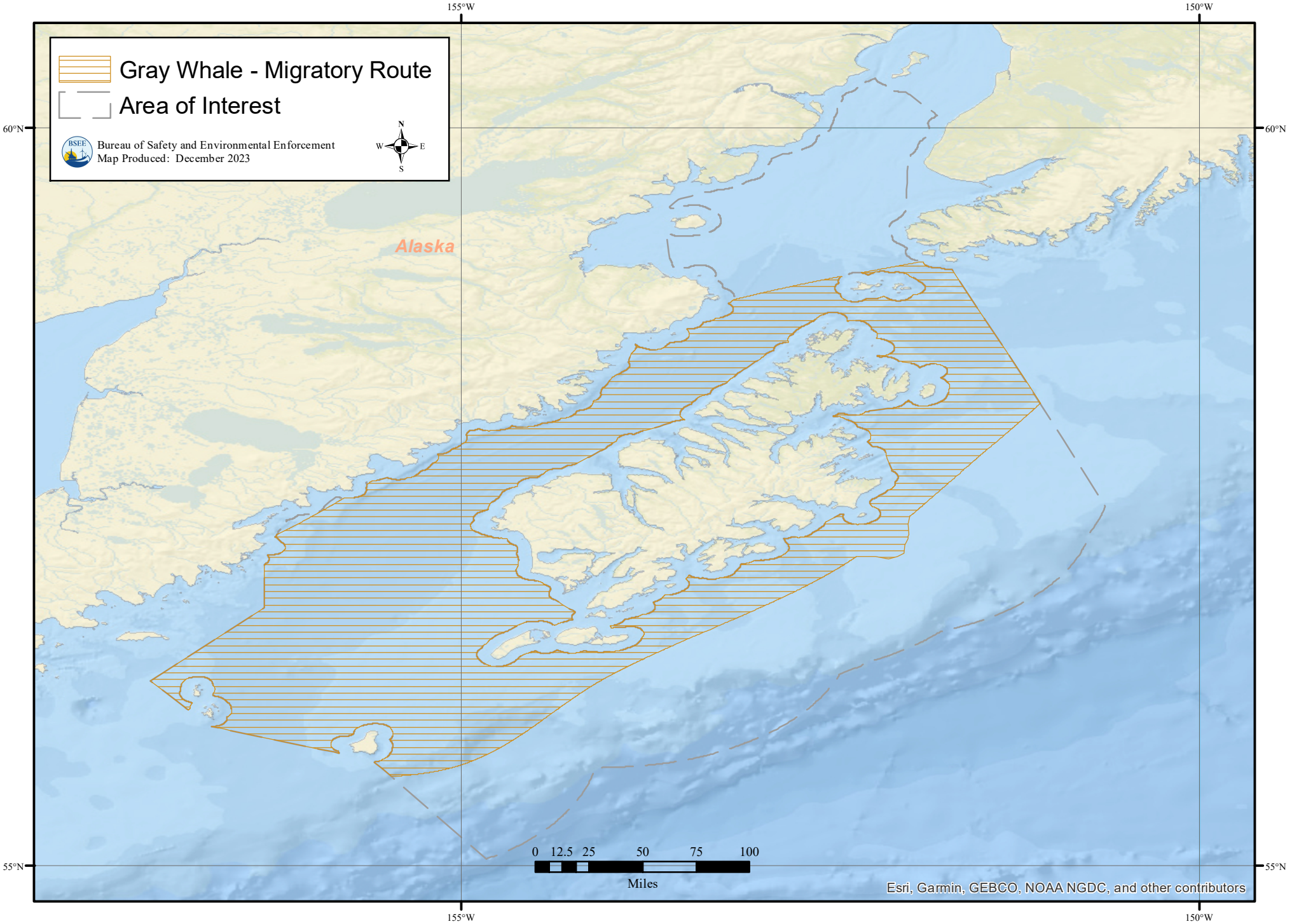
NOAA Fisheries. 2023. Species Directory: Gray Whale (*Eschrichtius robustus*). Available at https://www.fisheries.noaa.gov/species/gray-whale.

Rone BK, Zerbini AN, Douglas AB, Weller DW, Clapham PJ. 2017. Abundance and distribution of cetaceans in the Gulf of Alaska. Marine Biology, 164(1)1-23.

Werth AJ, Rita D, Rosario MV, Moore MJ, Sformo TL. 2018. How do baleen whales stow their filter? A comparative biomechanical analysis of baleen bending. Journal of Experimental Biology, 21(23):1-11.



This map represents the approximate range of gray whale in the Arctic (Chukchi and Beaufort Seas).



This map represents the approximate range of gray whale in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

Humpback Whale – Designated Critical Habitat occurs for 2 DPSs in the AOI: Mexico and Western North Pacific		**ESA Status***	**Endangered (2016)** Western North Pacific DPS **Threatened (2016)** Mexico DPS	81 FR 62260
Scientific Name	*Megaptera novaeangliae*	**Critical Habitat**		86 FR 21082
Appearance: Primarily black baleen whale with white on pectoral fins, undersides, and under flukes. The flukes have serrated edges with pointed tips and distinctive identifying coloration per individual (NOAA Fisheries 2023).				
Diet: Shrimp-like crustaceans (krill) and small pelagic schooling fish such as sardines, anchovy, and Pacific herring are preferred. They use several techniques to help them herd, corral, and disorient prey and that can include using bubbles, sounds, the seafloor, and their pectoral fins. One specific feeding method, called "group coordinated bubble net feeding," involves using curtains of air bubbles to condense prey. Once the fish are corralled, they are pushed toward the surface and engulfed as the whales lunge upward through the circular bubble net (NOAA Fisheries 2023).				
Population: The best estimates of abundance for the stock (1,084) and the portion of the stock migrating to summering areas in U.S. waters (127) were derived from a reanalysis of the 2004-2006 SPLASH data (Wade 2021). Although these data are more than fifteen years old, the estimates are still considered valid minimum population estimates.				
Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) and Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Cosmopolitan distribution in oceans around the world. Humpbacks are thought to have one of the longest migrations of any mammal on the planet, traveling up to 5,000 miles (8,046 km) between breeding and feeding grounds (NOAA Fisheries 2023). Humpbacks in the western North Pacific DPS spend summers/falls in high latitude feeding grounds which include the Gulf of Alaska and waters near the mouth of Cook Inlet (Young et al. 2023). They have been observed to travel as far north as the Beaufort Sea during feeding season. In winter/spring during mating and calving season, humpbacks seek the shallow warm waters of the tropics at lower latitudes. A 2009-2015 transect study of cetacean abundance in the Gulf of Alaska showed humpback whales concentrated at the shelf edge and slope waters eastside of Kodiak Island (Rone et al. 2017). During the survey, humpbacks were observed at depths of 165 to 657 feet (55 to 219 m). Designated critical habitat for the western North Pacific humpback includes waters around Kodiak Island and the Barren Islands, southwest along 154o40'W to the 1,000 m depth contour, east to just outside of the Cook Inlet/Kodiak Island OCS area, and northward to the mouth of Cook Inlet ending at a bounding line from Cape Douglas across to Cape Adam (NMFS 2016). It was noted that the central and western North Pacific stocks overlap in this area so separation of stocks during this evaluation was not possible. Critical habitat for the Mexico DPS of humpback whales includes marine waters on the north side of the Aleutian Islands. Critical habitat also includes the waters around Kodiak Island and the Barren Islands. The area also extends northward to the mouth of Cook Inlet where it is bounded by a line that extends from Cape Douglas across the inlet to Cape Adam. Critical habitat also includes the Prince William Sound area and associated waters.				

Vulnerabilities and Sensitivities to Oiling: Cetaceans that experience exposure to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia (Geraci 1990). Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive bottlenose dolphins that had crude oil added to their tank; skin lesions in a number of captive delphinid species where oil was applied to their skin; and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990).

Studies have shown that oil does not adhere to baleen so oil would not foul the baleen or reduce filtering capabilities. However, baleen whales may be at increased risk of oil ingestion. Studies focused on the health or survival of cetaceans following oil spills are limited with the exception of the *Exxon Valdez* and *Deepwater Horizon* spills (Michel 2021). Evidence from past spills has indicated that cetaceans do not avoid oil slicks; during the *Deepwater Horizon* spill, 11 species of cetaceans were documented swimming through oil and sheen (Dias et al. 2017) and killer whales were observed swimming through oil slicks following the *Exxon Valdez* oil spill (Matkin et al. 2008).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of whales are not likely because the dermal shield is considered to be a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on whales. Only prey entrained within the top few meters of the water column in the approximate footprint of the treatment area may be affected by chemically dispersed surface oil, likely representing a small fraction of the available food source.

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 meters) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 meters). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine

mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[9]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
	X	**X**

References:

DWH NRDA Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2016. *Deepwater Horizon* oil spill: final programmatic damage assessment and restoration plan and final programmatic environmental impact statement. https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology 4(3):199-217.

Frasier KE, Solsona-Berga A, Stokes L, Hildebrand JA. 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski SA et al. (editors), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci, JR and DJ St Aubin (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press, pp. 167-197.

Geraci JR, St Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review. (November) 42:1-12.

Geraci JR, St Aubin DJ 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press Inc.

Matkin C, Saulitis E, Ellis G, Olesiuk P, Rice S. 2008. Ongoing population-level impacts on killer whales Orcinus orca following the *Exxon Valdez* oil spill in Prince William Sound, Alaska. Marine Ecology Progress Series, 356:269-81.

[9] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058, 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25161.

NMFS. 2016. Endangered and Threatened Species: Identification of 14 Distinct Population Segments of the Humpback Whale (*Megaptera novaeangliae*) and Revision of Species-Wide Listing. Final Rule. 50 CFR Part 223 and 224. Vol 81 (62260 - 62320).

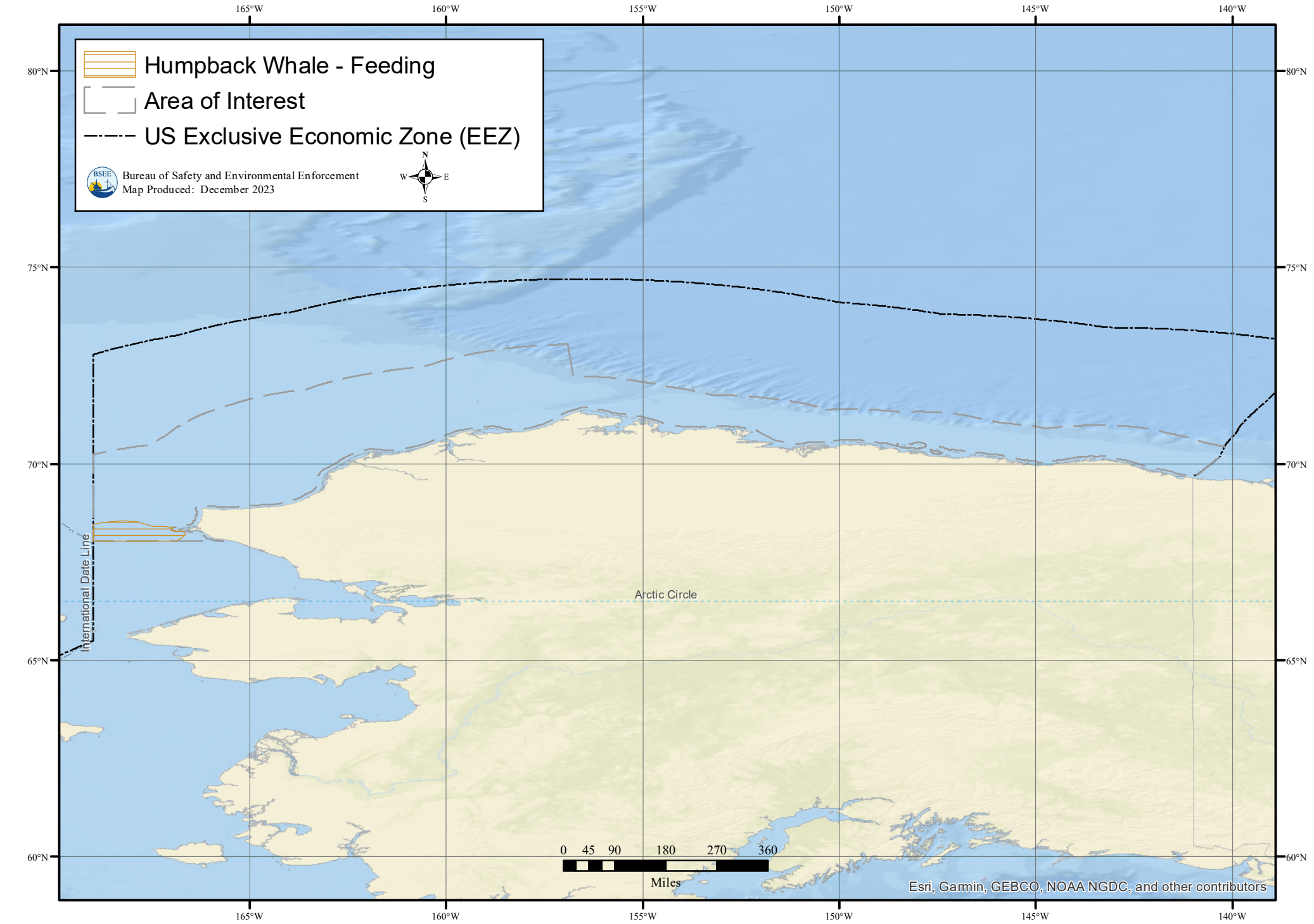
NOAA Fisheries. 2023. Species Directory: Humpback Whale (*Megaptera novaeangliae*). Available at https://www.fisheries.noaa.gov/species/humpback-whale.

Rone BK, Zerbini AN, Douglas AB, Weller DW, Clapham PJ. 2017. Abundance and distribution of cetaceans in the Gulf of Alaska. Marine Biology 164(1)1-23.

