Los Angeles / Long Beach California Sensitive Ecological Resources at Risk in the Offshore Environment

Spatial Temporal Profiles and Best Management Practices

Bureau of Safety and Environmental Enforcement

31 July 2024

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Los Angeles / Long Beach California
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Spatial Temporal Profiles and Best Management Practices

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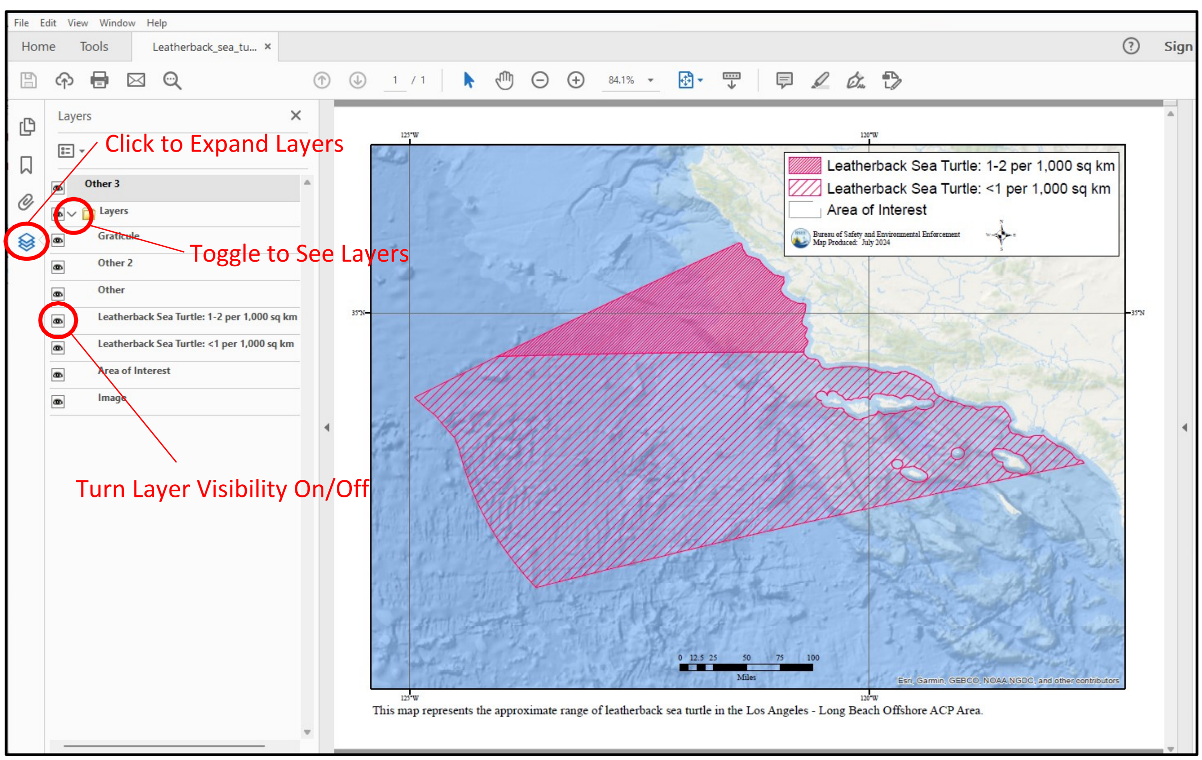
SPATIAL TEMPORAL PROFILES AND
BEST MANAGEMENT PRACTICES USER GUIDE

Spatial and temporal profiles were developed to describe the abundance and distribution of sensitive ecological resources for the U.S. Coast Guard Sector Los Angeles-Long Beach Captain of the Port (COTP) Area of Responsibility (AOR) and comprises federal waters offshore of State of California waters (3 nautical miles from shore) from the Monterey-San Luis Obispo County line extending south to the Orange-San Diego County line including waters of the exclusive economic zone (EEZ). 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; and 6) Best Management Practices (BMPs) for offshore operations.

Finally, maps are included at the end of each narrative species/taxa profile. Maps were generated from the Los Angeles – Long Beach, California 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 California; rather they depict the Offshore ESI data that was compiled for each mapped species in the Offshore ESI Areas of Interest (AOI). 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 leatherback sea turtle has polygons showing different densities (1-2 per 1,000 sq km and < 1 per 1,000 sq km) across the species range within the AOI. 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



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SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Birds

- California Least Tern
- Hawaiian Petrel
- Marbled Murrelet
- Short-tailed Albatross

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California Least Tern	ESA Status*	Endangered (1970)	35 FR 16047 16048
Scientific Name	*Sternula antillarum browni*	**Critical Habitat**	None

Appearance: The California least tern is a subspecies of least tern, a colonially nesting seabird, that typically measures around 23 cm (9 in) in length, with a wingspan of 51 cm (20 in). Adults have pale gray rumps and upper tails, matching the back and upper wings, while the other primary feathers are black, giving the outer wings narrow black edges. The tail is short and forked. During the breeding season, adults feature a black crown with a white triangular patch on the forehead, a yellowish bill tipped in black, and short yellow-orange legs. Subspecies are generally indistinguishable in the field and are often identified by their distribution (Goals Project 2000).

Diet: The California least tern forages by hovering over shallow to deep water and then diving or dipping into the surface. They prefer to fish in nearshore habitats such as estuarine channels, narrow bays, wetlands, and other shallow marine habitats that are near their nesting colonies, but they will also forage in the pelagic, open ocean several nautical miles offshore (Martinez 2022). While they prefer to feed on northern anchovy and silversides, they have also been documented foraging on other small fish and occasionally krill and other small invertebrates (Atwood and Kelly 1984; Goals Project 2000; Martinez 2022).

Population: California least tern populations have experienced a long-term downward trend largely due to habitat loss and degradation, disturbance, off-road vehicle use, and predation. While many of these threats are ongoing, conservation measures have helped reduce impacts. After its listing in 1970, it was estimated that only 256 pairs remained. Since that time, the number of pairs has steadily increased (USFWS 2020). A California least tern breeding survey from 2019 estimated that 3,169 to 4,037 breeding pairs established 4,485 nests at 59 documented sites across California (Sin et al. 2024).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): California least tern nest along the west coast of North America from Baja California, Mexico, north to the San Francisco Bay area. These nesting colonies are established on sandy habitats with little vegetation along the ocean, lagoons, and bays, with breeding occurring during the spring and summer months (USFWS 2020). Of the 59 nesting sites documented in 2019, ten were in the San Francisco Bay area, three in San Luis Obispo and Santa Barbara Counties, eight in Ventura County, 13 in Los Angeles and Orange Counties, and 25 in San Diego County (Sin et al. 2024). The California least tern is migratory, and their winter distribution is not well known; however, it is thought that they winter along the Pacific coasts of mainland Mexico, Guatemala, Costa Rica, and Panama (USFWS 2020).

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 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 et al. 1983). 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 et al. 1983). 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 et al. 1983; 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. (1997) 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 et al. 1983; NRC 2003). Direct exposure to dispersants and dispersed oil can cause effects similar to oil on the plumage (Osborne et al. 2022).

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed or dead birds. 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 the Wildlife Branch or Environmental Unit. Adhere to incident-specific flight restrictions over sensitive habitats and avoid hovering or landing aircraft near bird concentration 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 Oiled Wildlife Care Network: 844-823-6926.

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 300 m (1,000 ft) horizontal separation from rafting birds. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that wildlife is avoided. Any monitoring required by USFWS and/or NMFS for Endangered Species Act Section 7 compliance will be conducted.

Subsurface Dispersant: 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 50 m (150 ft) over birds; do not use predator (raptor)-shaped UASs when flying near birds.

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*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.

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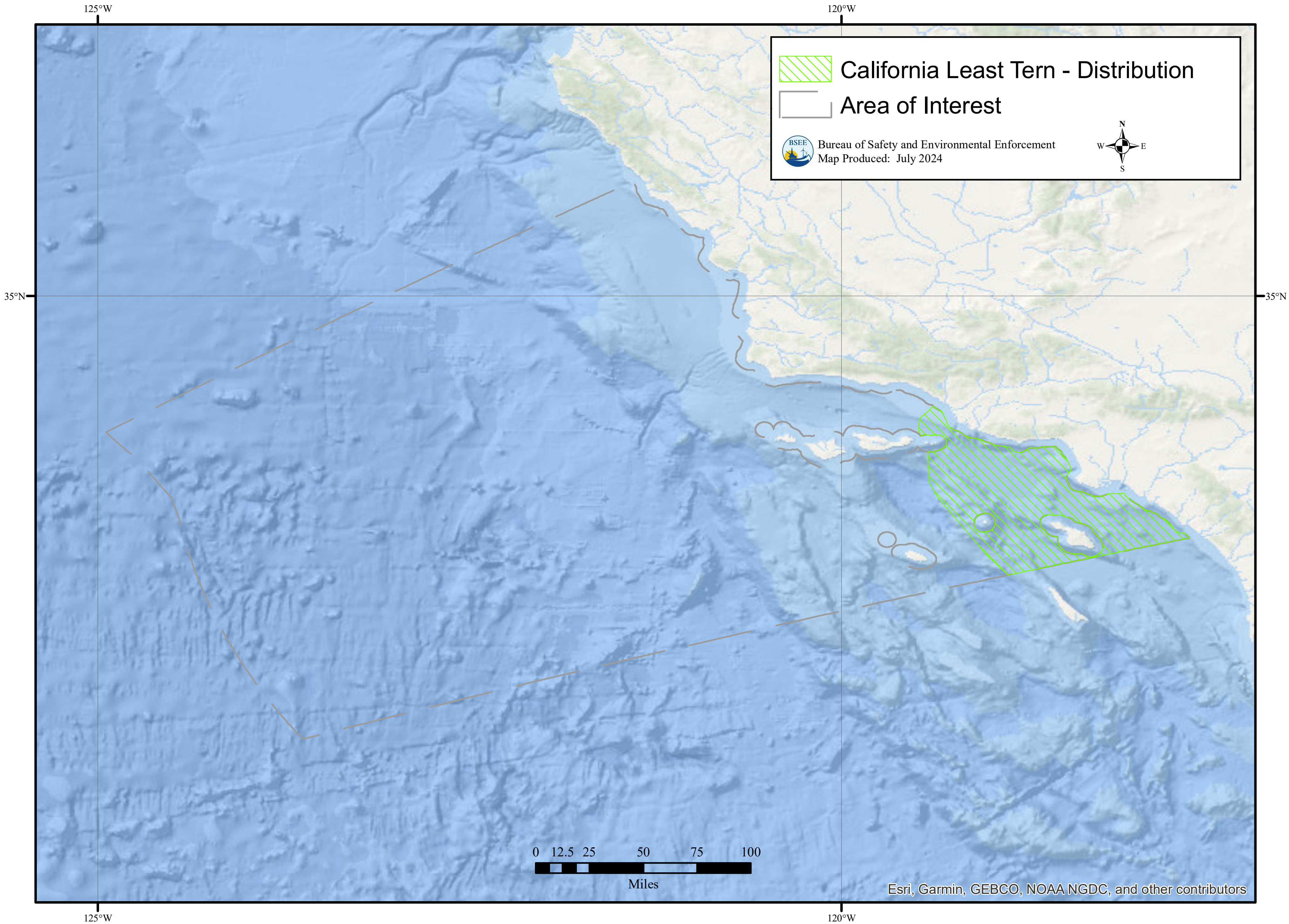

This map represents the approximate range of California least tern in the Los Angeles - Long Beach Offshore ACP Area.

Hawaiian Petrel		ESA Status*	Endangered (1967), Listed as full species status (2010)	32 FR 4001
Scientific Name	*Pterodroma sandwichensis*	**Critical Habitat**	None	

Appearance: The Hawaiian petrel, also known as the dark-rumped petrel, is a relatively large pelagic seabird that measures 40 cm (16 in.) in length with a wingspan of 1 m (3 ft) They have a dark gray head, wings, and tail and a white forehead and belly. It has pink and black feet and a stout grayish-black hooked bill (USFWS 2024).

Diet: Hawaiian petrel's diet consists mainly of squid but also includes fish, crustaceans, and plankton. Hawaiian petrels make foraging trips more than 10,000 km (6,000 miles) to and from their breeding colonies (Burg and Martin 2012).

Population: While the Hawaiian petrel was once abundant throughout the southern Hawaiian Islands, its population experienced a significant decline by the 1980s. It is only known to breed on the islands of Hawaii, Maui, Lanai, and Kauai. Analysis of at-sea survey data for the Hawaiian petrel from 1998 and 2011 gives a population estimate of 52,186 individuals (Joyce 2013). Radar data for the island of Kauai, which supports a third of the breeding population, indicate a 78% decline in the numbers of Hawaiian petrels (Raine et al. 2017).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): When not foraging at sea, Hawaiian petrels nest in a variety of remote, inland habitats with high elevation. They nest in burrows along large rock outcrops as well as under cinder cones, lichen covered lava, or in soil beneath dense vegetation (USFWS 2024). Most eggs are laid between May and June with most birds fledging by December. Sightings off Oregon and California occur between May and September, with the majority recorded in July and August (Howell et al. 2014). Hawaiian petrels are a rare occurrence off the coast of central and southern California with only 30 accepted records by the California Birds Records Committee from 1997 to 2013 (Tietz and McCaskie 2017). While this species is typically encountered offshore in deeper water, a review of eBird shows 25 additional sightings along the shelf edge from San Luis Obispo County to San Diego County between 2014 and 2024 (eBird 2024).

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 et al. 1983). 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).

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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:

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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.

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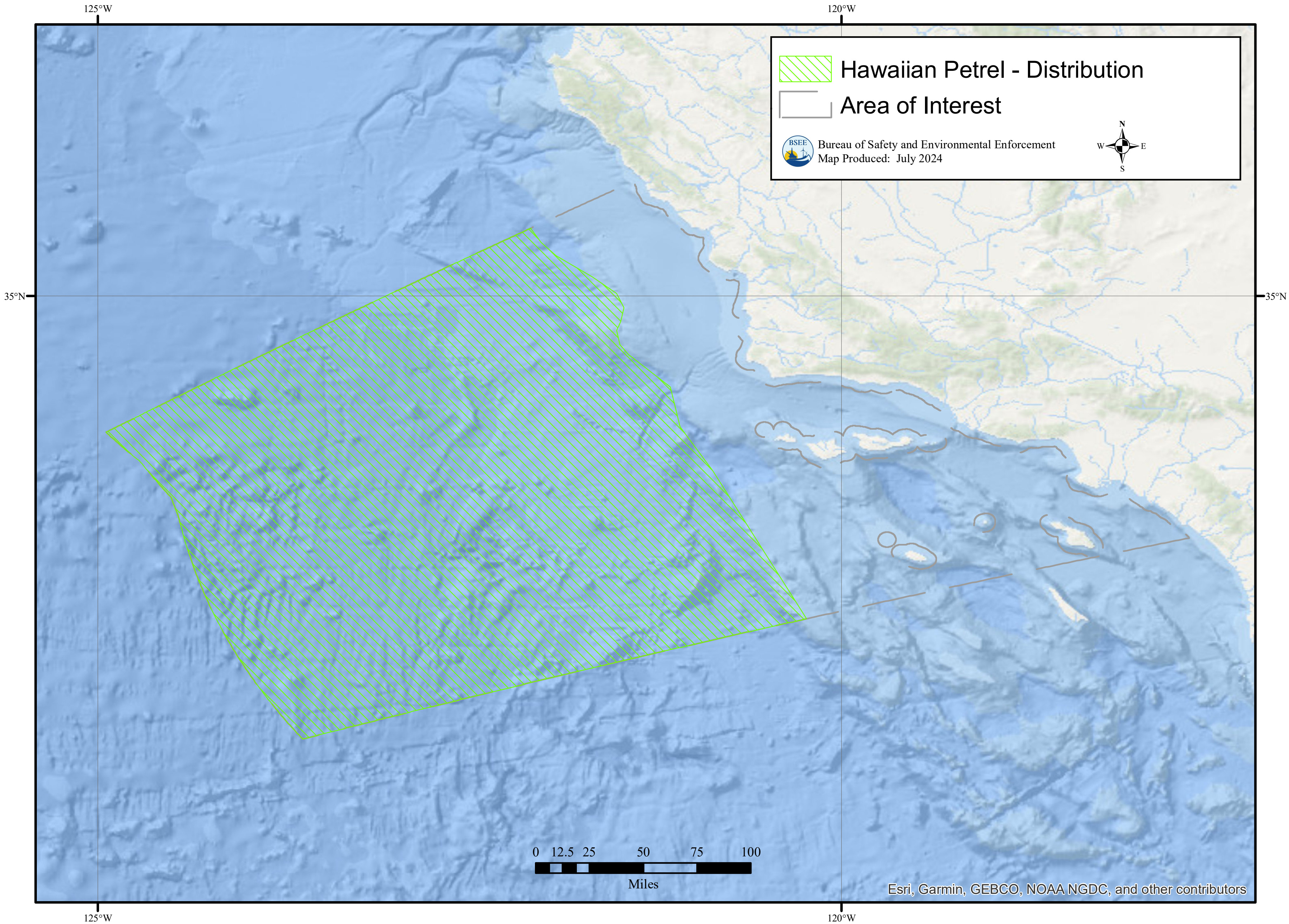

This map represents the approximate range of Hawaiian petrel in the Los Angeles - Long Beach Offshore ACP Area.

<table>
<tr><td colspan="2">Marbled Murrelet</td><td>ESA Status*</td><td>Threatened (1992)</td><td>57 FR 45328</td></tr>
<tr><td>Scientific Name</td><td>Brachyramphus marmoratus</td><td colspan="2">Critical Habitat</td><td>61 FR 26256 (1996)
81 FR 51348 (2011)
81 FR 51348 (2016)</td></tr>
</table>

Appearance: The marbled murrelet is a small diving seabird, with short wings and a body averaging 25 cm (10 in) in length. Marbled murrelets exhibit seasonal dichromatism, where males and females have sooty brown upperparts and light, mottled brown underparts during the breeding season. During the winter, non-breeding season, adults are brownish gray with white scapulars and resemble the plumage of fledged young. Chicks are tan in color with dark specking (USFWS 2024).

Diet: Marbled murrelet forages along shallow, nearshore waters, feeding on a variety of prey including small fish such as herring, anchovy, and smelt, as well as invertebrates such as shrimp, krill, and squid (Fountain et al. 2023).

Population: Marbled murrelet populations have experienced a long-term downward trend since their listing in 1992 largely due to the loss and degradation of nesting habitat caused by timber harvesting and more recently, wildfires. In 1997, the USFWS established six marbled murrelet conservation zones as part of the 1993 recovery plan for the species that extend from Washington to central California (USFWS 1997). The population estimate for zones one through six was estimated to be approximately 23,260 birds in 2016 (USFWS 2019). Lehman (2022) noted that the marbled murrelet is a very rare visitor during late summer, fall, and winter along the coast of Santa Barbara County, though it is somewhat more common in the late summer around the Point Sal and north Vandenberg Air Force Base areas. The species is rare south of Point Conception, but they do occur there casually during the winter (D. Pereksta, pers. comm.).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Marbled murrelet inhabit nearshore marine waters from the Aleutian Islands and southern Alaska to southern California. While the marbled murrelet spends most of their time on the ocean within 0.75-2 km (0.5 – 1.15 miles) of shore and in waters less than 30 m (100 ft) deep, they come inland to nest. In California, marbled murrelets nest from March to October in old growth forests within 80 km of the coast (Nelson 1997). These forests are comprised of Douglas fir and redwoods which provide multiple canopy layers and large branches that are used for nesting. In a study by Peery et al. (2008) radiomarked marbled murrelets nesting in the Santa Cruz Mountains showed significant dispersal. During the breeding season, 3 out of 46 birds (7%) traveled distances of 138-220 km (85-136 miles) to the San Luis Obispo County coast. After the breeding season, 9 out of 20 murrelets dispersed long distances, with 8 found along the San Luis Obispo County coast after traveling 192-288 km (119-179 miles). These findings suggest that the coast from San Luis Obispo to Point Sal in Santa Barbara County is a crucial wintering area for the species in central California.

A review of eBird records shows 142 sightings along the California coast from San Luis Obispo County to San Diego County (eBird 2024).

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.

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Subsurface Dispersant: 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 50 m (150 feet) over birds; do not use predator (raptor)-shaped UASs when flying near birds.

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.

*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.

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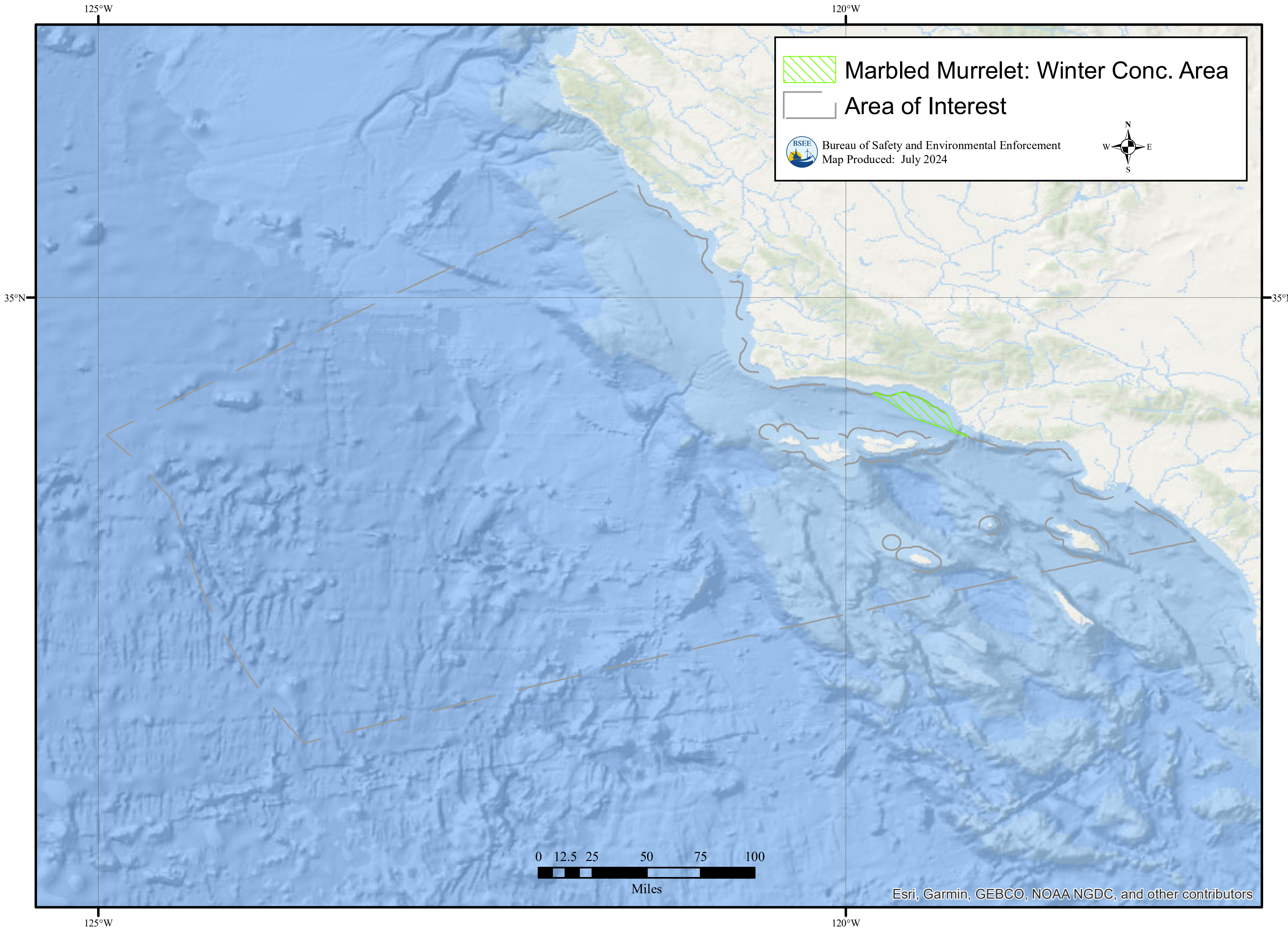

This map represents the approximate range of marbled murrelet in the Los Angeles - Long Beach Offshore ACP Area.

