ADDENDUM TO THE BIOLOGICAL EVALUATION

This document is an addendum to the Biological Evaluation (BE) submitted on July 8, 2014 by the Naval Sea Systems Command Inactive Ships Office (SEA 21I). The BE detailed the proposed action to tow inactive ships from their existing berthing locations to dismantling facilities. This addendum discusses the potential for biofouling to lead to the introduction of non-native or invasive species and the potential effects to species listed under the Endangered Species Act (ESA).

The document describes the risk of biofouling to ESA-listed species, the known invasive species at each origination port, the ESA-listed species that may be present at each of the destination ports and critical habitat present along the potential tow routes.

A.1. RISK OF BIOFOULING TO ESA-LISTED SPECIES

Biofouling consists of organisms that may have attached to an inactive ship hull while in the origination port and may be transported when the ship is brought to the dismantling facility. Since the destination ports are located throughout the country, there is a potential that biofouling from an origination port may introduce a non-native or invasive species to the destination port. Non-native (also known as introduced, exotic, or non-indigenous) species include organisms that live outside their historical geographic range. Invasive species are a non-native species of particular concern because they have the ability to spread and displace native species. This is of concern for ESA-listed species if invasive species were to replace a prey item or damage habitat.

A.1.1. Ship Movement as a Potential Vector for Biofouling Transport

The introduction of invasive species into coastal ecosystems can occur through a variety of vectors. Ship movement has contributed to this problem through organisms within ballast tanks and through biofouling on hulls. National and international policies aimed at reducing the risk associated with ballast water introductions have been implemented and will not be discussed further (e.g., United States National Invasive Species Act of 1996; International Convention for the Control and Management of Ships' Ballast Water and Sediment). The potential for ships to serve as vectors for invasive species has been studied throughout the world (Allen 1953; Campbell and Hewitt 2012; Davidson et al. 2008; Gollasch 2002). One study analyzed an action similar to the proposed action and is discussed below.

Davidson et al. (2008) studied two vessels before and after their final transit from California to Texas. One of these vessels sat dormant for one decade and the other for two decades. Biofouling surveys prior to departure found the biomass to be dominated by a non-native bryozoan (*Conopeum chesapeakensis*) which was 1 – 2 inches (in; 2 – 5 centimeters [cm]) thick. Nine (41%) of the 22 unique macroinvertebrates recorded in California were considered non-native. During the trip to the dismantling facility, salinities ranged from zero to 37 parts per thousand. Temperatures varied between 50 – 89 degrees Fahrenheit (°F; 9.9 – 31.6° Celsius [C]). The 43-day trip recorded tow speeds from 4.9 – 7.9 knots. Biofouling surveys were conducted on the vessels once they reached Texas, and found a decrease in biofouling and an increase in species richness (Davidson et al. 2008). The surveys in Texas found a reduction in organisms and most of the three-dimensional bryozoan structure was removed; however, the bryozoan was still present in 98% of the samples collected in Texas. Most of the species not previously identified were spatially rare and only occurred once or twice in the surveyed areas of the ship. The authors discuss the probability that organisms were picked up during slow vessel movements close to the coast. Nine of the 22 taxa surveyed in California were present in the Texas surveys (Davidson et al. 2008).

Ship movement in all of the potential origination and destination ports is common and non-native or invasive biofouling organisms from outside locations may be introduced by many vectors including commercial shipping, private vessels, or Navy ships. The proposed action has the increased potential to transport biofouling because the towed ships have been inactive for enough time that biofouling organisms would have had the opportunity to settle on the hull of the ship. However, the towing of inactive ships is not a frequent occurrence which decreases the risk.

The habitat and environmental qualities of each origination and destination port are important when considering biofouling survival at each port and along the tow route. Nonnative or invasive species persistence is likely determined by similar conditions between ports including water quality, temperature, and salinity.

A.1.2. Risk Factors

The following risk factors were considered when determining if biofouling associated with the proposed action may affect ESA-listed species:

- Invasive species present at the origination port;
- Invasive species known to be problematic at the destination port;
- ESA-listed species present at the destination port; and
- Critical habitat present at the destination port or along the tow route.

Invasive species present at origination ports present a risk because they may be transported as biofouling to a destination port. If an invasive species from an origination port is also present at a destination port, it is likely that species would survive at the destination port if it survives the transit, and could potentially escalate an existing problem. The focus of this addendum is the potential for invasive species to affect the prey or habitat of ESA-listed species in the destination ports or along the tow route.

A.2. ORIGINATION PORTS

A.2.1. Beaumont, Texas

Beaumont is a freshwater area on the Neches River approximately 40 miles (mi; 64 kilometers [km]) upstream from where Sabine Lake enters the Gulf of Mexico. No information on aquatic invasive species could be found for the area of the Neches River near Beaumont. Other aquatic non-native species known to occur in the state of Texas, although not reported in Beaumont specifically, include the copepod *Nitokra hibernica*, estuarine mud crab (*Rhithropanopeus harrisii*), Asian tiger shrimp (*Penaeus monodon*), tessellated blenny (*Hypsoblennius invemar*), spotted seatrout/ orangemouth corvina hybrid (*Cynoscion nebulosus x C. Xanthulu*), orangemouth corvina, and lionfish (*Pterois volitans/ miles*) (U.S. Geological Survey 2014).

A.2.2. Bremerton, Washington

The Puget Sound Naval Shipyard in Bremerton is located on the Sinclair Inlet, an estuary in the middle of Puget Sound, west of Seattle (Washington State Department of Ecology 1995). The Seattle area has water temperatures that ranged from 46 – 56°F (8 – 13°C) based on annual averages (National Oceanic and Atmospheric Administration 2014). Invasive species that occur in Puget Sound and may occur in Sinclair Inlet include: European green crab (*Carcinus maenas*), Japanese eelgrass (*Zostera japonica*), Sargassum (*Sargassum muticum*), purple varnish clam (*Nuttallia obscurata*), New Zealand green mussel (*Perna* sp.), Japanese oyster drill (*Ocinebrellus inornatus*), Asian mudsnail (*Batillaria attramentaria*), and tunicates (*Molgula manhattensis, Styela clava, Ciona savignyi, Botrylloides violaceus, Botryllus schlosseri, Didemnum vexillum*) (Eissinger 2009; Washington Invasive Species Council 2014). Other aquatic non-native species known to occur in the state of Washington, although not reported in Bremerton specifically, include the hydrozoan *Cordylophora caspia*, copepods (*Argulus japonicas, Sinocalanus doerri, Limnoithona tetraspina, Pseudodiaptomus forbesi, Harpacticella paradoxa, and Tachidius triangularis*), Chinese mitten crab (*Eriocheir sinensis*), barred knifejaw fish (*Oplegnathus fasciatus*), and veined rapa whelk (*Rapana venosa*) (U.S. Geological Survey 2014).

A.2.3. Pearl Harbor, Hawaii

Pearl Harbor is located on the southern coast on the island of Oahu. Pearl Harbor has water temperatures that range from 76 – 81°F (24 – 27°C) based on annual averages (National Oceanic and Atmospheric Administration 2014). A 2007 study found eight new introduced species since the previous survey in 1996 (Coles et al. 1997). These species include four bivalves (*Saccostrea cucullata, Chama elatensis, Abra* sp., *and Sphenia* sp.), one pycnogonid (*Pigrogromitus timsanus*), one barnacle (*Chthamalus proteus*), one grapsid crab (*Nanseesarma minutum*) and one ascidian (*Symplegma reptains*). Other aquatic non-native species known to occur in the state of Hawaii, although not reported in Pearl Harbor specifically, include 35 fish species, shrimp (*Macrobrachium lar, M. rosenbergii*), green crab, and Asian tiger shrimp (U.S. Geological Survey 2014).

A.2.4. Philadelphia, Pennsylvania

The port of Philadelphia is located on Schuylkill River approximately 100 mi (160 km) from the mouth of Delaware Bay and has water temperatures that ranged from 37 – 83°F (3 – 28°C) based on annual averages (National Oceanic and Atmospheric Administration 2014). The Schuylkill River in the vicinity of Philadelphia is freshwater (Delaware River Basin Commission 2014). No reports of aquatic invasive biofouling species were found for this area of the Schuylkill River. Non-native aquatic species known to occur in the state of Pennsylvania, although not reported in Philadelphia specifically, include the amphipod *Echinogammarus ischnus*, waterflea

(*Cercopagis pengoi*), and freshwater tubenose goby (*Proterorhinus semilunaris*) (U.S. Geological Survey 2014).

A.3. DESTINATION PORTS

Destination port descriptions include location descriptions and information on invasive species that may occur at each port. Upon review, we found that threatened or endangered species may occur at the ports described below and may be affected by the proposed action. These species are described for each destination port when applicable.

A.3.1. Baltimore, Maryland

Baltimore is located on the Patapsco River which flows in the northern most area of Chesapeake Bay. Baltimore has water temperatures that range from 37 – 79 °F (3 – 26°C) based on annual averages (National Oceanic and Atmospheric Administration 2014). Invasive species of concern in the Chesapeake Bay include zebra mussels (*Dreissena polymorpha*) which have been documented in the lower Susquehanna River (approximately 30 mi [48 km] northeast of Baltimore) and the Sassafras River (located on the other side of the Chesapeake Bay from Baltimore) (Klauda and Ashton 2013). Other non-native aquatic species known to occur in Maryland, although not reported in Baltimore specifically, include the hydroid *Cordylophora caspia*, the copepod *Argulus japonicus*, Chinese mitten crab, Asian shore crab (*Hemigrapsus sanguineus*), green crab, and three fish (*Alosa pseudoharengus, A. sapidissima, Dorosoma petenense*) (U.S. Geological Survey 2014).

Ships potentially moved to Baltimore may arrive from Philadelphia, Pearl Harbor, or Beaumont. Reports of invasive species in Philadelphia were not found. Pearl Harbor and Beaumont represent very different climates and environments compared to Baltimore. If species survive the transit to the east coast, it is unlikely they would flourish in the waters of Baltimore due to the difference in water temperature and salinity.

The proposed action may affect the following ESA-listed species that may occur in the vicinity of Baltimore: Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*).

A.3.1.1 Atlantic Sturgeon

Atlantic sturgeon are an anadromous species; the adults travel through the Chesapeake Bay from April to May and then again in the fall. Atlantic sturgeon spawn in Virginia's James and York Rivers. This species was once found throughout Chesapeake Bay and its freshwater rivers, but are now very rare. Following spawning, males may remain in rivers or lower estuary habitats until the fall; females typically exit the rivers within four to six weeks. Juveniles move downstream and inhabit brackish waters for a few months and when they reach a size of about 30 – 36 in (76 – 92 cm) they move into nearshore coastal waters (National Marine Fisheries Service 2014a; U.S. Fish and Wildlife Service 2014). Atlantic sturgeon feed on benthic invertebrates. As discussed in Section A.3.1, it is unlikely that biofouling from Philadelphia, Pearl Harbor or Beaumont would replace prey or alter Atlantic sturgeon habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect Atlantic sturgeon that may occur in Baltimore.

A.3.1.2 Shortnose Sturgeon

Shortnose sturgeon are considered an anadromous species. Though they don't inhabit open ocean areas, they may be found infrequently in nearshore marine habitats. The adults spend much of the year in the lower reaches of low-salinity spawning rivers, occasionally visiting the Chesapeake Bay. Shortnose sturgeon have been recorded spawning in the Potomac and Susquehanna Rivers between February and April, but are extremely rare. Once hatched, the sturgeon larvae remain in sheltered areas for about two weeks before being slowly carried downstream to merge with adults (National Marine Fisheries Service 2014; U.S. Fish and Wildlife Service 2014). Shortnose sturgeon feed on benthic invertebrates. As discussed in Section A.3.1, it is unlikely that biofouling from Philadelphia, Pearl Harbor or Beaumont would replace prey or alter shortnose sturgeon habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect shortnose sturgeon in Baltimore.

A.3.2. Beaumont, Texas

Beaumont is described in Section A.2.1. No information on invasive species could be found for the area of the Neches River near Beaumont. Other aquatic non-native species known to occur in the state of Texas, although not reported in Beaumont specifically, are listed in Section A.2.1. Ships potentially moved to Beaumont would be from Philadelphia. No ESA-listed species occur near the port of Beaumont.

A.3.3. Benicia, California

Benicia is located on the Carquinez Strait which feeds into San Pablo Bay, approximately 15 mi (24 km) north of San Francisco. There is no specific information for problematic invasive species specific to Carquinez Strait; however, San Francisco Bay has been studied for the presence of invasives. The overbite clam (*Corbula amurensis*) is thought to have entered the bay through ballast water (San Francisco Baykeeper 2013). Other aquatic non-native species known to occur in the state of California, although not reported in Benicia specifically, include Asian clam (*Potamocorbula amurensis*), Chinese mitten crab, green crab, water hyacinth (*Eichhornia crassipes*) (California Bay Delta Authority 2014), Atlantic shipworm (*Teredo navalis*), isopod (*Sphaeroma quayanum*), eastern mudsnail (*Ilyanassa obsolete*) (Martin 2006), algae (*Microcystis aeruginosa*) (Lehmna and Waller 2003), eastern softshell clam (*Mya arenaria*), channeled whelk (*Busycotypus canaliculatus*), oyster drill (*Urosalpinx cinerea*) (Martin 2006), black sea jellyfish (*Blackfordia virginica*), freshwater hydroid (*Cordylophora caspia*) (U.S. Geological Survey 2014), striped barnacle (*Amphibalanus amphitrite*), bay barnacle (*Amphibalanus improvisus*) (Fofonoff et al. 2003), species of copepod (*Sinocalanus doerri, Limnoithona sinensis, Limnoithona tetraspina, Pseudodiaptomus forbesi*) (Bouley and Kimmerer 2006; U.S. Geological Survey 2014), polychaetes (*Ficopomatus enigmaticus* and *Hydroids elegans*), Bryozoans (*Bugula neritina, Victorella pavida*, and *Watersiporia subtorquata* complex), and hydrozoans (*Maeotias marginata* and *Moerisia lyonsi*) (Fofonoff et al. 2003).