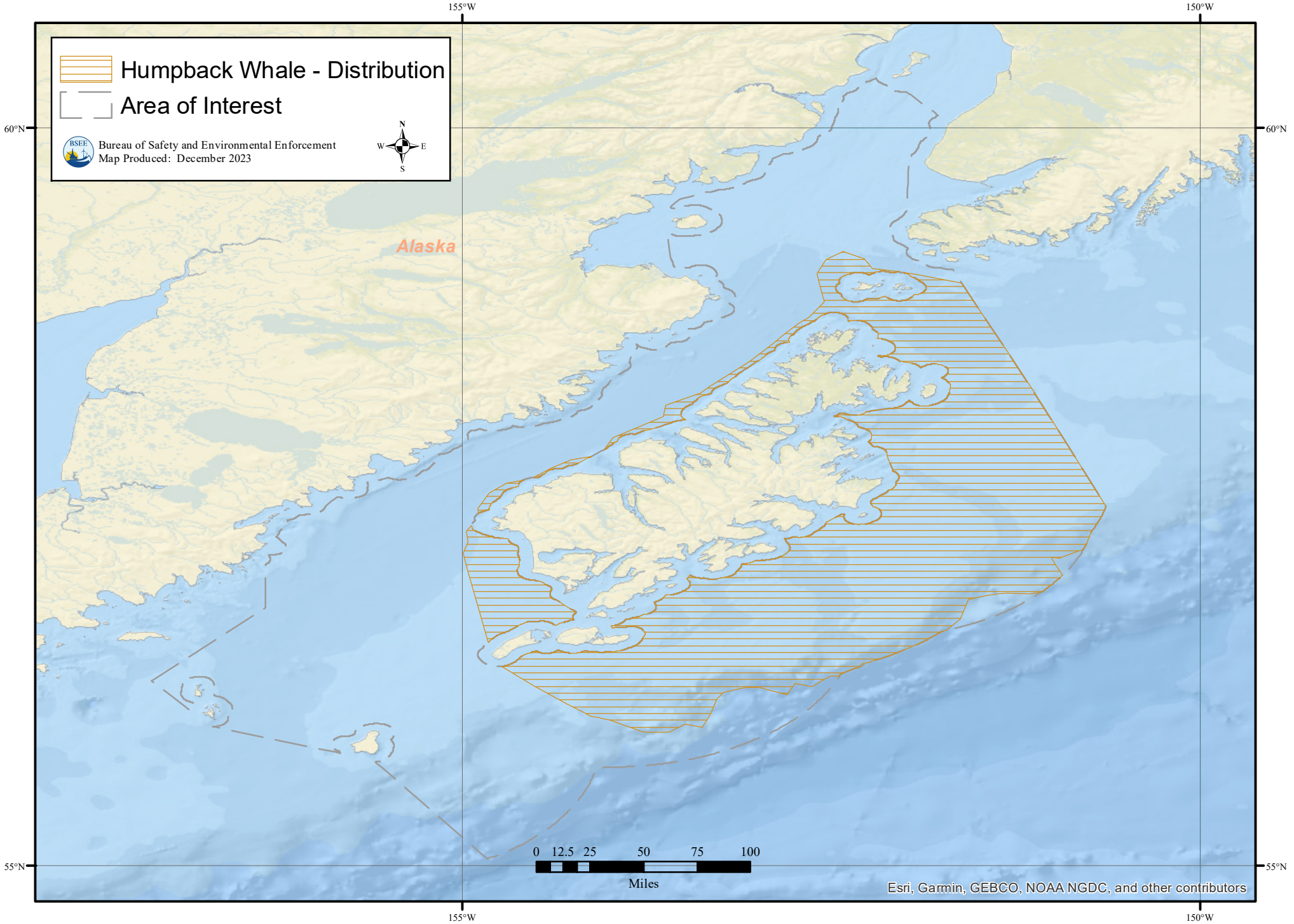
Wade PR. 2021. Estimates of abundance and migratory destination for North Pacific humpback whales in both summer feeding areas and winter mating and calving areas. International Whaling Commission Report SC/68c/IA/03.

Werth AJ, Rita D, Rosario MV, Moore MJ, Sformo TL. 2018. How do baleen whales stow their filter? A comparative biomechanical analysis of baleen bending. Journal of Experimental Biology, 221(23):1-11.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, et al. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.



This map represents the approximate range of humpback whale in the Arctic (Chukchi and Beaufort Seas).



This map represents the approximate range of humpback whale in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

North Pacific Right Whale		ESA Status*	Endangered (1970), listed as separate species (2008)	35 FR 18319 73 FR 12024
Scientific Name	*Eubalaena japonica*	**Critical Habitat**		73 FR 19000
Appearance: Baleen whale with black muscular body, undersides in some are white. Large head approximately one-quarter of its total length, raised rough skin covering head, eyes, around mouth, and behind blowhole. Broad, notched black tail with no dorsal fin (NOAA Fisheries 2023).				
Diet: Zooplankton (copepods, krill, and cyprids); preferred copepod species include *Neocalanus* cristatus*, N. flemingeri, N. plumchris.* and *Calanus marshallae* (NMFS 2017). Unlike other baleens, they will employ the use of skimming behaviors while foraging through concentrations of prey while moving.				
Population: Reliable population estimates or trends for North Pacific right whale are not available. According to the NMFS 2017 Five Year Review, fewer than 1,000 individuals remain. The minimum estimate of abundance of Eastern North Pacific right whales was 26 whales in 2008; however, given the extremely low abundance of this stock and the very low calf production, it seems unlikely that the current abundance is significantly different (Young et al. 2023).				
Distribution/Habitat/Migration (see map for distribution Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): North Pacific right whales occur mainly in the central North Pacific and eastern North Pacific within the OCS area. They are primarily found in coastal or shelf waters but sometimes travel into deeper waters. Their migration patterns are unknown but generally they summer in northern feeding grounds and winter in warm, shallow coastal waters to the south. Calving grounds have not been identified in the North Pacific. Designated critical habitat within the Cook Inlet/Kodiak Island OCS area occurs in the Gulf of Alaska on the Kodiak shelf near Albatross Bank just south of Kodiak Island (NMFS 2017). NOAA, as part of the Biologically Important Areas effort, identified Barnabas Trough, to the East of Kodiak, as an important feeding area (Wild et al. 2023). A July 2022 petition was filed proposing to connect the Bering Sea feeding area to the GOA feeding site. NMFS found review of the critical habitat area was warranted.				
Vulnerabilities and Sensitivities to Oiling: Cetaceans that experience exposure to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes, resulting in long-term population impacts (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive bottlenose dolphins that had crude oil added to their tank; skin lesions in a number of captive delphinid species where oil was applied to their skin; and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990). Studies have shown that oil does not adhere to baleen so oil would not foul the baleen or reduce filtering capabilities (Werth et al. 2018). However, baleen whales may be at increased risk of oil ingestion. Studies focused on the health or survival of cetaceans following oil spills are limited with the exception of the Exxon Valdez and Deepwater Horizon spills (Michel 2021). Evidence from past spills has indicated that cetaceans do not avoid oil slicks; during the Deepwater Horizon spill, 11 species of cetaceans were documented swimming through oil and sheen (Dias et al. 2017) and killer whales were observed swimming through oil slicks following the Exxon Valdez oil spill (Matkin et al. 2008). Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of North Pacific right whales are not likely because the dermal shield is considered to be a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on whales. Only prey entrained within the top few meters of the water column in the approximate footprint of the treatment area may be affected by chemically dispersed				

surface oil, likely representing a small fraction of the available food source.

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 meters) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 meters). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observers on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance. Comply with the North Pacific right whale Critical Habitat Avoidance Area and the 20-mile buffer around that Critical Habitat, and the North Pacific right whale biologically important areas designated in the AWA-ACP.

Atypical Dispersant[10]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by

[10] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
		X

References:

DWH NRDA Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2016a. *Deepwater Horizon* oil spill: final programmatic damage assessment and restoration plan and final programmatic environmental impact statement. https://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Frasier KE, Solsona-Berga A, Stokes L, Hildebrand JA. 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski, SA, Ainsworth CH, Gilbert S, Hollander DJ, Paris CB, Schlüter M, Wetzel DL (eds.), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci JR, St Aubin DJ (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press, pp.167-197.

Geraci JR, St Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review (November) 42:1-12.

Geraci JR, St Aubin DJ. 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press Inc.

Matkin C, Saulitis E, Ellis G, Olesiuk P, Rice S. 2008. Ongoing population-level impacts on killer whales Orcinus orca following the *Exxon Valdez* oil spill in Prince William Sound, Alaska. Marine Ecology Progress Series, 356:269-281.

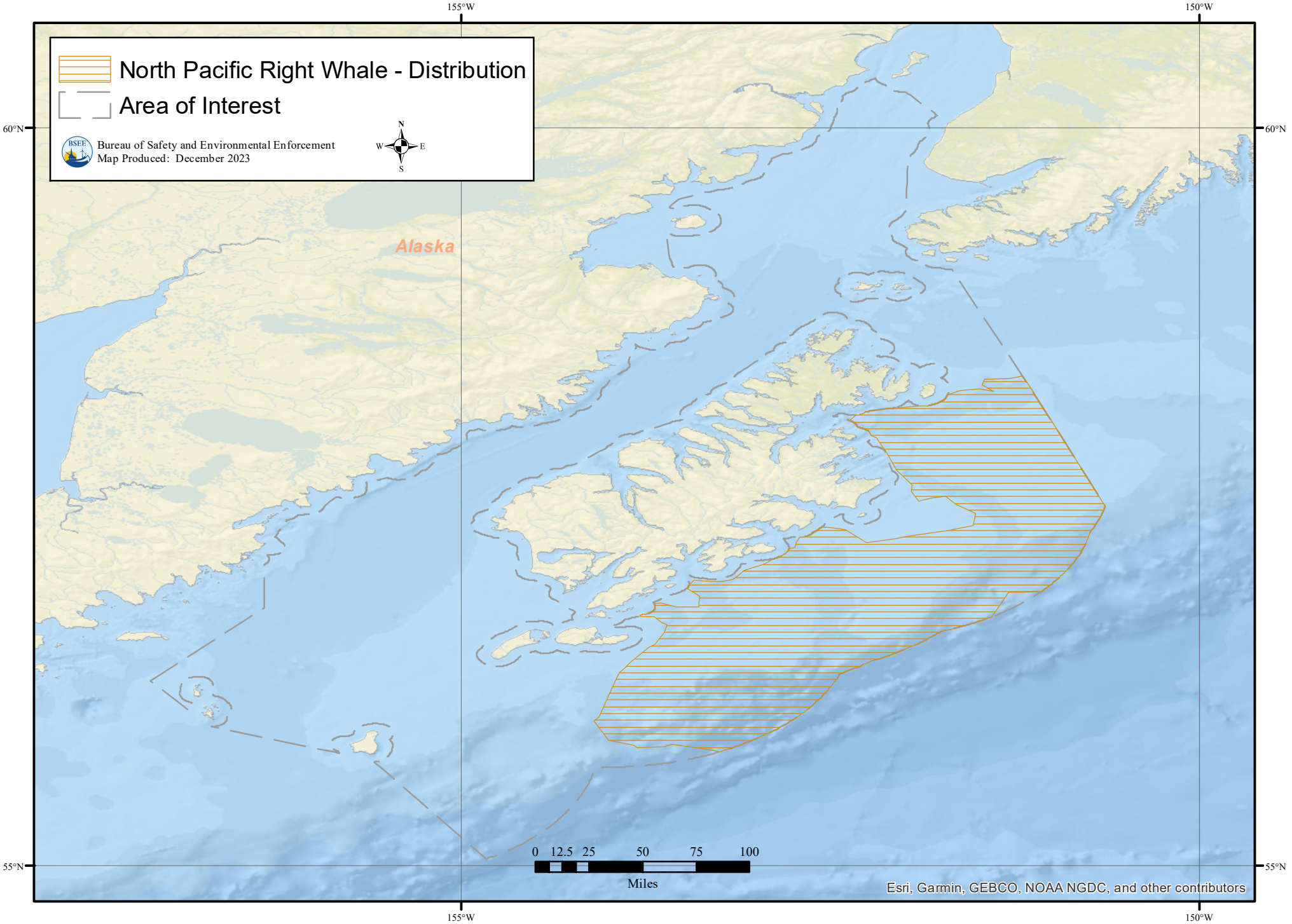
Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058, 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press, doi: https://doi.org/10.17226/25161.

NMFS. 2017. North Pacific Right Whale (*Eubalaena japonica*) Five-Year Review: Summary and Evaluation. https://media.fisheries.noaa.gov/dam-migration/2018northpacificrightwhale5yrreview.pdf

NOAA Fisheries. 2023. Species Directory: North Pacific Right Whale (*Eubalaena japonica*). Available at https://www.fisheries.noaa.gov/species/north-pacific-right-whale.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, et al. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474, 316 p.



This map represents the approximate range of North Pacific right whale in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

Sperm Whale		ESA Status*	Endangered (1970)	35 FR 18319
Scientific Name	*Physeter macrocephalus*	**Critical Habitat**	None	

Appearance: Sperm whales are the largest toothed whales. Mostly dark gray, though some have white patches on the belly, with an extremely large head that takes up about 1/3 of its total body length. Sperm whales are sexually dimorphic, with males averaging 52 feet (15 m) in length and 45-50 tons (40-45 metric tons) and females 36-40 feet (12-13 m) in length and 15 tons (14 metric tons) (NOAA Fisheries 2023).

Diet: Sperm whales preferentially feed on medium and large squids but can also consume octopus and medium- and large-sized demersal fish, such as rays, sharks, and many teleosts (Young et al. 2023). They typically feed at depths of 1,600-3,200 feet (500-1,000 m). They can consume 3.0-3.5% of their body weight per day.

Population: Sperm whales are managed as 6 different stocks. The only stock occurring in Alaska waters is the North Pacific stock. An estimate of 345 whales was calculated from surveys in the Gulf of Alaska in 2015 (Rone et al. 2017).

Distribution/Habitat/Migration (see map for distribution Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Sperm whales can be found worldwide and observed along the edge of pack ice. They are most common in deep ocean waters (>900 feet; 275 m). Sperm whales occur year-round in the Gulf of Alaska but appear to be more common during the summer months than winter months (Mellinger et al. 2004). Migrations are not well understood, but sperm whales are thought to migrate to higher latitude foraging grounds in the summer and lower latitudes in the winter, and aggregate in areas with high concentration of squid. Sperm whales hunt for food during deep dives that routinely reach depths of 2,000 feet (600 m) and can last for 45 minutes but are capable of diving to depths of over 10,000 feet (3,000 m) for over 60 minutes. After long, deep dives, individuals come to the surface to breathe and recover for several minutes before initiating their next dive. Sperm whales are social animals, often occurring in groups.