Short-tailed Albatross		ESA Status*	Endangered (1970)	35 FR 8491
Scientific Name	*Phoebastria albatrus*	**Critical Habitat**		None

Appearance: Adults have a white head and body with a golden hue on the crown and nape. Their tail is white with a black terminal bar. Their disproportionately large pink bill differentiates them from the other two North Pacific albatross species, the Laysan and black-footed albatross. The hooked tip of their bill becomes bluer as they age. Juveniles are blackish-brown and gradually become white with age (USFWS 2024).

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 (USFWS 2020).

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 short- tailed albatross population is growing, with a current estimate of 7,365 individuals and a population growth rate of 8.9% (USFWS 2020). Since 1977, there have been 42 sightings of the species off the California coast, with 38 of those occurring between 1998 and 2020. Six of these records were recorded off the San Luis Obispo County coast (Benson et al. 2021).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): 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 130-160 km (80-100 miles) 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 (Guy et al. 2013). While several short-tailed albatross sightings have been confirmed off the waters of California, including the nearshore waters of Santa Barbara and Santa Cruz islands, these occurrences are rare (Collins et al. In press). They are colonial breeders, with only a few colonies existing on remote Pacific islands including Torishima and the Senkaku Islands (USFWS 2020). 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 et al. 1983). 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 et al. 1983). 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 et al. 1983; 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. (1997) 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 et al. 1983; 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 Oiled Wildlife Care Network: 844-823-6926.

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 300 meters (1,000 ft) horizontal separation from rafting birds. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that wildlife is avoided. Any monitoring required by FWS for Endangered Species Act Section 7 compliance will be conducted.

Subsurface Dispersant: 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 50 m (150 ft) over birds; do not use predator (raptor)-shaped UASs when flying near birds; do not fly within 100 m (300 ft) 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.

*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.

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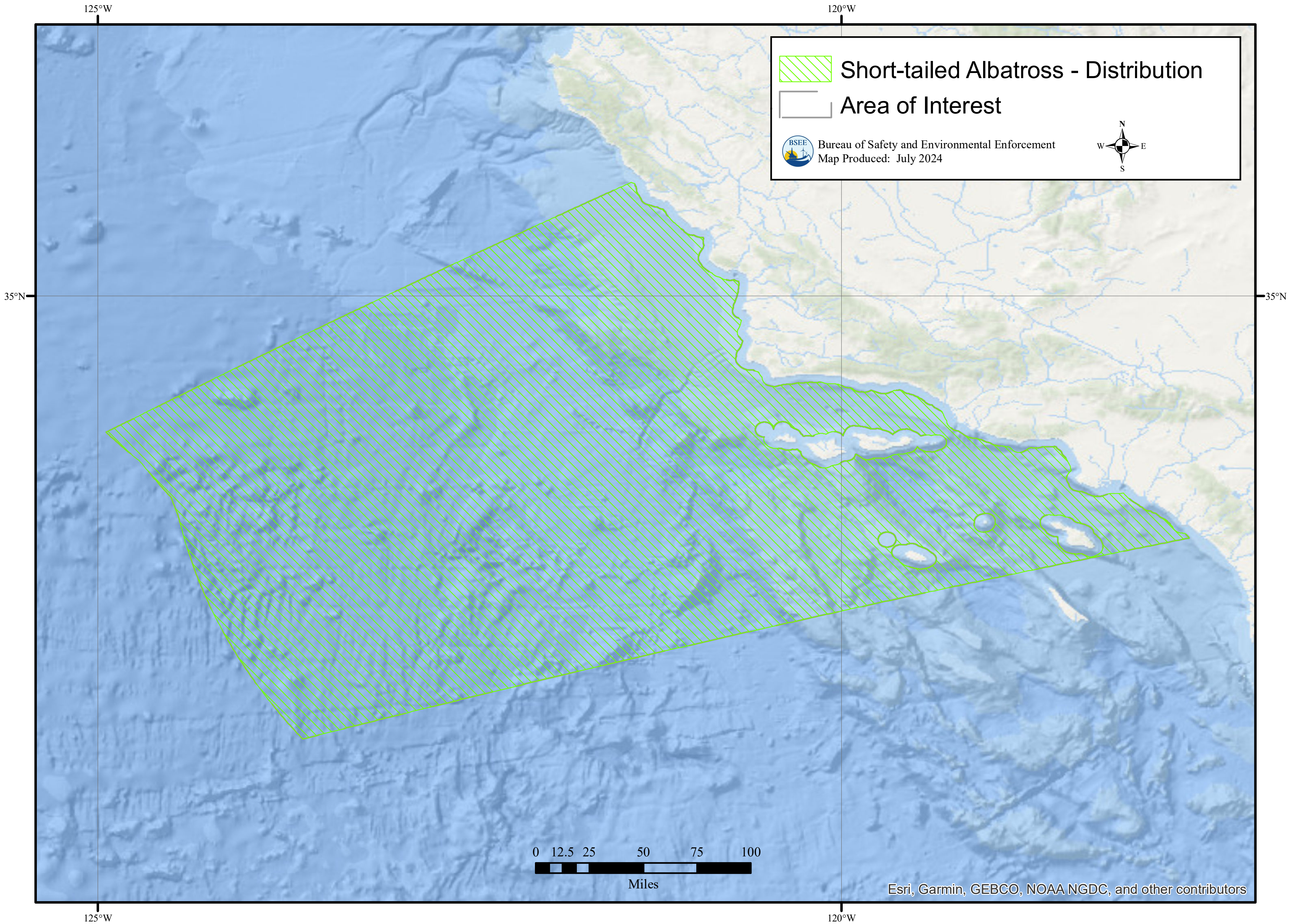

This map represents the approximate range of short-tailed albatross in the Los Angeles - Long Beach Offshore ACP Area.

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Fish

- Giant Manta Ray
- Oceanic Whitetip Shark
- Scalloped Hammerhead Shark
- Steelhead Trout

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<table>
<tr><td colspan="2">Giant Manta Ray</td><td>ESA Status</td><td>Threatened (2018)</td><td>83 FR 2916</td></tr>
<tr><td>Scientific Name</td><td>Mobula birostris</td><td>Critical Habitat</td><td colspan="2">None</td></tr>
</table>

Appearance: Giant mantas are the world's largest ray, with a wingspan of up to 9 m (29 ft). They have a diamond-shaped body with wing-like pectoral fins, ventrally placed gill plates, and a terminal mouth with cephalic lobes. They can have dark brown to black backs with a white belly or be all black in color. They have a caudal thorn and a rough skin appearance (NOAA Fisheries 2024).

Diet: Giant manta rays are filter feeders that prefer zooplankton such as euphausiids, copepods, mysids, decapod larvae, and shrimp. Some studies have shown that they prey on small fish as well. When feeding, mantas hold their cephalic lobes in an "O" shape and open their mouths wide, creating a funnel that pushes water and prey through their mouth and over their gill rakers. They may prefer shallow depths less than 10 meters (32 feet) in which to clean or socialize during the day while plunging to depths between 200 to 450 m (656 to 1,476 ft) during nocturnal foraging. Field studies suggest there is a critical zooplankton density threshold that triggers feeding (11.2 mg m^{-3} along the Great Barrier Reef; Armstong et al. 2016).

Population: There are no current or historical abundance estimates available for the giant manta ray. However, regional populations are believed to range between 600 and 2,000 individuals, except for a population off Ecuador, which is estimated to be over 22,000 individuals. Giant manta rays are at risk of population decline and depletion due to overfishing and bycatch, with a low likelihood of recovery due to their low reproductive output (NOAA Fisheries 2024).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Giant manta rays are found offshore in oceanic waters of varying temperature (tropical, subtropical, and temperate) worldwide. In addition, they use productive nearshore coastal areas such as estuarine waters, inlets, bays, and intercoastal waterways typically near coral and rocky reefs (NOAA Fisheries 2024). They are highly migratory with tagged individuals traveling up to 1,500 km (932 miles) (Miller and Klimovich 2017). They are generally solitary but have been observed aggregating at cleaning sites near offshore reefs and while feeding in shallow waters. Giant manta rays are rarely found offshore of southern California and perhaps only during warm-water events such as El Niño (Miller and Klimovich 2017). The most recent documented sighting of a giant manta ray in California waters was a single individual off San Clemente Island in 2014 (Warneke 2014).

Vulnerabilities and Sensitivities to Oiling: Little is known about the impact of spilled oil on manta rays. Their feeding behavior of filtering water over their gill rakers at depths of less than 10 m to up to 450 m water depths puts them at risk of uptake of oil in the form of oil droplets mixed into the water column, either naturally or from use of chemical dispersants, both at the surface and via subsea injection. They can metabolize oil, like all fish, though the rate is not known. Laboratory studies with stingrays, also elasmobranchs, showed that exposure to oil at 0.01% of a high-energy water accommodated fraction of oil from the *Deepwater Horizon* spill impacted olfactory function, which would detrimentally impact fitness, could lead to premature death, and could cause additional cascading effects through lower trophic levels (Cave and Kajiura 2018). Similar laboratory studies showed reduced electrosensory capabilities, which could reduce fitness (Cave and Kajiura 2020). Elasmobranchs use their electrosensory and olfactory systems to detect prey, mates, and predators (Cave and Kajiura 2018), and possibly to mediate orientation to the earth's magnetic field for navigation (Cave and Kajiura 2020).

BMPs for Offshore Operations:

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

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

Burning: No specific BMPs at this time.

Aerial Dispersant: No specific BMPs at this time.

Subsea Dispersants: Spill-specific BMPs to be followed.

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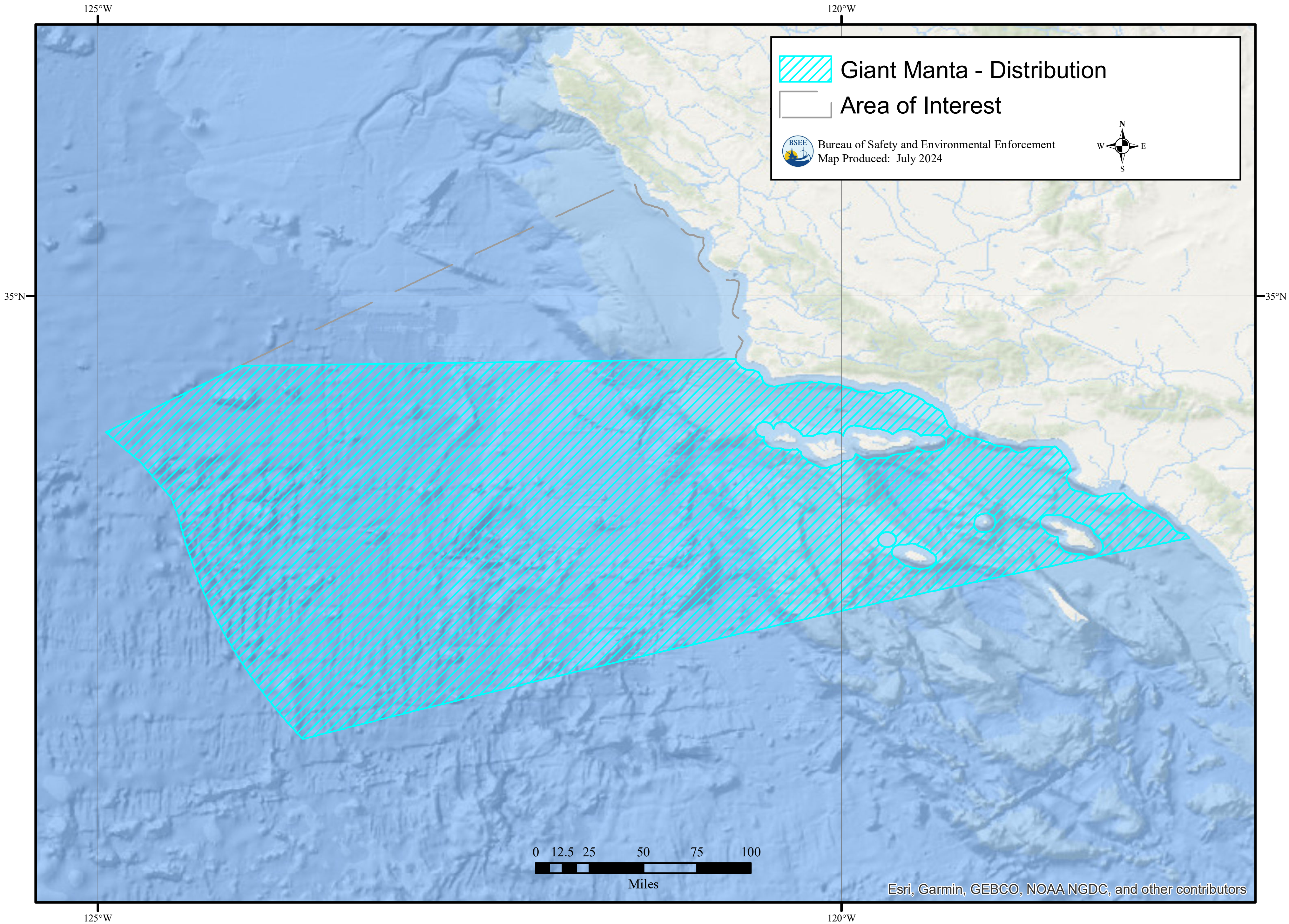

This map represents the approximate range of giant manta in the Los Angeles - Long Beach Offshore ACP Area.

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Oceanic Whitetip Shark		ESA Status	Threatened (2018)	83 FR 4153
Scientific Name	*Carcharhinus longimanus*	**Critical Habitat**		None

Appearance: Distinctive mottled white markings ('whitetip') on dorsal, pectoral, and tail fins. The dorsal fins are rounded, and the pectoral fins are long and paddle-like. Variable regional coloration, but generally grayish bronze to brown with whitish undersides (NOAA Fisheries 2023).

Diet: Oceanic whitetip sharks are opportunistic top-level predators in pelagic ecosystems. Their primary diet includes bony fish and cephalopods, although some reports show that they will prey on sea birds, marine mammals, other sharks, rays, mollusks, crustaceans, and even garbage (NOAA Fisheries 2023).

Population: Recent studies show significant population declines for the oceanic white tip shark throughout its range. In the Eastern Pacific Ocean, oceanic whitetip shark populations have experienced a significant population decline of 85-90% largely due to commercial fishing operations (Hall and Roman 2013).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Oceanic whitetip sharks are distributed in tropical/subtropical waters worldwide. In the Eastern Pacific, the species occur from Southern California to Peru. However, recent data show that their presence in Southern California is "rare" and concentrated to the Channel Islands during warm water years (Ebert et al. 2017). NMFS (2020) stated that there is no other information to suggest that oceanic whitetip sharks regularly occupy the waters of southern California or elsewhere along the U.S. West Coast. They are an epipelagic offshore open-ocean species that can be found on the outer continental shelf waters from the surface to at least 184 m depth. These sharks prefer the surface mixed layer in warm waters of about 20°C (and thus are considered a surface-dwelling shark) but can occur between 15°C and 28° C and for short periods down to 7.75°C. Information regarding movement patterns or migration paths is limited; however, this species is highly migratory, traveling long distances across jurisdictional boundaries. Nursery grounds are not well known but are thought to be oceanic (NMFS 2020).

Vulnerabilities and Sensitivities to Oiling: There have been no reported direct impacts to sharks due to exposure to spilled oil. Their high mobility, range in prey items, and ability to metabolize ingested oil reduces their risk of adverse impacts. With parturition and nursery areas not well known but in pelagic waters, impacts of oil or dispersed oil on early life stages are likely to be limited. Because they are considered a surface-dwelling shark, they could be at risk of higher exposures to oil and dispersed oil following application of dispersants to the water surface.

BMPs for Offshore Operations:

General: All vessel crew members must be instructed to watch for and avoid collisions with fish and wildlife. Report all sightings and all distressed or dead sharks to the Oiled Wildlife Care Network: 844-823-6926. 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: No specific BMPs at this time.

Aerial Dispersant: No specific BMPs at this time.

Subsea Dispersants: Spill-specific BMPs to be followed.

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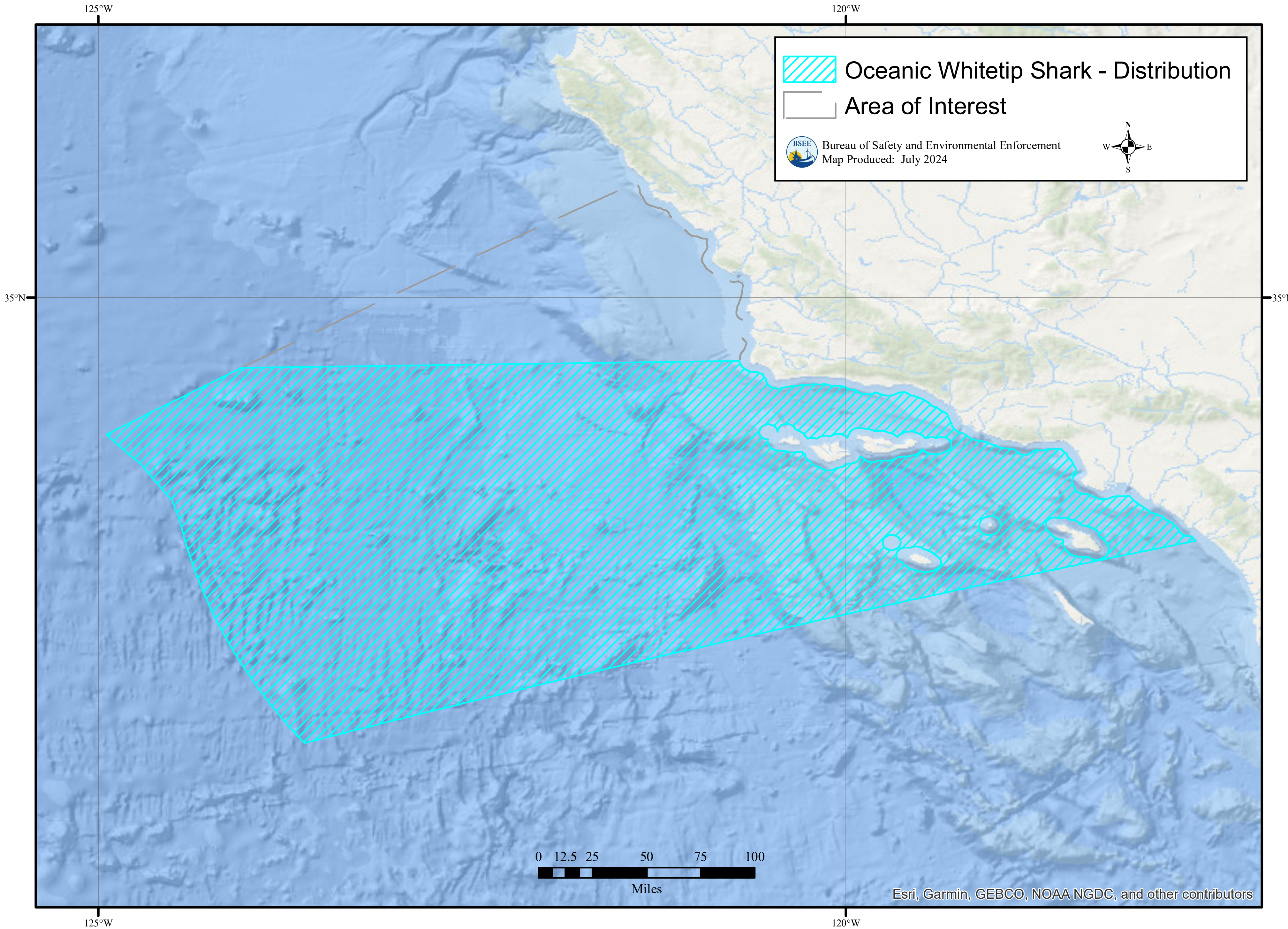

This map represents the approximate range of oceanic whitetip shark in the Los Angeles - Long Beach Offshore ACP Area.

Scalloped Hammerhead Shark		**ESA Status**	**Eastern Pacific DPS Endangered (2014)**	79 FR 38214
Scientific Name	*Sphyrna lewini*	**Critical Habitat**		None

Appearance: Scalloped hammerhead sharks are moderately large while maintaining a streamlined/torpedo shape and lacking interdorsal ridges. They are distinguished from other hammerhead sharks by indentations on the head that give it a "scalloped" appearance (Miller et al. 2013).

Diet: Scalloped hammerheads prey upon small to large bony fish, smaller elasmobranchs, baitfish, octopus and squid (Noriega et al. 2011).

Population: There is no systematic monitoring data on population abundance for scalloped hammerhead sharks throughout their range. However, the International Union for Conservation of Nature's (IUCN) most recent assessment designated the scalloped hammerhead as Critically Endangered. An analysis by Rigby et al. (2019) described the global population decreasing at a median of 76.9-97.3%, with the highest probability of >80% reduction over three generation lengths.

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Scalloped hammerhead shark is a circumglobal species that lives in coastal warm temperate waters and tropical seas. They often occur over continental and insular shelves and in nearby deeper water up to 500 m (1640 ft) in depth (Campagno 1984; Miller et al. 2013). The scalloped hammerhead shark's core range is entirely outside of the U.S. and extends from the Gulf of California south to Northern Peru. Sporadic observations off the southern coast of California have been reported during unusually warm water events (NMFS 2015).

Vulnerabilities and Sensitivities to Oiling: There have been no reported direct impacts to sharks due to exposure to spilled oil. Their high mobility, range in prey items, and ability to metabolize ingested oil reduces their risk of adverse impacts. Romo-Cureil et al. (2022) described scalloped hammerhead sharks in the Gulf of Mexico as particularly vulnerable to oil spills due to both juveniles and adults inhabiting the continental shelf with a high association to bottom habitats and their endangered status. This vulnerability does not apply to scalloped hammerhead sharks off California because of their sporadic occurrences in the area.