Ships potentially moved to Benicia may arrive from Bremerton. There is some risk of biofouling organisms from Bremerton being able to survive in Benicia based on the environmental conditions at each port. Although, as discussed in Section A.1.1, a reduction in biofouling presence would be expected following the tow from Bremerton.

The proposed action may affect the following ESA-listed species that may occur in Benicia: Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*).

A.3.3.1 Chinook Salmon

The Central Valley Spring-Run and Sacramento River Winter-Run ESUs of Chinook salmon may occur in the vicinity of Benicia within the Carquinez Strait. These were not described in the original submission to NMFS. The Central Valley Spring-Run is listed as threatened and the Sacramento River Winter-Run is listed as endangered under the ESA. Chinook salmon are an anadromous species; the adults migrate from marine waters to spawn in freshwater streams and rivers. These salmon only spawn once then die. Juveniles migrate to marine waters to feed and mature after 3 months to 2 years inhabiting freshwater (National Marine Fisheries Service 2014b). The Carquinez Strait is an important migration corridor for many species of fish, including Chinook salmon (AECOM 2013).

Spring-run Chinook enter the Sacramento River from late March through September. Adults remain in cool water habitats through the summer, then spawn in the fall from mid-August through early October. Juveniles may spend from 3 months to 2 years in freshwater before migrating to estuarine areas as smolts and then into the ocean to feed and mature. Chinook salmon juveniles exhibit two generalized freshwater life histories, stream-type and ocean-type. Stream-type juveniles reside in freshwater for a year or more before migrating to marine environments, whereas ocean-type juveniles migrate within their first year of life (AECOM 2013). The primary difference between the spring-run and winter-run is that winter-run adults migrate to spawning grounds between December and July, peaking in March, and spawn from early March through July, peaking in May through June. Juveniles begin migrating to marine environments between July and October, residing in estuarine waters from 5 to 10 months prior to entering the ocean (AECOM 2013). Juvenile Chinook salmon feed on terrestrial and aquatic insects, amphipods, and other crustaceans. Adult chinook salmon feed primarily on other fish species (AECOM 2013).

Critical habitat for winter-run and spring-run Chinook salmon includes the waters of Carquinez Strait (50 CFR 226.204). Primary Constituent Elements (PCEs) essential for the conservation of these ESUs are those sites and habitat components that support one or more life stages, include:

(1) Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development;

(2) Freshwater rearing sites with:

  i. Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility;

  ii. Water quality and forage supporting juvenile development; and

  iii. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

(3) Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging

large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

(4) Estuarine areas free of obstruction and excessive predation with:

i. Water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater;

ii. Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and

iii. Juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.

As discussed in Sections A.1.1 and A.3.3, potential biofouling from ships originating in Bremerton has some risk of surviving in Benicia but is unlikely to replace prey or alter Chinook salmon habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect Chinook salmon and their critical habitat that may occur near Benicia.

A.3.3.2 Steelhead Trout

The Central California Coast steelhead trout ESU may occur within the vicinity of Benicia. This ESU is listed as threatened under the ESA.

Steelhead trout are an anadromous species; the adults migrate from marine waters to spawn in freshwater streams and rivers. Most steelhead in the area are likely from the "winter" run that migrate to freshwater in the fall and winter, where they spawn within a few weeks or months (McEwan and Jackson 1996). Steelhead will migrate upstream after 1 to 4 growing seasons at sea (Burgner et al. 1992). Most steelhead spawn shortly after entering a freshwater river or stream (Leidy 2000). In addition to adults, a few immature steelhead also migrate upstream from the ocean (Leidy 2000). Ocean-maturing steelhead typically spawn between December and April, with the peak between January and March, but migrating steelhead may be seen in the San Francisco Bay and Suisun Marsh and Bay as early as August (Leidy 2000). After spawning, steelhead may return to the ocean and spawn the following year (Leidy 2000).

Historically, most streams with suitable habitat within the San Francisco Bay Estuary supported steelhead populations (Leidy 2000). However, currently only small runs, estimated to be less than 10,000 fish, exist in the San Francisco Bay tributaries (Leidy 2000). Juvenile steelhead trout feed primarily on zooplankton. Adult steelhead trout feed on aquatic and terrestrial insects, mollusks, crustaceans, fish eggs, minnows, and other small fish species (National Marine Fisheries Service 2014g).

Critical habitat is designated for waters of San Pablo Bay westward of the Carquinez Bridge. This does not include the waters of Benicia, although the Carquinez Bridge is only 4 mi (6.4 km) from the center of Benicia.

As discussed in Sections A.1.1 and A.3.3, potential biofouling from ships originating in Bremerton has some risk of surviving in Benicia but is unlikely to replace prey or alter steelhead habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect steelhead trout and their critical habitat that may occur near Benicia.

A.3.4. Brownsville, Texas

The port of Brownsville is located along the Gulf Intracoastal Waterway, approximately 15 mi (24 km) inshore from the Gulf of Mexico. No information on invasive species could be found for the area of Brownsville. Other aquatic non-native species known to occur in the state of Texas, although not reported in Brownsville specifically, are listed in Section A.2.1. The ships potentially moving to Brownsville would likely come from Philadelphia, Pearl Harbor, or Beaumount. No aquatic or marine ESA-listed species occur near the port of Brownsville, Texas.

A.3.5. Jacksonville, Florida

Jacksonville is located on the St. Johns River, approximately 20 mi (32 km) west of the Atlantic Ocean. No information on invasive species could be found specific to the area of Jacksonville. Other aquatic non-native species known to occur in the state of Florida, although not reported in Jacksonville specifically, include the freshwater hydroid *Cordylophora caspia*, the copepod *Argulus japonicus*, saber crab (*Platychirograpsus spectabilis*), brackish river prawn (*Macrobrachium macrobracion*), Nile crocodile (*Crocodylus niloticus*), Asian tiger shrimp, green mussel, and 34 species of fish (U.S. Geological Survey 2014). Ships potentially moved to Jacksonville would be from Philadelphia. Reports of invasive species in Philadelphia were not found. Philadelphia and Jacksonville represent very different environments; however, there is still some risk that biofouling organisms from Philadelphia would be able to survive in Jacksonville.

The proposed action may affect the following ESA-listed species that may occur in the waters near Jacksonville: Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*).

A.3.5.1 Atlantic Sturgeon

In recent years, there have only been 2 reports of Atlantic sturgeon confirmed in the Jacksonville area. While just over 20 were recorded in the nearby St. Marys River (along the Florida/Georgia border), only 2 were caught in the St. Johns River. There appears to no longer be a spawning population of the species in the St. Johns River since the impoundment of a major tributary, the Oklawaha River, at River Mile 95. There is evidence that the river serves as a nursery ground for a few young originating from other river systems to the north. The species is sensitive to low dissolved oxygen and high water temperatures, both of which could be exacerbated by climate change and water withdrawal or diversion (Nosca 2013).

As discussed in Sections A.1.1 and A.3.5, potential biofouling on a ship originating in Philadelphia has some risk of surviving in Jacksonville but is unlikely to replace prey or alter Atlantic sturgeon habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect Atlantic sturgeon that may occur near Jacksonville.

A.3.5.2 Shortnose Sturgeon

Shortnose sturgeon are an anadromous species. Though they don't inhabit open ocean areas, they may be found infrequently in nearshore marine habitats. Adults spend much of the year in the lower reaches of low-salinity spawning rivers. Historically, shortnose sturgeon inhabited St. Johns River near Jacksonville, Florida. From 1949 to 1999, only eleven sturgeon were able to be identified as from the St. Johns River system. To fill this data gap, gill net sampling was conducted in the St. Johns River from January 2002 through June 2003. During that period only one shortnose sturgeon was captured in the river, near Palatka, Florida, roughly 60 mi (97 km) south of Jacksonville. Due to these findings it was determined that it is unlikely any sizeable population of shortnose sturgeon inhabit the St. Johns River. Additionally, no spawning has ever been recorded in that area (Florida Fish and Wildlife Conservation Commission 2014).

As discussed in Sections A.1.1 and A.3.5, potential biofouling from a ship originating in Philadelphia has some risk of surviving in Jacksonville but is unlikely to replace prey or alter shortnose sturgeon habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect shortnose sturgeon that may occur near Jacksonville.

A.3.6. New Orleans, Louisiana

New Orleans is located on the Mississippi River, approximately 100 mi (160 km) from the Gulf of Mexico. Invasive species of concern in the area of New Orleans include the Australian spotted jellyfish (*Phyllorhiza punctata*), zebra mussel, Asian clam (*Corbicula fluminea*), and black sea jellyfish (*Chrysaora achlyos*) (Tulane/ Xavier Center for Bioenvironmental Research 2010; U.S. Geological Survey 2014), although there have been no reports in the port of New Orleans and most of these species would not be expected in freshwater. Other aquatic non-native species known to occur in the state of Louisiana, although not reported in New Orleans specifically, include copepods (*Eurytemora affinis* and *Argulus japonicus*), Chinese mitten crab, Asian tiger shrimp, American shad (*Alosa sapidissima*), spotted green pufferfish (*Tetraodon nigroviridis*), tessellated blenny, and lionfish (U.S. Geological Survey 2014). The ships potentially moved to New Orleans may arrive from Pearl Harbor or Beaumont. No aquatic or marine ESA-listed species are expected near the port of New Orleans, Louisiana.

A.3.7. Pearl Harbor, Hawaii

Pearl Harbor was described in Section A.2.3. Ships potentially moved to Pearl Harbor may arrive from Bremerton. Pearl Harbor and Bremerton represent very different environments; however, there is still some risk that biofouling organisms from Bremerton would be able to survive in Pearl Harbor.

ESA-listed species that may occur in Pearl Harbor include the green sea turtle and Hawaiian monk seal (*Monachus schauinslandi*).

A.3.7.1 Green Sea Turtle

Green sea turtles have been sighted in Pearl Harbor, but do not nest in the harbor; they are routinely seen in the outer reaches of the entrance channel (U.S. Department of the Navy 2001). The number of resident turtles at the entrance channel is estimated at 30 to 40, with the largest number occurring at Tripod Reef and the Outfall Extension Pipe. They are also found beneath the outfall pipe of the Fort Kamehameha wastewater treatment plant, at depths of approximately 65 ft (20 m) (Smith 2010). Green sea turtles are also regularly seen in West Loch, the Loch in which Pearl Harbor is located (Smith et al. 2006). As discussed in Sections A.1.1 and A.3.7, potential biofouling from ships originating from a ship in Bremerton has some risk of surviving in Pearl Harbor but is unlikely to replace prey or alter green sea turtle habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect green sea turtles that may occur in Pearl Harbor.

A.3.7.2 Hawaiian Monk Seal

Hawaiian monk seals are listed as endangered under the ESA. The monk seal population is currently declining at about 4 percent annually and is estimated at around 1,200 individuals. Hawaiian monk seals occur on lands (islands, atolls, emergent reefs) throughout the Hawaiian Archipelago, from Kure Atoll to Hawai`i Island, a distance over 1,550 mi (2,500 km). While the larger Northwestern Hawaiian Islands population is shrinking, the Main Hawaiian Islands population is growing, with a population estimated at around 150 animals (National Marine Fisheries Service 2014f).

Hawaiian monk seals spend two-thirds of their time at sea. They use waters surrounding atolls, islands, and areas farther offshore on reefs and submerged banks. When on land, monk seals breed and haul-out on sand, corals, and volcanic rock. Sandy, protected beaches surrounded by shallow waters are preferred when pupping. Monk seals are often seen resting on beaches during the day (National Marine Fisheries Service 2014f).

Monk seals forage in and transit the waters surrounding and between all land areas (National Oceanic and Atmospheric Administration and National Marine Fisheries Service 2014). Monk seals generally forage within demersal (near sea floor) and benthic (sea floor) habitats near breeding colonies. They are generalists, feeding on a variety of prey including fish (e.g., eels, wrasses, squirrelfish, soldierfish, triggerfish, parrotfish), cephalopods (e.g., octopus and squid), and crustaceans (e.g., lobster and crab) (Pacific Islands Fisheries Science Center 2014). Their diet varies by location, sex, and age. Monk seals generally hunt for food outside of the immediate shoreline areas in waters 60-300 ft (18-19 m) deep (National Marine Fisheries Service 2014f). As discussed in Sections A.1.1 and A.3.7, potential biofouling from a ship originating in Bremerton has some risk of surviving in Pearl Harbor but is unlikely to replace prey or alter monk seal habitat. Therefore, potential biofouling associated with the proposed action may affect, but is not likely to adversely affect Hawaiian monk seals that may occur in Pearl Harbor.