Vulnerabilities and Sensitivities to Oiling: Cetaceans that experience exposure to oil through direct contact, inhalation, ingestion, and/or aspiration of oil can experience severe damage to internal organs and disruption of reproductive processes (Frasier et al. 2020). Inhalation of toxic vapors can cause inflammation of mucous membranes of the eyes and airways, lung congestion, and possibly pneumonia. Laboratory studies on cetaceans have shown multiple effects from exposure, including liver damage in captive bottlenose dolphins that had crude oil added to their tank and skin lesions after oil was applied to the skin of a live, stranded sperm whale (Geraci 1990).

Because they feed at depth, sperm whales are less likely to be exposed to oil via consumption of prey, unless they are feeding directly in an oiled plume. Sperm whales are at risk of aspiration of oil if they encounter oil slicks while resting on the surface, and do not necessarily avoid oil in the water column or on the surface of the water. Following the *Deepwater Horizon* oil spill, sperm whales were observed swimming in surface oil on 16 occasions and passive acoustic monitoring indicated that sperm whales did not avoid the area around the *Deepwater Horizon* release site (Frasier et al. 2020).

Detrimental effects of exposure to chemically dispersed oil on the skin of sperm whales are not likely because the dermal shield is a highly effective barrier to the toxic compounds found in oil (NASEM 2019). Use of dispersants, either at the surface or via subsea injection, reduces the direct impacts of spilled oil on sperm whales. Sperm whales feed at depth and on mobile prey unlikely to be entrained within the top few meters of the water column (i.e., squid, sharks, skates, etc.) that would be affected by dispersant application on surface slicks.

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 m) to marine mammals in the water. Vessel speeds shall be reduced to <10 knots when marine mammals sighted within 1,000 feet (300 m). Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[11]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

[11] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
		X

References:

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Frasier KE, Solsona-Berga A, Stokes L, Hildebrand JA. 2020. Chapter 26: Impacts of the *Deepwater Horizon* Oil Spill on Marine Mammals and Sea Turtles. In: Murawski, SA, Ainsworth CH, Gilbert S, Hollander DJ, Paris CB, Schlüter M, and Wetzel DL (editors), Deep Oil Spills Facts, Fate, and Effects, Springer, p. 431-462.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR. 1990. Physiologic and Toxic Effects on Cetaceans. In: Geraci JR, St Aubin DJ (eds). Sea Mammals and Oil: Confronting the Risks. New York (NY): Academic Press, pp. 167-197.

Geraci JR, St Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review, (November) 42:1-12.

Geraci JR, St Aubin DJ. 1990. Sea Mammals and Oil: Confronting the Risks. San Diego (CA): Academic Press Inc.

Mellinger DK, Stafford KM, Fox CG. 2004. Seasonal occurrence of sperm whale (*Physeter macrocephalus*) sounds in the Gulf of Alaska, 1999-2001. Marine Mammal Science, 20:48-62.

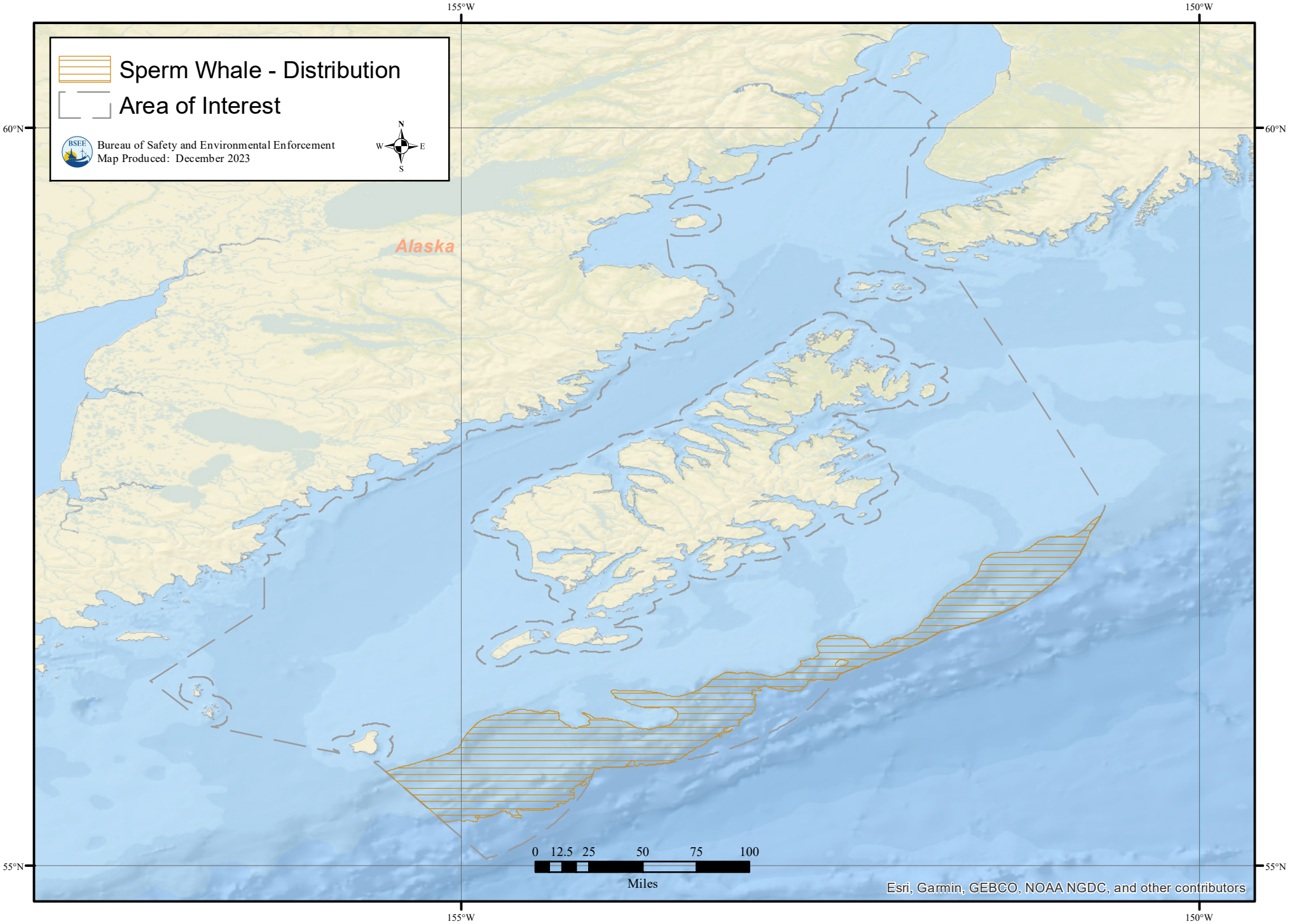
Michel J. (ed). 2021. Oil spill effects literature study of spills of greater than 20,000 barrels of crude oil, condensate, or diesel. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058, 326 p.

National Academies of Sciences, Engineering, and Medicine. 2019. The Use of Dispersants in Marine Oil Spill Response. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25161.

NMFS (National Marine Fisheries Service). 2015. NMFS Biological Opinion of the Unified Plan. 174 pp. Available at: https://alaskarrt.org/PublicFiles/NMFS%20BiOp%205_15_15.pdf.

NOAA Fisheries. 2023. Species Directory: Sperm Whale (*Physeter macrocephalus*). Available at https://www.fisheries.noaa.gov/species/sperm-whale.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, et al . 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.



This map represents the approximate range of sperm whale in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

Bearded Seal (Beringia DPS)		ESA Status*	Threatened	77 FR 76740
Scientific Name	*Erignathus barbatus nauticus*	**Critical Habitat**		87 FR 19180 (2022)

Appearance: The bearded seal is the largest phocid seal in Alaska, growing up to 7-8 feet (2-2.5 m) and weighing 575-800 pounds (260-365 kg) (ADF&G 2023). They have a small head in proportion to their body, long whiskers, and square- shaped fore flippers. Adults range in color from silver-gray to dark brown and they have no distinctive markings. The bearded seal gets its name from the long white whiskers on its face, which are used to find food on the ocean bottom.

Diet: Bearded seals feed primarily on benthic organisms, though they can switch their diet to pelagic schooling fishes when readily available (NMFS 2022). The bulk of their diet is bivalve mollusks, crustaceans such as crab and shrimp, and fish such as sculpin and cod. They primarily feed on or near the bottom, generally diving to depths of less than 328 feet (100 m), though dives of up to 1,000 (300 m) feet have been recorded. Bearded seals are believed to scan the surface of the seafloor with their highly sensitive whiskers, burrowing only in the pursuit of prey (ADF&G 2023).

Population: Bearded seals occurring in the U.S. belong to the Beringia distinct population segments (DPS), also referred to as the Alaska stock (Young et al. 2023). Although a reliable population estimate is not available, the most recent abundance estimate available was 301,836 bearded seals (95% CI: 238,195-371,147), (Young et al. 2023). Reliable data on trends in population abundance for the Beringia stock of bearded seals or the portion of the stock within U.S. waters are not available. Loss of sea ice is the main threat to this species, and the Beringia DPS is listed as Threatened under the ESA and considered 'depleted' under the MMPA (Young et al. 2023).

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) offshore ESI AOIs): In Alaskan waters, bearded seals mainly occur over the continental shelves of the Bering, Chukchi, and Beaufort seas (Kelly 1988). They are typically associated with the ice edge and in the Beaufort Sea, they most often occur in a mixed ice environment where drifting pack ice interacts with fast ice, with open water leads, fractures, and polynyas (Muto et al. 2021). In the spring, bearded seals move north into the Chukchi and Beaufort seas from wintering areas as the pack ice recedes. Bearded seals are widely distributed during summer, primarily along the southern edge of pack ice that is broken and drifting and provides leads, fractures, and polynyas (Cameron et al. 2010). Bearded seals spend the summer and early fall at the southern edge of the Chukchi Sea and Beaufort Sea pack ice and at the wide, fragmented margin of multiyear ice. At the same time (summer and early fall), some juvenile seals are found in bays, estuaries, and river mouths along the coasts of the Bering and Chukchi Seas (Cameron, et al. 2018). In the fall they move south into the Bering Sea with the advancing ice edge back to their winter areas (MacIntyre et al. 2015). A small portion of the bearded seal stock is believed to remain in the Beaufort Sea year-round, using lead systems, polynyas, and shear zones for access to the ocean.

Bearded seals are closely associated with sea ice during the critical periods related to reproduction, molting, and resting between foraging trips. They prefer moving ice that produces natural openings and areas of open water, while avoiding areas of continuous, thick, shorefast ice (Cameron et al. 2018). The core distribution for bearded seals are areas of the known range that are in water less than 500 meters deep (Cameron et al. 2010); however, virtually all habitat used by 51 bearded seals tagged in Alaska from 2004 to 2015 was of shelf waters less than 200 meters deep (Citta et al. 2018). Surveys in the Beaufort Sea indicate that bearded seals prefer areas with open ice cover and water depths of 25–75 m. During summer, their preferred habitat is characterized by shallow waters that retain ice cover, mostly with depths ≤ 200 m (Cameron et al. 2010). Bengtson et al. (2005) speculated that higher offshore densities of bearded seals in the Chukchi Sea could be due to high benthic productivity, high biomass, and fast ice distribution. Bearded seals may also use

nearshore areas of the Beaufort and Chukchi seas, especially bays, estuaries, and river mouths and may occasionally haul out on land (Muto et al. 2021). Critical Habitat designated for the bearded seal includes an area of marine habitat in the northern Bering, Chukchi, and Beaufort seas (NMFS 2022).

Vulnerabilities and Sensitivities to Oiling: Bearded seals can be exposed to oil via coating of their pelage, ingestion, or inhalation (Geraci and St. Albin 1988). The impacts of oil exposure to bearded seals are not well described but expected to be like other pinnipeds (Ziccardi et al. 2015). Bearded seals have thick blubber layers for insulation and little grooming behavior, which lessens their chance of ingesting oil (Alaska RRT 2020). Bearded seals are usually weaned and shed their fur by the end of the second week after being born, limiting the likelihood of oil exposure creating thermoregulation issues. Bearded seal pups would encounter oil while swimming or foraging or be exposed to oil from contact with an oiled mother. Bearded seal pups are most vulnerable to the effects of oiling from mid-March through June.

Juvenile and adult bearded seals are likely to be coated by or inhale oil while entering and exiting the water.

Bearded seals may be more vulnerable than other seals to the effects of ingestion of oiled prey, due to their preference for invertebrates, which are known to accumulate hydrocarbons (Engelhardt 1983).

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed or dead marine mammals to the Wildlife Hotline. If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers: for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <100-150 m) to marine mammals in the water. Vessel speeds shall be <10 knots when marine mammals sighted within 1,000 feet (300 m). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[12]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use near seals (Garron 2019).

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	

References:

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Bengtson, J. L., L. M. Hiruki-Raring, M. A. Simpkins, and P. L. Boveng. 2005. Ringed and bearded seal densities in the eastern Chukchi Sea, 1999-2000. Polar Biol. 28:833-845.

Cameron MF, Bengtson JL, Boveng PL, et al. 2010. Status review of the bearded seal (Erignathus barbatus). U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-211, 246 p.

Cameron M F, Frost KJ, Ver Hoef, JM, et al. 2018. Habitat selection and seasonal movements of young bearded seals (*Erignathus barbatus*) in the Bering Sea. PLoS ONE 13(2):e0192743. DOI: dx.doi.org/10.1371/journal.pone.019274.

Citta JJ, Lowry LF, Quakenbush LT, et al. 2018. A multi-species synthesis of satellite telemetry data in the Pacific Arctic (1987–2015): overlap of marine mammal distributions and core use areas. Deep-Sea Res. II 152:132-153 . DOI: dx.doi.org/10.1016/j.dsr2.2018.02.006

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare. 11788755.v2.