BMPs for Offshore Operations:

General: All vessel crew members must be instructed to watch for and avoid collisions with fish and wildlife. Report all sightings and all distressed or dead sharks to the Oiled Wildlife Care Network: 844-823-6926. 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: No specific BMPs at this time.

Aerial Dispersant: No specific BMPs at this time.

SubseaDispersants: Spill-specific BMPs to be followed.

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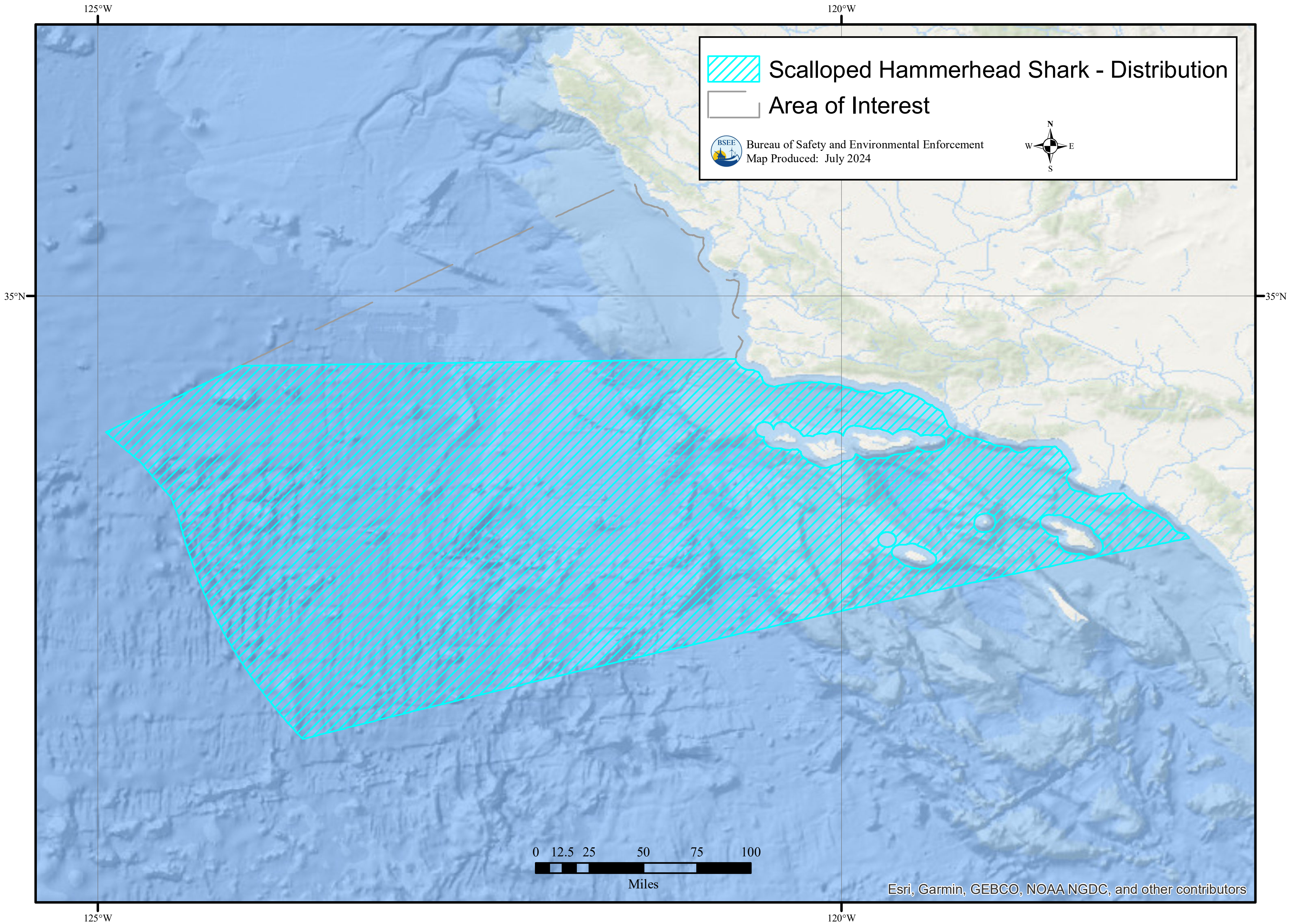

This map represents the approximate range of scalloped hammerhead shark in the Los Angeles - Long Beach Offshore ACP Area.

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Steelhead Trout		**ESA Status**	**Southern California DPS: Endangered (1997)** **South – Central California DPS: Threatened (1997)**	62 FR 43937 70 FR 37159
Scientific Name	*Oncorhynchus mykiss*	**Critical Habitat**		70 FR 52488

Appearance: Steelhead trout are the anadromous form of rainbow trout. Steelhead have a deep, compressed body typical of trout, with a moderately large head and a mouth that extends past the eyes. Steelhead trout are typically more silver in color and grow larger than their freshwater counterparts. They have numerous spots on their caudal, adipose, and dorsal fins, and along the back, extending down their sides to the lateral line. The sides are mostly silvery and free of spots, the belly and ventral surface of the head are whitish, and sometimes a soft metallic-pink color is present along the sides of the body and head; the dorsal fin has 10-12 principal rays; the anal fin has between 8-12 rays (Moyle 2002). Steelhead normally reach lengths of 46 to 71 cm (18 to 28 in) and can weigh up to 19 kg (42 lb.) (Behnke 2002).

Diet: Steelhead trout consume a wide range of aquatic species. As juveniles, they primarily feed on zooplankton and a variety of amphipods and crustaceans. As they mature, their diet expands to include small fish and squid (Meyers 2018, Quinn 2018).

Population: Steelhead trout are divided into 15 Distinct Population Segments (DPS) on the Pacific Coast. Initial abundance estimates from the first status review of the South-Central and Southern California Steelhead DPSs suggested that these populations were already in substantial decline (Busby et al. 1996). Dagit et al. (2020) reviewed 25 years of adult steelhead observations in the Southern California DPS from 1994-2018 and found that their presence is consistently very rare with only 177 adults observed, averaging 7 per year across the entire area inhabited by the DPS (Santa Maria River to the U.S-Mexico border). This decline is largely attributed to anthropogenic stressors including alteration of stream flow patterns, habitat degradation, barriers to fish migration, and droughts coupled with wildfires in response to climate change (NMFS 2012, 2013, Capelli 2024). While numerous recovery actions have been identified by NOAA Fisheries and the California Department of Wildlife, given the small numbers of adults and long recovery timelines, future trends in population abundance are unclear (NMFS 2012, 2013 2023a, 2023b, California Department of Fish and Wildlife 2024).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): The documented native range of spawning steelhead trout extended from southern California (NMFS 2012), north to southcentral Alaska, and west to the Alaska Peninsula and the Kamchatka Peninsula (Xanthippe 2005, Quinn 2018). Two ESA-listed distinct population segments occur in coastal watersheds adjacent to the BSEE Pacific AOI: South-Central California Coast Steelhead DPS extending approximately 201 km (125 miles) from the Pajaro River (Monterey Bay) south to, but not including the Santa Maria River; and Southern California Steelhead DPS extending approximately 500 km (310 miles) from the Santa Maria River in Santa Barbara County south to the U.S.-Mexico border. These populations disperse in the marine environment and may return to spawn in non-natal watersheds. Steelhead fry typically emerge in freshwater from gravel redds during late spring to mid-summer and may move downstream to estuarine overseeing habitats. Juveniles generally rear for 2-3 years before they smolt and transition into the ocean during spring to early summer (Boughton et al. 2006). Steelhead typically spend 1 to 3 years in the ocean before returning to freshwater to spawn (Myers et al. 1996, Myers 2018). Steelhead can make long-distance migrations throughout the North Pacific. Using archival temperature loggers attached to juvenile and adult steelhead in a central California stream, Hayes et al. (2012) found that steelhead trout occupied cooler, more stable thermal habitats in their marine environment and inferred that they were more likely to migrate north from the California Current to a narrow habitat band near the Bering Sea. Marine migration patterns of South-Central and Southern California steelhead are poorly understood, and information on specific habitat use or migration patterns of these species in the marine waters offshore of southern California is not well described (Hubbs 1946).

Vulnerabilities and Sensitivities to Oiling: Anadromous fish are most vulnerable to oil impacts to spawning habitat, which can cause mortality and/or sublethal effects from exposure of eggs, embryos, larvae, and juveniles (Grosell and Pasparakis 2021). In the marine environment, adult salmon may be exposed to dissolved fractions and small droplets, which can result in exposure to toxic components of PAHs through the gill tissue and incidental ingestion while feeding. Fish are susceptible to a broad range of sublethal impacts (Grosell and Pasparakis, 2021) which may affect their long-term fitness.

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: No specific BMPs at this time.

Aerial Dispersant: No specific BMPs at this time.

Subsurface Dispersants: Spill-specific BMPs to be followed.

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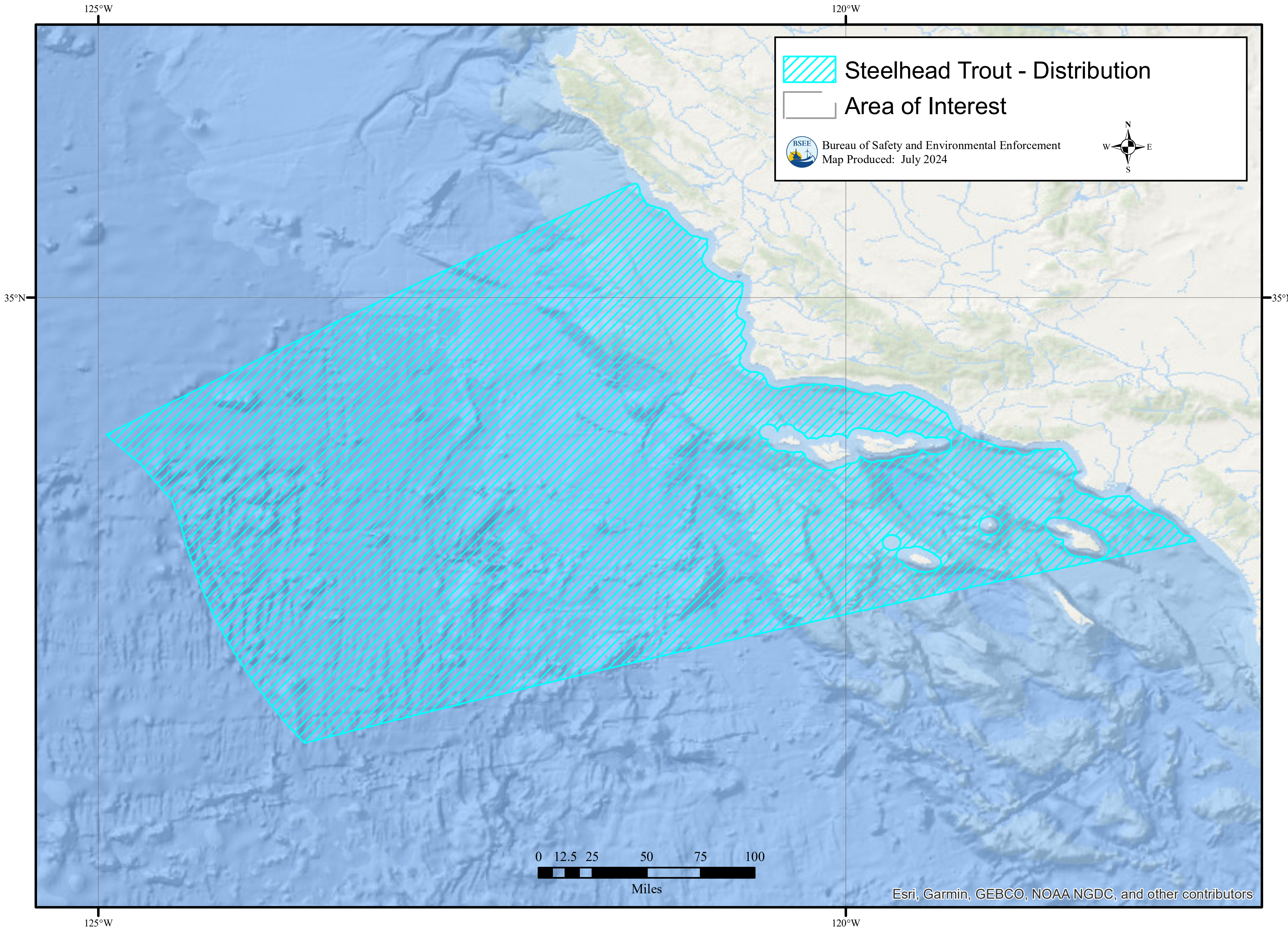

This map represents the approximate range of steelhead trout in the Los Angeles - Long Beach Offshore ACP Area.

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SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Invertebrates

- Sunflower Sea Star
- White Abalone

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<table>
<tr><td colspan="2">Sunflower Sea Star</td><td>ESA Status</td><td>Proposed-Threatened</td><td>88 FR 16212</td></tr>
<tr><td>Scientific Name</td><td>Pycnopodia helianthoides</td><td>Critical Habitat</td><td colspan="2">None</td></tr>
<tr><td colspan="5">Appearance: The sunflower sea star is among the largest sea stars in the world and can reach over 1 m (3ft) 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.</td></tr>
<tr><td colspan="5">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.</td></tr>
<tr><td colspan="5">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 (Hamilton et al. 2021). .</td></tr>
<tr><td colspan="5">Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): 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. While there are anecdotal reports of juveniles from northern California and the Channel Islands, mature sunflower sea stars are now rare or nonexistent in the southern extent of their range (Cape Flattery south to Mexico) (Lowry et al. 2022). They are found from the low intertidal to depths of 435 m (1,427 ft) on various substrate types but are most common in waters less than 120 m (394 ft). 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 proximity to mates for successful fertilization. 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).</td></tr>
<tr><td colspan="5">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 encounter 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. 1996). Surveys in the years following the spill observed lower densities of Pycnopodia in oiled eelgrass beds compared to non-oiled eelgrass beds; however, declines were not evident in other habitats sampled, and two of the four years sampled had very high juvenile recruitment.</td></tr>
<tr><td colspan="5">BMPs for Offshore Operations:
<u>General</u>: Secure all materials on vessels to prevent inadvertent loss overboard.
<u>Skimming and Booming</u>: Maintain control of all materials to prevent inadvertent release and sinking.
<u>Burning</u>: 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.
<u>Surface Dispersant</u>: Follow any spill specific RRT guidance.
<u>Subsurface Dispersants</u>: Follow spill-specific special considerations, constraints, permit requirements, and/or special authorizations as part of the case-by-case approval process.</td></tr>
</table>

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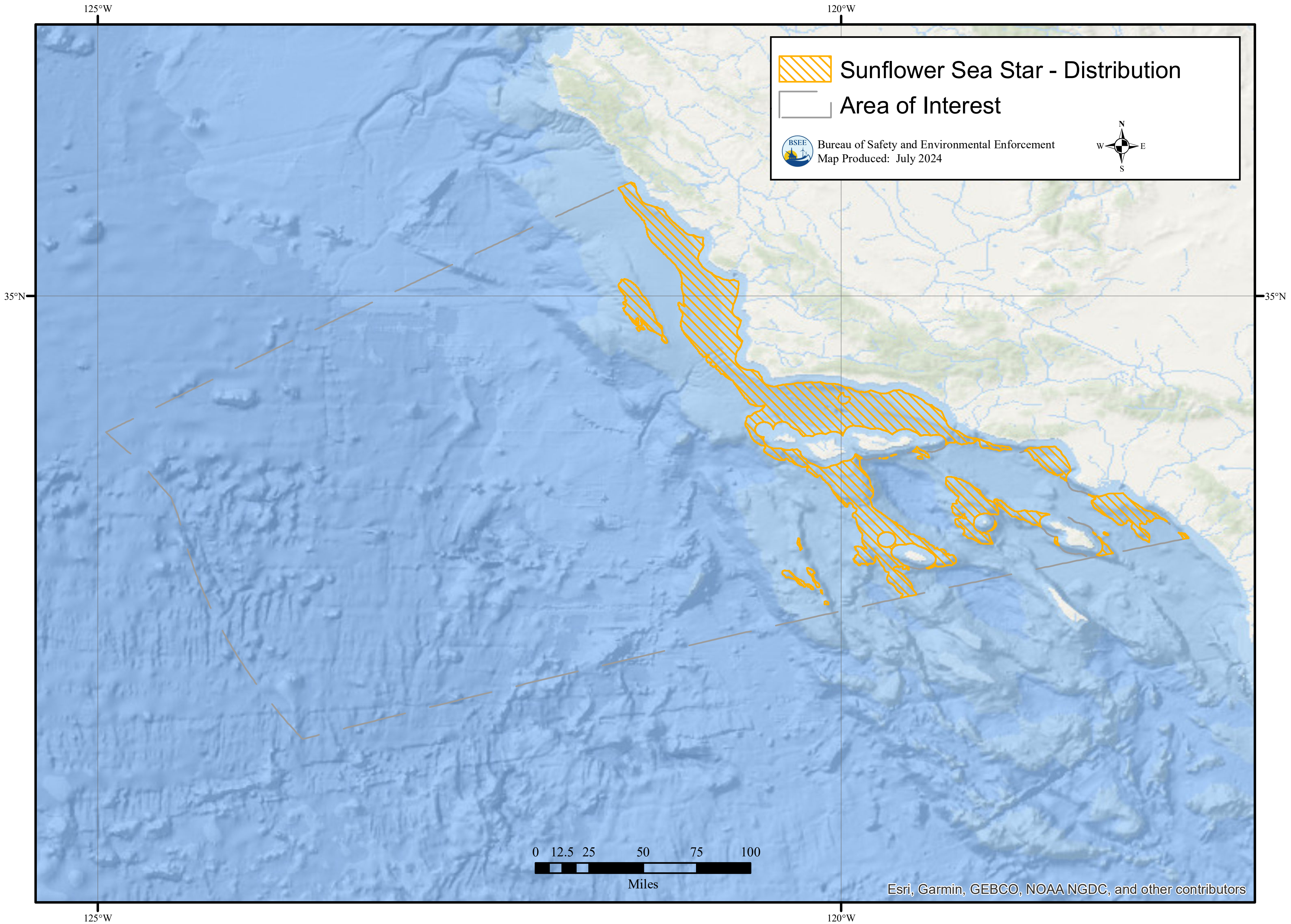

This map represents the approximate range of sunflower sea star in the Los Angeles - Long Beach Offshore ACP Area.

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White Abalone		ESA Status*	Endangered (2001)	66 FR 29046
Scientific Name	*Haliotis sorenseni*	**Critical Habitat**		None

Appearance: White abalone have a thin, oval-shaped shell with a row of 3-5 open respiratory holes. Adult white abalone are typically 20-25 cm (7.8-9.8 in) in length and have an orange-beige foot, tan-beige epipodium, and brown cephalic tentacles (Hobday and Tegner 2000).

Diet: As white abalone mature, their diet transitions from small, attached algae like benthic diatoms to coralline algae (Cox 1962) and eventually to attached or drifting brown macroalgae including *Laminaria farlowii* and *Agarum fimbriatum* (Tutschulte 1976).

Population: A historic decline in population led to the white abalone becoming the first marine invertebrate to be listed as endangered under the Endangered Species Act in 2001 (Federal Register 66 FR 29046). This decline is largely attributed to overfishing, which resulted in low densities, and is further compounded by their susceptibility to withering syndrome (NMFS 2018). In southern California, submersible surveys led to estimates of less than 2,600 animals, or less than 0.1% of their pre-exploitation population size (Hobday and Tegner 2000, Hobday et al. 2001). More recent survey data, based largely on updated habitat information, suggest that although population estimates may be larger than previously thought, they remain well below the level required to sustain a viable population (Stierhoff et al. 2012; Catton et al. 2016).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI distribution): White abalone occur between Point Conception in California, USA, and Punta Abreojos in Baja California, Mexico. They are reported to be most common in the northern end of their range, particularly on the islands of San Clemente and Santa Catalina (Cox 1962, Leighton 1972). White abalone inhabit rocky substrates near sandy channels and can be found at depths ranging from 5 to 60 m (16 to 196 ft) but are most abundant at depths between 43 and 63 m (141-206 ft), and where *Laminaria farlowii* is found (Lafferty et al. 2004).

Vulnerabilities and Sensitivities to Oiling: As benthic organisms (or slow-moving bottom dwellers) that can occur in shallow water, abalone are susceptible to oil that is dispersed into the water column (naturally and through use of chemical dispersants), as well as from oil-contaminated sediments. Oil spills could also affect organisms that abalone rely upon for settlement cues (e.g., crustose coralline algae), food (e.g., diatoms, macroalgae), and shelter.

BMPs for Offshore Operations:

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

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

Burning: Spill-specific BMPs to be followed.

Surface Dispersant: Spill-specific BMPs to be followed.

Subsurface Dispersant: Spill-specific BMPs to be followed.

Uncrewed Aerial Systems (UAS) Use: N/A

Aircraft Activities: N/A

*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 and/or NMFS.

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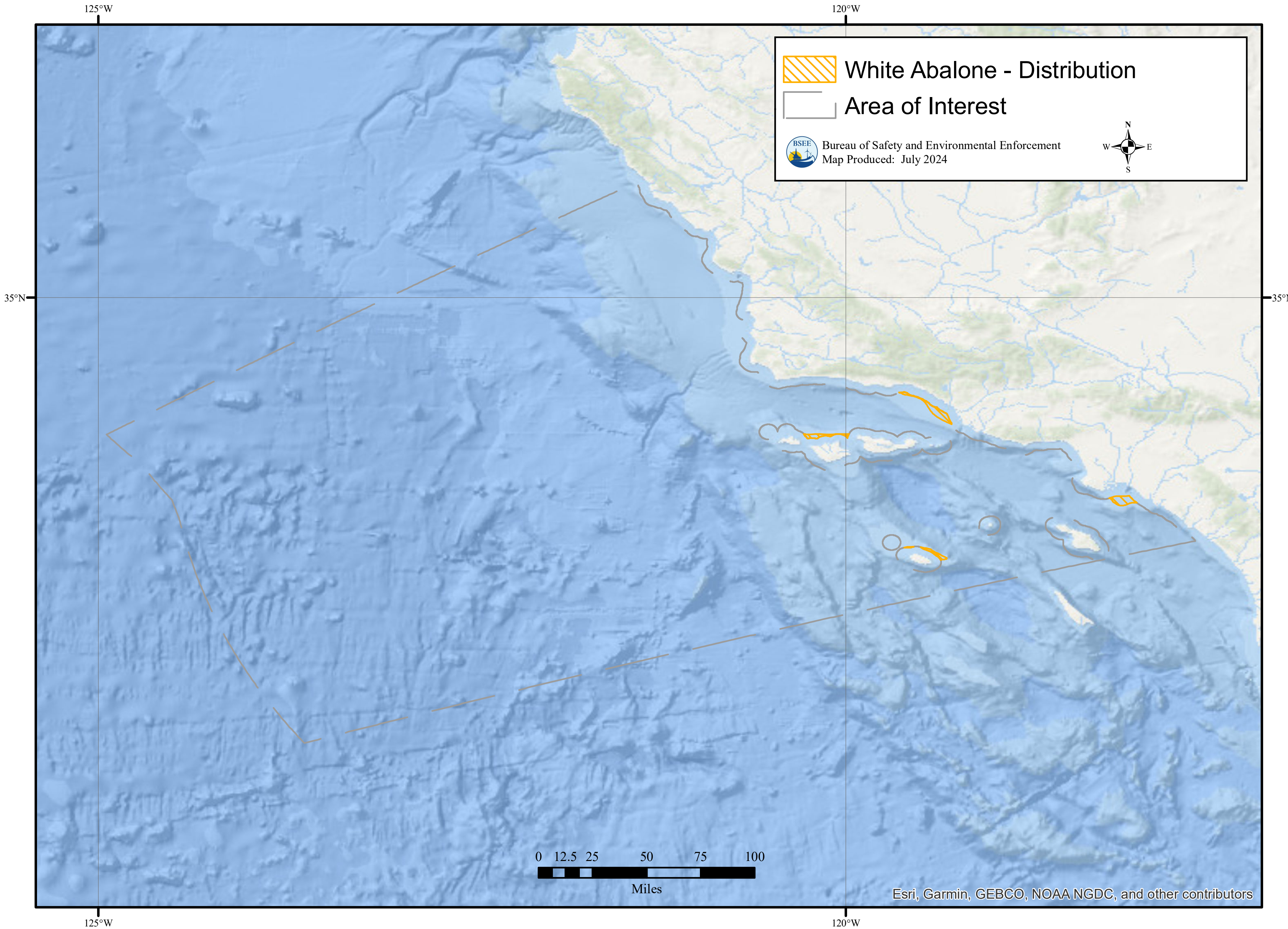

This map represents the approximate range of white abalone in the Los Angeles - Long Beach Offshore ACP Area.