A.4. OPEN OCEAN CRITICAL HABITAT

ESA-listed species with critical habitat along the tow route are discussed below. Gulf sturgeon have critical habitat identified, but it does not include the Mississippi River or anywhere along the tow route. North Pacific right whales (*Eubalaena japonica*) have critical habitat identified near Alaska and would not be within the potential tow routes. Green and hawksbill sea turtles have critical habitat identified in the nearshore waters of Puerto Rico and would also not be within the potential tow routes. Coho salmon have designated critical habitat in Washington, Oregon and California but not near the destination ports or tow routes.

A.4.1. Hawaiian Monk Seals

No critical habitat has been designated in Pearl Harbor or the potential tow route. Critical habitat has been proposed which would overlap a small portion of the tow route as the ship moves in or out of the harbor south of Pearl Harbor (Figure 1). Pearl Harbor and the area directly south of Pearl Harbor are excluded from the proposed critical habitat (Figure 1). If biofouling from Bremerton survived the transit to Pearl Harbor, there is some risk that it may dislodge in the small area of proposed critical habitat in Hawaiian waters. Should the proposed critical habitat become final, biofouling associated with the proposed action may affect, but is not likely to adversely affect critical habitat for Hawaiian monk seals.

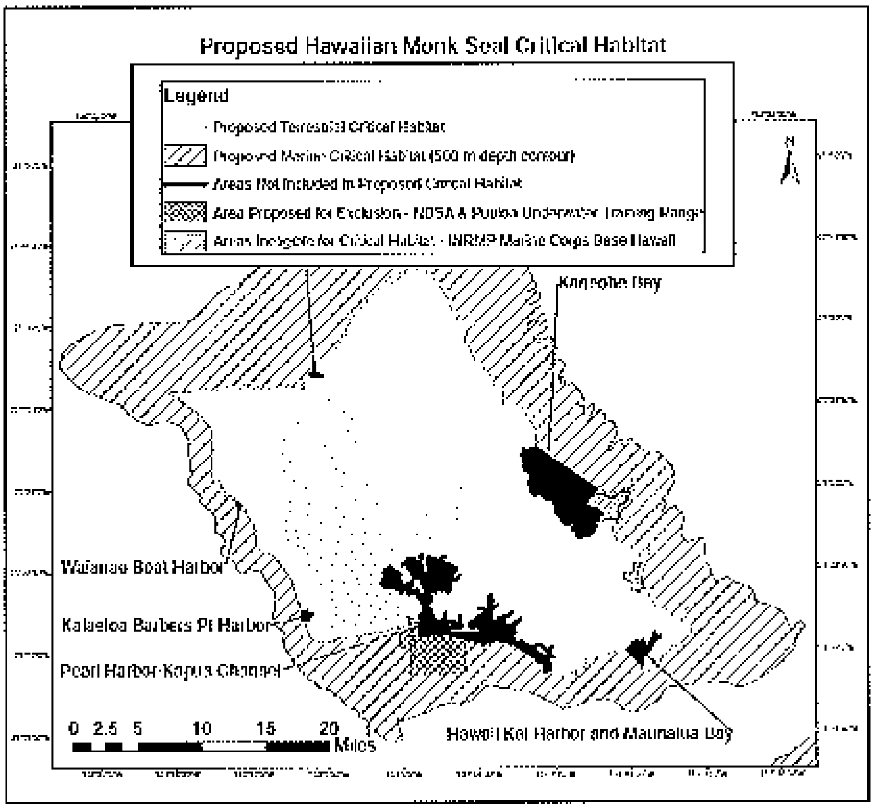

Figure 1. Proposed Hawaiian Monk Seal Critical Habitat (National Marine Fisheries Service 2014d).

A.4.2. Killer Whale

Killer whale (*Orcinus orca*) critical habitat exists in the area of Bremerton, Washington (National Marine Fisheries Service 2014d), one of the origination ports. Areas less than 20 ft (6 m) deep (relative to extreme high water) are not designated as critical habitat. Critical habitat does not include the Sinclair Inlet naval restricted area (50 CFR § 226). The PCEs essential for conservation of the Southern Resident killer whale critical habitat have been identified as (1) water quality to support growth and development; (2) prey species of sufficient quantity, quality and availability to support individual growth, reproduction and development, as well as overall population growth; and (3) passage conditions to allow for migration, resting, and foraging (National Marine fisheries Service 2006).

Sinclair Inlet is part of Puget Sound and the species composition of potential biofouling would likely not differ from species present in any of the critical habitat located in Puget Sound, even if some biofouling dislodged during vessel movement leaving Bremerton. Therefore, biofouling associated with the proposed action may affect, but is not likely to adversely affect critical habitat for killer whales.

A.4.3. Leatherback Sea Turtle

Leatherback sea turtles have critical habitat identified off the coast of Washington, Oregon, and California (Figure 2). The PCE identified as essential for the conservation of leatherbacks is: "The occurrence of prey species, primarily scyphomedusae of the order Semaeostomeae (*Chrysaora, Aurelia, Phacellophora* and *Cyanea*), or sufficient condition, distribution, diversity, abundance and density necessary for growth and success of leatherback sea turtles" (National Marine Fisheries Service 2012).

The proposed action may occur through leatherback critical habitat, however based on the discussion in Sections A.1.1 and A.3.7, the proposed action is not expected to alter or reduce the occurrence of prey species of the leatherback turtle. The quantity, quality, or availability of the PCEs or other physical, chemical, or biotic resources is not likely to decline as a result of the proposed action. The proposed action would not exclude leatherback turtles from designated critical habitat or alter the PCEs to the critical habitat. Biofouling associated with the proposed action may affect, but is not likely to adversely affect critical habitat for leatherback sea turtles.

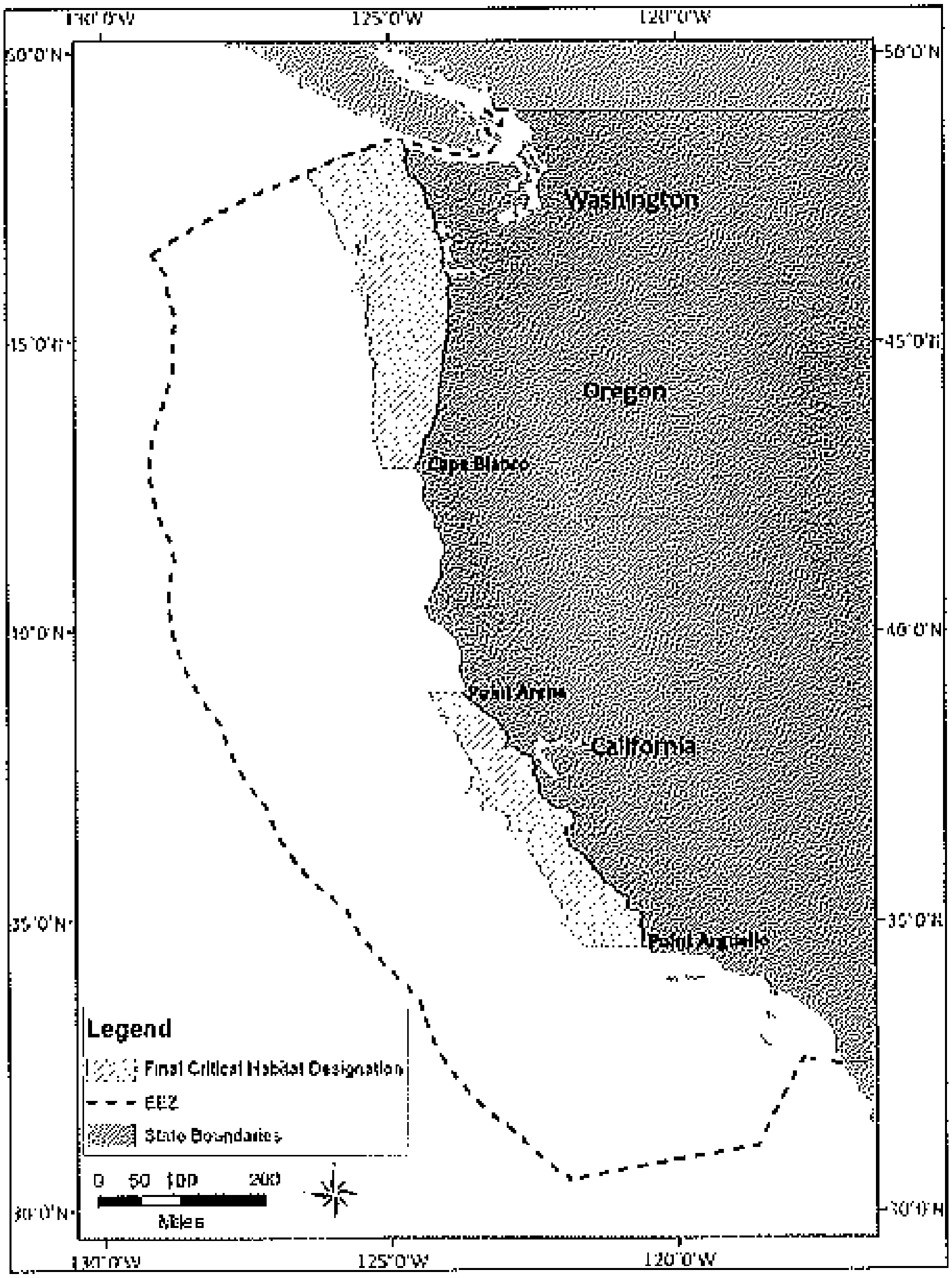

Figure 2. Leatherback Critical Habitat (National Marine Fisheries Service 2014d).

A.4.4. Loggerhead Sea Turtle

The Northwest Atlantic Ocean distinct population segment is listed as threatened under the ESA. Critical habitat is shown in Figure 3. The proposed action may occur in areas designated as *Sargassum* habitat, which is described as developmental and foraging habitat for young loggerheads where surface waters form accumulations of floating material, especially *Sargassum* spp. PCEs that support this habitat are the following:

(i) Convergence zones, surface-water downwelling areas, the margins of major boundary currents (Gulf Stream), and other locations where there are concentrated components of the *Sargassum* community in water temperatures suitable for the optimal growth of *Sargassum* and inhabitance of loggerheads;

(ii) *Sargassum* in concentrations that support adequate prey abundance and cover;

(iii) Available prey and other material associated with *Sargassum* habitat including, but not limited to, plants and cyanobacteria and animals native to the *Sargassum* community such as hydroids and copepods; and

(iv) Sufficient water depth and proximity to available currents to ensure offshore transport (out of the surf zone), and foraging and cover requirements by *Sargassum* for post-hatchling loggerheads, i.e., >33 ft (10 m) depth (National Marine Fisheries Service 2014e).

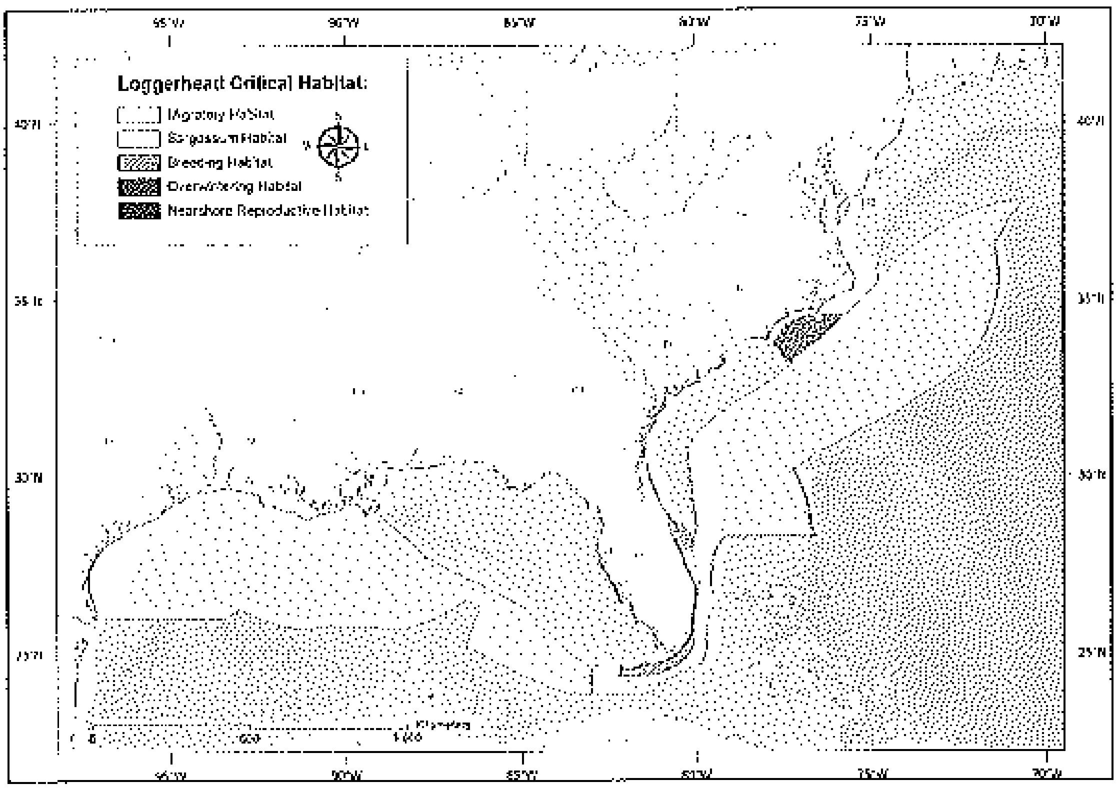

Figure 3. Loggerhead critical habitat (National Marine Fisheries Service 2014d).