Geraci JR, St. Aubin DJ. 1988. Synthesis of effects of oil on marine mammals. U.S. Dept. of Interior, OCS Study MMS 88-0049. 151 p.

Kelly BP. 1988. Bearded seal, Erignathus barbatus, p. 77-94. In J. W. Lentfer (ed.), Selected Marine Mammals of Alaska: Species Accounts with Research and Management Recommendations. Marine Mammal

[12] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

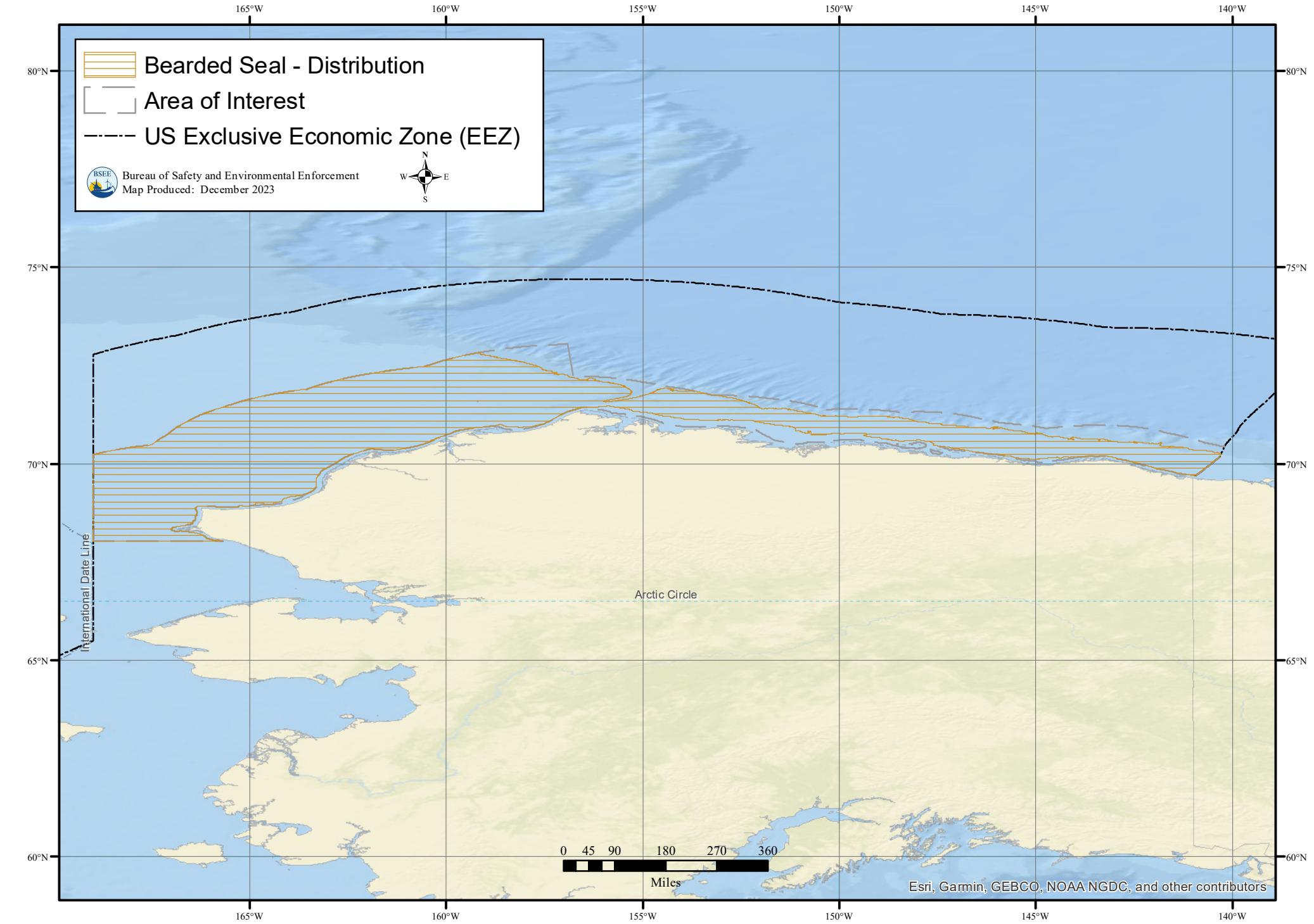
Commission, Washington, DC.

MacIntyre KQ, Stafford KM, Conn PB, Laidre KL, Boveng PL. 2015. The relationship between sea ice concentration and the spatio-temporal distribution of vocalizing bearded seals (*Erignathus barbatus*) in the Bering, Chukchi, and Beaufort seas from 2008 to 2011. Prog. Oceanogr. 136:241-249. DOI: dx.doi.org/10.1016/j.pocean.2015.05.008

Muto MM, Helker VT, Delean BJ, et al. 2021. Alaska marine mammal stock assessments, 2020. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-421, 398 p.

NMFS 2022. Designation of Critical Habitat for the Beringia Distinct Population Segment of the Bearded Seal. Final Rule. 50 CFR Parts 223 and 226. Vol 87 (19180-19230).

Ziccardi MH, Wilkin SM, Rowles K, Johnson S. 2015. Pinniped and Cetacean Oil Spill Response Guidelines. U.S. Dept. of Commer., NOAA. NOAA Tech. Memo. NMFS-OPR-52. 138 p.



This map represents the approximate range of bearded seal in the Arctic (Chukchi and Beaufort Seas).

THIS PAGE INTENTIONALLY LEFT BLANK

Arctic Ringed Seal		ESA Status*	Threatened	77 FR 76706
Scientific Name	*Pusa hispida hispida*	**Critical Habitat**		87 FR 19232 (2022)

Appearance: Ringed seals are the smallest and most common Arctic seal (ADF&G 2023). Their coat is dark with light-colored rings on their back and sides, and a light-colored belly. Pups are born with a white coat of hair (lanugo) which is shed after about 4-6 weeks. Ringed seals have thick, strong claws on their small foreflippers that they use to maintain breathing holes through 6 feet or more of ice. Ringed seals can grow to an average length of 4 to 4.5 feet (1.2-1.5 m) and weigh 110 to 150 pounds (50-70 kg). The average weight of a ringed seal pup at birth is about 10 pounds (4.5 kg).

Diet: Ringed seals are opportunistic and eat a variety of invertebrates, fish, and amphipods (NOAA Fisheries 2023). The particular species eaten depends on availability, depth of water, and distance from shore. In Alaska waters, the important food species are arctic cod, saffron cod, shrimps, and other crustaceans.

Population: The Arctic ringed seal is the most abundant of the five ringed seal subspecies. Although no accurate estimate exists, there are probably more than 2 million Arctic ringed seals worldwide. The estimated population size for Arctic ringed seal is over 158,000 individuals (Young et al. 2023). Loss of sea ice and snow cover on the ice poses the main threat to this species, and Arctic subspecies are listed as Threatened under the ESA and considered 'depleted' under the MMPA.

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) offshore ESI AOIs): Arctic ringed seals have a circumpolar distribution, occurring in all seas of the Arctic Ocean, and seasonally in adjacent seas including the Bering Sea (Young et al. 2023). They are the most widespread seal species in the Beaufort Sea and some reside there throughout the year; however, during fall most ringed seals move from the Beaufort and Chukchi Seas to overwinter in the Bering Sea. In the spring, ringed seals move north with the pack ice as it recedes, and back into the Chukchi and Beaufort seas.

Most ringed seals are found in shorefast ice near polynyas and lead systems, particularly in or near pressure ridges and snowdrifts. Pack ice is sub-optimal habitat. Ringed seals maintain breathing holes in sea ice. Each individual seal typically maintains multiple holes. They use dens for resting and whelping pups but spend much of their time looking for food under the ice and scraping away ice buildup at their holes.

Ringed seals forage most intensively during the open-water period. Ringed seals rarely come to shore, preferring to remain with the sea ice most of the year. They travel widely and can be found in waters of nearly any depth and in open water, hundreds of miles from land or ice. Ringed seal densities in the Beaufort Sea are greatest in water with greater than 80 percent ice cover and depths between 16 and 115 feet (5-35 m) (Frost et al. 2004). Molting for ringed seals occurs between mid-May to mid-July, and during this time they remain hauled out on the edge of the pack ice, coastline, or on remnant landfast ice until their old pelt dries out and sheds (Ryg et al. 1990). Because of the need for dry skin during the molt, ringed seals refrain from entering the water and forgo foraging activities, making the molt a particularly stressful time for this species (Ryg et al. 1990). Critical Habitat designated for the Arctic ringed seal includes an area of marine habitat in the northern Bering, Chukchi, and Beaufort seas (NMFS 2022).

Vulnerabilities and Sensitivities to Oiling: Ringed seals can be exposed to oil via coating of their pelage, ingestion, or inhalation (Alaska RRT 2020). The impacts of oil exposure are not well described; most studies have been unable to correlate the degree of oiling with the type of effect and many of the observed effects (including lesions and mortality) may be related as well to captivity stress or other underlying factors. The most immediate threat to ringed seals would be direct oil contamination of subnivean lairs and pre-weaned pups, or indirect oil contamination resulting from the transport of oil into lairs by adults (Alaska RRT 2020).

Pre-weaned pups are much more sensitive to the effects of oiling because they rely primarily on lanugo (i.e., a

thick layer of white hair) for insulation and have little or no blubber layer at birth. Oiling of lanugo could result in the loss of insulation, which could be fatal to pre-weaned pups. March to June is the critical period for pups, which are born in March and April and are weaned by June. By the time the pups are weaned, they have a well- developed blubber layer for insulation (Alaska RRT 2020)

Juvenile and adult ringed seals are likely to be coated or inhale oil while entering and exiting the water, and while under the ice while using under-ice pockets of air on sub-ice travels (Engelhardt 1983). Oil does not adhere well to ringed seal pelage; in a lab study, oil was cleared from seals in a day due to normal movement through the water (summarized in Englehardt 1983). Ringed seals have been shown to inhale oil, but the effects of inhalation of oil in confined spaces are not well understood. Seals can also ingest oil by consuming oiled prey. It has been demonstrated that ringed seals can tolerate low levels of oil exposure, but the effects of chronic sublethal quantities is not understood.

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed or dead marine mammals to the Wildlife Hotline. If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers: for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <50-150 m) to marine mammals in the water. Vessel speeds shall be <10 knots when marine mammals sighted within 1,000 feet (300 m). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[13]: Follow spill-specific special considerations, constraints, permit requirements, and/or

[13] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use near seals.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	

References:

Alaska Department of Fish and Game. 2023. "Ringed seal (*Pusa hispida*) species profile." Available at https://www.adfg.alaska.gov/index.cfm?adfg=ringedseal.main.

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Frost, KJ, Lowry LL, Pendleton G, Nute HR. 2004. Factors affecting the observed densities of ringed seals, Phoca hispida, in the Alaskan Beaufort Sea, 1996-1999. Arctic. Vol. 57(2): 115-128.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR, St. Aubin DJ. 1988. Synthesis of effects of oil on marine mammals. U.S. Dept. of Interior, OCS Study MMS 88-0049, 151 p.

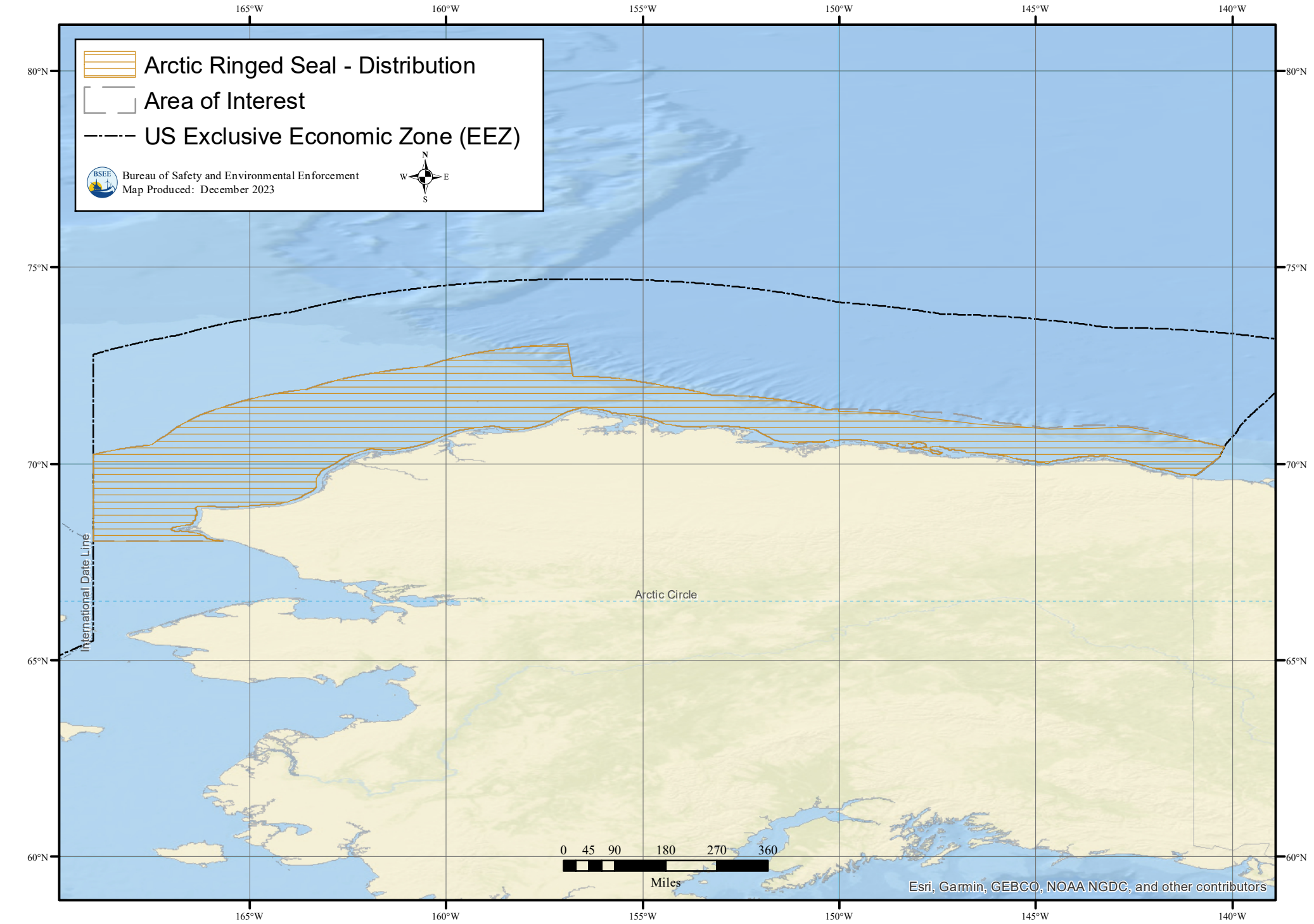
NMFS. 2022. Endangered and Threatened Species; Designation of Critical Habitat for the Arctic Subspecies of the Ringed Seal. Final Rule. 50 CFR Parts 223 and 226. Vol 87 (19232-19287).