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SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Marine Mammals

- Blue Whale
- Fin Whale
- Guadalupe Fur Seal
- Humpback Whale
- North Pacific Right Whale
- Sei Whale
- Southern Sea Otter
- Sperm Whale

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<table>
<tr><td colspan="2">Blue Whale</td><td>ESA Status</td><td colspan="2">Endangered (1970)</td><td>35 FR 8491</td></tr>
<tr><td>Scientific Name</td><td>Balaenoptera musculus musculus</td><td colspan="2">Critical Habitat</td><td colspan="2">None</td></tr>
</table>

Appearance: The largest animal on the planet, the blue whale's body is long and slender in shape. Their name is derived from their mottled blue-gray color which appears light blue underwater. Their underbellies are lighter in color and the undersides of the flippers are a light blueish gray to white. Adults grow up to 30 m (98.5 ft.) and can weigh more than 150,000 kg (330,693 lb.) (NMFS 2023). Their rostrum is broad and flattened at the tip with a single ridge extending to a raised area just above the blowholes (Leatherwood et al. 1982).

Diet: Blue whales feed almost exclusively on krill (*Euphausia pacifica* and *Thysanoëssa spinifera*) but are also known to consume fish and copepods. They are filter feeders, foraging and feeding mostly in small groups at depths of 100 m (328 ft.) typically, down to 300 m (984 ft) following their prey's diel vertical migration through the water column.

Population: The global population of mature blue whales is estimated to be between 5,000 and 15,000 individuals, which is 3-11% of their historic estimated population (Cooke 2018). Analyses of survey data from 1991-2018 have resulted in a mark-recapture estimate of 1,898 for the eastern Pacific stock, and a species distribution model-based estimate of 670 whales foraging off the west coast in 2018 (Becker et al. 2020). While some evidence suggests a population size increase since the 1990's, there is no formal trend analysis, and the current population trend is unknown (Caretta et al. 2022).

Distribution/Habitat/Migration (see map for distribution in Los Angeles-Long Beach ACP Offshore ESI): Cosmopolitan in distribution, blue whales are found in all oceans except for the Arctic. Generally, whales migrate seasonally between summer feeding grounds and winter breeding grounds. Blue whales in the eastern north Pacific range from the Gulf of Alaska to the Costa Rica Dome with the stretch of coast between the Gulf of Farallones to the Channel Islands serving as an important feeding area from June to November (Calambokidis et al. 2024).

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 several 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 that focused on the health or survival of cetaceans following oil spills are limited except for 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).

They are at risk of aspiration of oil if they encounter oil slicks on the surface. During the *Deepwater Horizon* oil spill, 33 sperm whales were observed swimming in surface oil on 16 occasions. Passive acoustic monitoring during the spill indicated that sperm whales did not avoid the area around the *Deepwater Horizon* release site (Frasier et al. 2020).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of 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 whales.

BMPs for Offshore Operations:

General: Watch for and avoid collisions with marine mammals and report all distressed, oiled, or dead marine mammals to the Oiled Wildlife Care Network: 844-823-6926.

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. If marine mammals are sighted oiled or swimming in oil, call 844-823-6926.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations.

Booming: Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. If a marine mammal is observed trapped or entangled in a boom, open the boom carefully until the animal leaves on its own, and call 844-823-6926 to report.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. A 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 to 844-823-6926.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals or sea turtles.

Subsurface Dispersant: Spill-specific BMPs to be followed.

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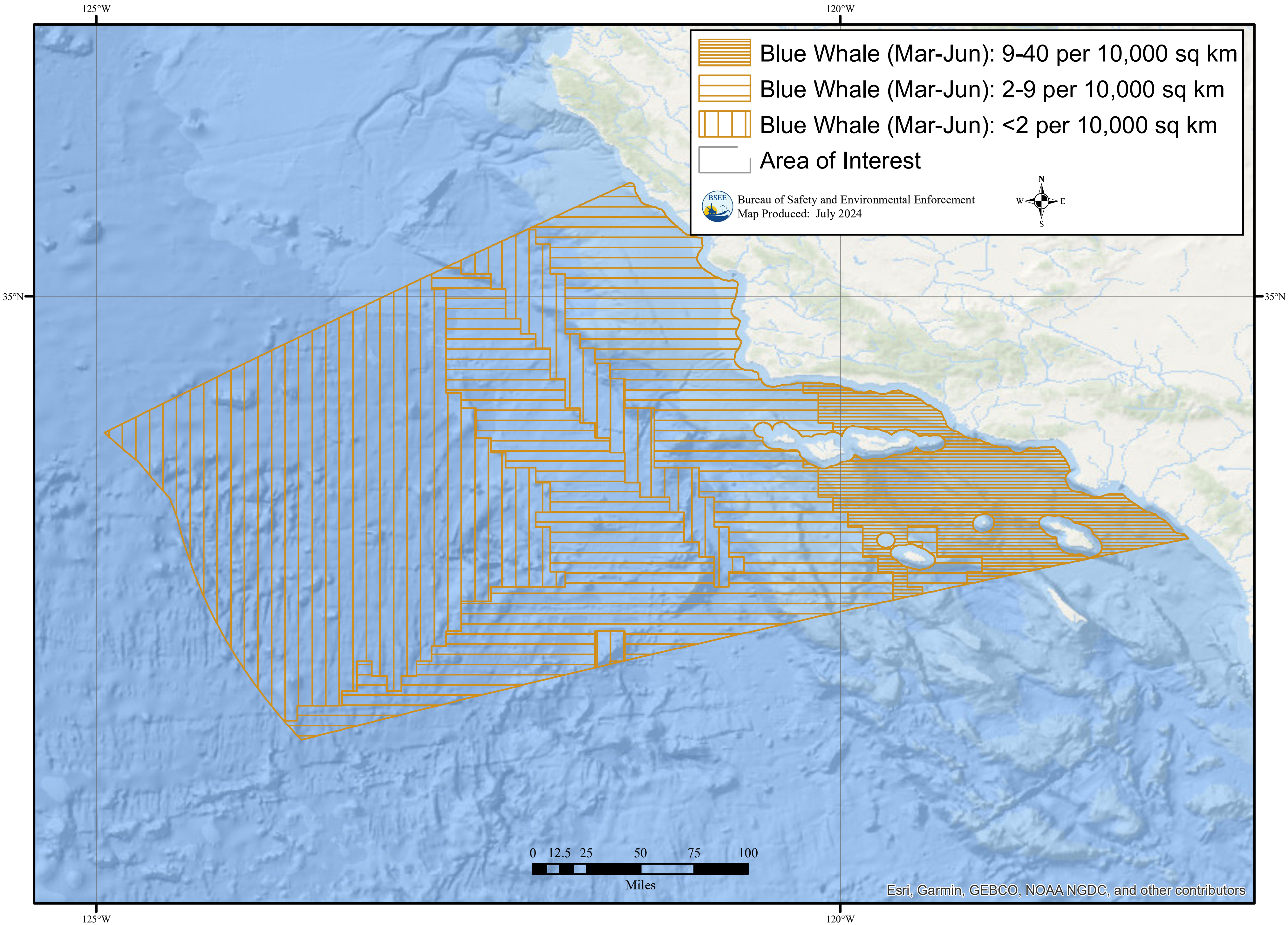
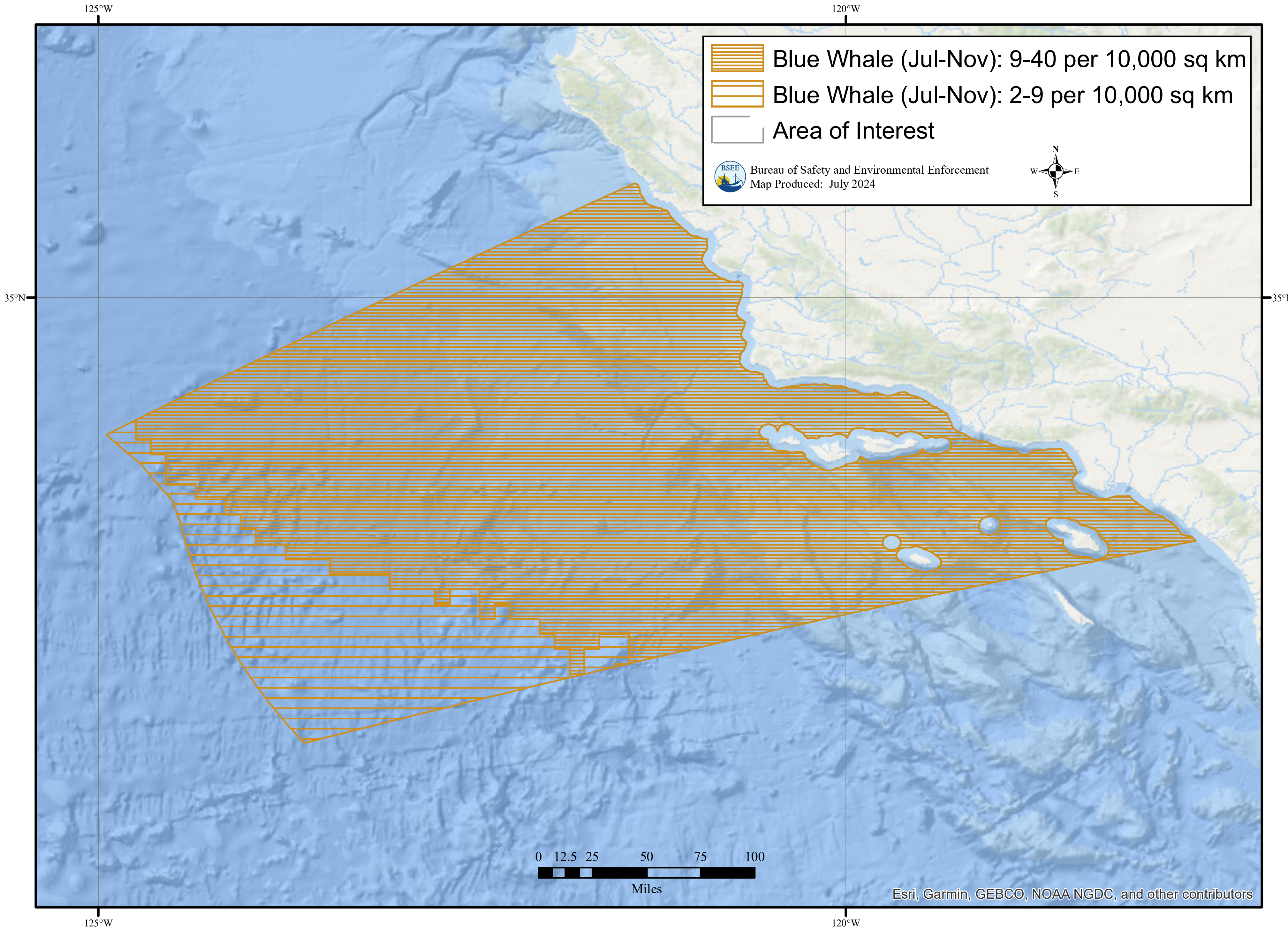
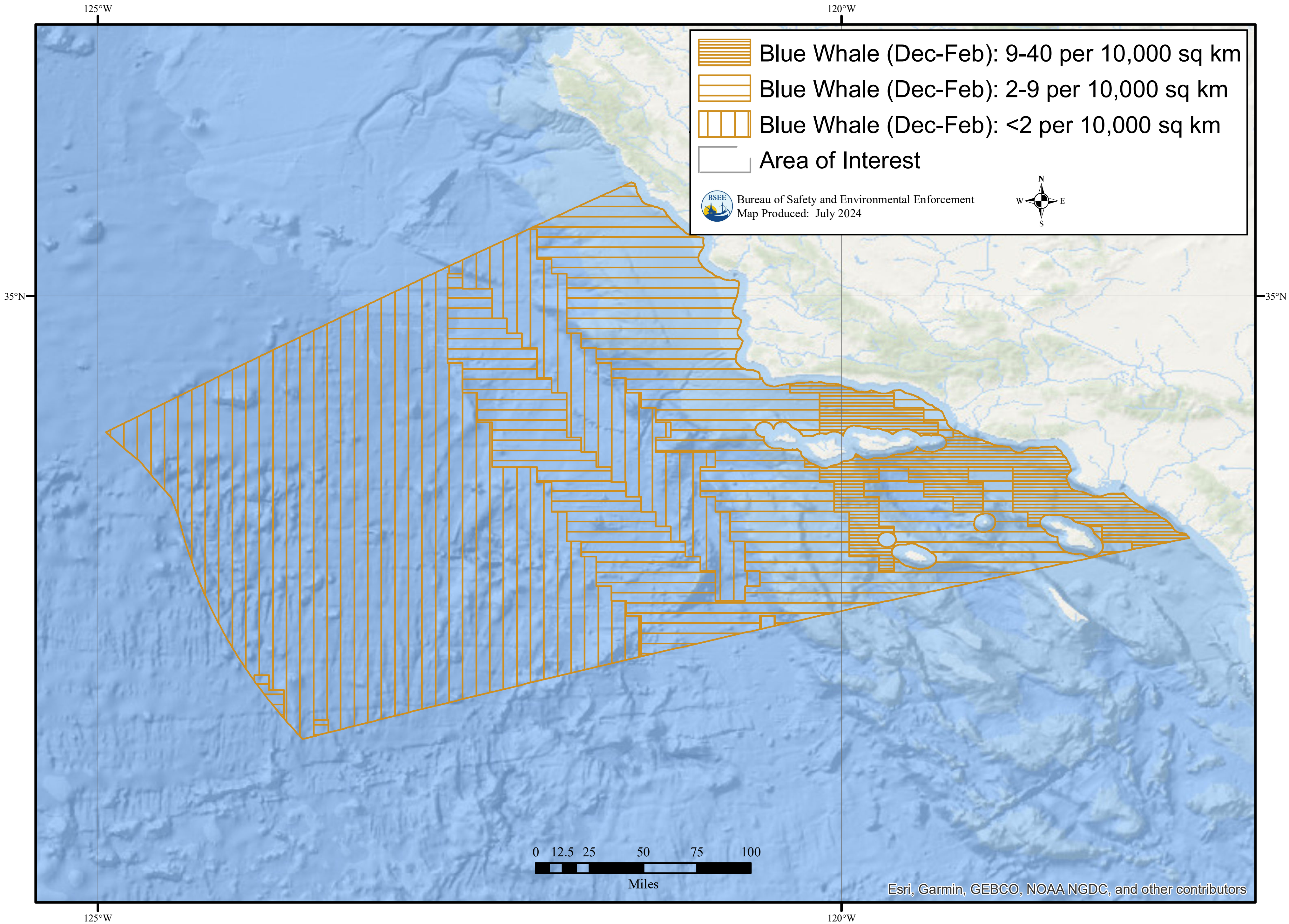


This map represents the approximate spring (March-June) range of blue whale in the Los Angeles - Long Beach Offshore ACP Area.



This map represents the approximate summer/fall (July-November) range of blue whale in the Los Angeles - Long Beach Offshore ACP Area.



This map represents the approximate winter (December-February) range of blue whale in the Los Angeles - Long Beach Offshore ACP Area.

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

Appearance: Fin whale is a baleen whale with a sleek, streamlined body, V-shaped head, and notable hooked dorsal fin two- thirds down the body (NOAA Fisheries 2023). They have dark grey dorsal coloration, white ventral, with possible V- shaped chevron patterns behind the head, white tail flukes with gray borders, and 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: During the summer, fin whales feed almost exclusively on krill. Fin whales are also known to feed on copepods and schooling fish such as herring, walleye pollock, and capelin. In winter, fin whales are thought to reduce food intake or fast during migration (NOAA Fisheries 2023).

Population: Fin whales off the U.S. west coast are part of a broader eastern North Pacific population for which no overall abundance estimate is available. However, based on surveys along the U.S. west coast since 1991, fin whale abundance has been increasing as the population recovers from past whaling impacts. The most recent estimate of abundance is 11,065 during 2018 (Becker et al. 2020).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): 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. Fin whales occur year-round in California (Širović et al. 2017), including the Southern California Bight (Falcone and Shorr 2013).

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 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 that 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 to dispersants or chemically dispersed oil on the skin of 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 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: Watch for and avoid collisions with marine mammals and report all distressed, oiled, or dead marine mammals to the Oiled Wildlife Care Network: 844-823-6926.

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. If marine mammals are sighted oiled or swimming in oil, call 844-823-6926.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations.

Booming: Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. If a marine mammal is observed trapped or entangled in a boom, open the boom carefully until the animal leaves on its own, and call 844-823-6926 to report.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. A 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 to 844-823-6926.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals or sea turtles.

Subsurface Dispersant: Spill-specific BMPs to be followed.

References:

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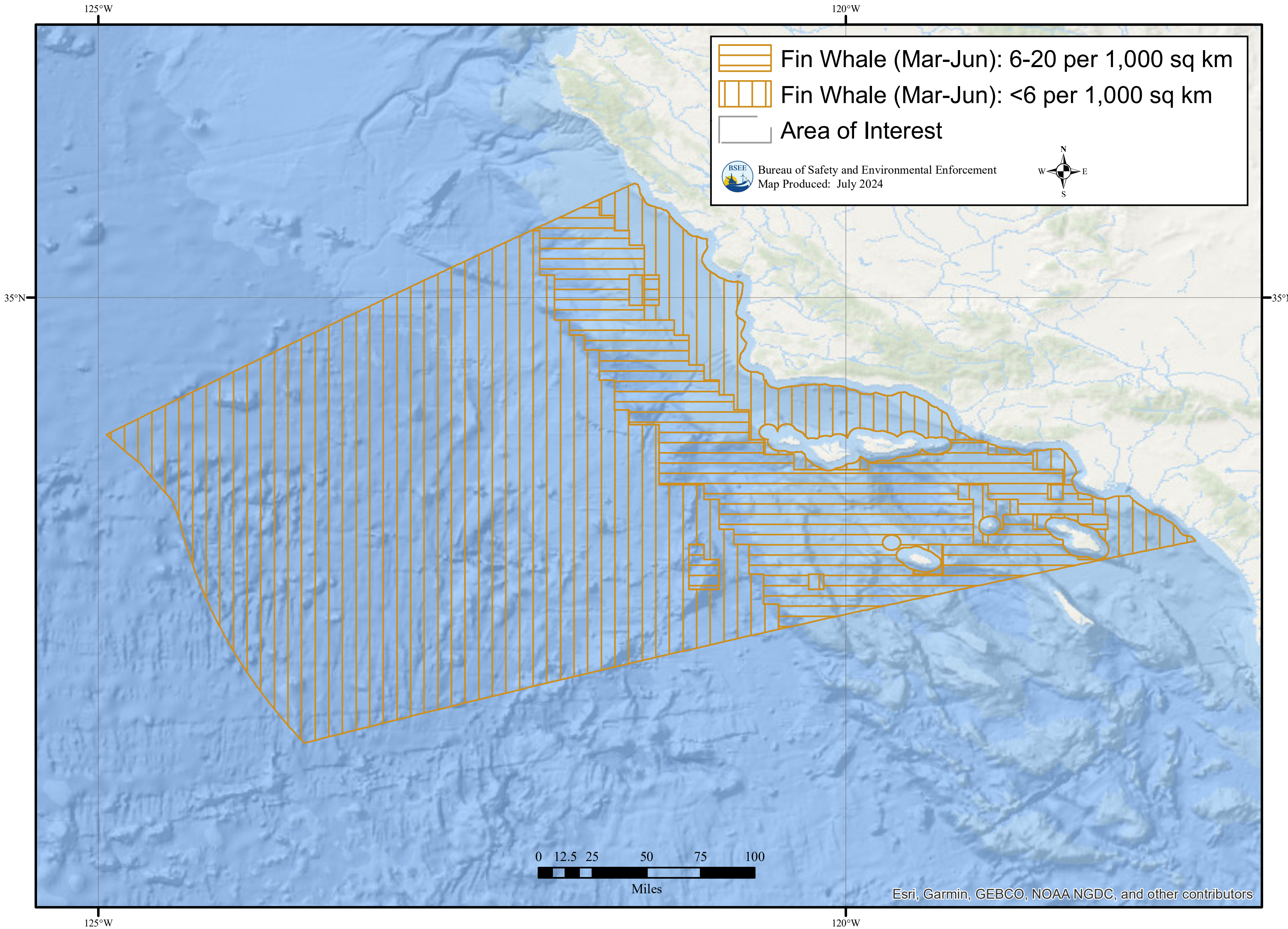
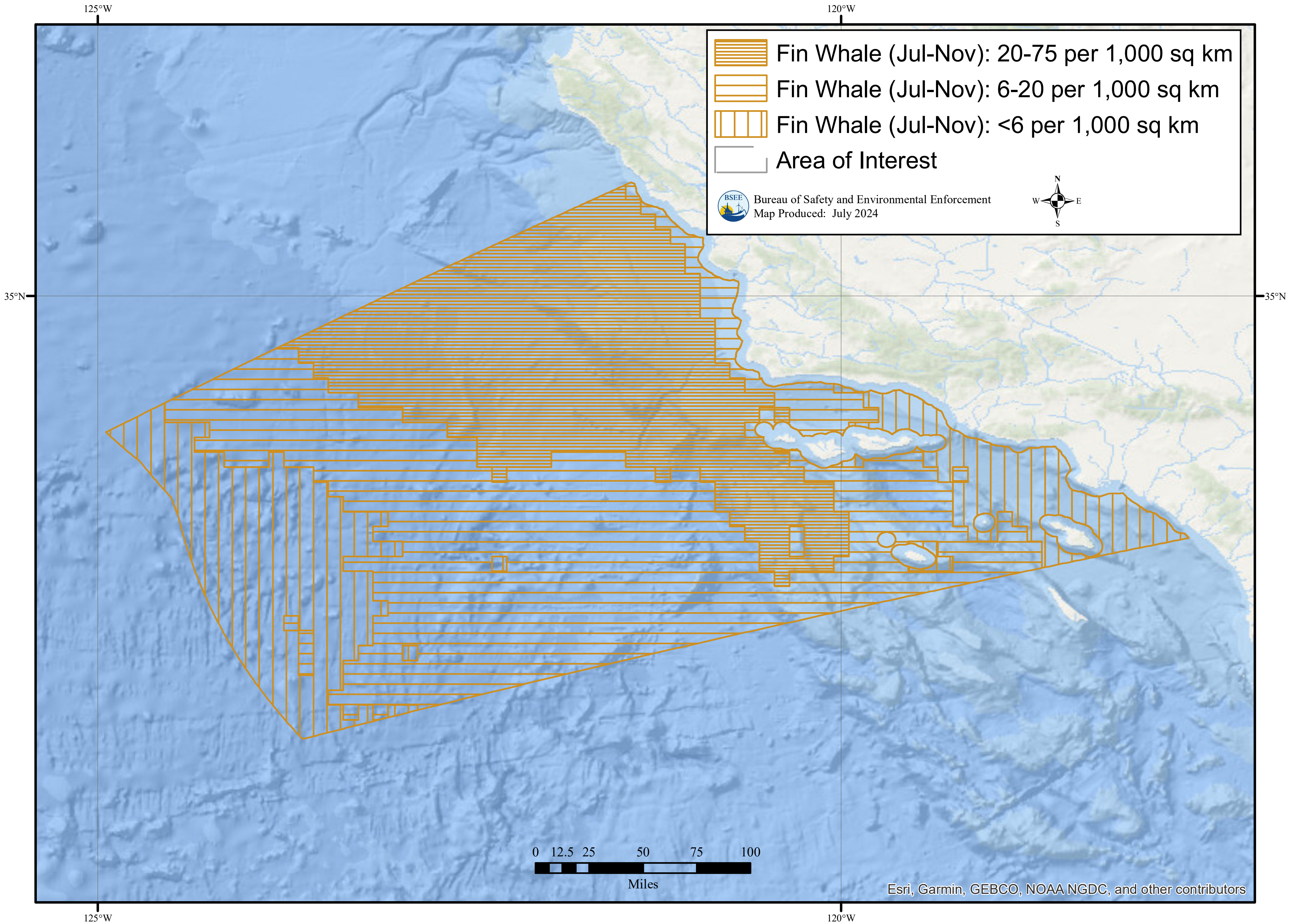
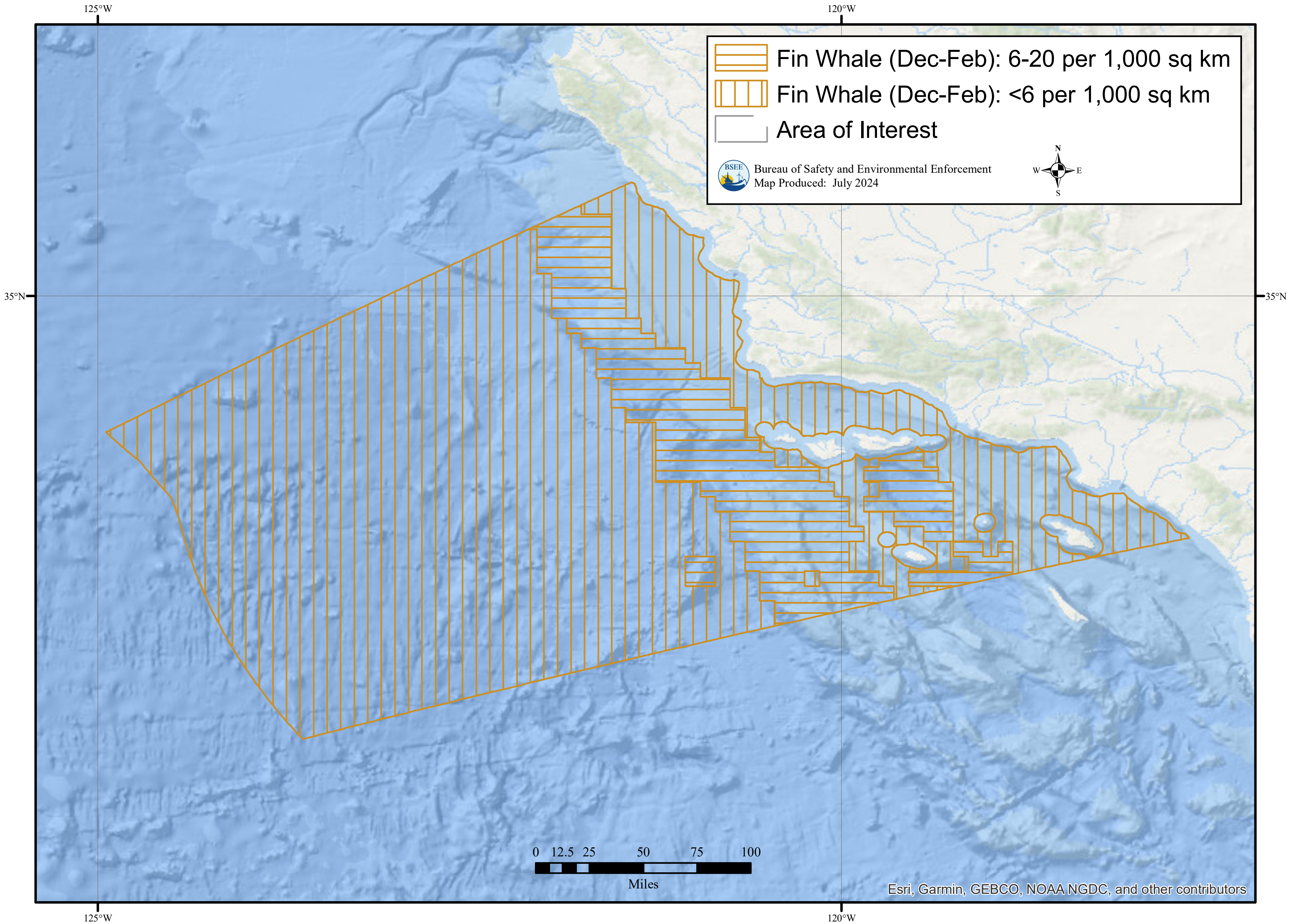


This map represents the approximate spring (March-June) range of fin whale in the Los Angeles - Long Beach Offshore ACP Area.



This map represents the approximate summer/fall (July-November) range of fin whale in the Los Angeles - Long Beach Offshore ACP Area.



This map represents the approximate winter (December-February) range of fin whale in the Los Angeles - Long Beach Offshore ACP Area.

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Guadalupe Fur Seal	ESA Status*	Threatened (1967)	32 FR 4001
Scientific Name	*Arctocephalus townsendi*	**Critical Habitat**	None

Appearance: Guadalupe fur seals are brown to silver in color with tan-colored underfur. The species have long vibrissae (i.e., whiskers), and are distinguished by their long, prominent, and slightly downturned pinnae and their elongated snouts. Guadalupe fur seals are sexually dimorphic with adults ranging from 1.5m (5ft) to over 2.5 m (8ft) for female and males respectively (McCue et al. 2021).

Diet: Guadalupe fur seal diets consist of squid and other cephalopods, as well as small fish including mackerel, sardines, and anchovies. Feeding primarily at night, they dive to average depths of 20m (65ft) with maximum depths of about 75m (246ft) to forage (NOAA Fisheries 2024).

Population: Guadalupe fur seal populations experienced a precipitous decline in the 18th and 19th centuries due to heavy commercial harvesting and were thought to be extinct until the mid-20th century. Due to their protected status in the U.S. and Mexico, the Guadalupe fur seal population has increased exponentially over the past three decades, with an annual growth rate of 8.4% from 1991 to 2019, resulting in an estimated population size of 63,850 individuals (Juárez-Ruiz et al. 2022).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Guadalupe fur seals are primarily found off the Pacific coast of Mexico and the waters off southern California; however, they have been recorded as far north as British Columbia, Canada. Breeding occurs from May to August and breeding grounds are almost entirely centered on Guadalupe Island, although several pups have been recorded on the Channel Islands off southern California. A pelagic species, their preferred habitat is rocky slopes along narrow coastlines offshore of the continental shelf (McCue et al. 2021). From 2015 to 2021, an Unusual Mortality Event (UME) along the U.S. west coast involving Guadalupe fur seals resulted in hundreds of strandings. Mainly attributed to suboptimal prey conditions due to unusually warm water conditions, the effects of the UME on the population and distribution of Guadalupe fur seals along the west coast are currently unknown (NOAA Fisheries 2022).

Vulnerabilities and Sensitivities to Oiling: Guadalupe fur seals 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. 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. Oil will readily adhere to fur, which would be a greater risk for pups.

BMPs for Offshore Operations:

General: Watch for and avoid collisions with wildlife and report all distressed, entangled, or dead marine mammals to the Wildlife Hotline. If marine mammals are sighted oiled or swimming in oil, call the Oiled Wildlife Care Network: 844-823-6926.

Collision Risk and Avoidance: Response vessel operators shall avoid close approach (<300-500 ft; <100-150 m) to marine mammals in the water. Vessel speeds shall be <10 knots when marine mammals sighted within 1,000 ft (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. A 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: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water or on haul-outs. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals.

Subsurface Dispersant: Spill-specific BMPs to be followed.

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. 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.

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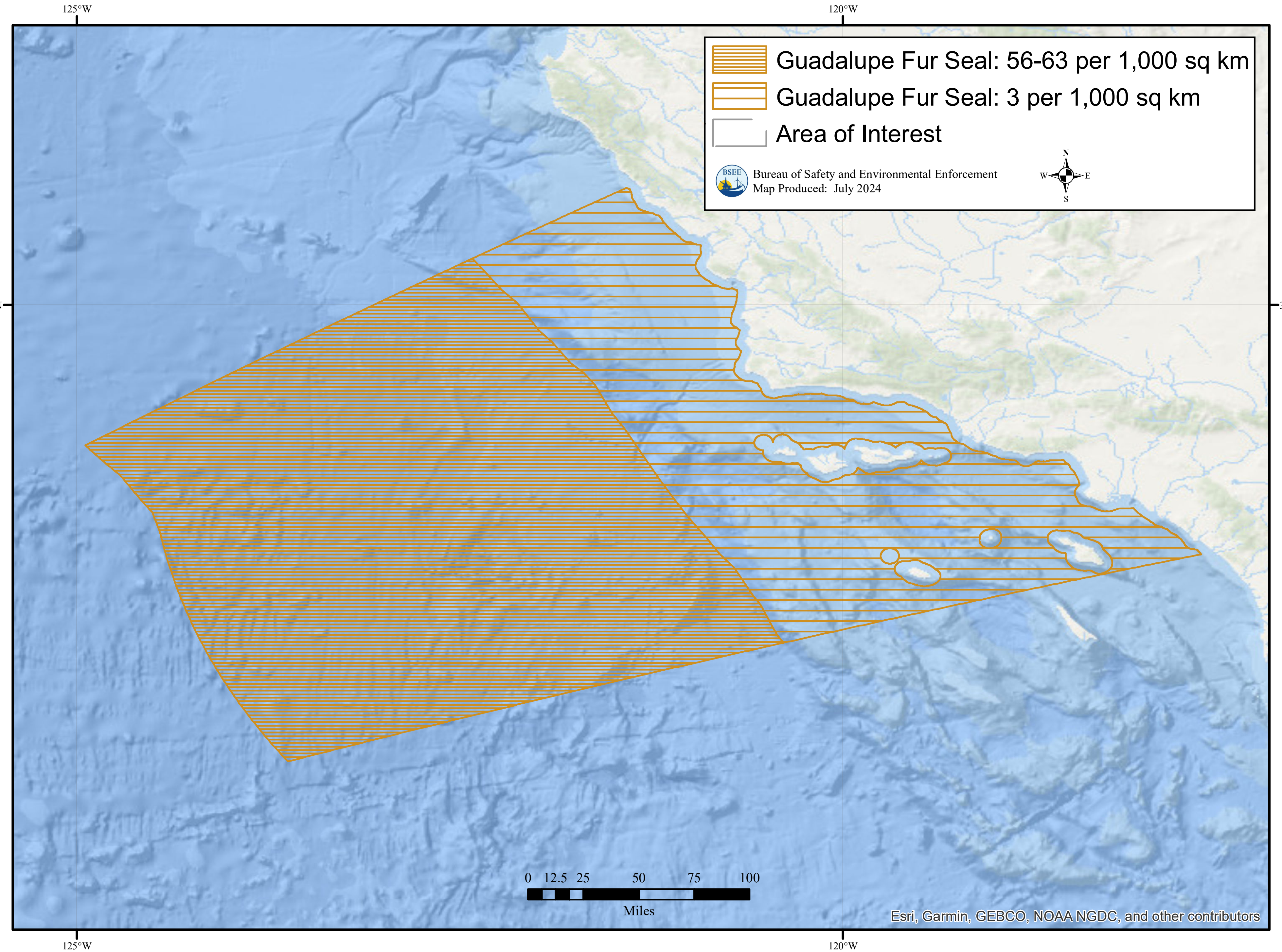

This map represents the approximate range of Guadalupe fur seal in the Los Angeles - Long Beach Offshore ACP Area.

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Humpback Whale		ESA Status	Threatened (2016) Mexico DPS Endangered (2016) Central America DPS	81 FR 62259
Scientific Name	*Megaptera novaeangliae*	**Critical Habitat**	86 FR 21082	

Appearance: Humpback whales' bodies are primarily black, with varying amounts of white on their pectoral fins, bellies, and the undersides of their flukes. Their flukes can span up to 5.5 m (18 ft) wide and are characterized by serrated trailing edges and pointed tips. Each whale's fluke pigmentation pattern, along with their unique shape, size, and scarring patterns, can be used for individual identification (NOAA Fisheries 2024).

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 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 whales lunge upward through the circular bubble net (NOAA Fisheries 2024).

Population: The global population of humpback whales is estimated at around 135,000 individuals (Cooke 2018). Off the U.S. west coast, their abundance was estimated using mark-recapture methods from 2015-2018, resulting in an estimated 4,973 whales (Calambokidis and Barlow 2020). Another study by Becker et al. (2020), using habitat models and line-transect data, estimated a population of 4,784 whales for 2018. Since 1989, humpback whale abundance off the entire U.S. west coast has increased at an average rate of 8.2% per year (Calambokidis and Barlow 2020); however, the endangered Central American DPS, which feeds primarily off California and Oregon, has increased at a lower rate of 1.2% per year (with high uncertainty, Curtis et al. 2022)

Distribution/Habitat/Migration (see map for distribution in Los Angeles-Long Beach ACP Offshore ESI): Cosmopolitan in distribution, humpback whales are found in all major oceans. Humpback whales are thought to have one of the longest migrations of any mammal on the planet, traveling up to 8,046 km (5,000 miles) between breeding and feeding grounds (NOAA Fisheries 2024). Off the U.S. west coast, humpback whales are most abundant along the Pacific Rim from spring through fall, typically migrating to low-latitude regions of Mexico and Central America during the winter (Calambokidis et al. 2000).

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 several 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 that focused on the health or survival of cetaceans following oil spills are limited except for 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).

Cetaceans are at risk of aspiration of oil if they encounter oil slicks on the surface. During the *Deepwater Horizon* oil spill, 33 sperm whales were observed swimming in surface oil on 16 occasions. Passive acoustic monitoring during the spill indicated that sperm whales did not avoid the area around the *Deepwater Horizon* release site (Frasier et al. 2020).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of 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 whales.

BMPs for Offshore Operations:

General: Watch for and avoid collisions with marine mammals and report all distressed, oiled, or dead marine mammals to the Oiled Wildlife Care Network: 844-823-6926.

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. If marine mammals are sighted oiled or swimming in oil, call 844-823-6926.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations.

Booming: Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. If a marine mammal is observed trapped or entangled in a boom, open the boom carefully until the animal leaves on its own, and call 844-823-6926 to report.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. A marine species observer on the ignition vessel will monitor three 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 to 844-823-6926.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals or sea turtles.

Subsurface Dispersant: Spill-specific BMPs to be followed.

References:

Becker EA, Forney KA, Miller DL, Fiedler PC, Barlow J, Moore JE. 2020. Habitat-based density estimates for cetaceans in the California current ecosystem based on 1991-2018 survey data, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-638.

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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): U.S. Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2020-058. 326 pp.

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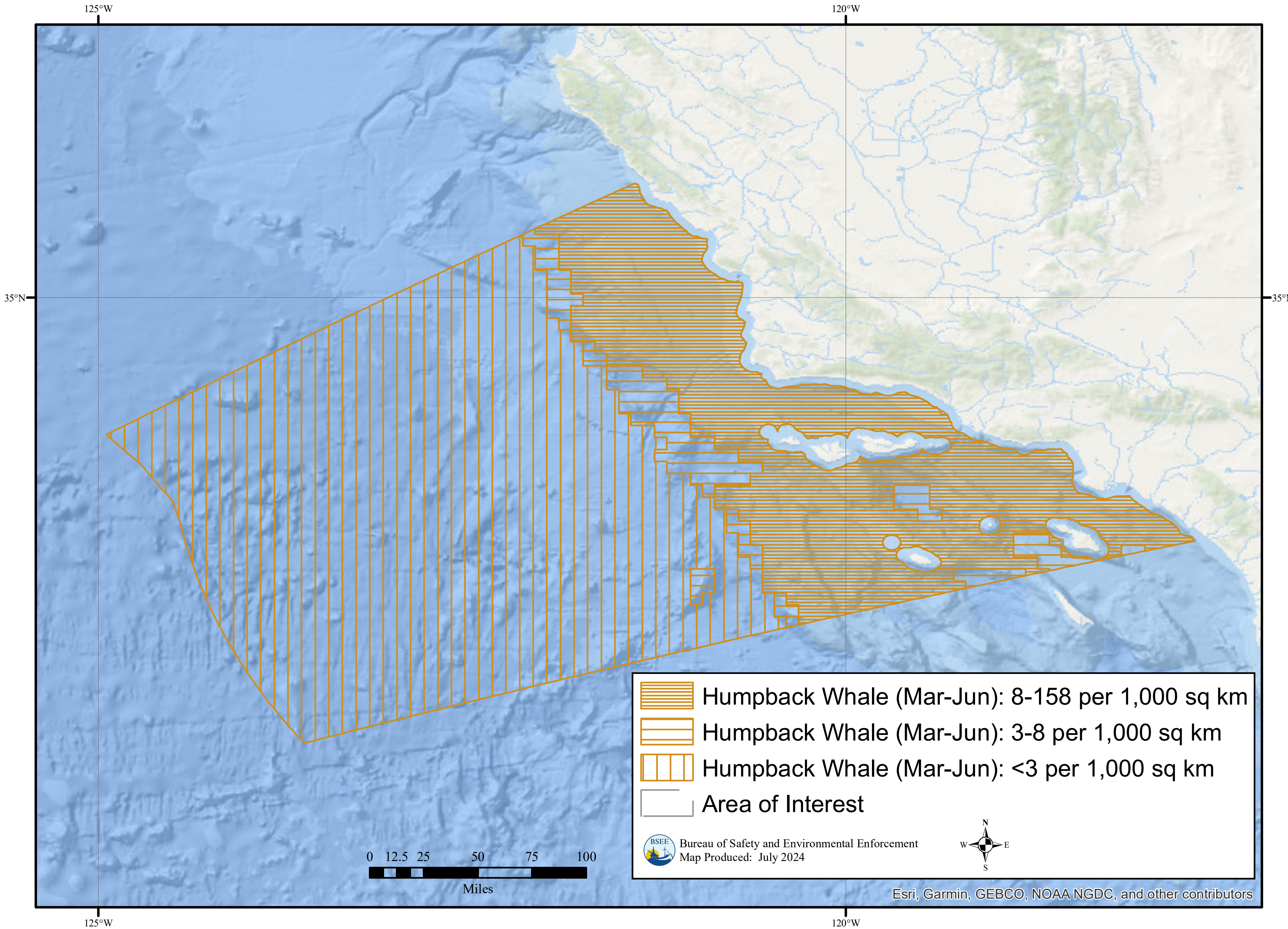
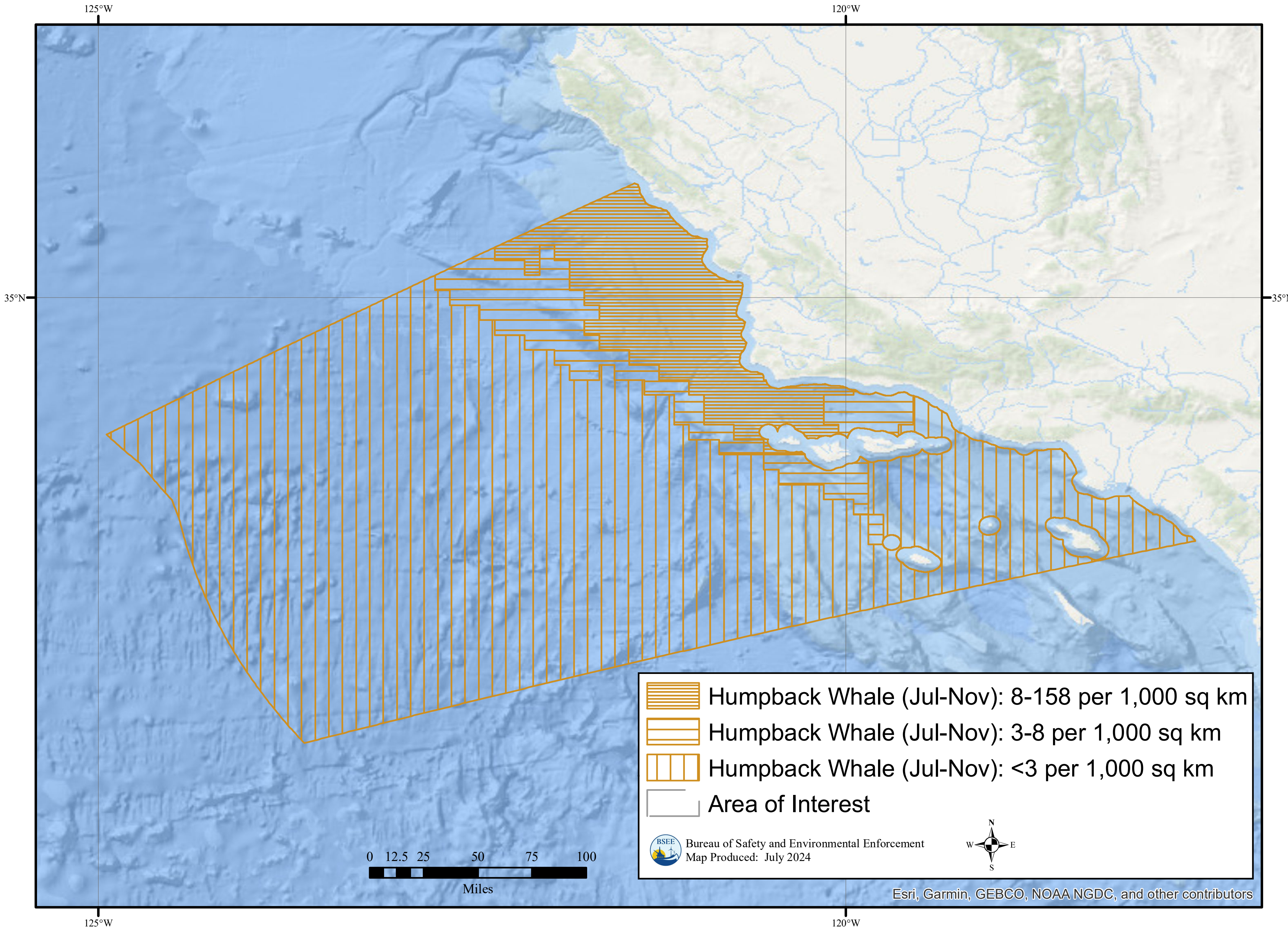
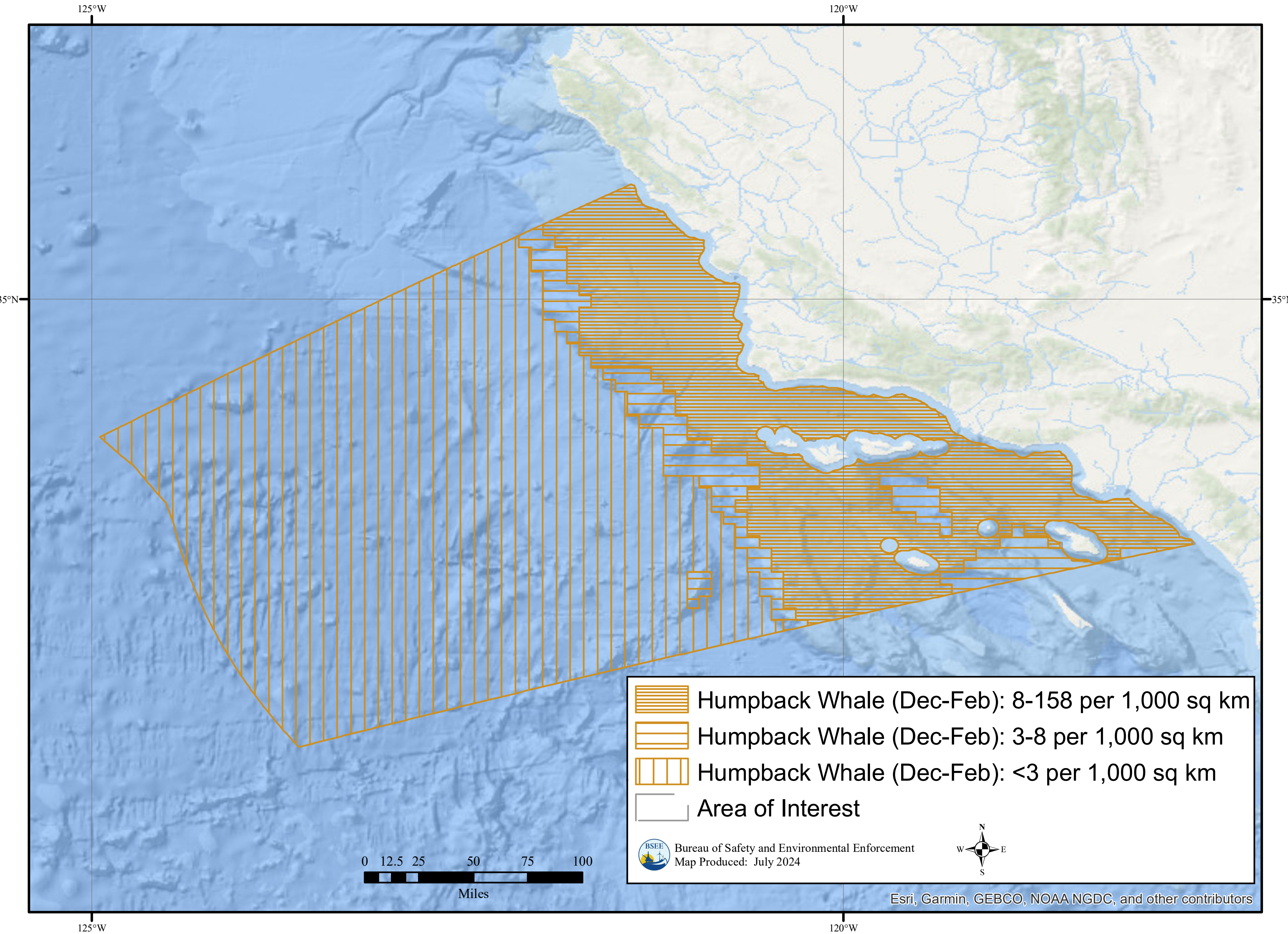