The proposed action may occur through loggerhead critical habitat; however based on the discussion in Sections A.1.1 and A.3.5, the proposed action is not expected to alter or reduce the occurrence of prey species of the loggerhead turtle. The quantity, quality, or availability of the PCEs or other physical, chemical, or biotic resources is not likely to decline as a result of the proposed action. The proposed action would not exclude loggerhead turtles from designated critical habitat or alter the PCEs to the critical habitat. Biofouling associated with the proposed action may affect, but is not likely to adversely affect critical habitat for loggerhead sea turtles.

A.4.5. North Atlantic Right Whale

North Atlantic right whales (*Eubalaena glacialis*) have critical habitat identified in the Gulf of Maine and in nearshore waters of Georgia and Florida (Figure 4). The critical habitat near Florida is in the potential tow route if Jacksonville is used as a destination port. No PCEs have been identified (50 CFR § 226.203). The proposed action may occur through North Atlantic right whale critical habitat, however based on the discussion in Sections A.1.1. and A.3.5, the proposed action is not expected to alter or reduce the occurrence of prey species of the North Atlantic right whale. The proposed action would not exclude North Atlantic right whales from designated critical habitat. Potential biofouling associated with the proposed action may affect, but is not likely to adversely affect critical habitat for North Atlantic right whales.

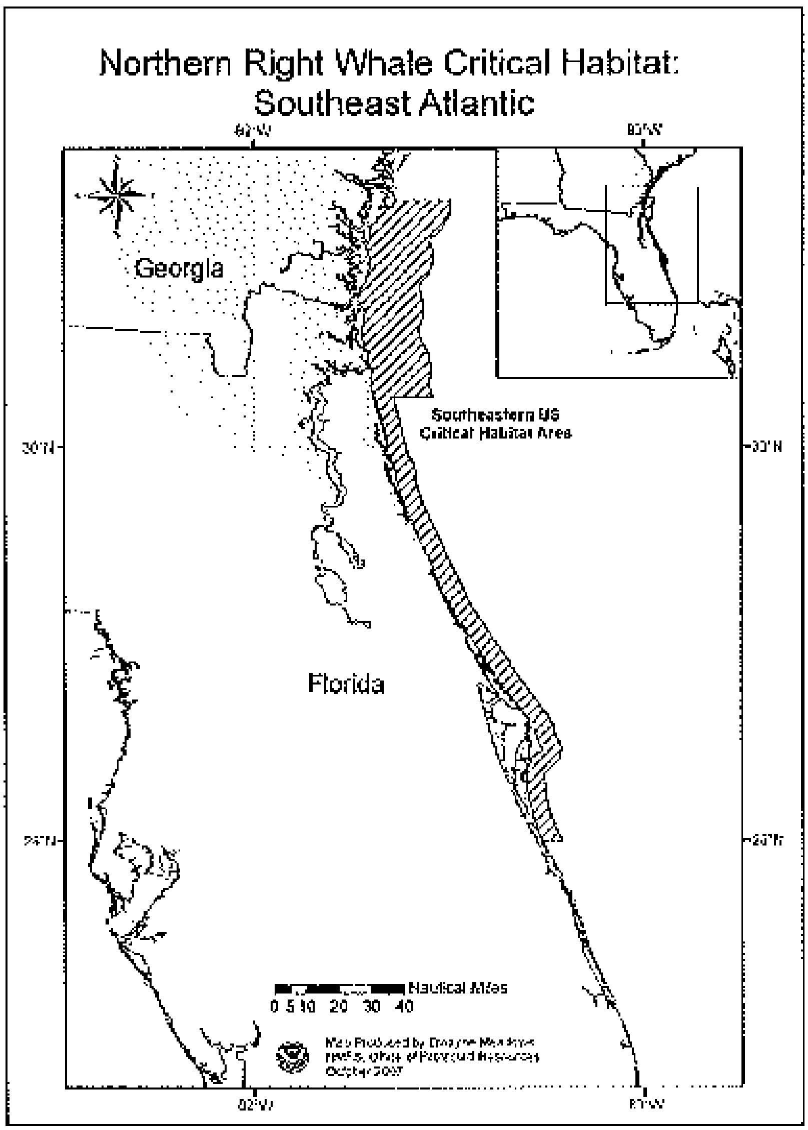

Figure 4. North Atlantic Right Whale Critical Habitat in the Southeastern United States (National Marine Fisheries Service 2014d).

A.5. CONCLUSIONS

Overall, the risk is minimal that biofouling would affect ESA-listed species in the destination ports. However, when the presence of an ESA-listed species overlapped with a ship from an origination port with invasive species, it was given a may affect determination under the ESA because we cannot rule out the potential for biofouling transported to a destination port to be an invasive species that may overtake prey or habitat used by ESA-listed species.

Biofouling associated with the proposed action may affect, but is not likely to adversely affect the following:

- Atlantic sturgeon and shortnose sturgeon in Baltimore, Maryland, and Jacksonville, Florida;
- Chinook salmon and steelhead trout in Benicia, California; and
- Green sea turtles and Hawaiian monk seals in Pearl Harbor, Hawaii.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

Mr. Glen A. Clark
Director
U.S. Navy, Inactive Ships Office (SEA-21I)
Washington Navy Yard @ NAVSEAWEST
Washington, DC 20376

NOV 17 2014

Re: Request for informal consultation under Section 7(a)(2) of the Endangered Species Act regarding U.S. Navy Naval Sea Systems Command Inactive Ships Office proposed contracted towing and dismantling of inactive U.S. Navy vessels

Refer to NMFS No: FPR-2014-9105

Dear Mr. Clark:

On 8 July, 2014, NOAA's National Marine Fisheries Service (NMFS) received your request for concurrence that the towing of inactive ships from their existing berthing locations to dismantling facilities by contracted vessels is not likely to adversely affect species listed as threatened or endangered or critical habitat designated for those species under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparation of letters of concurrence.

Below, we describe the proposed action, the ESA-listed species that may be affected by the proposed action, and the minimization measures included in the proposed action. We then consider the effects of the proposed action on ESA-listed species and critical habitats. Finally we explain the assumptions and uncertainties used in this evaluation and how they relate to the future formal programmatic consultation.

Consultation History
On 8 July 2014, NMFS received a letter from the U.S. Navy Naval Sea Systems Command (NAVSEA) describing the proposed action and requesting concurrence with the Inactive Ships Office's determination that the action may affect, but is not likely to adversely affect, listed threatened or endangered species or critical habitats designated under the ESA (Attachment 1).

Between 24 July 2014 and 1 August 2014, NMFS and NAVSEA communicated via phone and email to clarify details of the Proposed Action (e.g., maps of vessel routes, timeline for towing, expected number of tows, minimization measures).

On 12 August 2014, NMFS and NAVSEA communicated via email and phone to discuss potential effects of the action related to invasive fouling species that were not included in the Inactive Ships Office's *Biological Evaluation for Species Listed under the Endangered Species Act for the Towing of Inactive Ships* (Navy 2014).

On 14 August 2014, NAVSEA emailed NMFS to communicate that NAVSEA wished to postpone the programmatic consultation to allow time for further analysis of the potential effects of invasive biofouling organisms on listed species and critical habitats. NMFS concurred with this approach.

On 30 September 2014, NAVSEA submitted to NMFS an addendum to the *Biological Evaluation for Species Listed under the Endangered Species Act for the Towing of Inactive Ships*, including additional analysis on the potential effects of invasive biofouling organisms on ESA-listed species and critical habitats, and requested that NMFS initiate consultation on the programmatic action.

Between 21 October 2014 and 28 October 2014, NMFS and NAVSEA communicated via email and phone to clarify proposed towing routes and to discuss concerns regarding potential impacts of the proposed action from biofouling species.

On 3 November 2014, NMFS communicated to NAVSEA that NMFS did not concur with the finding of NAVSEA that the programmatic action, as described in the *Biological Evaluation* and the addendum to the *Biological Evaluation*, may affect but is not likely to adversely affect ESA-listed species and critical habitats. As such, NMFS indicated that the programmatic action, as described in the *Biological Evaluation* and the addendum to the *Biological Evaluation*, would require formal consultation.

On 4 November 2014, NMFS and representatives from NAVSEA discussed concerns with an informal programmatic consultation, particularly with regards to the potential impacts of invasive biofouling organisms to a handful of ESA-listed species. NAVSEA requested that NMFS concur with NAVSEA's determination that a limited number of inactive towing events, specifically the tow of the EX-USS RANGER, EX-USS THOMAS S GATES, EX-USS GEORGE PHILIP, EX-USS SIDES, EX-USS DOYLE, and the EX-USS JARRETT, may affect but are not likely to adversely affect ESA-listed species and critical habitats. NMFS agreed to consider the contracted tow and dismantling of the above six ships as a single action, distinct from the programmatic action described in the *Biological Evaluation* and the addendum to the *Biological Evaluation*. NMFS communicated to NAVSEA that despite NMFS' informal consultation for these six towing events, the programmatic action described in the *Biological Evaluation* and the addendum to the *Biological Evaluation* would require formal consultation and that formal consultation was expected to follow.

Description of the Proposed Action

The Naval Sea Systems Command Inactive Ships Office proposes to contract for the towing and dismantling of the inactive aircraft carrier EX-USS RANGER, and the following five ships: EX-USS THOMAS S GATES, EX-USS GEORGE PHILIP, EX-USS SIDES, EX-USS DOYLE, and the EX-USS JARRETT. The proposed action includes contracting for both the towing of the ships from their present berthing locations to dismantling facilities and the dismantling of the ships. The tows of the USS RANGER, GEORGE PHILIP, SIDES, and JARRETT will originate from Bremerton, Washington. The tows of the USS THOMAS S GATES, and DOYLE will originate from Philadelphia, Pennsylvania. All vessels will be towed to the Port of Brownsville, Texas for dismantling.

The EX-USS RANGER will be towed around Cape Horn through the Straits of Magellan, while the remaining vessels transiting from Bremerton to Brownsville will go through the Panama Canal. Once in the Atlantic Ocean, the tug and tow would proceed through the Gulf of Mexico to Brownsville. Vessels transiting from Philadelphia, Pennsylvania will travel down the Delaware River, through Delaware Bay, south through the offshore waters of the Atlantic Ocean, around the southern tip of Florida and west through the Gulf of Mexico (Figures 1, 2, and 3 in the Appendix). While these routes may not be precise, we expect the provided maps accurately depict the routes that will actually be taken. If routes should deviate substantially from those proposed, reinitiation of consultation may be required.

Sea conditions will dictate tow speed but the tug and tow will normally travel at speeds of between 6 and 8 knots in the open ocean. The tow cable will be up to 2,000 feet (610 m) long, consisting of 2.25 inch (5.72 cm) diameter wire rope. While underway, the cable may dip 100 feet (30 m) below the surface; when transiting in shallower water (e.g., river channels) the cable may be shortened to avoid snags. The tug will maintain approximately 75 tons (68 metric tons) of strain on the cable. Within harbors and ports, additional harbor tugs will facilitate the movement of towed vessels to their final berthing location. Towing will follow the U.S. Navy Towing Manual (Navy 2002).

Action Area

Under the ESA, the "action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for the proposed action includes portions of the Delaware River, western Atlantic (eastern U.S. coast), eastern Pacific (western U.S. coast), Panama Canal, Gulf of Mexico, Caribbean Sea, and oceans of the Southern Hemisphere (South Pacific, South Atlantic, and Southern oceans).

Specifically, we consider the action area to be the straight line within the path of moving tugs and towed vessels for the purpose of analyzing the effects of vessel strike, invasive species, and ship noise. For the purposes of the analysis of effects of noise from ship breaking and biofouling species establishment at the Port of Brownsville, the action area also includes the immediate area of similar habitat surrounding the Port of Brownsville. The inland-most 4.5 miles of the Brownsville shipping channel, which includes the ship breaking facility, are heavily industrialized and provide adequate hard substrate upon which biofouling organisms could become established. Based on an analysis of aerial imagery, the seaward 13 miles of the Brownsville channel is primarily soft bottom substrate and sandy channel edges susceptible to erosion and likely unsuitable for biofouling species establishment. The manmade jetties at the mouth of the canal (the Brazos Santiago Pass) would provide suitable biofouling substrate; however, these jetties are not being considered for inclusion in the action area due to the very limited time the towed vessels will be within close proximity to them. Additionally, the approximately 17-mile long Brownsville shipping channel has little connectivity with other open marine habitats until it reaches the Laguna Madre and the Gulf of Mexico at its mouth. This long, narrow stretch, approximately two-thirds of which does not appear to contain substantial quantities of suitable biofouling habitat, will limit the natural spread of biofouling species from the Port of Brownsville into the Gulf of Mexico by tidal action and water currents.

Minimization Measures
To reduce the potential for vessel strikes to listed species, tug operators contracted by the Naval Sea Systems Command Inactive Ships Office to tow inactive vessels will employ minimization measures as part of the proposed action. A brief description of measures relevant to these tows is below; further details on these measures, including maps and nautical charts, are provided in Attachment 2 to this letter.