NOAA Fisheries. 2023. Species Directory: Ringed Seal (*Phoca hispida*). Available at https://www.fisheries.noaa.gov/species/ringed-seal.

Ryg M, Smith TG, Oritsland NA. 1990. Seasonal changes in body mass and body: composition of ringed seals (*Phoca hispida*) on Svalbard. Can. J. Zool. 68: 470-475

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, et al. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.

Ziccardi MH, Wilkin SM, Rowles K, Johnson S. 2015. Pinniped and Cetacean Oil Spill Response Guidelines. U.S. Dept. of Commer., NOAA. NOAA Tech. Memo. NMFS-OPR-52. 138 p.



This map represents the approximate range of Arctic ringed seal in the Arctic (Chukchi and Beaufort Seas).

Steller Sea Lion		ESA Status*	Endangered (Western DPS)	55 FR 49204 62 FR 24345
Scientific Name	*Eumetopias jubatus*	**Critical Habitat**		59 FR 30715 (1994)

Appearance: The Steller sea lion is the largest member of the family Otariidae, the "eared seals," which includes all sea lions and fur seals (ADF&G 2023). Males can be up to 11 feet long (3 m) and can weigh up to 2,500 pounds (1133 kg), and females can be 7.5-9.5 feet (2.5-3 m) long and weigh up to 800 pounds (365 kg). At birth, pups have dense, coarse, nearly black fur with a frosty appearance because the tips of the hair are colorless. Color lightens after their first molt in late summer. Most adult females are buff colored on the back. Nearly all males stay darker on the front of the neck and chest; some are even a reddish color. Adult males have prominent, broad foreheads and muscular necks.

Diet: Steller sea lions are generalist predators that eat a variety of fishes and cephalopods and occasionally other marine mammals and birds. Sea lions are known to consume primarily fish and can take prey that are seasonally abundant, such as Pacific herring, Pacific salmon, Pacific cod, eulachon and capelin (NOAA Fisheries 2023).

Population: Steller sea lion was initially listed as Threatened under the ESA in 1990. In 1997, the species was split into two Distinct Population Segments (DPS), the western DPS and the eastern DPS (Young et al. 2023). The western distinct population segment (DPS) includes all Steller sea lions originating from rookeries west of Cape Suckling (144° west longitude). The western DPS's ESA listing status was elevated to endangered when it was established, due to lack of recovery; it remains listed as endangered. The eastern DPS was delisted in 2013. Recent population estimates of the western DPS have led to a minimum population estimate of 52,932. Model results indicate that pup and non-pup counts of western stock Steller sea lions in Alaska were at their lowest levels in 2002 and have increased at 1.63% and 1.82% per year, respectively, between 2002 and 2019 (Sweeney et al., 2019). However, there are strong regional differences across the range in Alaska, with positive trends in the Gulf of Alaska and the eastern Aleutian Islands region, including eastern Bering Sea, and generally negative trends to the west of Samalga Pass, in the central and western Aleutian Islands. Steller sea lions are regularly seen in the southern Chukchi Sea; only a few individual males have been documented in the far western Beaufort Sea. Steller sea lion is considered 'depleted' under the MMPA.

Distribution/Habitat/Migration (see map for distribution Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Steller sea lions are typically found in coastal waters on the continental shelf; they also occur and sometimes forage in much deeper continental slope and pelagic waters, especially in the non-breeding season. Steller sea lion distribution extends along the Pacific Rim with its center of abundance in the Aleutian Islands and Gulf of Alaska (Young et al. 2023). Steller sea lions haul-out on land to mate, bear their young, nurse, avoid predators and disturbance, and rest. Steller sea lions are generally considered non-migratory although some individuals, particularly juveniles and adult males, disperse widely outside of the summer breeding season. Pupping occurs at discrete sites (rookeries) from mid-May through mid-July. Sites classified as haulouts may also be used throughout the year. Molting periods normally extend from June through September, during which time Steller sea lions can remain out of water for extended periods. Steller sea lion Critical Habitat in Western Alaska includes a 20 nautical mile buffer around all major haulouts and rookeries, as well as associated terrestrial, air and aquatic zones, and three large offshore foraging areas (NMFS 1993).

Vulnerabilities and Sensitivities to Oiling: Steller sea lions can be exposed to oil by inhalation, ingestion, or coating. Inhalation of volatile components of crude oil can damage the mucous membranes, including airways, lead to lung congestion, and cause hemorrhagic bronchopneumonia and pulmonary edema at high concentrations (Geraci and St. Aubin 1988).

Ingestion of oil can lead to diarrhea, increase passage time of food through the intestinal tract, and decrease the nutritional value of food. Skin irritation and conjunctivitis could result from prolonged exposure to oil. These effects can increase an individual's physiological stress and increase the likelihood of death of individuals that are highly contaminated or already weakened. Steller sea lions do not rely on their fur for insulation because they have a thick layer of fat and do not groom themselves, factors which lessen their susceptibility to oil impacts when compared to other marine mammals (Alaska RRT 2020). Studies of Steller sea lion exposure during the *Exxon Valdez* spill showed that hydrocarbon levels were elevated during the spill; however, no associated population declines were observed (Loughlin et al. 1996)

Within the Steller sea lion population, females and pups have the greatest risk of oiling. During the pupping and breeding season, females spend part of their time on the rookery and part of their time feeding at sea. Steller sea lion pups, which are generally weaned one to two years after birth, have less subcutaneous fat than adults and are likely to be more sensitive to the effects of oiling to their coat. In addition, pups can ingest oil from their mothers while nursing.

Steller sea lions are sensitive to impacts from response activities, such as helicopter activity and/or vessel activity near rookeries or haulouts. Disturbance to haulouts and rookeries can lead to trampling of smaller animals due to the marked sexual dimorphism.

BMPs for Offshore Operations:

General: Implement 1,500-foot (450 m) restricted access zones around all known Steller sea lion haulouts and rookeries. Watch for and avoid collisions with wildlife and report all distressed or dead marine mammals to the Wildlife Hotline. If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers: for whales, seals, sea lions, porpoises, and dolphins: NMFS Marine Mammal Stranding Network Hotline (877) 925-7773 or (877) 9-AKR-PRD.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <50-150 m) to marine mammals in the water. Vessel speeds shall be <10 knots when marine mammals sighted within 1,000 feet (300 m). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the

boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[14]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS to understand incident-specific protection measures regarding UAS use near sea lions.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals. Aircraft will keep a distance of at least 1.6 km (1 mi) from Steller sea lion rookeries and haulouts.

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
		X

References:

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Alaska Department of Fish and Game. 2023. "Steller sea lion (*Eumetopias jubatus*) species profile". Available at https://www.adfg.alaska.gov/index.cfm?adfg=stellersealion.main.

Loughlin TR, Ballachey BE, Wright BA. 1996. Overview of studies to determine injury caused by the *Exxon Valdez* oil spill to marine mammals. In Proceedings of the *Exxon Valdez* oil spill symposium. American Fisheries Society Symposium, 18:798-808.

NOAA Fisheries. 2023. Species Directory: Steller sea lion (*Eumetopias jubatus*). Available at https://www.fisheries.noaa.gov/species/steller-sea-lion.

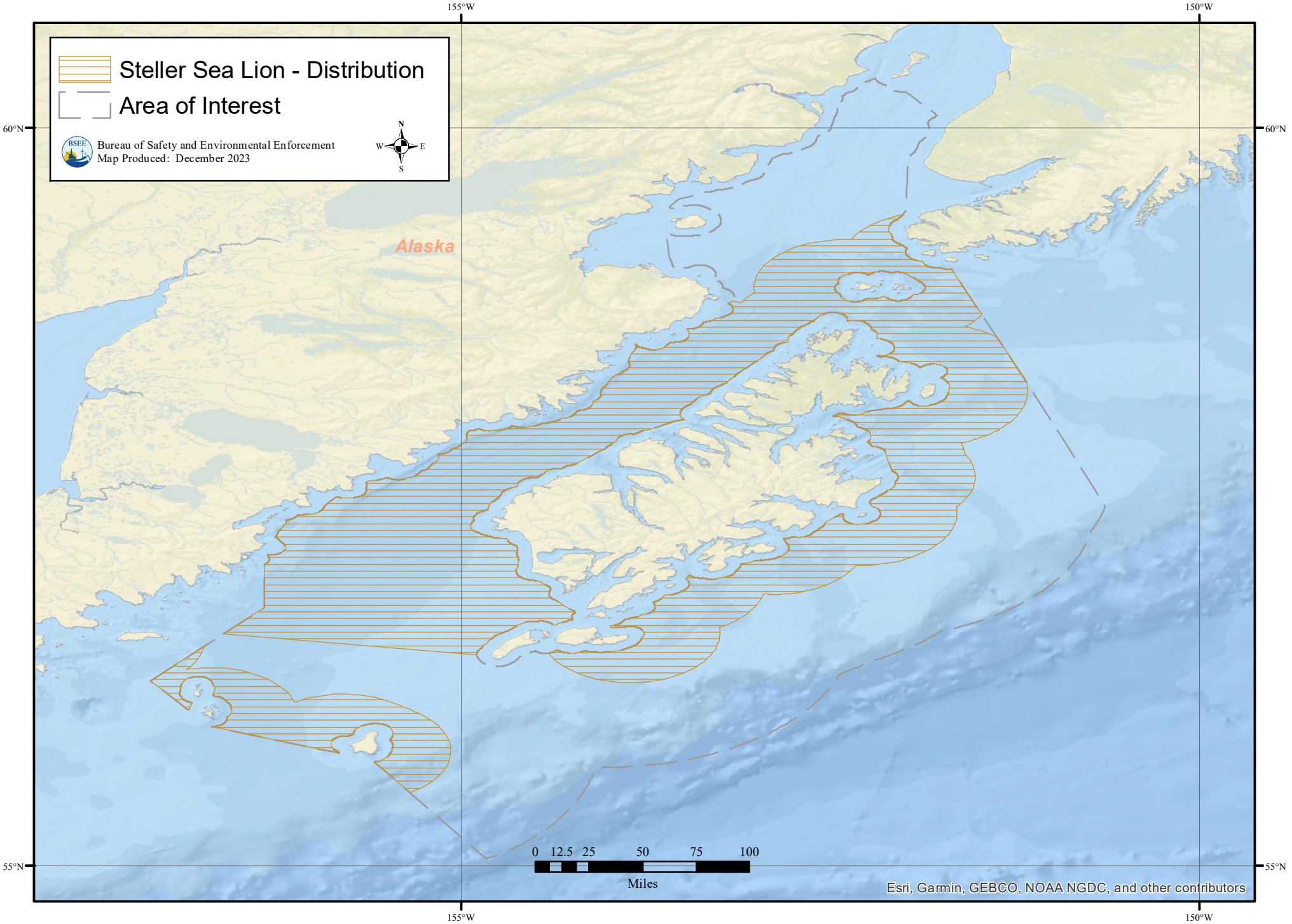
NMFS. 1993. Designated Critical Habitat; Steller Sea Lion. Final Rule. 50 CFR Part 226. Vol 56(165) (45269-45408).

[14] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

Sweeney KL, Birkemeier B, Luxa K, Gelatt T. 2019. Results of Steller Sea Lion Surveys in Alaska, June-July 2019. Memorandum to The Record. December 6, 2019. https://www.fisheries.noaa.gov/resource/data/2019-results-steller-sea-lion-surveys-alaska.

Young NC, Brower AA, Muto MM, Freed JC, Angliss RP, et al. 2023. Alaska marine mammal stock assessments, 2022. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-AFSC-474. 316 p.

Ziccardi MH, Wilkin SM, Rowles TK, Johnson S. 2015. Pinniped and Cetacean Oil Spill Response Guidelines. U.S. Dept. of Commerce, NOAA. NOAA Tech. Memo. NMFS-OPR-52. 138 p.



This map represents the approximate range of Steller sea lion in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

THIS PAGE INTENTIONALLY LEFT BLANK

Pacific Walrus		ESA Status	Not listed
Scientific Name	*Odobenus rosmarus divergens*	**Critical Habitat**	None

Appearance: Pacific walruses are among the largest pinnipeds and can reach lengths of up to 12 feet (3.5 m) and weigh up to two tons (1.8 metric tons). Walruses are strong bodied and have a very thick, tough hide. Their long, ivory tusks are up to 3 feet (1 m) in length. They also have hundreds of short, strong, highly sensitive whiskers that they use to search the seafloor for their food. Adult males (bulls) are larger than females and identified by their heavier tusks, and many large bumps on their neck and shoulders called "bosses" (ADF&G 2008).

Diet: Walruses are benthic foragers that eat a wide variety of soft invertebrates found on or below the seafloor, using their sensitive whiskers to search for prey (USFWS 2015). Prey items include clams, snails, worms, sea cucumbers, and tunicates. Except for their tusks, walrus teeth are flat; as a result, walruses eat by sucking food into their mouths using the powerful suction created by pulling their piston-like tongue back quickly. Walruses suck out the soft parts of clams and snails leaving the shells to fall to the sea floor. Some walruses, mostly males, are known to occasionally prey on seals and seabirds.

Population: The most recent (2022) population estimate for Pacific walrus is 257,000 animals (Beatty et al. 2022). Population trends are unknown, but expected to decline as sea ice loss continues. Walruses are not currently listed as 'threatened' or 'endangered' under the Endangered Species Act, nor are they designated as 'depleted' under the Marine Mammal Protection Act.