This map represents the approximate spring (March-June) range of humpback whale in the Los Angeles - Long Beach Offshore ACP Area.



This map represents the approximate summer/fall (July-November) range of humpback whale in the Los Angeles - Long Beach Offshore ACP Area.



This map represents the approximate winter (December-February) range of humpback whale in the Los Angeles - Long Beach Offshore ACP Area.

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, but a minimum abundance was estimated to be 26 whales during 2008. 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 in Los Angeles – Long Beach ACP Offshore ESI): North Pacific right whales occur mainly in the central 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. Most sightings of right whales off California occur almost exclusively in spring, with the most recent confirmed sighting off San Mateo County during April 2022, and a more recent, unconfirmed sighting recorded west of Pt. Reyes (Scarff 2024).

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 several 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 that focused on the health or survival of cetaceans following oil spills are limited except for 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).

They are at risk of aspiration of oil if they encounter oil slicks on the surface. During the *Deepwater Horizon* oil spill, 33 sperm whales were observed swimming in surface oil on 16 occasions. Passive acoustic monitoring during the spill indicated that sperm whales did not avoid the area around the *Deepwater Horizon* release site (Frasier et al. 2020).

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 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: Watch for and avoid collisions with marine mammals and report all distressed or dead marine mammals to the Oiled Wildlife Care Network: 844-823-6926.

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. If marine mammals are sighted oiled or swimming in oil, call 844-823-6926.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations.

Booming: Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. If a marine mammal is observed trapped or entangled in a boom, open the boom carefully until the animal leaves on its own, and call 844-823-6926 to report.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. A 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 to 844-823-6926.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals.

Subsurface Dispersant: Spill-specific BMPs to be followed.

*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.

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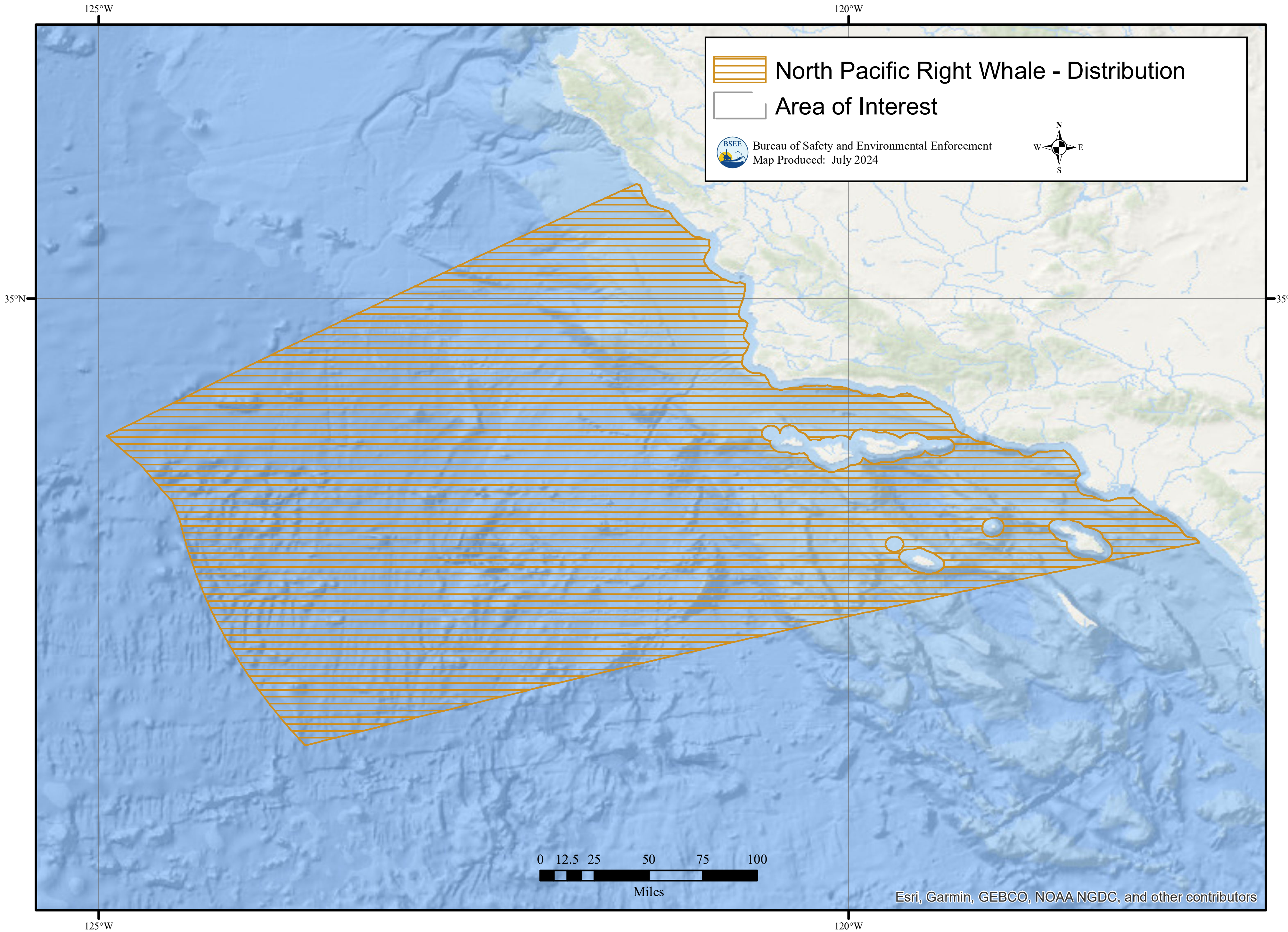

This map represents the approximate range of North Pacific right whale in the Los Angeles - Long Beach Offshore ACP Area.

Sei Whale		ESA Status	Endangered (1970)	35 FR 8491
Scientific Name	*Balaenoptera borealis*	**Critical Habitat**	None	

Appearance: Long and sleek, the body of the Sei whale is dark bluish gray to black in color, with a lighter white or cream-colored underside. Among the largest animals on the planet, Sei whales grow up to 19.5 meters (64 feet), although the typical length is 15 m (49 ft) and weighing 20 metric tons (40,000 lb) (Horwood 1987). Due to physical similarities with other species within the family *Balaenoptera,* at-sea identification can be difficult. By size, sei whales are smaller than blue and fin whales and larger than minke whales. Horwood (2009) noted differences, including fin morphology, with the dorsal fin of the sei whale being relatively taller than that of the blue and fin whales. The study also notes differences between another species similar in appearance, the closely related Bryde's whale, which has three distinct ridges running the length of the head, whereas the sei whale has only one.

Diet: Sei whales are opportunistic feeders, primarily consuming copepods but also feeding on krill, amphipods, small schooling fish, euphausiids, decapods, and squid (Wiles 2017). They use both an engulfment feeding strategy, like that of blue and fin whales, and a skimming strategy, like right and bowhead whales (Prieto et al. 2012). A recent study by Segre et al. (2021) found that the ability to switch between these filter-feeding modes, acting as an intermediate between intermittent and continuous feeding strategies, are bio-mechanically distinct behaviors. The authors suggest this combination of feeding techniques may be an example of rapid evolution to compete with larger, more efficient rorqual species.

Population: No reliable estimates of the global population of sei whales exist. Although not initially a target of the whaling industry, sei whales were excessively hunted after the depletion of blue, fin, and humpback whale stocks. In the first systemic sighting survey abundance estimate for sei whales over a large pelagic region, Hakamada et al. (2017) estimated 29,632 whales in the central and eastern North Pacific. However, this study excluded the waters of the California Current, where the number of sei whales for the California, Oregon, and Washington waters is estimated to be 864 whales as of 2014 (Barlow 2016).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Cosmopolitan in distribution, sei whales are found in all ocean basins. They are most often observed alone or in small groups of two to five animals. Generally, sei whales migrate seasonally, spending the summer months feeding in the higher latitudes before returning to the lower latitudes to calve in winter (Horwood 2009). Sei whales are generally more pelagic compared to other large whales, predominantly inhabiting deep oceanic waters (Wiles 2017). They are commonly found along the slopes and edges of the continental shelves, but rarely venture over shelf waters (Prieto et al. 2012).

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 several 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 that focused on the health or survival of cetaceans following oil spills are limited except for 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).

They are at risk of aspiration of oil if they encounter oil slicks on the surface. During the *Deepwater Horizon* oil spill, 33 sperm whales were observed swimming in surface oil on 16 occasions. Passive acoustic monitoring during the spill indicated that sperm whales did not avoid the area around the *Deepwater Horizon* release site (Frasier et al. 2020).

Detrimental effects of exposure of dispersants or chemically dispersed oil on the skin of 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 whales.

BMPs for Offshore Operations:

General: Watch for and avoid collisions with marine mammals and report all distressed, oiled, or dead marine mammals to the Oiled Wildlife Care Network: 844-823-6926.

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. If marine mammals are sighted oiled or swimming in oil, call 844-823-6926.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations.

Booming: Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. If a marine mammal is observed trapped or entangled in a boom, open the boom carefully until the animal leaves on its own, and call 844-823-6926 to report.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. A 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 to 844-823-6926.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals or sea turtles.

Subsurface Dispersant: Spill-specific BMPs to be followed.

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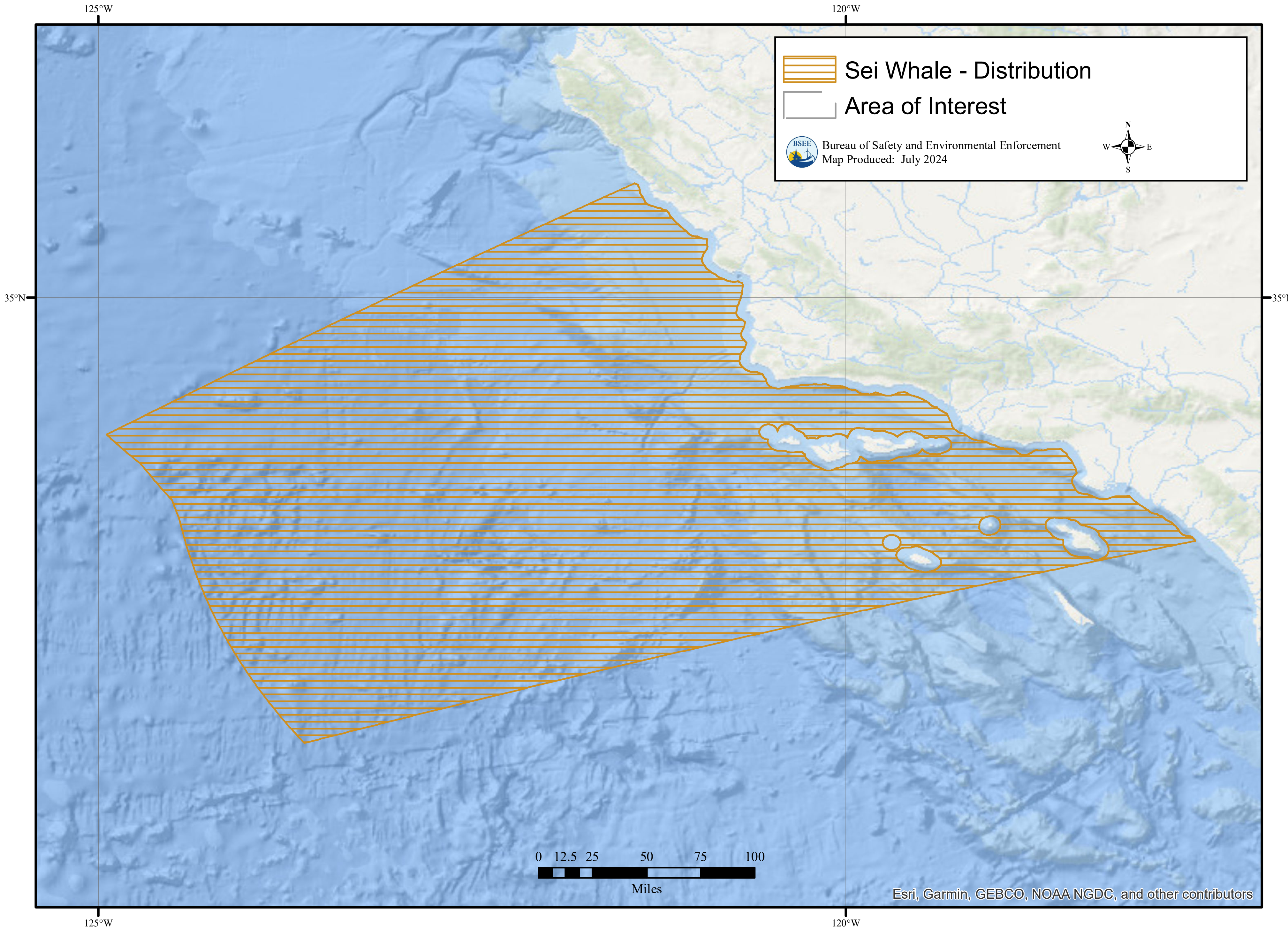

This map represents the approximate range of sei whale in the Los Angeles - Long Beach Offshore ACP Area.

Southern Sea Otter		ESA Status*	Threatened (1977)	42 FR 2965
Scientific Name	*Enhydra lutris nereis*	**Critical Habitat**	None	

Appearance: Southern sea otters are among the smallest marine mammals. Sexually dimorphic, adults are about 1.2 m long and weigh an average of 30 kg (66 lb) for males and 20 kg (44 lb) for females. They have a dense underfur that is brown and black, and longer guard hair that can be brown, black, or silver.

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 7.9 minutes (with an average of 1 minute) and range in depth from 1.5-88 m (5-288 ft), with an average depth of 1-10 m (3-32 ft) (Thometz et al. 2016). Main prey species include sea urchins, crabs, clams, mussels, octopus, and other marine invertebrates. They have strong canines and molars to tear and crush their food and will use tools to help open or process their prey. Sea otters do not have blubber and need to eat approximately 25% of their body weight per day to maintain their body temperature (USFWS 2024).

Population: According to the most recent census, the southern sea otter population index was 2,962 (Hatfield et al. 2019). This index of abundance consists of a primary population occurring along the mainland from Pigeon Point to east of Point Conception, and a secondary, smaller population located at San Nicolas Island.

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Southern Sea otters are found in a variety of Californian coastal marine habitats including rocky exposed coasts, sand-bottomed embayments, and estuaries. They typically occur within 2 km (1.2 miles) of shore and between 0-60 m (0-196 ft) in depth (Tinker et al. 2021). Southern sea otter home ranges are defined at relatively small spatial scales with one study estimating an average of 8.6 km (5.3 miles) (Tarjan and Tinker 2016). Sea otters are not migratory but may move up to tens of kilometers per day. Thometz et. al (2016) found that most foraging occurred in depths between 2 and 25 m (6.5 and 82 ft).

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.

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. 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. When oiled, sea otter pelage provides relatively poor insulation resulting in decreased body temperature and an increased metabolic rate (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 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: Watch for and avoid collisions with marine mammals and report all distressed, oiled, or dead sea otters to the Oiled Wildlife Care Network: 844-823-6926.

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 sea otters become trapped or entangled in boom, anchor lines, or other response equipment, immediately notify the Oiled Wildlife Care Network at 844-823-6926 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. A 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 500 m (1,640 ft) horizontal separation from marine mammals in the water. A qualified Dispersant Controller will be in a separate aircraft, to direct operations so that wildlife is avoided. Follow any spill specific RRT guidance.

Subsurface Dispersant: 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. 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.

*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.

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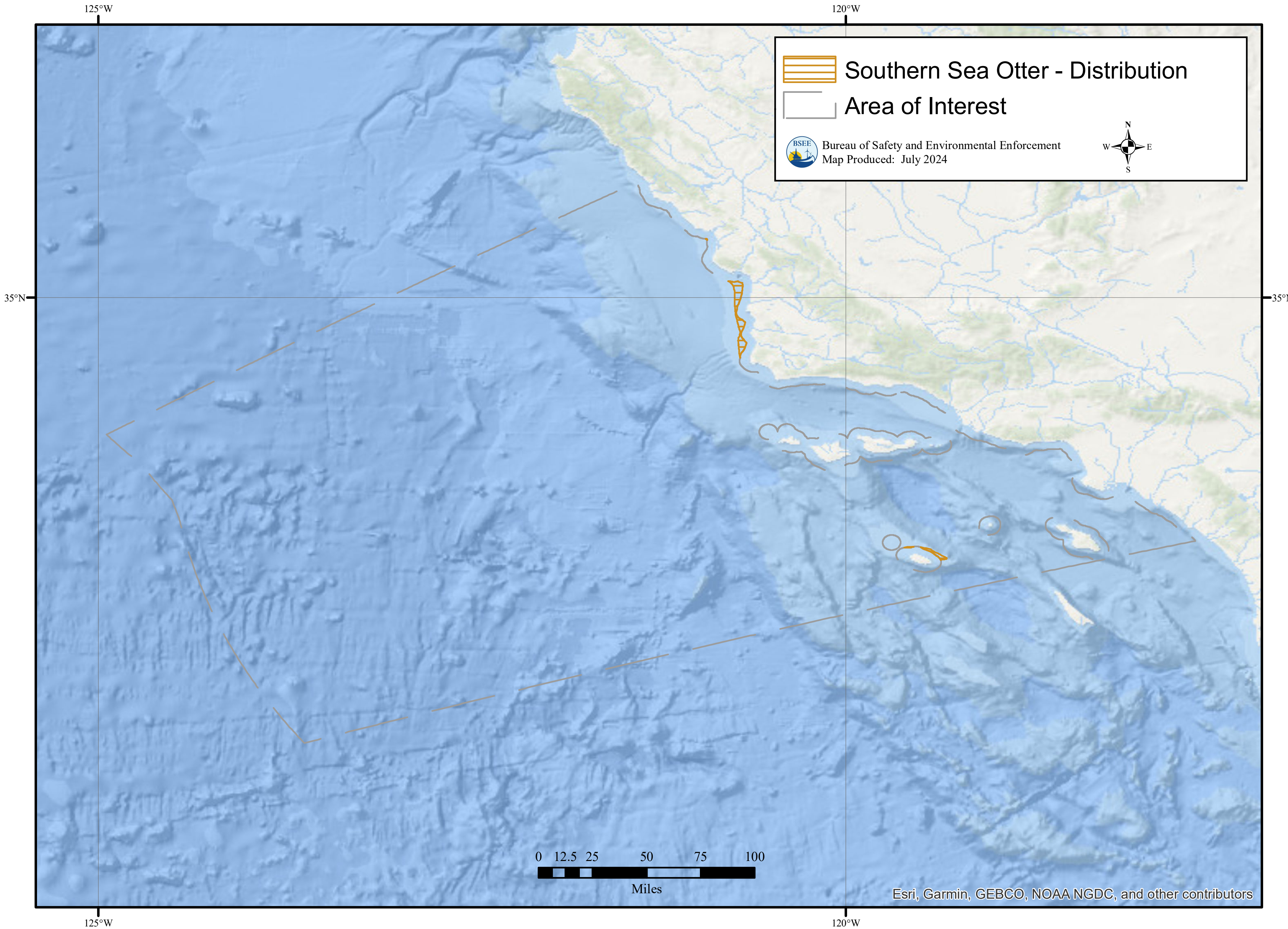

This map represents the approximate range of southern sea otter in the Los Angeles - Long Beach Offshore ACP Area.