- Whenever marine mammals or sea turtles are sighted, the tug's crew will increase vigilance and take reasonable and prudent actions to avoid collisions or activities that might result in close interactions between the vessels and animals. Actions may include changing speed and/or direction as dictated by environmental and other conditions (e.g., safety, weather). NMFS asserts it will be the Navy's responsibility to ensure crew are adequately trained to spot and identify marine mammals and sea turtles.
- Between 1 November and 30 April, the tug and tow will transit at speeds of 10 knots or less when operating within the Mid-Atlantic U.S. Seasonal Management Areas for North Atlantic right whales (in accordance with 50 CFR 224.105, 9 December 2008).
- The tug and tow will avoid Dynamic Management Areas (DMA) for right whales to the maximum extent practicable. If towing is to occur within a DMA, the tug and tow will reduce speeds to 10 knots or less while transiting through these areas (in accordance with 50 CFR 224.105, 9 December 2008).
- Any interactions between contracted tug vessels and listed species will be logged by contracted tug operators. Data from these logs will be reported annually to the NMFS Office of Protected Resources.

NAVSEA does not propose any measures to minimize the transport of biofouling species.

Affected Species and Critical Habitat
The proposed action has the potential to affect ESA-listed species that occur in the Pacific, Atlantic, and Southern Oceans, Gulf of Mexico, and Caribbean Sea. Only those species with current ranges or designated critical habitat that overlap the action area (areas around ports and along proposed tow routes) are included (Table 1). Some ESA-listed species in Table 1 may have designated critical habitat that is not listed in the table because it is not within the action area.

Table 1. ESA-listed species and designated critical habitat that may be affected by U.S. Navy inactive ship towing and dismantling activities.

Species	ESA Status	Critical Habitat	Navy Determination
Marine Mammals – Cetaceans			
Blue Whale (*Balaenoptera musculus*)	E – 35 FR 18319	---	NLAA
Fin Whale (*Balaenoptera physalus*)	E – 35 FR 18319	---	NLAA
Humpback Whale (*Megaptera novaeangliae*)	E – 35 FR 18319	---	NLAA
North Atlantic right whale (*Eubalaena glacialis*)	E – 73 FR 12024	---	NLAA

Species	ESA Status	Critical Habitat	Navy Determination
Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*)			
- Gulf of Maine DPS	T – 77 FR 5880	-- --	NLAA
- New York Bight DPS	E – 77 FR 5880	-- --	NLAA
- Chesapeake Bay DPS	E – 77 FR 5880	-- --	NLAA
- Carolina DPS	E – 77 FR 5914	-- --	NLAA
- South Atlantic DPS	E – 77 FR 5914	-- --	NLAA
Green sturgeon (*Acipenser medirostris*)			
- Southern DPS	T – 71 FR 17757	74 FR 52300	NE
Shortnose sturgeon (*Acipenser brevirostrum*)	E – 32 FR 4001	-- --	NLAA
Largetooth sawfish (*Pristis pristis*)	E – 76 FR 40822	-- --	NE
Smalltooth sawfish (*Pristis pectinata*)	E – 68 FR 15674	-- --	NE
Sockeye salmon (*Oncorhynchus nerka*)			
- Ozette Lake ESU	T 64 FR 14528	-- --	NE
- Snake River ESU	E 56 FR 58619	-- --	NE
Canary rockfish (*Sebastes pinniger*)	T – 75 FR 22276	-- --	NE
Yelloweye rockfish (*Sebastes ruberrimus*)	T – 75 FR 22276	-- --	NE
Bocaccio (*Sebastes paucispinus*)	E – 75 FR 22276	-- --	NE
Steelhead (*Oncorhynchus mykiss*)			
- Puget Sound DPS	T – 72 FR 26722	-- --	NE
- Central California coast DPS	T – 62 FR 43937	-- --	NE
- Snake River Basin DPS	T – 62 FR 43937	-- --	NE
- Upper Columbia River DPS	T – 74 FR 42605	-- --	NE
- Southern California DPS	E – 62 FR 43937	-- --	NE
- Middle Columbia River DPS	T – 64 FR 14517	-- --	NE
- Lower Columbia River DPS	T – 63 FR 13347	-- --	NE
- Upper Willamette River DPS	T – 64 FR 14517	-- --	NE
- Northern California DPS	T – 65 FR 36074	-- --	NE
- South-Central California coast DPS	T – 62 FR 43937	-- --	NE
- California Central Valley DPS	T – 63 FR 13347	-- --	NE
Invertebrates			
Staghorn coral (*Acropora cervicornis*)	T 71 FR 26852	-- --	NE
Elkhorn coral (*Acropora palmata*)	T 71 FR 26852	-- --	NE
Dendrogyra cylindrus	T 79 FR 53851	-- --	NE
Mycetophylia ferox	T – 79 FR 53851	-- --	NE
Orbicella annularis	T – 79 FR 53851	-- --	NE
Orbicella faveolata	T – 79 FR 53851	-- --	NE
Orbicella franksi	T – 79 FR 53851	-- --	NE

Note: "NLAA" denotes "Not likely to adversely affect"; NE denotes "Not evaluated" in the BE; DPS denotes "Distinct population segment"; ESU denotes "Evolutionarily significant unit".

Effects of the Action
Under the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

Effects of the Action: Ship Strike
The Inactive Ships Office's *Biological Evaluation for Species Listed under the Endangered Species Act for the Towing of Inactive Ships* concluded that the proposed action may affect ESA-listed marine mammals, sea turtles, and Atlantic and shortnose sturgeon due to the potential for ship strike. The analysis concluded that there is the potential for vessels and/or the tow cable to strike animals during transit. The limited maneuverability of the tug and towed vessels during transit reduces the ability to avoid animals sighted in close proximity. However, based upon the slow speed of the tug and tow, along with the relatively short periods they would be transiting habitats where the most susceptible species (North Atlantic right whales, sperm whales, and sea turtles) are most likely to be encountered, NAVSEA concluded that this action is not likely to adversely affect ESA-listed marine mammals, sea turtles, and Atlantic and shortnose sturgeon.

Vessel collisions are a known source of mortality in marine mammals, and can be a significant factor affecting some large whale populations (Laist et al. 2001). Likewise, vessel collisions are known to contribute to the anthropogenic mortality of sea turtles (Lutcavage et al. 1997) and sturgeon (Brown and Murphy 2010). Laist et al. (2001) reported that most lethal or severe injuries among whales struck by ships involve vessels traveling at 14 knots or faster. Silber et al. (2010) reported that hydrodynamic modeling experiments showed a linear relationship between vessel speed and the accelerations experienced by vessel-struck whales, and concluded that limits on vessel speed may increase response time for a whale attempting to maneuver away from a vessel. In experiments on green sea turtles' responses to oncoming boats, greater vessel speed increased the probability that turtles would fail to flee from the approaching vessel, leaving the turtle more vulnerable to collision (Hazel et al. 2007). As described above, the tug and tow will be restricted to a maximum speed of 10 knots when operating within North Atlantic right whale Seasonal Management Areas, in accordance with 50 CFR 224.105 (9 December 2008). However, it is unlikely that vessels involved in the proposed action will achieve speeds of over 8 knots throughout the course of their voyages; speeds of between 6 and 8 knots are typical.

The endangered North Atlantic right whale appears to be particularly prone to vessel collisions in comparison to other large whale species (Vanderlaan and Taggart 2007), possibly due to their slow swimming speeds, positive buoyancy, and largely coastal distribution (NMFS 2008). However, of the proposed towing events, only those originating in Philadelphia will require passage through the Mid-Atlantic Seasonal Management Area at the entrance of Delaware Bay. Minimization measures as part of the proposed action, including compliance to the maximum extent practicable with ship speed rules in Seasonal Management Areas and Dynamic

Management Areas, are expected to further reduce the potential for North Atlantic right whale collisions with tugs and towed vessels.

Large vessels that transit through shipping channels typically draft close to the bottom of the channel, which increases the likelihood of interactions with bottom-dwelling fish including ESA-listed Atlantic sturgeon and shortnose sturgeon. Transit routes will take vessels originating in Philadelphia through the Delaware River and Delaware Bay, where they may encounter Atlantic and shortnose sturgeon. Despite the presence of Atlantic and shortnose sturgeon in the proposed action area, the likelihood that infrequent towing events would result in strikes is so low as to be discountable given the maneuverability of sturgeon, and the minimal time that a vessel would be in any given location. In the rare event sturgeon encounter a towed vessel they are expected to exhibit avoidance behavior. The temporary deflection of sturgeon swimming patterns associated with infrequent vessel movements are not expected to result in an increased likelihood of injury due to the significant disruption of breeding, feeding, or sheltering; therefore, any potential effects from avoidance behavior are considered insignificant.

Sea turtles, in the rare event they are encountered by a towed vessel are expected to exhibit avoidance behavior and it is not reasonably expected that given the minimization measures implemented and slow tow speed, sea turtle strikes will occur (discountable). The deflection of sea turtle swimming patterns associated with infrequent vessel movements are not expected to result in an increased likelihood of injury due to the significant disruption of breeding, feeding, or sheltering; therefore, any potential effects from avoidance behavior are considered insignificant.

NMFS also considered the potential for ship strike on several additional ESA-listed fish species that may occur within the action area (Table 1) and were not evaluated in the *Biological Evaluation* provided by NAVSEA. After evaluating the risk associated with ship strike for these species, NMFS determined the likelihood of vessel strikes was so low as to be discountable due to the slow tow speed, high maneuverability and relatively small body size of these fish species, and that much of the fish ranges overlapping with the action area are in open ocean water where they are less densely populated.

In summary, given the low speed and infrequency of transit, and the expected density of ESA-listed species along the tow routes, the likelihood of vessels encountering ESA-listed species and posing a strike risk is so low as to be discountable. Even in the event ESA-listed species encounter a slow-moving vessel any behavioral avoidance is not expected to rise to the level of take. Therefore, NMFS concurs with the Navy that vessel strikes from the proposed ship towing as described in this letter are not likely to adversely affect the ESA-listed species analyzed in the *Biological Evaluation*.

Effects of the Action: Shipbreaking

If not contained and disposed of properly during the shipbreaking process, hazardous materials (e.g., polychlorinated biphenyls (PCBs), petroleum products, asbestos) commonly found in ships have the potential to affect listed species and critical habitats.

Ship dismantling companies that are awarded contracts to tow and dismantle inactive ships are responsible for all work associated with the removal and proper disposal of hazardous materials. The Navy Inactive Ships Office uses the Defense Logistics Agency (DLA) Disposition Services for the sales contracting of surface combatant ships for dismantling. As described in further detail in the DLA Disposition Services Invitation for Bid (Attachment 3), these companies must comply with all applicable federal, state, and local environmental laws and regulations during the processing, use, or disposal of any material under an awarded contract. Applicable laws include, but are not limited to, the Clean Water Act, Resource Conservation and Recovery Act, and the Toxic Substances Control Act. Shipbreaking companies must submit an Environmental Compliance Plan as part of the bid process. Bidders must demonstrate how the shipbreaking facility will ensure safe and environmentally sound management of all hazardous materials and wastes removed from a ship recycled at the facility, including information for asbestos, PCBs, fuels and oils, bilge/ballast water, heavy metals, paints and coatings, waste water/sludge, ozone depleting substances and other potential hazardous materials. In addition, bidders must certify and/or verify that the dismantling facility has developed, implemented, and maintains a Spill Prevention, Control and Countermeasures Plan and a Stormwater Pollution Prevention Plan. The bidder must also reveal any Notices of Violations, fines or proposed fines, convictions or citations associated with environmental compliance, and whether the bidder has been the subject of any judicial or administrative proceeding related to the violation of any applicable law related to environmental compliance.

Based on the requirements for environmental compliance related to the shipbreaking process described above, we have determined that the potential risks to ESA-listed species and critical habitats associated with contaminant or hazardous material discharge from the shipbreaking process are so low as to be discountable.

Noise from shipbreaking activities would likely be detectable to ESA-listed species if they were in close proximity to the ship breaking facility in Brownsville. However, we do not expect any ESA-listed species to be present in the industrialized portion of the Port of Brownsville (J. Patterson, NOAA port agent to J. Morse NMFS OPR, 15 August 2014), where these facilities are located. Further, it is unlikely that shipbreaking activity associated with the proposed action will significantly increase underwater noise levels above baseline in the Port of Brownsville. Therefore, based on the absence of ESA-listed species, and baseline levels of underwater sound in the port, we have determined that the potential risks to ESA-listed species and critical habitat associated with underwater noise from shipbreaking are so low as to be discountable.

Effects of the Action: Vessel sinking

Oil and chemical pollution from sunken vessels represents a persistent problem in the marine environment (Monfils et al. 2006) and has the potential to affect listed species and critical habitats. We considered the potential for the contracted tug or towed vessel to sink as part of the proposed action, and for oil or chemical pollution to enter the marine environment and affect listed species and critical habitats as a result of vessel sinkings. However, the Inactive Ships Office reported that the sinking of a tug or towed inactive Navy vessel from one port to another as part of the towing of inactive ships has not been documented. Based on the lack of ship sinkings throughout the history of the program, and taking into account the limited scale of the proposed action, we have determined that the risk of oil or chemical discharge from potentially sunken vessels is so low as to be discountable.

Effects of the Action: Vessel Noise

Noise from contracted tug vessels and towed Navy ships may be detectable to ESA-listed marine mammals, sea turtles, and fish although the density of species in the open ocean is so low that they are unlikely to be encountered. Near shore species are more likely to be encountered near origination ports. However, these areas are already heavily trafficked by vessels and the infrequency of towed Navy vessels is not expected to substantially increase noise levels above background conditions. Any response elicited from ESA-listed marine mammals, sea turtles, or fish due to vessel noise is expected to be in the form of behavioral avoidance or interruption in behavior and of short duration. We believe any behavioral response of ESA-listed species to vessel noise will be of limited duration and magnitude such that it would not involve fitness consequences from the disruption of breeding, feeding, communication or sheltering. Therefore, the effects of vessel noise on ESA-listed species is biologically irrelevant and insignificant.