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) offshore ESI AOIs): Pacific walruses range across the continental shelf waters of the Bering and Chukchi seas. Distributions and habitat use patterns vary markedly in response to seasonal and annual variations in sea-ice cover, yet most of the population makes a northward spring migration and southward fall migration that is related to the seasonal advance and retreat of the sea ice. They use sea-ice as a resting platform between feeding dives, as a birthing substrate, for shelter from storms, isolation from predators, and passive transportation.

The Pacific walrus population spends the winter on the Bering Sea pack ice before separating in the spring. Mating occurs primarily from January to February in broken pack-ice habitats in the Bering Sea. Large breeding aggregations have been reported near St. Lawrence Island, Nunivak Island, and in the Gulf of Anadyr (USFWS 2017).

In April and May, most adult females and juveniles migrate northward to summer feeding areas in the Chukchi Sea (Smith et al. 2017). From March through October, several thousand adult males remain in the Bristol Bay area. The Walrus Islands State Game Sanctuary in northern Bristol Bay protects a group of 7 small islands and their adjacent waters, including Round Island, a terrestrial haulout for mostly male (up to 14,000) Pacific walruses in summer. Bulls migrate northward in the fall to the St. Lawrence Island area. In early summer (June - August), walruses occupy broken sea-ice habitats along the northwestern coast of Alaska and the Chukotka Peninsula. The summer range (May - October) extends along the coast of Alaska from Unimak Island (Aleutian Islands) to Point Barrow and along the coast of Russia.

When sea ice recedes beyond the shallow continental shelf waters where walruses feed, walruses transition from sea ice habitats to terrestrial haulouts. Walruses are very gregarious and occur as small groups at sea or haul-out in groups up to several thousand. Use of coastal haul outs (on land) is increasing as sea ice decreases, and ice edges are further away from land, in waters too deep for walruses to dive to the bottom. In September, when the annual sea-ice margin is at its minimum extent and recedes out over deep, Arctic basin waters, walruses congregate in large numbers at terrestrial haulouts on Wrangel Island, along the northern

coast of the Chukotka Peninsula, and increasingly along the Chukchi coast in Alaska, especially near Point Lay (Fay 1982; Kochnev 2004; Kavry et al. 2008; Huntington et al. 2012; NOAA 2014). The Chukchi Sea Hanna Shoal Walrus Use Area is an offshore area where walruses concentrate due to warm water diverting around a 10m (30ft) hill on the seafloor, allowing the sea ice to persist into September and attract walruses.

Walruses typically migrate from the Chukchi Sea to the Bering Sea from October to December (USFWS 2017). Large herds of southbound migrants often congregate for short times to rest at coastal haulout sites in the southern Chukchi Sea along the Russian coast (Fay and Kelly 1980).

Vulnerabilities and Sensitivities to Oiling: Walruses can be exposed to oil by inhalation, ingestion, or coating. Inhalation of volatile components of crude oil can damage the mucous membranes, including airways, lead to lung congestion, and cause hemorrhagic bronchopneumonia and pulmonary edema at high concentrations (Geraci and St. Aubin 1988). Ingestion of oil can lead to diarrhea, increase passage time of food through the intestinal tract, and decrease the nutritional value of food. Skin irritation and conjunctivitis could result from prolonged exposure to oil.

Walruses have thick skin and blubber layers for insulation and no grooming behavior, which lessens their chance of ingesting oil (Alaska RRT 2020). However, nursing pups will be at risk due to ingestion of oil from contaminated teats. Heat loss in adult walruses is controlled by peripheral blood flow through the animal's skin and blubber, so it is unknown if oil affects their thermoregulation. There is evidence that short-term oil-induced irritation to the eyes (i.e., conjunctivitis) is reversible. There can be long-term chronic effects because of exposure during migration through oil-contaminated waters or hauling out onto oil-contaminated land and ice, and there may be the possibility of consuming contaminated prey items. Adult walruses may not be severely affected by the oil spill through direct contact; however, they are extremely sensitive to any habitat disturbance by response activities.

Bivalves and crustaceans, including zooplankton, have a recognized potential to bioaccumulate hydrocarbons; species, such as walrus, that prey on these animals could have increased exposure to oil if prey become contaminated (Geraci and St. Aubin 1980).

BMPs for Offshore Operations:

General: Large numbers of walruses could be encountered in the Chukchi Sea July through September. Contact USFWS for additional mitigation measures, such as seasonal restrictions, reduced vessel traffic, or rerouting vessels, that may be appropriate for activities within these areas. Watch for and avoid collisions with wildlife and report all distressed or dead marine mammals to the Wildlife Hotline. If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for walruses, sea otters, polar bears, or birds: USFWS Alaska Region Spill Response Team (907) 242-6893 or fwsakspillresponse@fws.gov.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <50-150 m) to marine mammals in the water. Vessel speeds shall be <10 knots when marine mammals sighted within 1,000 feet (300 m). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking. If marine mammals become trapped or entangled in

boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: To avoid disturbances at walrus haul-outs, any dispersant-related aircraft will comply with any Federal Aviation Administration Temporary Flight Restriction(s) and Notice to Airmen and/or aviation restrictions issued by the USFWS. In addition, any dispersant-related vessel(s) will comply with any USCG Notice to Mariners and/or FWS restrictions for walrus haul-outs. Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[15]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: For walruses, Coordinate with USFWS to understand incident-specific protection measures regarding UAS use (Garron 2019). Do not fly within 0.5 mile/0.8 km (direction or altitude) of hauled-out walruses or known walrus haul-out locations. Maintain 2,000-foot/600-m distance from individual animals or small groups on ice. Regardless of distance or group size, if walrus change behavior in response to a UAS, move the aircraft away and report these events to USFWS.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals. Pacific walrus: Pilots of the following aircraft types should not fly below the specified altitude or within the listed distance of walruses hauled out on land or ice. If aircraft safety requires flight operations closer than specified, aircraft should maintain the following minimum altitudes: Small single engine aircraft and Unmanned Aircraft Systems (UASs): 2,640 ft altitude, 0.5 mi distance (2,000 ft). Helicopters and multi-engine aircraft: 5,280 ft altitude, 1 mi distance (3,000 ft). If these recommended minimums will not allow for safe operations, pilots must pass inland or seaward (within safe gliding distance to shore) of the haulout site at the greatest lateral distance manageable for safe operation of the aircraft (1 mile if possible).

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	

[15] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

References:

Alaska Department of Fish and Game. 2008. Walrus Fact Sheet. Available at https://www.adfg.alaska.gov/static/education/wns/walrus.pdf

Alaska Regional Response Team (RRT). 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Beatty WS, Lemons PR, Everett JP, Lewis CJ, and others. 2022. Estimating Pacific walrus abundance and survival with multievent mark-recapture models. Marine Ecology Progress Series, 697:167-182. https://doi.org/10.3354/meps14131.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Fay 1982. Ecology and biology of the Pacific walrus, *Odobenus rosmarus divergens* Illiger. *North American Fauna* 74:1–279.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Geraci JR, St. Aubin DJ. 1980. Offshore petroleum resource development and marine mammals: a review and research recommendations. Marine Fisheries Review, 42:1-12.

Geraci JR, St. Aubin DJ. Synthesis of effects of oil on marine mammals. 1988. Department of Interior, OCS study MMS, pp. 88-0049.

Huntington HP, Nelson M, Quakenbush LT. 2012. Traditional Knowledge Regarding Walrus near Point Lay and Wainwright, Alaska. Huntington Consulting and Alaska Department of Fish and Game, Eagle River and Fairbanks, AK.

Kavry V, Boltunov A, Nikiforov V. 2008. New coastal haulouts of walruses (*Odobenus rosmarus*)–response to the climate changes. *In* Collection of scientific papers from the Marine Mammals of the Holarctic V Conference, Odessa, Ukraine.

Kochnev, A. A. 2004. Warming of eastern Arctic and present status of the Pacific walrus (*Odobenus rosmarus divergens*) population, *In Marine Mammals of the Holarctic*. V. M. Belkovich ed., pp. 284–288. KMK Scientific Press, Moscow, Russia.

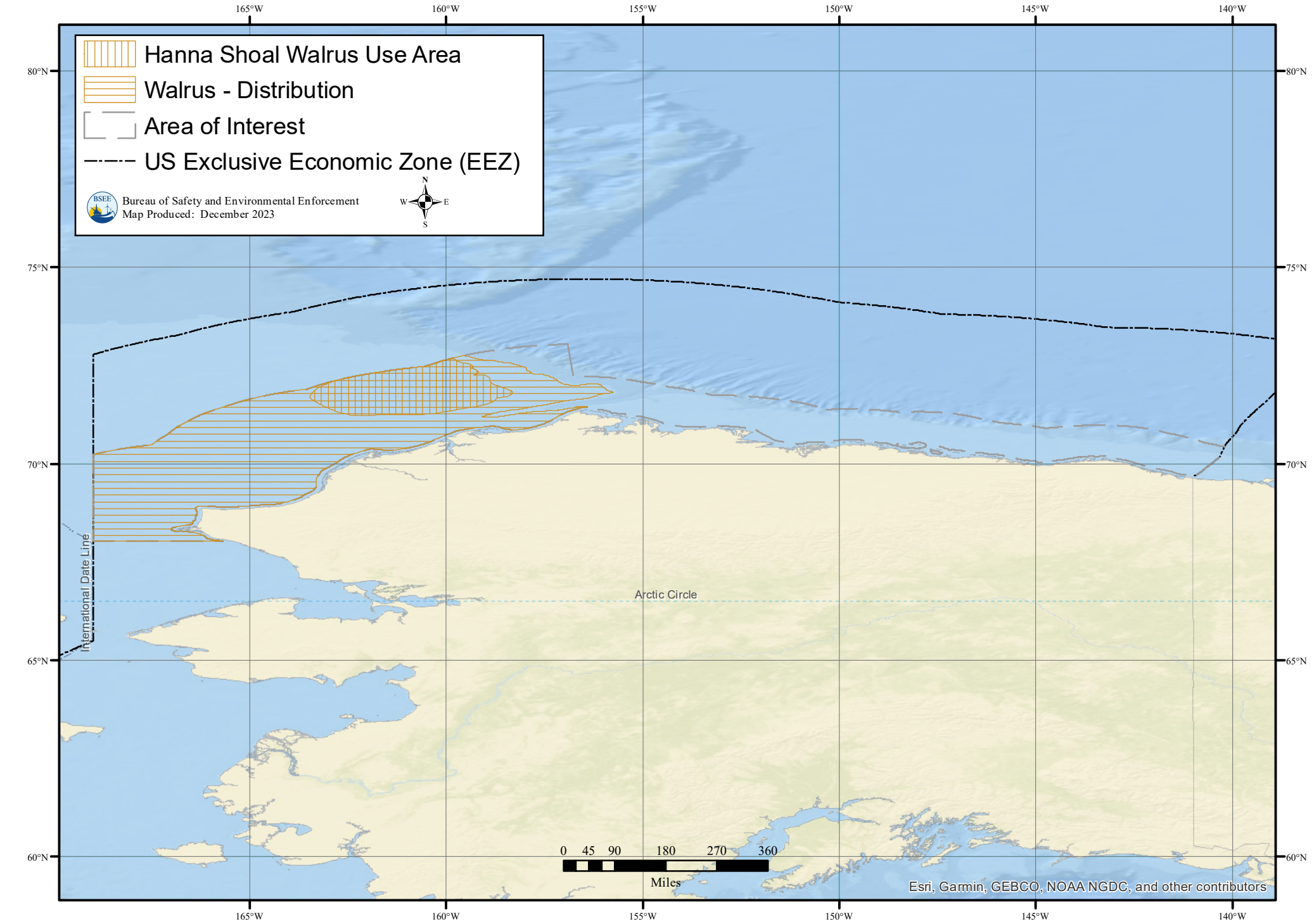
NOAA. 2014. NOAA's Aerial Surveys of Arctic Marine Mammals Photograph Walrus Haulout Site-Scientists Call Behavior a New Phenomenon. National Marine Fisheries Service, Alaska Regional Office, Anchorage, AK. Accessed online 1 December 2014 at http://alaskafisheries.noaa.gov/newsreleases/2013/walrushaulout093013.htm.

Smith,MA, Goldma MS, Knight EJ, Warrenchuk JJ. 2017. Ecological Atlas of the Bering, Chukchi, and Beaufort Seas. 2nd edition. Audubon Alaska, Anchorage, AK.

USFWS (U.S. Fish and Wildlife Service). 2015. Biological Opinion for the Alaska Federal/State Preparedness Plan for Response to Oil & Hazardous Substance Discharges/Releases: Consultation with the U.S. Coast Guard and Environmental Protection Agency. 148 pp + appendices. Available at: https://alaskarrt.org/PublicFiles/USFWS%20BiOp%2027Feb2014.FINAL.pdf.

USFWS (U.S. Fish and Wildlife Service). 2017. Final species status assessment for the Pacific walrus (*Odobenus rosmarus divergens*). U.S. Fish and Wildlife Service, Region 7, Anchorage, Alaska, USA.

U.S. Marine Mammal Commission. Pacific Walrus. Available at: https://www.mmc.gov/priority-topics/species-of-concern/pacific-walrus/



This map represents the approximate range of walrus in the Arctic (Chukchi and Beaufort Seas).

THIS PAGE INTENTIONALLY LEFT BLANK

Polar Bear		ESA Status*	Threatened (2008)	73 FR 28212
Scientific Name	*Ursus maritimus*	**Critical Habitat**		75 FR 76086

Appearance: The polar bear is the largest living bear species (USFWS 2023). They are completely white. Adult bears are 7-8 feet (2-2.5 m) long. Males are larger than females and can weigh up to 1,450 pounds (650 kg).

Diet: Polar bears are top predators in the Arctic marine ecosystem (USFWS 2023). Their preferred prey is ringed seals and to a lesser extent, bearded seals. They occasionally take larger animals such as walruses and belugas or scavenge on remains of harvested or stranded whales. Whale carcasses remaining from subsistence harvest is an important and seasonally reliable food source in some regions, including the Southern Beaufort Sea.