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 15 m (52 ft) in length and 40-45 metric tons (80,000—90,000 lb), and females 12-13 m (36-40 ft) in length and 14 metric tons (28,000 lb) (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 500-1,000 m (1,600-3,200 ft) and can consume 3.0-3.5% of their body weight per day (NOAA Fisheries 2023).

Population: Sperm whales are managed as 6 different stocks. Studies on the abundance of sperm whales in the California Current include a long-term trend estimate of 1,997 based on a 2014 survey (Moore and Barlow 2017) and a more recent abundance estimate of 2,606 during 2018 (Becker et al. 2020).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Sperm whales inhabit all oceans of the world and are most common in the deep ocean waters (> 275 m, 900 ft). They are found year-round in California waters (Forney et al. 1995), reaching peak abundance in April through mid-June and from the end of August through mid-November (Rice 1974). 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 600 m (2,000 ft) and can last for 45 minutes but are capable of diving to depths of over 3,000 m (10,000 ft) 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: 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 the Oiled Wildlife Care Network: 844-823-6926.

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. If marine mammals are sighted oiled or swimming in oil, call 844-823-6926.

Skimming: To avoid entangling marine mammals, a trained observer or crew member is required for all skimming operations.

Booming: Make efforts to reduce slack in boom lines and if possible, use stiff, non-tangling material. If a marine mammal is observed trapped or entangled in a boom, open the boom carefully until the animal leaves on its own, and call 844-823-6926 to report.

Burning: Watch for and avoid marine mammals while operating vessels or aircraft involved directly or in support of in-situ burn operations. A 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 to 844-823-6926.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of marine mammals in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals.

Subsurface Dispersant: Spill-specific BMPs to be followed.

*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.

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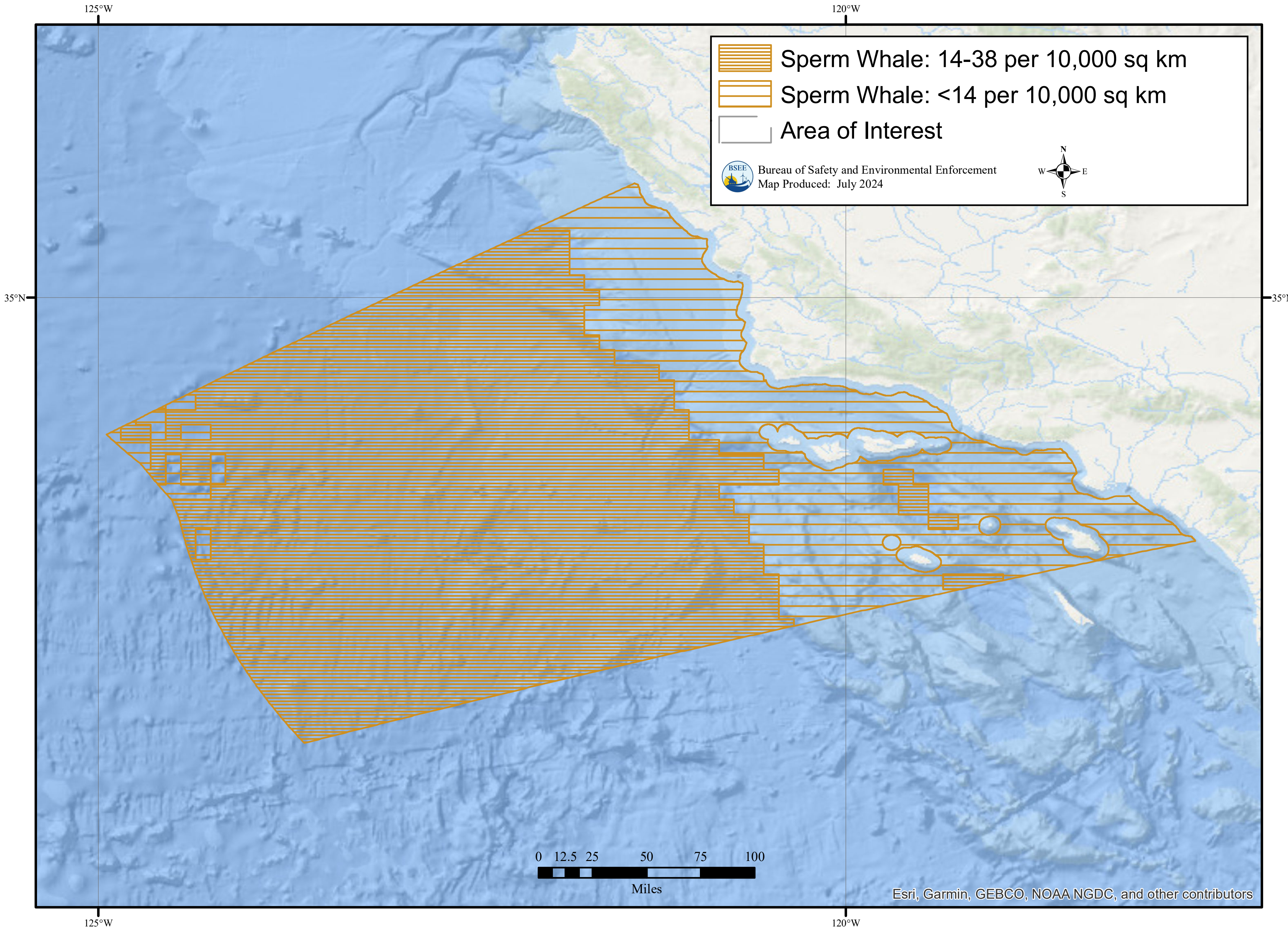

This map represents the approximate range of sperm whale in the Los Angeles - Long Beach Offshore ACP Area.

SPATIAL TEMPORAL PROFILES AND BEST MANAGEMENT PRACTICES

Sea Turtles

- Green Sea Turtle
- Leatherback Sea Turtle
- Loggerhead Sea Turtle
- Olive Ridley Sea Turtle

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Green Sea Turtle	ESA Status	Endangered (1978) East Pacific DPS Threatened (2016)	81 FR 20058
Scientific Name	*Chelonia mydas*	**Critical Habitat**	Final Rule (1998)

Appearance: Variable in color, the adult carapace is smooth, keelless, and light to dark brown with dark mottling. The plastron is whitish to light yellow. Identifying characteristics include 4 pairs of costal scutes and only 1 pair of prefrontal scales. They are one of the largest hard-shelled sea turtles (NOAA Fisheries 2023).

Diet: Green sea turtle hatchlings and early-stage juveniles eat a variety of plants and animals typically found in pelagic drift communities. Neritic stage juveniles and adult turtles shift to a mainly herbivorous diet consisting primarily of seagrasses and benthic macroalgae but may include sponges and other invertebrates. (NMFS and USFWS 2007; NMFS 2015).

Population: While green sea turtles in the United States have been listed under the Endangered Species Act since 1978 (80 FR 1527), populations have been increasing throughout the Eastern Pacific over the last several decades. This recovery is largely due to the increase in nesting females in Michoacán, Mexico (Crear et al. 2017). As this population continues to increase, the increased abundance along the edges of their range is expected to extend their population range as far as their thermal tolerance allows. Presently, there are "resident" groups of green sea turtles that occur in San Diego Bay (approximately 60 individuals), the mouth of the San Gabriel River, and in the Seal Beach National Wildlife Refuge, with the latter considered the northern most extent of their range (Crear et al. 2017; Eguchi et al. 2020; Hanna 2021).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Green sea turtles that forage off the California coast are part of the Eastern Pacific Distinct Population Segment (DPS). Their range is restricted to the 41° Northern Latitude and waters up to 200 nautical miles offshore of the U.S. west coast. Hatchlings and early-stage juveniles occupy habitats greater than 200 m (656 ft), moving with the predominant oceanic gyres, until a shift to the post-pelagic development phase at around 5-7 years. At this stage, the turtles occupy neritic habitats such as coral and nearshore reefs, seagrass beds, inshore bays, estuaries, and manmade embayments. Adults migrate between nesting and foraging habitats, hundreds to sometimes thousands of kilometers away. Females migrate from foraging areas to nesting beaches approximately every 2-5 years; adult males can breed every year (NMFS and USFWS 2007).

Vulnerabilities and Sensitivities to Oiling: Sea turtle biology and behavior place them at risk of oil exposure during spills at sea, including dependence on nesting beaches, lack of avoidance behavior, reliance on oceanographic features that tend to accumulate oil, propensity for accidental ingestion, and specific sensitivities of some life stages (Wallace et al. 2020; Shigenaka et al. 2021). During the *Deepwater Horizon* spill, most reports of oiled pelagic juvenile turtles originated from convergence zones (DWH NRDA Trustees 2016).

Sea turtles can be exposed to oil through direct contact with skin or eggs, ingestion, or inhalation. Sea turtles breathe at the water surface, and inhalation of oil may impair the olfactory gland, affecting sea turtles' sense of smell. The sense of smell plays a key role in sea turtle navigation and orientation. Damaging that sense could lead to overall harm to a population of sea turtles trying to orient during migration or to natal nesting beaches. Ingestion by unknowingly eating tar balls or contaminated food is a direct effect of an oil spill; however, reduced food availability is an indirect effect that can lead to a decline in local sea turtle populations.

Physical fouling by oil is the most frequently reported effect of oil exposure on sea turtles (Shigenaka et al. 2021). Coating of oil on sea turtles at any life stage can have similar effects caused by smothering, clogging the mouth and nose, or creating an inability to maneuver. Oil contact can cause acute toxicity in hatchlings and impair their movements and normal bodily functions if coated. At sea, juvenile and adult sea turtles can be weighed down by oil, which can obstruct their ability to surface for air and reduce their ability to dive for feeding or to avoid predators or vessel strikes. Heavy oiling can interfere with regulation of temperature. Ingesting oil either directly (i.e., eating tar balls) or indirectly (i.e., consuming contaminated foods) can cause acute toxicity or, in terms of tar balls, can lead to blockage of their mouths or esophageal pathways. Loehefener et al. (1989) found tar balls in the mouths, esophagi, and stomachs of 65 out of 103 post-hatchling loggerhead turtles off the east coast of Florida in a convergence zone. Hatchlings, juveniles, and adults can have trouble eating if their beaks and esophagi are blocked, which could lead to starvation. Tar balls or oil that is ingested can also cause gut blockage, decreased absorption efficiency, absorption of toxins, effects of general intestinal blockage (i.e., local necrosis or ulceration), interference with fat metabolism, and buoyancy control problems caused by buildup of fermentation gases (Shigenaka et al. 2021). Buoyancy control allows sea turtles to surface or dive to depth freely; without this ability, they are especially vulnerable to predators, vessel strikes, and disruption of normal feeding behavior.

Harms et al. (2014) exposed 3-day old loggerhead hatchlings to crude oil with and without dispersant for 1 to 4 days, resulting in a failure to gain weight, indicating a lack of normal hydration in seawater.

BMPs for Offshore Operations:

General: All vessels must be equipped with the necessary equipment (dip nets, holding containers, towels, etc.) to capture and hold sea turtles aboard the vessel. Resuscitate any live, unresponsive sea turtles according to the official sea turtle resuscitation guidelines (https://www.greateratlantic.fisheries.noaa.gov/ protected/stranding/disentanglements/turtle/seaturtlehandlingresuscitationv1.pdf). Safely release uninjured and unoiled sea turtles over the stern of the boat, when gear is not in use, the engine is in neutral, and in areas where they are unlikely to be recaptured or injured by vessels. Retrieve injured/dead/oiled sea turtles using the Sea Turtle At-Sea Retrieval Protocol.

Skimming: To avoid entangling sea turtles, a trained observer or crew member is required for all skimming operations.

Booming: All deployed boom must include: (1) gaps between boom or sufficient space under boom to allow sea turtles to go around or under them, (2) boom should be monitored daily for sea turtle presence. If a sea turtle is observed trapped or entangled in boom, open the boom carefully until the animal leaves on its own.

Burning: Sea turtle observers on the ignition vessel will monitor three areas prior to the burn (the area in front of the trawlers, oil concentrated in the boom, and any oil trailing behind the boom) to spot and retrieve any sea turtles prior to the burn. A survey should be conducted in the burn area after the burn is complete and all dead sea turtles should be counted and if possible, collected.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of sea turtles in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals or sea turtles.

Subsurface Dispersants: Spill-specific BMPs to be followed.

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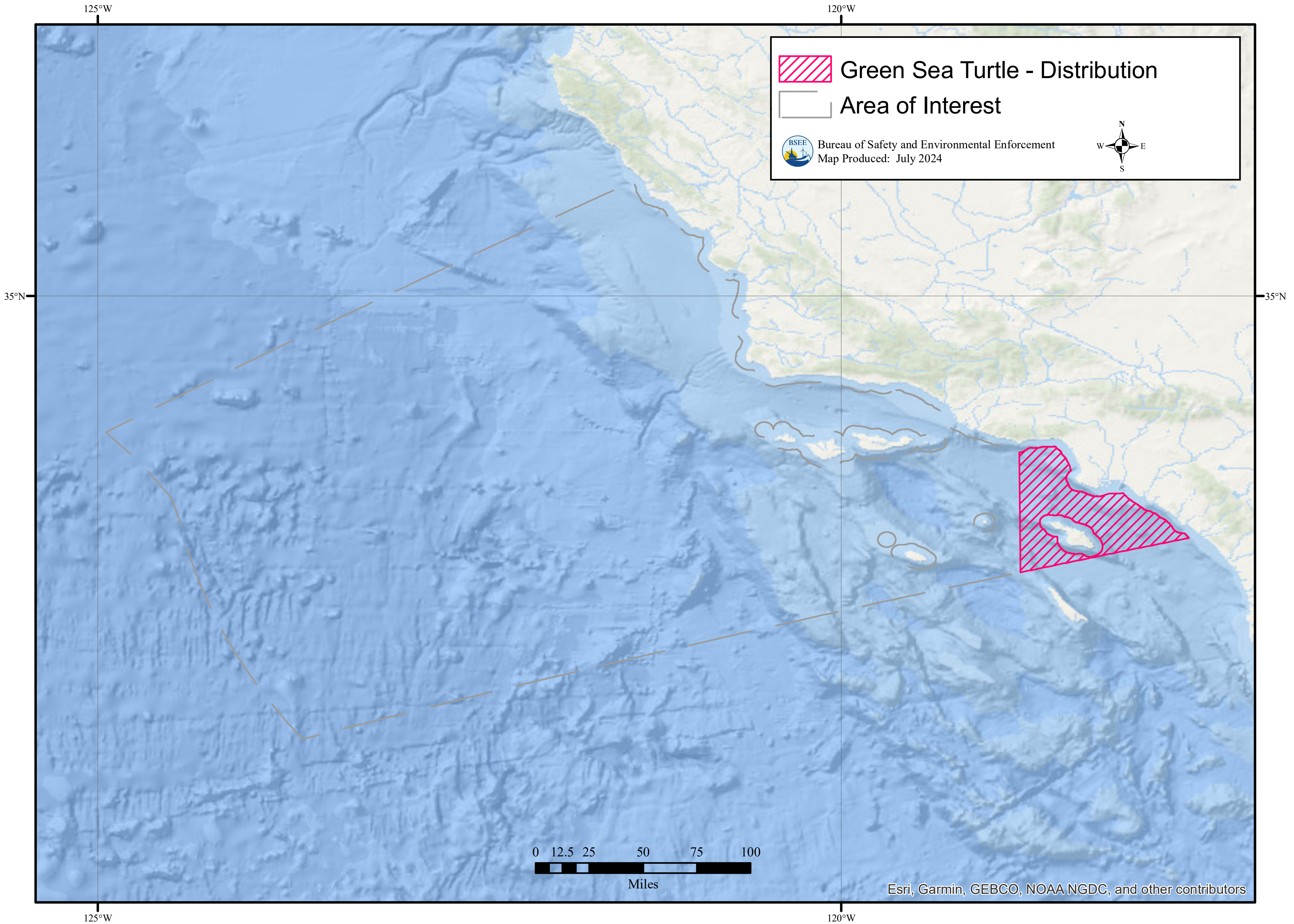

This map represents the approximate range of green sea turtle in the Los Angeles - Long Beach Offshore ACP Area.

Leatherback Sea Turtle		**ESA Status**	**Endangered (1970)**	35 FR 5961
Scientific Name	*Dermochelys coriacea*	**Critical Habitat**		43 FR 43688 (1978) 44 FR 17710 (1979) 77 FR 4170 (2012)

Appearance: The largest of all sea turtles, the leatherback's carapace is composed of small, interlocking dermal bones covered by predominately black rubbery skin with variable pale spots. The carapace features seven longitudinal ridges and tapers to a blunt point. As a long-distance swimmer, its front flippers are proportionally longer than those of other sea turtles, and their back flippers are paddle shaped. (NOAA Fisheries 2024).

Diet: The leatherback is the most pelagic of all sea turtles, preferring to feed exclusively on jellyfish and other gelatinous organisms. Its sharp-edged jaws and pointed tooth-like cusps allow it to eat more soft-bodied open ocean prey (NMFS 2020).

Population: Leatherback sea turtles' populations have undergone a marked decline throughout most of their range, including the West Pacific Distinct Population Segment (DPS). After nesting in Papua Barat, Indonesia, leatherback sea turtles in the Western DPS travel towards the eastern temperate North Pacific and can be found foraging off the coast of California, Oregon, and Washington in the spring and fall (NMFS 2020). The abundance of leatherback sea turtles off the coast of California varies by year, with estimates ranging from 22 to 298 individuals during 1990-2017 (Benson et al. 2020). During this period, the population declined by about 80% (-5.6% per year), a rate like the decline observed at Indonesia nesting beaches (Tapilatu et al. 2013).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Leatherbacks are found worldwide in tropical and subtropical waters of the Atlantic, Indian, and Pacific Oceans. The leatherback spends its life in the pelagic zone except when females come ashore to lay eggs. Multiple migration patterns are found to exist between breeding populations. Extraordinary swimmers and excellent navigators, they have the longest migration routes between feeding and nesting sites of any sea turtle, traveling sometimes up to 11,000 km (6,835 miles). Leatherbacks can dive to depths of approximately 1,200 m (3937 ft) and stay down for up to 85 minutes (NOAA Fisheries 2024).

Critical habitat has been designated for the leatherback sea turtle along the U.S west coast from Point Arena to Point Arguello. This area includes the nearshore region of central California, a well-documented seasonal leatherback foraging ground (Benson et al. 2007, Benson et al. 2011, Benson et al. 2020).

Vulnerabilities and Sensitivities to Oiling: Sea turtle biology and behavior place them at risk of oil exposure during spills at sea, including dependence on nesting beaches, lack of avoidance behavior, reliance on oceanographic features that tend to accumulate oil, propensity for accidental ingestion, and specific sensitivities of some life stages (Shigenaka et al. 2021).

Sea turtles can be exposed to oil through direct contact with skin or eggs, ingestion, or inhalation. Sea turtles breathe at the water surface, and inhalation of oil may impair the olfactory gland, affecting sea turtles' sense of smell. The sense of smell plays a key role in sea turtle navigation and orientation. Damaging that sense could lead to overall harm to a population of sea turtles trying to orient during migration or to natal nesting beaches. Ingestion by unknowingly eating tar balls or contaminated food is a direct effect of an oil spill; however, reduced food availability is an indirect effect that can lead to a decline in local sea turtle populations.

Physical fouling by oil is the most frequently reported effect of oil exposure on sea turtles (Shigenaka et al. 2021). Coating of oil on sea turtles at any life stage can have similar effects caused by smothering, clogging the mouth and nose, or creating an inability to maneuver. Oil contact can cause acute toxicity in hatchlings and impair their movements and normal bodily functions if coated. At sea, juvenile and adult sea turtles can be weighed down by oil, which can obstruct their ability to surface for air and reduce their ability to dive for feeding or to avoid predators or vessel strikes. Heavy oiling can interfere with regulation of temperature. Ingesting oil either directly (i.e., eating tar balls) or indirectly (i.e., consuming contaminated foods) can cause acute toxicity or, in terms of tar balls, can lead to blockage of their mouths or esophageal pathways. Loehefener et al. (1989) found tar balls in the mouths, esophagi, and stomachs of 65 out of 103 post-hatchling loggerhead turtles off the east coast of Florida in a convergence zone. Hatchlings, juveniles, and adults can have trouble eating if their beaks and esophagi are blocked, which could lead to starvation. Tar balls or oil that is ingested can also cause gut blockage, decreased absorption efficiency, absorption of toxins, effects of general intestinal blockage (i.e., local necrosis or ulceration), interference with fat metabolism, and buoyancy control problems caused by buildup of fermentation gases (Shigenaka et al. 2021). Buoyancy control allows sea turtles to surface or dive to depth freely; without this ability, they are especially vulnerable to predators, vessel strikes, and disruption of normal feeding behavior.

Harms et al. (2014) exposed 3-day old loggerhead hatchlings to crude oil with and without dispersant for 1 to 4 days, resulting in a failure to gain weight, indicating a lack of normal hydration in seawater.

BMPs for Offshore Operations:

General: All vessels must be equipped with the necessary equipment (dip nets, holding containers, towels, etc.) to capture and hold sea turtles aboard the vessel. Resuscitate any live, unresponsive sea turtles according to the official sea turtle resuscitation guidelines (https://www.greateratlantic.fisheries.noaa.gov/protected/stranding/disentanglements/turtle/seaturtlehandlingresuscitationv1.pdf). Safely release uninjured and unoiled sea turtles over the stern of the boat, when gear is not in use, the engine is in neutral, and in areas where they are unlikely to be recaptured or injured by vessels. Retrieve injured/dead/oiled sea turtles using the Sea Turtle At-Sea Retrieval Protocol.