Effects of the Action: Invasive Species Transfer

The Inactive Ships Office's *Addendum to the Biological Evaluation for Species Listed under the Endangered Species Act for the Towing of Inactive Ships* concluded the transfer of biofouling species from Bremerton, Washington and Philadelphia, Pennsylvania to Brownsville, Texas would have no effect on ESA-listed species. The evaluation performed by NMFS suggests a "not likely to adversely affect" determination may be more appropriate for some ESA-listed species.

Aquatic invasive species represent a persistent and increasing problem throughout the world's oceans, including the waters of the U.S. Ocean-going vessels have the potential to affect ESA-listed species and critical habitats through the introduction of invasive species. The ecosystems into which these invasive organisms are introduced often lack the conditions that limit range expansion in their natural habitats (e.g., predators, pests, or diseases). This factor, accompanied by characteristics such as high reproductive rates, the ability to utilize a variety of resources, and wide tolerances to a range of environmental conditions, allow invasive species to spread quickly following introduction, potentially resulting in serious impacts to listed species and critical habitats which may lack the evolutionary adaptations necessary to cope with these invasive species. Consequences of invasion to ESA-listed species and critical habitats may include predation of native species, competition for food or space, hybridization, and the introduction of harmful pathogens and parasites.

The action has the potential to affect ESA-listed species through the transmission of aquatic invasive species via one of two vectors: (1) invasive species could be taken in with ballast water at the origination port and later discharged at the destination port; or (2) invasive species may attach themselves to the hull of a vessel (biofouling) at the origination port and be transported on the ship's hull to the destination port.

Invasive species are unlikely to be taken in with ballast water at the origination port and later discharged at the destination port because engineering plants of inactive ships are secured so the vessels are non-operational. Without the capability to run pumps, no water may be taken onboard or discharged before or during the transit between ports. The Inactive Ships Office reported that in the rare occasion that ballast water is used in towed vessels, fresh water is pumped in using hoses and is not taken in from the surrounding marine environment (T. Fetherston, Navy NUWC, pers. comm. to J. Carduner, NMFS OPR, August 13, 2014). The privately owned and operated tug boat will operate under all laws and regulations reducing the risk of introducing invasive species through ballast water. Therefore it is extremely unlikely (to the point of being discountable) that invasive species would be taken in with ballast water and later released at the destination port as part of the action.

Llanso and Sillett (2008) reported that vessels that were heavily fouled prior to transport, such as the inactive vessels considered in this analysis, are more likely to transfer invasive fouling organisms to the destination port than those that are less fouled at their origination port, because the extent of initial fouling encourages further fouling organisms to attach to the hull during the transit. The authors surveyed two heavily fouled, inactive vessels before and after transit from Suisun Bay, California, to Brownsville, Texas, and reported several species in the post-transit survey that were not recorded in pre-transit surveys. Some of these species were considered oceanic instead of estuarine, suggesting that species attachments during long voyages are possible.

The introduction of invasive species via hull biofouling would primarily be a concern to ESA-listed species and critical habitats in the locations of the destination ports. Thus we focused our analysis on potential effects to ESA-listed species potentially near the Port of Brownsville including the blue, fin, humpback, sei, and sperm whales, and the green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles. The largetooth and smalltooth sawfish once occurred along the Texas coast but are now essentially extirpated from the Brownsville area (no observed records of these species in over 30 years; NMFS 2010a, NMFS 2010b). The ranges of the North Atlantic right whale, Atlantic sturgeon, and shortnose sturgeon are limited within the action area to the area surrounding the Philadelphia origination port and the U.S. Atlantic coast. Thus effects to these species would be limited to inactive ships tows originating in Philadelphia. The remaining species identified in Table 1 occur at the Bremerton, Washington origination port or along the proposed tow routes between Bremerton and Brownsville.

The origination port at Philadelphia is a freshwater port, thus it is assumed all biofouling organisms attached to the hulls of ships originating there will also be freshwater species. As such, biofouling species on ships originating in Philadelphia are not expected to survive the slow tow through the marine environment of the open ocean, nor survive in the marine waters present at the Port of Brownsville. The survival rate of these organisms is expected to be so low that their potential effects on listed species near Brownsville is not reasonably expected to occur and are considered discountable. The origination port at Bremerton is a marine port, so it is much more likely that biofouling organisms from this port will be able to survive the trip through the marine environment and to further survive upon arrival in the Port of Brownsville.

There is some potential for biofouling species to become dislodged from the towed vessel during transit. If biofouling organisms happen to become dislodged while passing over areas with suitable hard substrates, there is the potential for biofouling organisms to be introduced to new environments in which they can become established and proliferate. The extensive biofouling community on the hulls of these vessels is likely so heavy that dislodgment of biofouling mats may be relatively common. However, we believe the slow rate of movement of these vessels may minimize dislodgement. Presumably, a majority of dislodgement will occur early during the transit when the species and mats that are most loosely attached will fall off. In our best professional judgment we believe once the initial period of dislodgement has occurred and the most loosely attached biofoulers have fallen off, the remaining biofouling mats are less likely to be dislodged. Given readily available geographic data in NMFS' files, the most likely areas along the tow routes where hard substrates may be present and susceptible to biofouler introduction would be nearshore coral reef ecoregions. The coral reef ecoregions intersected by the proposed routes from Bremerton to Brownsville include the Costa Rica and Panama Ecoregion on the Pacific coast of Panama (the tow route would pass through ~300 km of this ecoregion), the Belize and West Caribbean Ecoregion on the Atlantic coast of Panama and northwest (~839 km), the Bay of Campeche, Yucatan, Gulf of Mexico Ecoregion (~243 km), and the Flower Garden Banks, Gulf of Mexico Ecoregion (~140 km)(Figure 4)(Veron 2014).

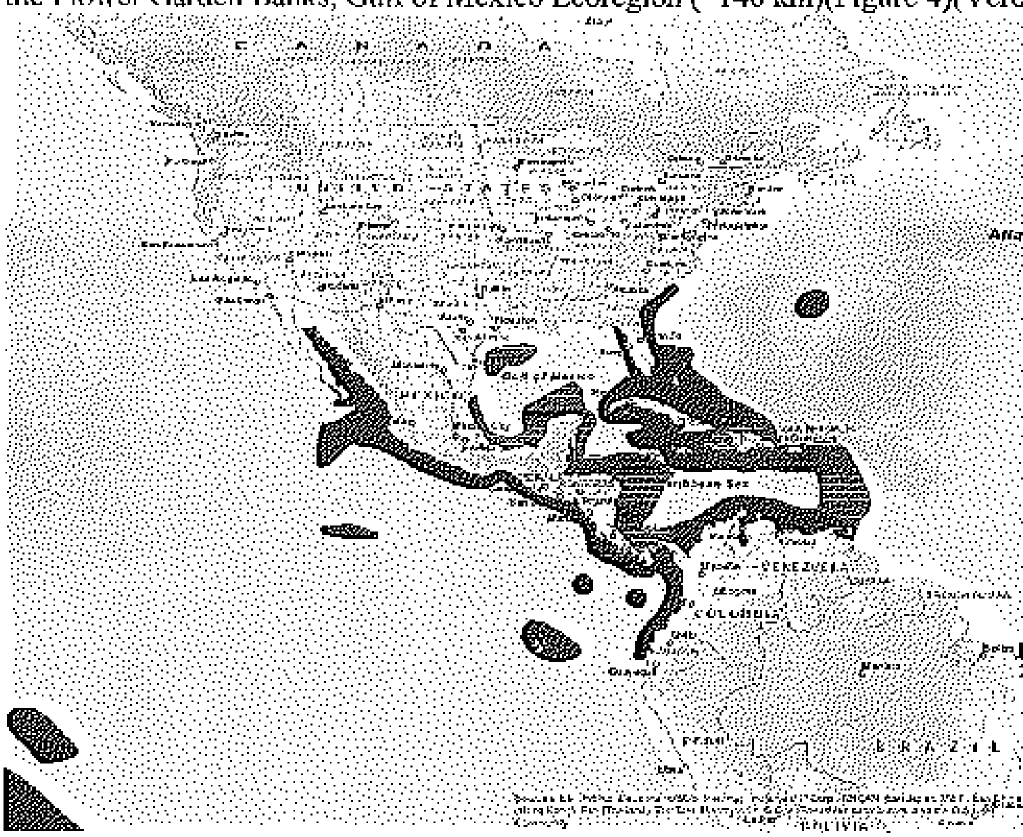

Figure 1. Coral reef ecoregions from (Veron 2014). Green ecoregions are known to be inhabited by ESA-listed corals. Ecoregions depicted with stripes will be passed through by one or more transiting vessels.

To analyze the effects of biofouling invasion on ESA-listed species, NMFS was required to make assumptions regarding the risk of biological invasion and the potential for effects from introduced biofouling species. The assumptions and uncertainties important to understanding biological invasions and the effects analysis within this letter follow below.

Assumptions and Uncertainties
Inactive Navy vessels have remained stationary in origination ports for years without hull cleaning. As such, the biofouling mass on inactive ships considered in this letter likely represent a climax biofouling community from the origination port. The following assumptions are made regarding the risk of biological invasion from inactive Navy vessels:

- The biofouling mass on ship hulls is representative of the biofouling species present within the origination port in terms of both species presence and relative abundance.
- Densities, abundance, and nearest-neighbor distances of biofouling individuals of the same species are sufficient to support reproductive success.
- The biomass of biofouling organisms on long-dormant ships is more species rich and abundant than would be expected on active ships, providing some level of protection to the biofouling organisms from biotic (predation) and abiotic (physiochemical alterations) during vessel transit due to a more sustainable microhabitat and microclimate.
- The extensive biofouling community present may be capable of supporting the transit of species incapable of directly attaching to the boat hull themselves by their retention among the biofouling mats within which they seek refuge. For the purposes of this letter, such species are included in the general term "biofouling" organism.
- Inactive Navy ships are likely to remain in the water at destination ports long enough for mobile biofouling organisms to relocate and for non-mobile organisms to reproduce, dislodge naturally, or become dislodged during the ship breaking process/movements.

Given the assumptions above, inactive Navy vessels are ideal vectors for the transport of biofouling organisms, regardless of species nativity and invasiveness. The ideal nature of inactive Navy vessels as biofouling organism transporters suggests the following assumptions are likely valid regarding the potential effects of Navy vessel transport:

- Biofouling organisms not already present at the destination port that are physiologically capable of surviving the journey (i.e., are successfully introduced) and the conditions of the destination port may become established in the new environment.
- Biofouling organisms already present at the destination port that are physiologically capable of surviving the journey may receive a reproductive boost to the destination port's existing population.
- The introduction, establishment, and proliferation of biofouling invasive species may, or may not, affect ESA-listed species and the ecosystems upon which they rely in a number of ways including: beneficially, negligibly, adversely, and catastrophically.

The following assumptions are a source of considerable uncertainty with regards to timing, magnitude, likelihood, and location and will be more thoroughly analyzed as part of the formal programmatic biological opinion. These assumptions may lead to the expansion of the action area to include areas beyond the ship tow routes and immediate area of the destination ports.

- Given the assumption biofouling organisms capable of surviving the oceanic journey to the destination port and the physiological conditions of the destination port may become established, it is also assumed future ship traffic (Federal and non-Federal) from the destination port may disperse these organisms to ports worldwide. Over extremely long distances, this dispersal method is probably dominant over natural dispersion by oceanic currents.

- Given the assumption biofouling organisms capable of surviving the oceanic journey to the destination port and the physiological conditions of the destination port may become established, it is also assumed oceanic currents will be capable of dispersing the planktonic life history stages of biofouling species to new suitable habitats based on ocean current velocities, and planktonic life stage duration, survival, and density. Due to the relatively low survival and decreased density of planktonic stages over longer durations and transport distances, the range of biofouling expansion by this method is presumably lower than would be expected from the transport of adults on fouled ship hulls. Over shorter distances, this method of dispersal is probably dominant over ship hull fouling dispersion.
- Biofouling organisms may become dislodged, or spawn gametes while in transit to the destination port. If these events occur in areas containing suitable habitat for introduction, establishment, and proliferation, biofouling organisms may be transported to new locations via this method.

The likelihood of successful establishment of organisms from super-inoculations, such as may occur from a towed climax community of biofouling organisms, is much higher than would be expected from active ships with much less extensive biofouling. Some organisms transported by inactive Navy vessels will presumably already be present at destination ports, given the long history of inter-port ship traffic within the United States. However, biofouling species' populations that are not abundant or well-established in destination ports may receive substantial increases in reproductive success from a well-established inoculation source. These inoculations could shift the biofouling community assemblage and species composition, especially if repeated inoculations were to occur. The inoculation of a species into a destination where that species is already a dominant component of the biofouling community is less likely to result in long-term substantial effects to that species, although it may receive a temporary increase in reproductive success and species abundance.

Although it can be assumed a majority of biofouling organisms potentially transported from origination ports are likely already present at destination ports given the historical and ongoing movement of ships between these ports, it cannot be said that all species will already be present. Despite centuries of ship traffic from common ports entering Vancouver and Halifax, Canada, Sylvester et al. (2011) found significant differences between hull and harbor biofouling communities suggesting the introduction of new species is still a substantial risk. Cohen and Carlton (1998) found the number of new exotic species being detected in the San Francisco Bay has increased over the past 145 years based on raw data tabulation, which further refutes the notion biological invasions that will occur have already done so and that the risk of additional invasive species colonization between existing ship routes is unlikely. Between 1970 and 1995 a non-native species has invaded the San Francisco Bay every 24 weeks, on average (Cohen and Carlton 1995).