Population: The global polar bear population was estimated to be 26,000 individuals in 2015 (95% CI: 22,000–31,000); (Wiig et al. 2015). Polar bears occur in 19 subpopulations throughout the seasonally and permanently ice-covered marine waters of Arctic and subarctic regions of Canada, Greenland, Norway, Russia, and the U.S. The U.S. contains portions of two subpopulations: the Chukchi Sea (2016 population estimate 2,937 bears (95% CI: 1552-5944 bears); co-managed with Russia) and the Southern Beaufort Sea (2016 population estimate 900 bears (95% CI: 606-1212 bears); co-managed with Canada).

Distribution/Habitat/Migration (see map for distribution in Arctic Alaska (Chukchi and Beaufort Seas) offshore ESI AOIs): Polar bears occur throughout the circumpolar Arctic, primarily above the Arctic Circle. They are typically found in low densities over large areas and do not concentrate, except in areas with exceptional food resources (USFWS 2023). Polar bears distribution shifts in association with the Arctic ice pack, contracting and moving north in the summer and expanding to the south in the winter. Their primary habitat is sea ice, but they can be found on land near the coast. They tend to be found near open water, where they hunt seals. Polar bears are excellent swimmers.

Pregnant females enter dens from September through December (Wiig 1998, Laidre et al. 2015, Rode et al. 2018), but phenology of den entrance varies with latitude, snow accumulation, and consolidation of sea-ice (Amstrup 2003). Females will remain in dens to give birth and nurse their cubs until March-April (Rode et al. 2018). Denning habitat consists of topographic features that catch snow in fall and early winter, and may be located on sea ice, shorefast ice, or on land. The primary denning habitat for polar bears in the southern Beaufort Sea population is on the relatively flat topography of the coastal area on the North Slope of Alaska and the pack ice. A high density of dens is known to occur in the 1002 Area of the Arctic NWR (Durner et al. 2009). The region between the Colville and Canning rivers contains the largest fraction of land dens (Patil et al. 2022). The primary denning areas for the Chukchi-Bering seas population occur on Wrangel Island and the northeastern coast of the Chukotka Peninsula (both in Russia).

Polar bear critical habitat consists of three units: Sea Ice Critical Habitat, Denning Critical Habitat, and Barrier Island Critical Habitat; combined they encompass 187,157 square miles within the State of Alaska and adjacent territorial and U.S. waters (USFWS 2010).

Vulnerabilities and Sensitivities to Oiling:

Oil spills could potentially result in reduced survival of individual polar bears from: 1) ingestion of oil when grooming or consuming oiled prey; 2) oiling of fur and associated thermoregulatory stresses; 3) disturbance, injury, or death from interactions with humans during oil spill response activities; and 4) reduction in available prey resources (Alaska RRT 2020).

Polar bears may be particularly vulnerable to disturbance when nutritionally stressed, and during denning. Cleanup operations that disturb an occupied den could result in death of cubs through abandonment, and

perhaps death of the female in defense of (human) life situations. Oiling of food sources, such as ringed seals and onshore food resources (e.g., whale remains), may result in a local reduction in abundance or a change in distribution.

The effects of oil on polar bears present serious health concerns. Scientists have reported that polar bears will not avoid petroleum products encountered in the wild and may actively investigate oil spills (Amstrup 1989; Derocher and Stirling 1991). However, under experimental conditions in a study conducted by Øritsland et. al. (1981), three polar bears did not voluntarily enter a saltwater pool containing surface oil (~ 1 cm thick) until forced to do so. Once oiled, the bears actively ingested oil through grooming and licking behavior, causing thermoregulatory and metabolic stresses. Øritsland et al. (1981) reported that ingestion of oil also led to anorexia, tissue damage from uremia, dehydration, anemia, and renal failure, eventually leading to death in two of three animals. In addition, skin damage and hair loss were noted after contact with oil in both experimental and natural conditions (Øritsland et al. 1981; Derocher and Stirling 1991). Residual oil on the animal's fur may persist if the animal is not cleaned completely. Inhalation of hydrocarbon volatiles can result in nerve damage, behavioral abnormalities, mortality, and long-term impacts to reproductive success of marine mammals. Only a few milliliters of aspirated oil are fatal to polar bears. Large amounts of oil directly consumed through grooming is detrimental to polar bears (Øritsland et al. 1981), but what levels of oil bears might be expected to consume through contaminated prey are unknown, as are the long-term consequences of eating contaminated prey. There is some evidence to suggest that other forms of contamination can lead to population-level effects of polar bears (Derocher et al. 2003), so it is reasonable to suspect that oil-contaminated prey might also be problematic for bears (Wilson et al. 2018).

BMPs for Offshore Operations:

General: All polar bears pose a significant safety risk to response personnel. During an oil spill event, all field response personnel working in polar bear habitat should have or receive bear awareness safety training (as well as whatever additional training is required by their agency or company). To minimize the potential for injuries to both response personnel and bears, wildlife agency representatives will coordinate with the Unified Command to determine if bear guards (i.e., individuals with expertise in avoiding bear-human conflicts) should accompany work crews. If bears are observed during staging activities, contact supervisor, Safety Officer, or Environmental Unit. Watch for and avoid collisions with wildlife and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877-WHALEHELP)). If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for walruses, sea otters, polar bears, or birds: USFWS Alaska Region Spill Response Team (907) 242-6893 or fwsakspillresponse@fws.gov.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 feet; <50-150 m) to marine mammals in the water. Vessel speeds shall be <10 knots when marine mammals sighted within 1,000 feet (300 m). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions. Install and monitor underwater equipment or booms to prevent entrapment of fish and wildlife. Maintain control of all materials to prevent inadvertent release and sinking.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in

support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[16]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with NMFS and USFWS to understand incident-specific protection measures regarding UAS use near seals, a primary food source for polar bears (Garron 2019). Maintain 1,500-foot (500 m) distance; greater distances from active polar bear dens may be required. If polar bears change behavior in response to a UAS, move the aircraft away and report these events to USFWS.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

Deterrence and Hazing: If deterrence/hazing actions are proposed, responders must follow guidance in FWS (2015). This guidance includes auditory and physical deterrents that are described in detail in Appendix 4. Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
X	**X**	

References:

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 pp. Available at: http://www.alaskarrt.org/Home/Documents/9.

Amstrup SC, Gardner C, Myers KC, Oehme FW. 1989. Ethylene glycol (antifreeze) poisoning in a free-ranging polar bear. Veterinary and Human Toxicology, 31(4):317-319.

Amstrup SC. 2003. Polar Bear (*Ursus maritimus*). In Feldhamer, GA, Thompson BC, Chapman, JA editors. Wild Mammals of North America—Biology, Management, and Conservation. John Hopkins University Press. Baltimore, Maryland, USA, pp 587–610.

Derocher AE, Wolkers H, Colborn T, Schlabach M, Larsen TS, Wiig Ø. 2003. Contaminants in Svalbard polar bear samples archived since 1967 and possible population level effects. Science of The Total Environment 301:163-174.

[16] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

Derocher AE, Stirling I. 1991. Oil contamination of polar bears. Polar Record 27(160):56-7.

Durner GM., SC Armstrup, and KJ Ambrosius. 2006. Polar bear maternal den habitat in the Arctic National Wildlife Refuge, Alaska. Arctic, 59(1):31-36.

Durner GM, Douglas DC, Nielson RM, et al. 2009. Predicting 21st century polar bear habitat distribution from global climate models. Ecological Monographs 79:107–120.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336, 6p. doi.org/10.6084/m9.figshare.11788755.v2.

Laidre KL, Born EW, Heagerty P, Wiig Ø, Stern H, Dietz R, Aars J, Andersen M. 2015. Shifts in female polar bear (Ursus maritimus) habitat use in East Greenland. Polar Biology 38:879–893.

Øritsland NA, Engelhardt FR, Juck FA, Hurst RJ, Watts PD. 1981. Effects of crude oil on polar bears. Canadian Department of Indian Affairs and Northern Development. QS-8283-020-EE-A1.

Patil VP, Durner GM, Douglas DC, Atwood TC. 2022. Modeling the spatial and temporal dynamics of land-based polar bear denning in Alaska. Journal of Wildlife Management e22302. https://doi.org/10.1002/jwmg.22302

Rode KD, Olson J, Eggett D, Douglas DC, Durner GM, et al. 2018. Den phenology and reproductive success of polar bears in a changing climate. Journal of Mammalogy 99:16–26.

USFWS. 2010. Designation of Critical Habitat for the Polar Bear (*Ursus maritimus*) in the United States; Final Rule. 50 CFR 17. Vol 75 (234).

USFWS. 2010. Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for the Polar Bear (*Ursus maritimus*) in the United States. Final Rule. 50 CFR Part 17. Vol 75 (76086-76137).

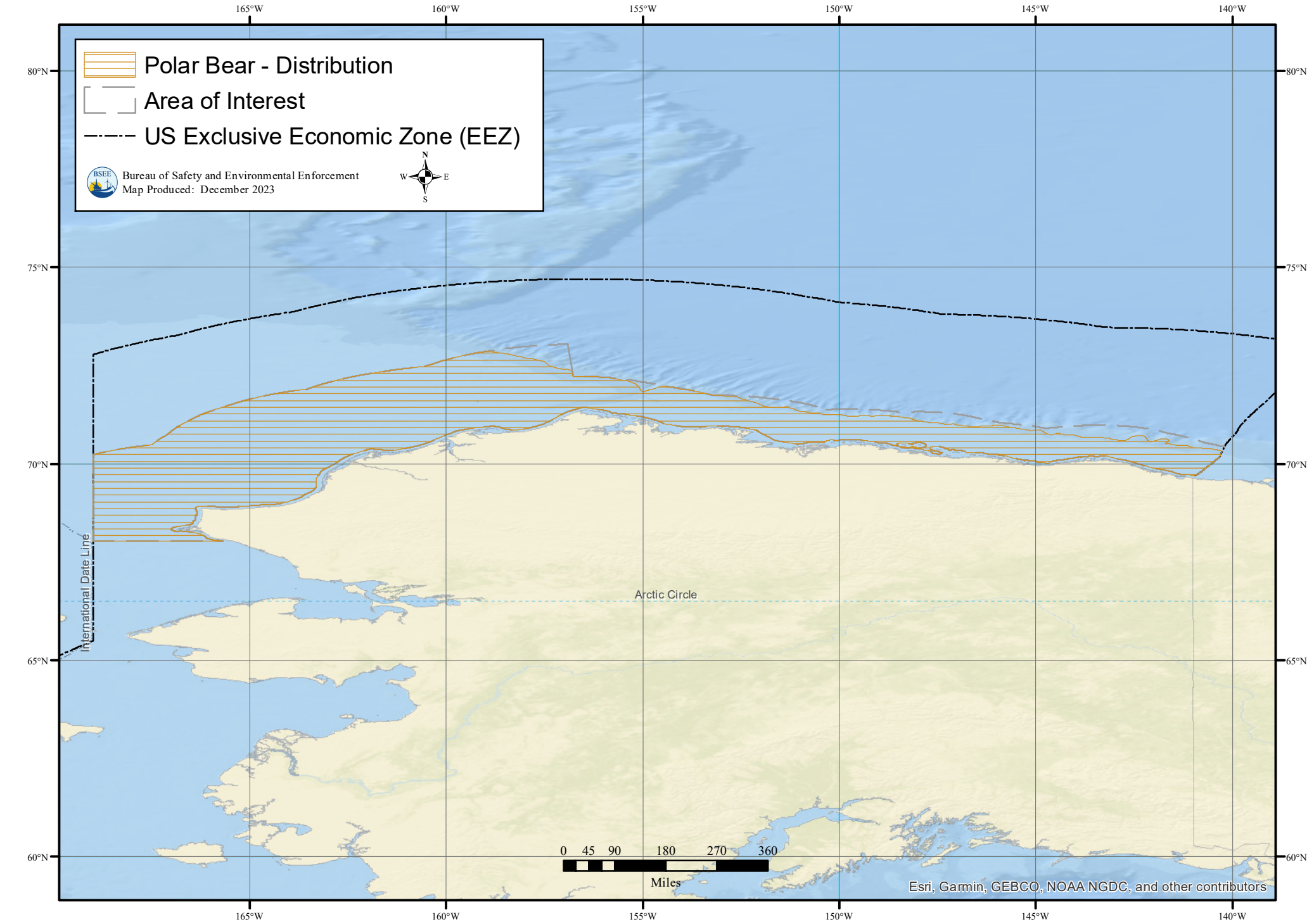
USFWS. 2015. Oil Spill Response Plan for Polar Bears in Alaska. 36 pp + appendices**.** https://wayback.archive-it.org/4347/20170403124846/https:/www.fws.gov/alaska/fisheries/contaminants/pdf/Polar%20Bear%20WRP%20final%20v8_Public%20website.pdf

USFWS. 2023. Polar Bear. Available at https://www.fws.gov/species/polar-bear-ursus-maritimus.

Wiig Ø. 1995. Distribution of polar bears (Ursus maritimus) in the Svalbard area. Journal of Zoology 237:515–529.

Wiig Ø, Amstrup S, Atwood T, Laidre K, Lunn N, Obbard M, Regehr T, Thiemann G. 2015. *Ursus maritimus*. The IUCN Red List of Threatened Species 2015: e.T22823A14871490.

Wilson RR, Perham C, French-McCay DP, Balouskus R. 2018. Potential impacts of offshore oil spills on polar bears in the Chukchi Sea. Environmental Pollution, 235:652-659.



This map represents the approximate range of polar bear in the Arctic (Chukchi and Beaufort Seas).

THIS PAGE INTENTIONALLY LEFT BLANK

Northern Sea Otter		ESA Status*	Threatened (2005) Southwest Alaska DPS	70 FR 46365
Scientific Name	*Enhydra lutris kenyoni*	**Critical Habitat**		74 FR 51987 (2009)

Appearance: Sea otters are the largest member of the weasel family. Adults are about 4 feet (1.2 m) long and weigh an average of 65 pounds (30 kg) for males and 45 pounds (20 kg) for females. They have a dense underfur that is brown and black, and longer guard hair that can be brown, black, or silver. Their hind feet are webbed to aid in swimming (ADF&G 2023).