Skimming: To avoid entangling sea turtles, a trained observer or crew member may be required for skimming operations.

Booming: All deployed booms must include: (1) gaps between boom or sufficient space under boom to allow sea turtles to go around or under them, and (2) boom should be monitored daily for sea turtle presence. If a sea turtle is observed trapped or entangled in boom, open the boom carefully until the animal leaves on its own.

Burning: Sea turtle observers on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the trawlers, oil concentrated in the boom, and any oil trailing behind the boom) to spot and retrieve any sea turtles prior to the burn. A survey should be conducted in the burn area after the burn is complete and all dead sea turtles should be counted and, if possible, collected.

Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of sea turtles in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of marine mammals or sea turtles.

Subsurface Dispersants: Spill-specific BMPs to be followed.

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Benson SR, Forney KA, Harvey JT, Carretta JV, Dutton PH. 2007. Abundance, distribution, and habitat of leatherback turtles (Dermochelys coriacea) off California, 1990 - 2003.

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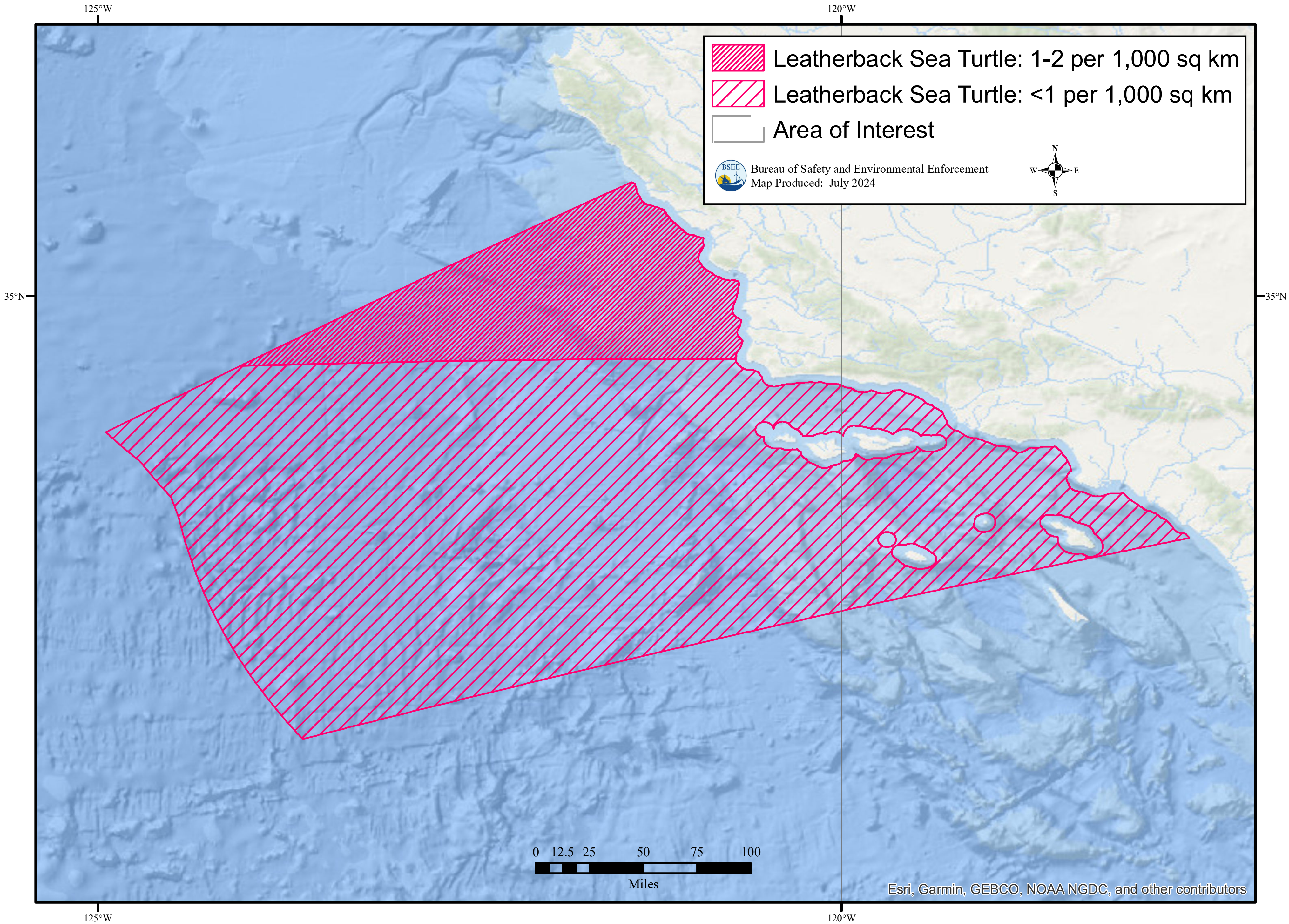

This map represents the approximate range of leatherback sea turtle in the Los Angeles - Long Beach Offshore ACP Area.

Loggerhead Sea Turtle	ESA Status	Threatened (1978) North Pacific DPS Endangered (2011)	76 FR 58868
Scientific Name	*Caretta caretta*	**Critical Habitat**	Final Rule (2011)

Appearance: Loggerhead sea turtles have large heads with powerful, blunt jaws. For adults and juveniles, the carapace and flippers are reddish-brown while the plastron is medium to light yellow. The carapace has five pairs of costal scutes and is connected to the plastron by three inframarginal scutes that form the bridge of the shell (NOAA Fisheries 2024; USFWS 2024).

Diet: Loggerheads feed on a variety of foods including mollusks, crustaceans, fish, and other marine animals. During the post-pelagic stage, juveniles and early-stage adults shift to neritic habitats where they become benthic feeders in habitats such as lagoons, estuaries, and other shallow coastal waters. They prefer to feed in coral reef habitats, rocky areas, and around shipwrecks (USFWS 2024).

Population: The North Pacific Ocean Distinct Population Segment (DPS) of the loggerhead sea turtle appears to be in decline, at risk, and is likely to continue declining due to fishery bycatch and coastal development on nesting beaches in Japan. The abundance of loggerhead sea turtles in the waters off southern California is highly variable and is thought to be associated with anomalous warm waters events. Eguchi et al. (2018) described the presence of loggerheads off the southern coast of California using counts from aerial surveys conducted during 2011 and 2015, a warm water year. The 2011 survey resulted in no loggerhead sightings, while the 2015 survey estimated 15,000 loggerheads at the sea surface, demonstrating significant variability in loggerhead presence in southern California.

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): Loggerhead sea turtles are distributed worldwide throughout temperate and tropical regions of the Pacific, Atlantic, and Indian Oceans. Loggerheads can be found in the eastern Pacific from Alaska to Chile. The North Pacific DPS undertake a trans-pacific migration, hatching on beaches in Japan and then migrating nearly 13,000 km (8,077 miles) to the coasts of California and Baja California Peninsula, Mexico (Allen et al. 2013). There is a shift to the post-pelagic development phase at around 7-12 years when the turtles move to occupy neritic habitats, such as lagoons, estuaries, bays, marshes, rivers, and shallow coastal waters. Nine DPS have been identified for the loggerhead sea turtle, which are distributed globally. The Californian Pacific region is in the North Pacific Ocean DPS, although only a small portion of this population makes it to the eastern Pacific during warm water events such as El Nino.

Vulnerabilities and Sensitivities to Oiling: Sea turtle biology and behavior place them at risk of oil exposure during spills at sea, including dependence on nesting beaches, lack of avoidance behavior, reliance on oceanographic features that tend to accumulate oil, propensity for accidental ingestion, and specific sensitivities of some life stages (Wallace et al. 2020; Shigenaka et al. 2021). During the *Deepwater Horizon* spill, most reports of oiled surface pelagic juvenile turtles originated from convergence zones (DWH NRDA Trustees 2016).

Sea turtles can be exposed to oil through direct contact with skin or eggs, ingestion, or inhalation. Sea turtles breathe at the water surface, and inhalation of oil may impair the olfactory gland, affecting sea turtles' sense of smell. The sense of smell plays a key role in sea turtle navigation and orientation. Damaging that sense could lead to overall harm to a population of sea turtles trying to orient during migration or to natal nesting beaches. Ingestion by unknowingly eating tar balls or contaminated food is a direct effect of an oil spill; however, reduced food availability is an indirect effect that can lead to a decline in local sea turtle populations.

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Harms et al. (2014) exposed 3-day old loggerhead hatchlings to crude oil with and without dispersant for 1 to 4 days, resulting in a failure to gain weight, indicating a lack of normal hydration in seawater.

Using keratin samples from loggerhead carapaces to record foraging history (over up to 18 years), Vander Zanden et al. (2016) determined that, in 2011 and 2012, of the 10 individuals that foraged in areas with surface oil, none had significant changes in foraging patterns post spill. This high site fidelity could increase the risk of chronic exposures in the *Deepwater Horizon* impact area and during future spills (Frasier et al. 2020).

BMPs for Offshore Operations:

General: All vessels must be equipped with the necessary equipment (dip nets, holding containers, towels, etc.) to capture and hold sea turtles aboard the vessel. Resuscitate any live, unresponsive sea turtles according to the official sea turtle resuscitation guidelines (https://www.greateratlantic.fisheries.noaa.gov/protected/stranding/disentanglements/turtle/seaturtlehandlingresuscitationv1.pdf).

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Surface Dispersant: There is a minimum horizontal no-spray buffer of 100 m (328 ft) from observed congregations of sea turtles in the water. Dispersant planes and vessels will observe restricted use zones of 400 m (1,312 ft) around high concentrations of sea turtles.

Subsurface Dispersants: Spill-specific BMPs to be followed.

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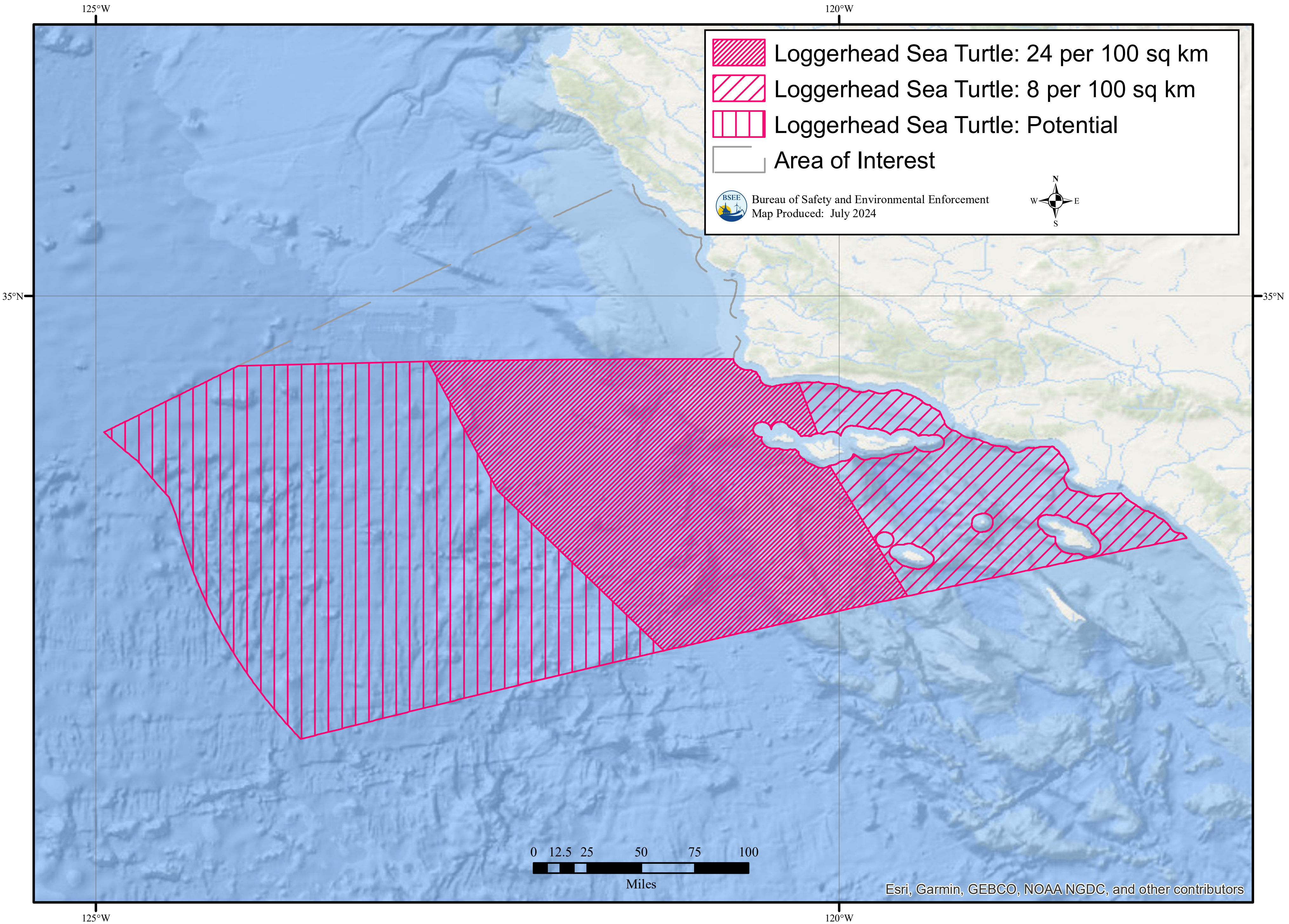

This map represents the approximate range of loggerhead sea turtle in the Los Angeles - Long Beach Offshore ACP Area.

Olive Ridley Sea Turtle	ESA Status	Endangered (1978)	43 FR 32800
Scientific Name	*Lepidochelys olivacea*	**Critical Habitat**	None

Appearance: Olive ridley sea turtles closely resemble Kemp's ridley sea turtles, and both species are the smallest among sea turtles. They have an olive or grayish-green color with a heart-shaped carapace that features 5 to 9 pairs of scutes. Each of their four flippers is equipped with one or two claws. Sexually dimorphic, adult males weigh significantly less than adult females and have a longer and thicker tail (NOAA Fisheries 2022).

Diet: Olive ridley sea turtles are opportunistic foragers with the ability to forage on a wide variety of prey in both oceanic and neritic habitats (Peavey et al. 2017). They are omnivorous and feed on tunicates, gastropods, crustaceans, fishes, and algae (Jones and Seminoff 2013).

Population: The olive ridley is the most abundant sea turtle in the world, with an abundance estimate ranging from 1.15 to 1.63 million (NMFS and USFWS 2014). In the eastern Pacific, nesting occurs throughout the year; however, it peaks during summer and fall months. In addition to solitary nesting as is found with all marine turtle species, olive ridleys exhibit unique synchronized mass nesting events called "arribadas" where hundreds of thousands of turtles congregate and nest simultaneously. Major arribadas in the eastern Pacific are located at Nancite and Ostional beaches in Costa Rica and Escobilla beach in Mexico. The abundance of nesting olive ridley sea turtles at most major arribadas has declined since the 1970s due to over-exploitation (NMFS and USFWS 2014).

Distribution/Habitat/Migration (see map for distribution in Los Angeles – Long Beach ACP Offshore ESI): The olive ridley sea turtle is typically an open-ocean species but can also be found in coastal regions. They inhabit tropical and subtropical waters globally, including the South Atlantic, Indian, and South Pacific Oceans, and they prefer sea surface temperatures that range between 23 and 28° C (73 and 86° F) (Polovina et al. 2004). Additional ocean conditions that facilitate olive ridleys are relatively low concentrations of chlorophyll-*a* and the presence of floating debris (Montero et al. 2016). There are few documented occurrences of olive ridley sea turtles off the California coast, with most of these occurrences described as incidental and mainly attributed to dead strandings during cold months, or skinny, debilitated "live strandings" of individuals who are off course and caught in waters that are too cold (J. Seminoff, pers. comm., 2024).

Vulnerabilities and Sensitivities to Oiling: Sea turtle biology and behavior place them at risk of oil exposure during spills at sea, including dependence on nesting beaches, lack of avoidance behavior, reliance on oceanographic features that tend to accumulate oil, propensity for accidental ingestion, and specific sensitivities of some life stages (Wallace et al. 2020; Shigenaka et al. 2021). During the *Deepwater Horizon* spill, most reports of oiled surface pelagic juvenile turtles originated from convergence zones (DWH NRDA Trustees 2016).

Sea turtles can be exposed to oil through direct contact with skin or eggs, ingestion, or inhalation. Sea turtles breathe at the water surface, and inhalation of oil may impair the olfactory gland, affecting sea turtles' sense of smell. The sense of smell plays a key role in sea turtle navigation and orientation. Damaging that sense could lead to overall harm to a population of sea turtles trying to orient during migration or to natal nesting beaches. Ingestion by unknowingly eating tar balls or contaminated food is a direct effect of an oil spill; however, reduced food availability is an indirect effect that can lead to a decline in local sea turtle populations.

Physical fouling by oil is the most frequently reported effect of oil exposure on sea turtles (Shigenaka et al. 2021). Coating of oil on sea turtles at any life stage can have similar effects caused by smothering, clogging the mouth and nose, or creating an inability to maneuver. Oil contact can cause acute toxicity in hatchlings and impair their movements and normal bodily functions if coated. At sea, juvenile and adult sea turtles can be weighed down by oil, which can obstruct their ability to surface for air and reduce their ability to dive for feeding or to avoid predators or vessel strikes. Heavy oiling can interfere with regulation of temperature. Ingesting oil either directly (i.e., eating tar balls) or indirectly (i.e., consuming contaminated foods) can cause acute toxicity or, in terms of tar balls, can lead to blockage of their mouths or esophageal pathways. Loehefener et al. (1989) found tar balls in the mouths, esophagi, and stomachs of 65 out of 103 post-hatchling loggerhead turtles off the east coast of Florida in a convergence zone. Hatchlings, juveniles, and adults can have trouble eating if their beaks and esophagi are blocked, which could lead to starvation. Tar balls or oil that is ingested can also cause gut blockage, decreased absorption efficiency, absorption of toxins, effects of general intestinal blockage (i.e., local necrosis or ulceration), interference with fat metabolism, and buoyancy control problems caused by buildup of fermentation gases (Shigenaka et al. 2021). Buoyancy control allows sea turtles to surface or dive to depth freely; without this ability, they are especially vulnerable to predators, vessel strikes, and disruption of normal feeding behavior.

Harms et al. (2014) exposed 3-day old loggerhead hatchlings to crude oil with and without dispersant for 1 to 4 days, resulting in a failure to gain weight, indicating a lack of normal hydration in seawater.

BMPs for Offshore Operations:

General: All vessels must be equipped with the necessary equipment (dip nets, holding containers, towels, etc.) to capture and hold sea turtles aboard the vessel. Resuscitate any live, unresponsive sea turtles according to the official sea turtle resuscitation guidelines (https://www.greateratlantic.fisheries.noaa.gov/protected/stranding/disentanglements/turtle/seaturtlehandlingresuscitationv1.pdf). Safely release uninjured and unoiled sea turtles over the stern of the boat when gear is not in use, the engine is in neutral, and in areas where they are unlikely to be recaptured or injured by vessels. Retrieve injured/dead/oiled sea turtles using the Sea Turtle At-Sea Retrieval Protocol.

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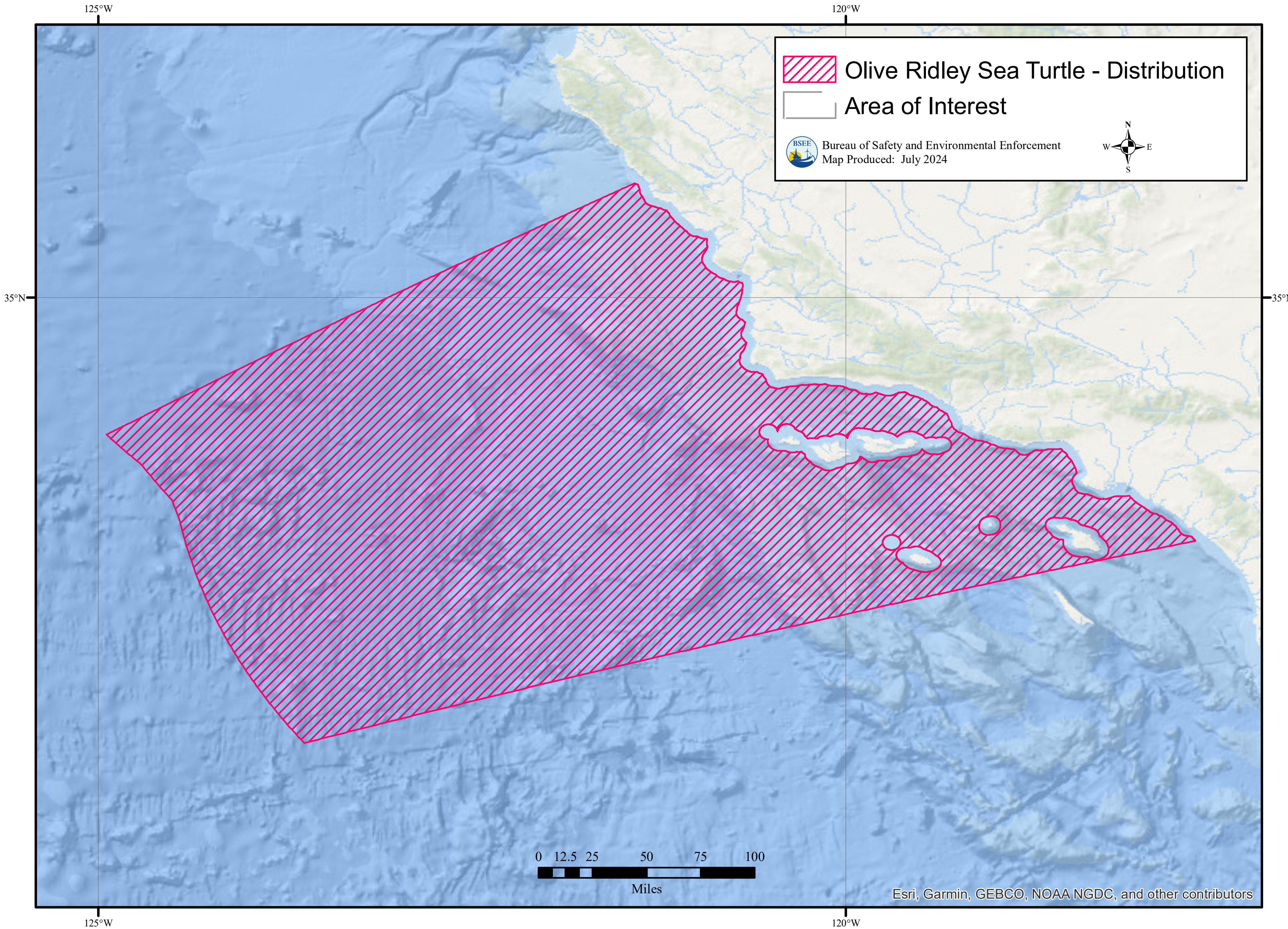

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