It is difficult to predict the geographic spread and successful invasion of ecosystems for even a single invasive species. The vessel movements in this action have the potential to move hundreds of different species to the Port of Brownsville, where existing biofouling communities are not well studied. The potential introduction, establishment and proliferation of many known and unknown biofouling species (including non-invasives, non-native invasives, and native invasives) is impossible to accurately predict, as is their potential further spread and impacts to ESA-listed species and the ecosystems upon which they depend. The effects of successful biofouling invasions (i.e., introduction, establishment, and proliferation) on ESA-listed species may range from completely beneficial to catastrophic, depending on a number of factors which will vary depending largely on the biofouling species, the ESA-listed species, and the ecosystem involved. As new biofouling species become established in ports over time and biofouling community structures shift, the risk of inactive ship tows to ESA-listed species from invasive species will also change.

There is a great deal of uncertainty surrounding the identity and locations of biofouling organisms (both current and future), the potential for successful invasions, the potential for biofouling organisms to spread beyond destination ports following successful invasion, and the impacts to ESA-listed species, their critical habitats, and their ecosystems. Considering the substantial uncertainty, assessing potential invasion scenarios and attempting to quantitatively or qualitatively address the likelihood of such scenarios and their potential effect on ESA-listed species is nearly impossible. This issue needs to be examined further and we hope to engage the Navy in an ongoing collaborative effort to address uncertainties and concerns. The analyses and conclusions of this letter, like those of much of the peer-reviewed and gray literature for invasive species, are speculative and incomplete. Until the field of invasion biology is more thoroughly developed for marine environments, NMFS must base its decisions on the best available scientific and commercial data, even when some data and principles of invasion biology are speculative or completely unknown.

In the case of the action analyzed in this letter, there was uncertainty with regards to an appropriate action area to consider and the potential spread of biofouling organisms during transit and from newly established populations at destination ports. Much of this uncertainty is due to a lack of knowledge regarding specific biofouling species present, the physiological tolerances and habitat requirements of specific biofouling species, and the potential risk of successful invasion and spread. NMFS has based its action area delineation, effects analyses, and conclusions on effects it deems are reasonably certain to occur given the best available scientific and commercial data available and the best professional judgment of several biologists. The effects analysis for ESA-listed species follows in the sections below.

Effects to Cetaceans
Although some biofouling organisms are capable of attaching to cetaceans, the limited exposure of the small number of ships analyzed in this consultation and the density of ESA-listed cetaceans suggest the likelihood of ESA-listed species encountering these vessels while in transit and being inoculated with biofoulers is so unlikely as to be discountable. No ESA-listed cetaceans are known to regularly occur in the Brownsville area and none have been recorded within the Port of Brownsville (J. Patterson, NOAA port agent to J. Morse NMFS OPR, 15 August 2014), suggesting biological invasions within the Port of Brownsville are also unlikely to affect ESA-listed cetaceans to the point of being discountable.

Effects to Sea Turtles
Only the green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles occur within the Brownsville vicinity and there are no recorded instances of these species occurring in the heavily industrialized end of the Port of Brownsville (J. Patterson, NOAA port agent to J. Morse NMFS OPR, 15 August 2014). We expect that the leatherback sea turtle is not likely to be adversely affected, as it does not nest in the area and is not frequently observed close to shore in the Brownsville area (B. Higgins, NMFS SEFSC, pers. comm. to J. Carduner, NMFS OPR, August 14, 2014).

Potential direct effects to sea turtles of the introduction of invasive species that may foul the hull of the transported vessels may include parasitism by invasive species, which could lead to fitness consequences. Biofouling of turtle shells can also increase drag, resulting in increased energy expenditure of sea turtles during movement. However, turtle shells are often fouled by organisms and the occasional shedding of scutes lessens the impact of this fouling. The probability of direct effects from parasitism are very low (B. Stacy, NMFS OPR, pers. comm. to J. Carduner, NMFS OPR, August 18, 2014); therefore, we have determined the likelihood of take of sea turtles from parasitism to be so low as to be discountable.

The introduction of invasive species that may foul the hull of transported vessels has the potential to lead to indirect effects to sea turtles in the form of changes to benthic habitat and/or changes to invertebrate prey. These effects could result from invasive species preying upon, outcompeting, or smothering organisms that may be critical to a sea turtle's benthic habitat or food chain. The alteration of a sea turtle's habitat or food chain could potentially lead to behavioral disturbance in the form of requiring a turtle to travel farther or could cause fitness consequences if a turtle is unable to feed. The hawksbill, loggerhead, and Kemp's ridley sea turtles are generalist feeders and it is unlikely additional biofouling species would impact the ability of these species to locate food even if they were to co-occur with biofouling invasion areas. Green sea turtles are specialist feeders and only eat seagrasses and algae as adults. As such, green sea turtles would be more susceptible to biofouling invaders capable of impacting the food web's seagrasses and algae and ultimately the green sea turtle. However, no sea turtles, including the green sea turtle, utilize the industrialized portion of the Port of Brownsville as habitat (J. Patterson, NOAA port agent to J. Morse NMFS OPR, 15 August 2014). The Port of Brownsville is relatively isolated, occurring more than 13 miles inland in a channel that mostly lacks suitable substrate for biofouling spread and invasion. There is limited evidence to suggest biofouling organisms are capable of spreading from the Port of Brownsville to the Gulf of Mexico where sea turtles are more likely to occur. Therefore, in the instance of the six ships being towed in this analysis, effects to sea turtles from biological invasions occurring in this area are not reasonably expected to occur and are discountable.

Effects to Fishes
The proposed action may overlap spatially with the ranges of several ESA-listed fish species, including: steelhead (multiple ESUs); sockeye salmon (multiple ESUs); chinook salmon (multiple ESUs); chum salmon (multiple ESUs); coho salmon (multiple ESUs); eulachon; green sturgeon; Gulf sturgeon; canary rockfish; yelloweye rockfish; bocaccio; scalloped hammerhead shark (East Pacific DPS & Southwest Atlantic DPS); Atlantic sturgeon; shortnose sturgeon; largetooth sawfish; and smalltooth sawfish. Therefore, in the instance of the six ships being

towed in this analysis, we believe that the likelihood of an impact to these species from biofouling organisms associated with the proposed action is so unlikely as to be discountable for one or more of the following reasons: 1) the ESA-listed species does not occur near the Port of Brownsville; 2) the ESA-listed species only has the potential to encounter biofoulers in the open ocean where biofouling establishment is not likely; or 3) the ESA-listed species will only encounter the biofouling organism at the origination port, where it occurred prior to the proposed action.

Effects to Invertebrates
The EX-USS RANGER, GEORGE PHILIP, JARRETT, and SIDES will originate from Bremerton, Washington and will be towed to Brownsville, Texas. The EX-USS GEORGE PHILIP, JARRETT, and SIDES will pass through the Panama Canal while the EX-USS RANGER will traverse around South America and into the Gulf of Mexico from the east. Table 2 identifies the ESA-listed corals present along these tow routes and the estimated time towed vessels will be within occupied coral ecoregions (Figure 1) based on the proposed tow routes and an estimated speed of 6 to 8 knots.

TABLE 2. Estimated time towed vessels from Bremerton, Washington will be present within coral ecoregions containing ESA-listed species based on an estimated vessel speed of 6 to 8 knots.

Coral Species	Time USS RANGER will be within occupied ecoregions (hours)	Time USS GEORGE PHILIP will be within occupied ecoregions (hours)	Time USS SIDES will be within occupied ecoregions (hours)	Time USS JARRETT will be within occupied ecoregions (hours)	Total time for all vessels (hours)
Staghorn coral (*Acropora cervicornis*)	88–117	73–98	73–98	73–98	307–411
Elkhorn coral (*Acropora palmata*)	97–130	83–110	83–110	83–110	346–460
Dendrogyra cylindrus	88–117	73–98	73–98	73–98	307–411
Mycetophyllia ferox	88–117	73–98	73–98	73–98	307–411
Orbicella annularis	97–130	83–110	83–110	83–110	346–460
Orbicella faveolata	97–130	83–110	83–110	83–110	346–460
Orbicella franksi	97–130	83–110	83–110	83–110	346–460

Biofouling organisms that dislodge while over coral reef ecoregions have some potential to land on hard substrates amenable to their introduction and become established. Given the duration of time towed vessels will be over coral ecoregions occupied by ESA-listed species (between 307 and 460 hrs [approximately 13 to 19 days]) it is likely some biofouling organisms will become dislodged from the towed vessels within these areas at these times. However, the slow speed of towed vessels and the fact most loosely attached organisms will likely become dislodged early during the transit or when the vessel first reaches its maximum speed may minimize the quantity of organisms dislodged over ESA-occupied coral reef ecoregions near the Gulf of Mexico. To become established, biofouling organisms would need to dislodge from towed vessels, land on hard substrate, be tolerant of the physiochemical properties of the habitat, be abundant enough and in high enough density to reproduce, and compete for resources with already established organisms. Further, the establishment of biofouling organisms on reef ecosystems does not necessarily indicate negative effects to ESA-listed species will occur. NAVSEA did not include ESA-listed corals among the list of ESA-listed species and critical habitats that may be affected by the proposed action in the *Biological Evaluation* or the addendum to the *Biological Evaluation*. With the scant information available, NMFS does not have the information available to reasonably predict the likelihood of these events occurring. For the reasons outlined above, NMFS believes that the limited scale of the action—one-time transit of four ships through these areas—presents a low risk (discountable) of adverse effects. However, for the programmatic opinion NMFS intends to conduct a thorough analysis of impacts to determine whether the risk is discountable with transit of multiple ships.

Effects to critical habitat

The proposed action may occur within ESA-listed critical habitats that have been designated for: the Northwest Atlantic DPS of loggerhead sea turtles (off the Southeast coast of the U.S. and in the Gulf of Mexico); leatherback sea turtles (off the coasts of Washington, Oregon and California); Chinook salmon (Puget Sound, Washington), chum salmon (Puget Sound), green sturgeon (Puget Sound and U.S. west coast) and Southern resident killer whales (Puget Sound). The Addendum to the *Biological Evaluation* concluded that potential biofouling associated with the proposed action may affect, but is not likely to adversely affect critical habitat for Northwest Atlantic DPS loggerhead sea turtles, leatherback sea turtles, and Southern resident killer whales.

No designated critical habitat exists in the Brownsville area, so only potential impacts to critical habitat along the tow routes were evaluated. We examined the Primary Constituent Elements (PCEs) for all ESA-listed critical habitats occurring within the action area to determine if the proposed action is likely to affect those PCEs. It is possible for towed vessels to come into contact with floating *Sargassum* communities while within loggerhead critical habitat. This may occur along tow routes in the Gulf of Mexico or off the Atlantic coast. One of the PCEs of this habitat type is available prey for young loggerheads, including but not limited to, plants, cyanobacteria, and animals endemic to the *Sargassum* community such as hydroids and copepods. If *Sargassum* communities come in contact with biofouling organisms during vessel tows, some of these fouling organisms may be dislodged and temporarily join these floating communities. However, it is unlikely these organisms could survive and reproduce in this environment because *Sargassum* communities lack the hard substrate necessary for fouling organism settlement. Additionally, young loggerheads are known to be generalist, opportunistic omnivores (Witherington et al. 2012). Any fouling organisms temporarily residing within a *Sargassum* community would most likely serve as an additional food source. All other PCEs of remaining designated critical habitats that occur along tow routes are not likely to be affected because the proposed action would involve only the temporary movement of a low number of vessels through those critical habitats, would involve passing through only a small portion of designated critical habitat, or the designated critical habitat is within the Puget Sound area where the biofouling organisms associated with towed vessels from Bremerton, Washington are already likely to occur.

For the reasons outlined above, we believe that the likelihood of the proposed action altering the PCEs of Northwest Atlantic DPS loggerhead turtle, leatherback turtle, chinook salmon, chum salmon, green sturgeon, or Southern resident killer whale critical habitats is so low as to be discountable. Likewise, we believe that the likelihood of the action excluding loggerhead turtles, leatherback turtles, chinook salmon, chum salmon, green sturgeon, or Southern resident killer whales from their respective critical habitats is so low as to be discountable.

Conclusion
After review of the proposed action including minimization measures, using substantive requirements of ESA section 7 and using the best scientific and commercially available data, we determined the likelihood that a vessel strike or encounter with the tow cable will occur is so low as to be discountable, due to the slow speed of the tug and towed vessel in concert with the relatively short periods that the vessels will be transiting habitats. We also determined that the likelihood of invasive fouling species establishing new populations in the Port of Brownsville, those species spreading from the Port of Brownsville by natural or anthropogenic means, and of those species resulting in direct or indirect effects to listed species, is so low as to be discountable. We also determined that the likelihood of the tug and/or tow sinking and resulting in pollution of the marine environment, and that pollution affecting listed species or critical habitats, to be so low as to be discountable.