Diet: Sea otters forage in shallow coastal waters, where they dive to the bottom to catch their prey and surface to eat their food. Their lung capacity is 2.5 times the size of land mammals of the same size. Dives can last up to 5 minutes and range in depth from 5-250 feet (1.5-75 m). Main prey species include sea urchins, crabs, clams, mussels, octopus, fish, and other marine invertebrates. They have strong canines and molars to tear and crush their food and will use rocks as hammers to help open shells. Sea otters do not have blubber and need to eat approximately 25% of their body weight per day to maintain their body temperature (ADF&G 2023).

Population: There are three distinct population segments (DPS) of northern sea otters in Alaska – Southwest, Southcentral and Southeast. The Southwest and Southcentral populations occur in the Cook Inlet area.

The Southwest DPS is listed as 'Threatened' under the ESA and 'depleted' under the MMPA. The population is estimated to be 51,395 otters, and the population trend is stable (U.S. Marine Mammal Commission 2023). The Southcentral DPS is not listed under the ESA or considered 'depleted' under the MMPA. The current estimate of sea otters for the Southeast stock is 22,359 otters, and are increasing (Schuette et al. 2023).

Distribution/Habitat/Migration (see map for distribution in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island) offshore ESI AOIs): Sea otters are found in coastal waters, inshore of the 130 feet (40 m) depth contour, but they have been observed in waters as deep as 328 feet (100 m). Sea otters are not migratory but may move up tens of miles per day. Their home ranges may be a few square miles up to 9 square miles (23 square km). Bodkin et al. (2004) found most (84%) foraging occurred in depths between 6 and 100 feet (1.8 and 30 m), and 16% of all foraging between 100 and 328 feet (30 and 100 m). Sea otters forage in rocky substrate and soft bottom communities, as well as in and around kelp. Sea otters use a variety of terrains (including ice) to haul out to rest, but typically do not make it more than a few feet from the water.

Breeding males establish territories and defend groups of females. Pupping areas are difficult to define and protect because most sea otters give birth in either open water or near kelp beds. Sea otters are very social, and sometimes travel and/or rest in groups. Concentrations of over 1,000 animals have been seen floating together in a single area. Critical habitat designated for the Southwest DPS of northern sea otter includes waters out to either 328 feet (100 m) from shore or out to the 20 fathom isobaths in most areas within the population's range.

Vulnerabilities and Sensitivities to Oiling: Sea otters are extremely vulnerable to oil spills because of their small size, dependence on fur rather than blubber for insulation, and heavy use of nearshore habitats (Alaska RRT 2020). They do not consistently avoid oil and are frequently at the surface of the water, increasing their likelihood of interacting with oil that accumulates in coastal areas.

Oil adheres readily to fur. Sea otter pelage is relatively poor insulation compared to other pinnipeds (Englehardt 1983). As a result, oiling of more than a small portion of their fur can result in rapid death from hypothermia.

Oiled sea otters will spend a great deal of time grooming in an attempt to remove the oil and maintain their

fur. Sea otters have high metabolic requirements, and the additional time spent grooming can increase metabolic needs, reduce foraging time, and lead to lowered metabolic efficiency. If unresolved, this condition will result in starvation and death. Ingestion of hydrocarbons during the grooming process or through feeding on oiled prey items can result in digestive tract irritation, neurological effects, and physiological changes, which in turn, can lead to organ injury, dysfunction, and death.

Aromatic hydrocarbons can cause inhalation injury and death quickly, before either hypothermia or ingestion affects the animals. Sea otters were heavily impacted by the Exxon Valdez oil spill, where acute oil exposure caused mortality and sublethal effects (lung, liver, and kidney damage), and long-term residual oiling of shoreline habitats caused impacts to sea otter populations for up to 10 years after the spill (Monson et al. 2000).

BMPs for Offshore Operations:

General: If marine mammals are sighted oiled or swimming in oil, call 877-WHALEHELP. Observations of entangled wildlife during a spill response should be immediately reported to the following numbers for walruses, sea otters, polar bears, or birds: USFWS Alaska Region Spill Response Team (907) 242-6893 or fwsakspillresponse@fws.gov.

Collision Risk and Avoidance: Watch for and avoid collisions with wildlife and report all distressed or dead marine mammals to the Wildlife Hotline (If no hotline is yet operating, call 877-942-5343 (877- WHALEHELP)). NOAA's Vessel Strike Avoidance Measures and Reporting for Mariners should be implemented to reduce the risk associated with vessel strikes or disturbance of protected species to discountable levels.

When operating marine vessels during spill response, all operators should abide by the following Boat Operation Guidance to Avoid Disturbing Sea Otters:

- While operating boats in near shore areas, scan the water surface ahead of the boat vigilantly for otters. In choppy water conditions sea otters are difficult to spot. If you are boating with another person, place them in the bow to help search. You may encounter otters as individuals, a mother and a pup, or rafts of 10 or more.
- When you see an otter(s), alter your course and slow down to avoid disturbance and collision. Once you have spotted an otter(s), you should not assume that the otter(s) will dive and get out of the way. Even if they are alert, capable, and do dive, your action of knowingly staying your course would be considered harassment.
- Do not operate a vessel at ANY rate of speed heading directly at the otter(s). A good rule of thumb is that your buffer should be great enough that there is ample room for the otter(s) to swim away without startling them. It is your responsibility to minimize the stimulus and threat of a loud boat approaching quickly.
- The more otters you see, the wider the berth you need to give. Also, do not pass between otters, but rather go around the outside perimeter, plus add a buffer.
- It is illegal to pursue or chase sea otters. Do not single out or surround an otter(s).

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations. Protected species observers should be present to monitor take of ESA-listed species from all response activities.

Booming: If sea otter pupping areas are identified, booms will need to be placed far enough away to minimize disturbance and prevent driving sea otters into oiled areas. If marine mammals become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify wildlife agency representatives for instructions. Install and monitor underwater equipment or booms to prevent entrapment. Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. Maintain control of all materials to prevent inadvertent release and sinking.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. Marine species observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the tow boats, oil concentrated in the boom, and any oil trailing behind the boom). A survey should be conducted in the burn area after the burn is complete and any distressed or dead marine mammals should be counted and reported.

Surface Dispersant: Dispersants applications will maintain a minimum of 1,640 feet (500 m) horizontal separation from swarming fish, rafting flocks of birds, marine mammals in the water, and/or marine mammal haul-outs. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that fish and wildlife are avoided. Any monitoring required by NMFS for Endangered Species Act Section 7 compliance will be conducted. Follow any spill specific RRT guidance.

Atypical Dispersant[17]: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.

Uncrewed Aerial Systems (UAS) Use: Coordinate with USFWS to understand incident-specific protection measures regarding UAS use (Garron 2019). If sea otters change behavior in response to a UAS, move the aircraft away and report these events to USFWS.

Aircraft Activities: Maintain a minimum altitude above (sensitive/protected) species, wildlife management areas, and sensitive habitats, except when doing so would compromise safety or violate FAA flight rules. Apply a flight altitude minimum of 457 m (1,500 ft) or as specified by the USFWS and/or NMFS and enacted by the Unified Command excluding takeoffs and landing. Aircraft will not hover over (helicopters), circle, or pursue marine mammals.

Deterrence/Hazing: If deterrence/hazing actions are proposed, responders must follow the guidance in the Wildlife Protection Plan (Alaska Regional Response Team, 2020). Responders must have a full understanding of authorized AND unauthorized activities (and any conditions attached to authorizations) to minimize secondary or inadvertent impacts.

*Please note that ESA-listed species affected by a spill or spill response should be addressed in an after-action emergency ESA section 7 consultation with the USFWS or NMFS.

Potential Range by OCS Area		
Beaufort Sea	Chukchi Sea	Cook Inlet and Kodiak Island
		X

References:

Alaska Department of Fish and Game. 2023. Northern sea otter (*Enhydra lutris kenyoni*) species profile. Available at https://www.adfg.alaska.gov/index.cfm?adfg=seaotter.main

Alaska Regional Response Team. 2020. Wildlife Protection Guidelines for Oil Spill Response in Alaska. 220 p. Available at: http://www.alaskarrt.org/Home/Documents/9.

Bodkin JL, Esslinger GG, Monson DH. 2004. Foraging depths of sea otters and implications to coastal marine communities. Marine Mammal Science, 20:305-321.

Engelhardt FR. 1983. Petroleum effects on marine mammals. Aquatic Toxicology, 4(3):199-217.

Garron J. 2019. Protocol for using unmanned aircraft systems (UAS) during an oil spill response or exercise. University of Alaska Fairbanks Geophysical Institute Report UAG-R 336. 6 p.

[17] Atypical use of dispersants is defined to include: (1) full scale dispersant application ongoing for, or expected to exceed or exceeding 96 hours following the dispersant application field test, and/or (2) the use of dispersants subsea; i.e., below the water surface.

doi.org/10.6084/m9.figshare.11788755.v2.

Monson DH, Doak DF, Ballachey BE, Johnson A, Bodkin JL. 2000. Long-term impacts of the *Exxon Valdez* oil spill on sea otters, assessed through age-dependent mortality patterns. Proceedings of the National Academy of Sciences, 97(12):6562–7.

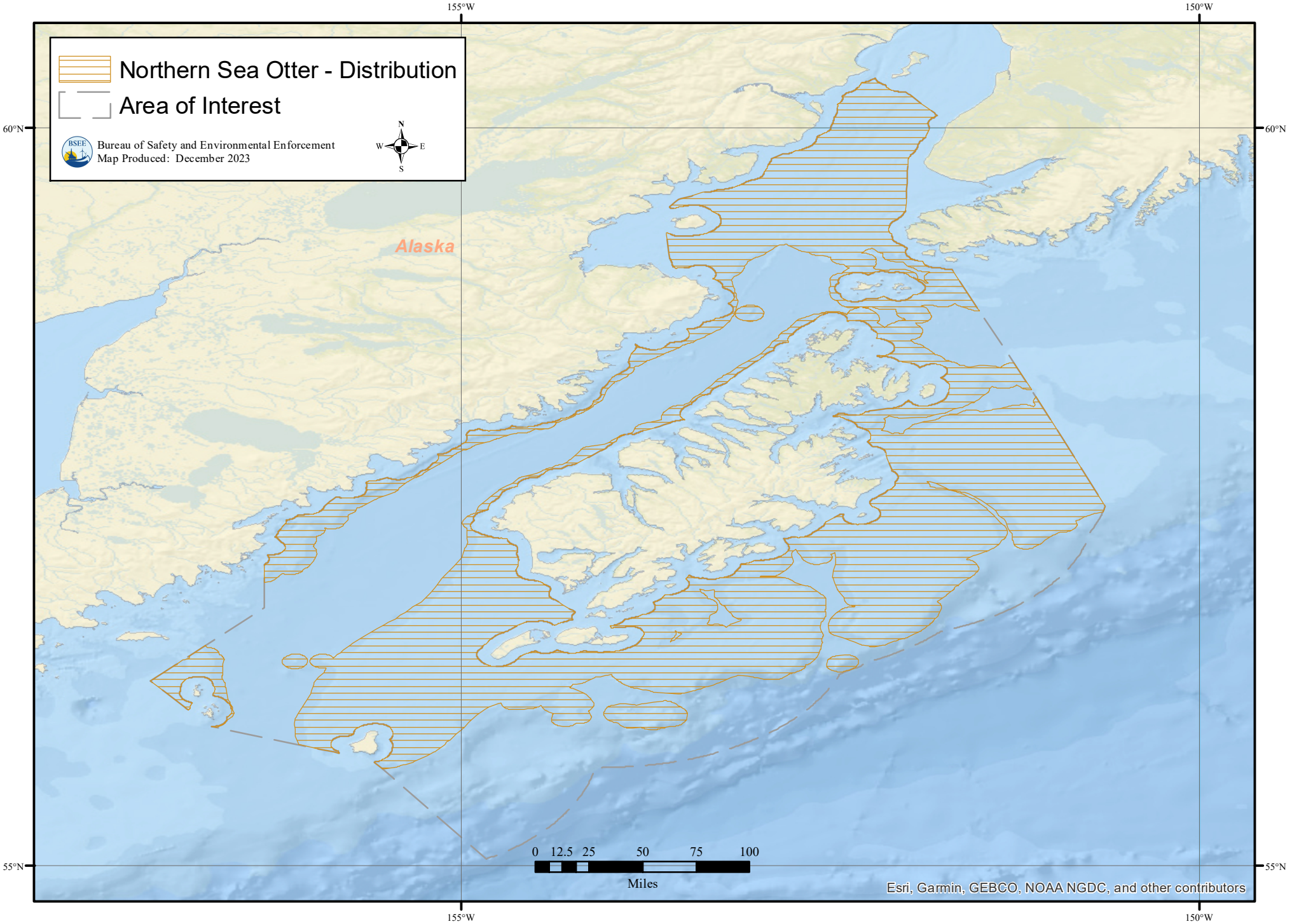
Schuette P, Eisaguirre J, Weitzman JB, et al. 2023. Northern sea otter (*Enhydra lutris kenyonii*) population abundance and distribution across the Southeast Alaska stock. USFWS Region 7 Technical Report MMM 2023-01. March 2023, Anchorage, Alaska.

USFWS. 2023. Northern Sea Otter (Southwest Alaska) Stock Assessment Report (Draft). Available at: https://www.regulations.gov/document/FWS-R7-ES-2022-0155-0002.

USFWS. 2014. Northern Sea Otter (Southcentral Alaska) Stock Assessment Report. Available at: https://www.fws.gov/media/northern-sea-otter-southeast-alaska-stock-assessment-report.

USFWS. 2023. Marine Mammal Protection Act; Draft Stock Assessment Reports for the Pacific Walrus stock and three nothern sea otter stocks in Alaska. Docket No. FWS-R7-ES-2022-0155; FF07CAMM00-FXES111607MWA07, Vol 88(25) (7992-7993).

U.S. Marine Mammal Commission. 2023. Northern Sea Otter. Available at: https://www.mmc.gov/priority-topics/species-of-concern/northern-sea-otters/



This map represents the approximate range of northern sea otter in Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island).

THIS PAGE INTENTIONALLY LEFT BLANK