As noted above, with the scant information available regarding the potential establishment of biofouling organisms on reef habitat within the action area, NMFS does not have the information available to reasonably predict the likelihood of adverse effects to ESA-listed corals within the Gulf of Mexico. However, for the reasons outlined above, NMFS believes that the limited scale of the action—one-time transit of four ships through these areas—presents a low risk (discountable) of adverse effects. It is anticipated the action area evaluated during the programmatic formal consultation will be expanded and a more thorough evaluation of potential effects to ESA-listed corals will be performed to determine whether the risk is discountable with transit of multiple ships. Of the ESA-listed corals considered in this letter, only the staghorn (*Acropora cervicornis*) and elkhorn (*A. palmata*) corals currently have take prohibitions.

NMFS also determined critical habitat would not likely be adversely affected.

The incidental take of listed species associated with this action, including behavioral harassment, injury, or mortality, is not anticipated nor exempted; thus, if take occurs as a result of the action, the U.S. Navy Naval Sea Systems Command must immediately contact the NMFS Office of Protected Resources Interagency Cooperation Division to develop and implement mitigation to avoid additional take or initiate formal consultation in accordance with ESA section 7(a)(2).

NMFS believes the issue of invasive species transfer is important to the health of aquatic ecosystems. As such, we are interested in fostering a collaborative relationship with the Navy to address many of the uncertainties regarding the spread of biofouling invasives, their impacts to ESA-listed species, and their impact to the ecosystems upon which ESA-listed species depend. We also believe this issue warrants consideration of an Essential Fish Habitat consultation with NMFS and ESA consultation with the U.S. Fish and Wildlife Service. Please direct questions regarding this letter to Dr. John Morse, NMFS Office of Protected Resources, at (301) 427-8413 or john.t.morse@noaa.gov.

Sincerely,

Donna S. Wieting
Director
Office of Protected Resources

Attachments:

1. U.S. Navy Naval Sea Systems Command Inactive Ships Office request for concurrence, 08 July 2014
2. Minimization measures to reduce the potential for vessel strike
3. DLA Disposition Services Invitation for Bid

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Appendix

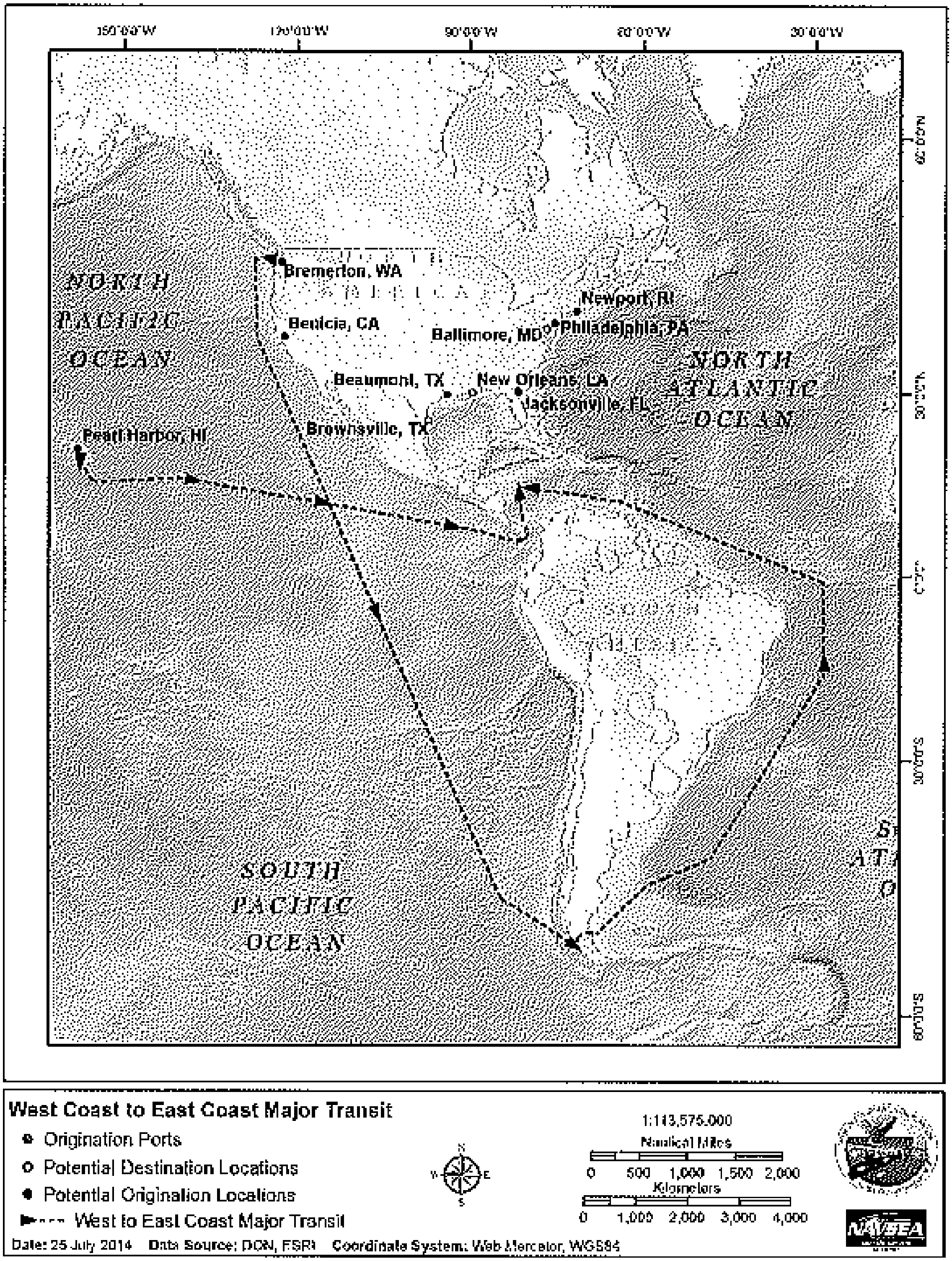

Figure 1. Transit routes from Bremerton, Washington to the Gulf of Mexico. Not all origination and destination ports are part of the action analyzed in this letter.

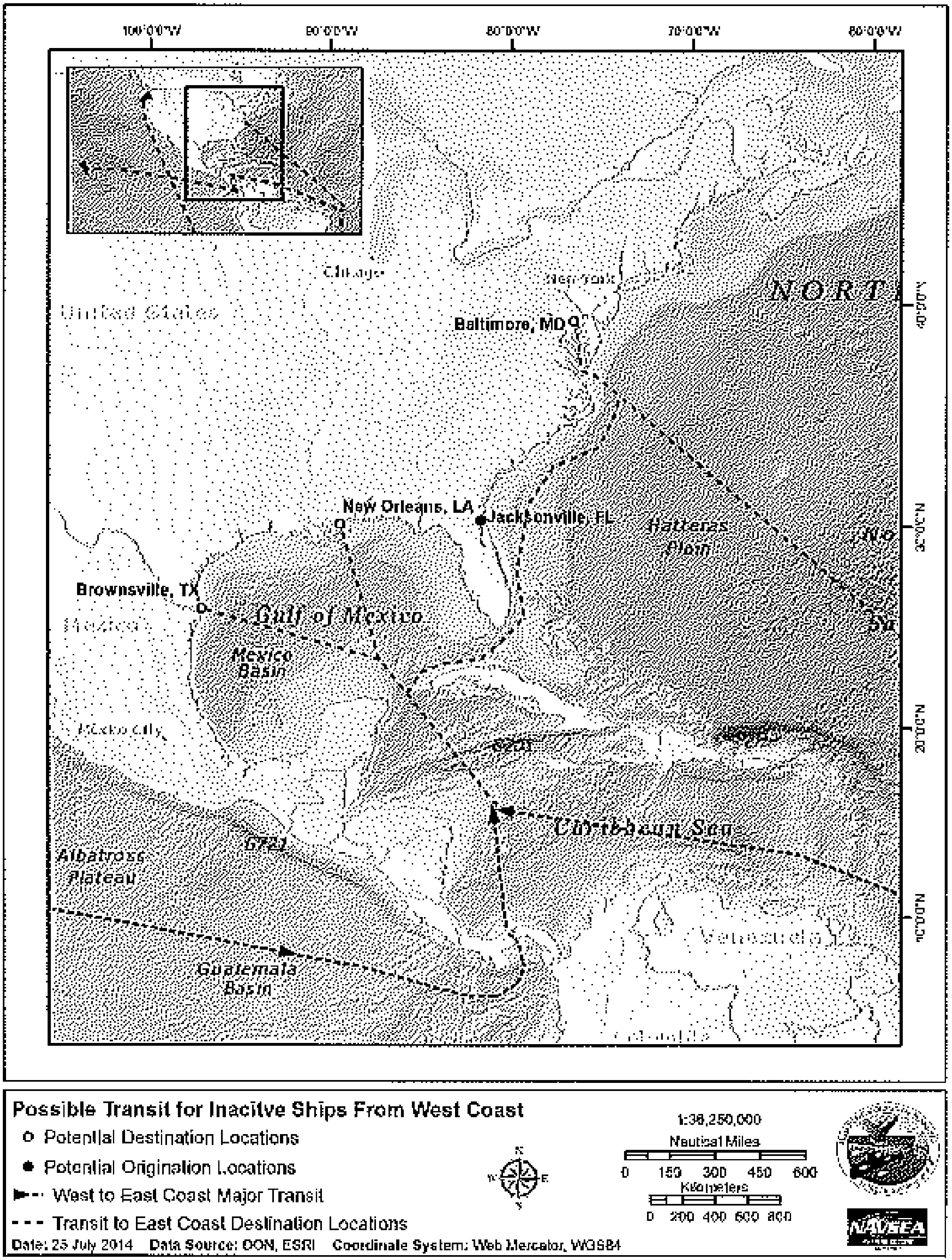

Figure 2. Transit routes to Brownsville, Texas for vessels arriving from Bremerton, Washington. Not all origination and destination ports are part of the action analyzed in this letter.

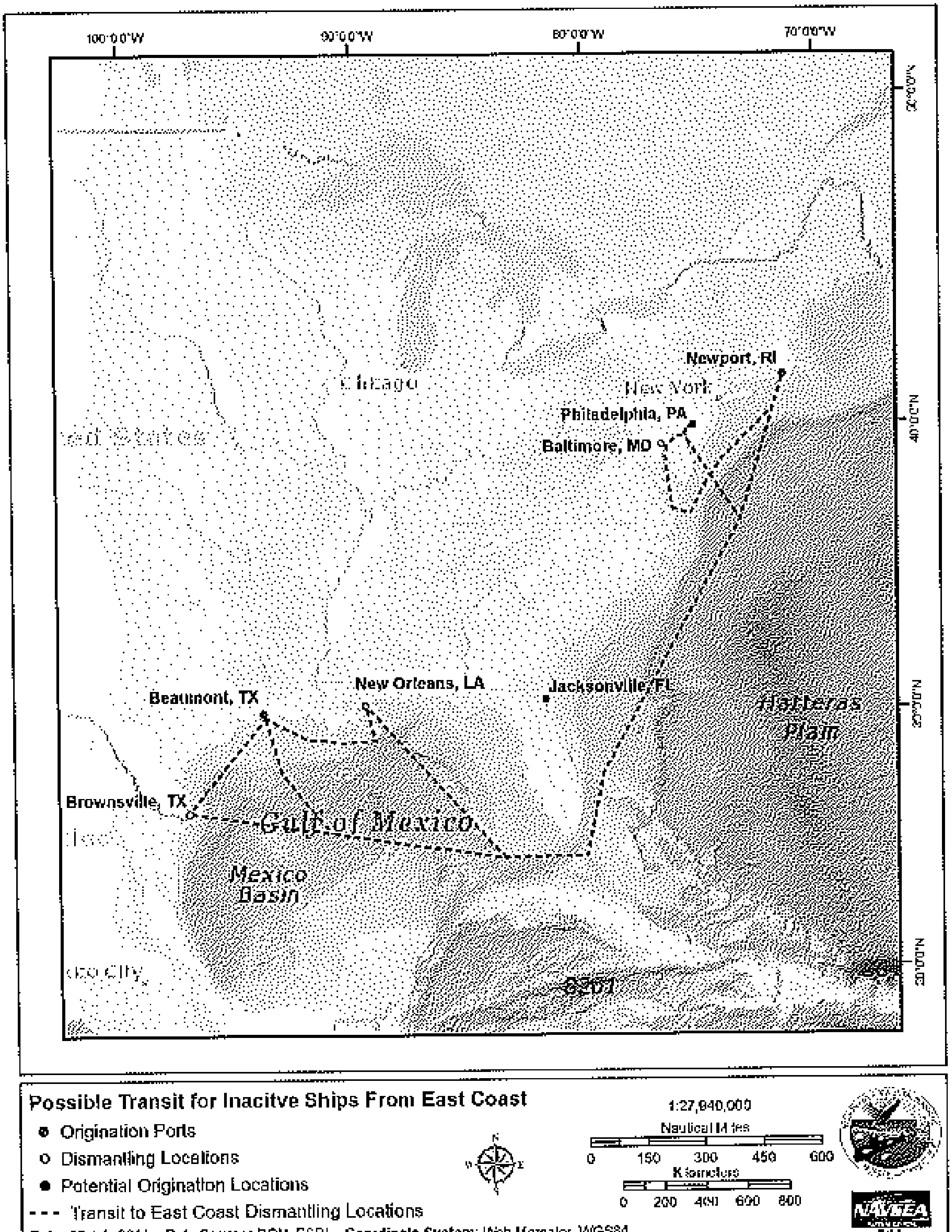

Figure 3. Transit routes from Philadelphia, Pennsylvania to Brownsville, Texas. Not all origination and destination ports are part of the action analyzed in this letter.