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50 CFR Part 226

Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale; Proposed Rule

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 226

[Docket No. 100217099–4774–02]

RIN 0648–AY54

Endangered and Threatened Species; Critical Habitat for Endangered North Atlantic Right Whale

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Proposed rule; request for comments.

SUMMARY: We, the NMFS, propose to replace the critical habitat for right whales in the North Atlantic with two new areas. The areas under consideration as critical habitat contain approximately 29,945 nm^2 of marine habitat in the Gulf of Maine and Georges Bank region (Unit 1) and off the Southeast U.S. coast (Unit 2). We have considered positive and negative economic, national security, and other relevant impacts of the proposed critical habitat. We do not propose to exclude any particular area from the proposed critical habitat.

We are soliciting comments from the public on all aspects of the proposal, including our identification and consideration of impacts of the proposed action. A draft Biological Source Document provides the basis for our identification of the physical and biological features essential to the conservation of the species that may require special management considerations or protection. A draft report was also prepared pursuant to section 4(b)(2) of the Endangered Species Act (ESA) in support of this proposal. Both supporting documents are available for public review and comment.

DATES: Comments on this proposal must be received by April 21, 2015.

ADDRESSES: You may submit comments, identified by the NOAA–NMFS–2014–0085, by any of the following methods:

• *Electronic Submissions:* Submit all electronic public comments via the Federal eRulemaking Portal. Go to *www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2014-0085* click the ''Comment Now'' icon, complete the required fields, and enter or attach your comments.

• *Mail:* Assistant Regional Administrator, Protected Resources Division, NMFS, Greater Atlantic Regional Office, 55 Great Republic Drive, Gloucester, MA 01930.

Instructions: You must submit comments by one of the above methods to ensure that we receive, document, and consider them. Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered. All comments received are a part of the public record and will generally be posted to *http://www.regulations.gov* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

NMFS will accept anonymous comments (enter ''N/A'' in the required fields if you wish to remain anonymous).

FOR FURTHER INFORMATION CONTACT: Mark Minton, NMFS, Greater Atlantic Regional Fisheries Office (GARFO), 978–282–8484, *Mark.Minton@noaa.gov;* Barb Zoodsma, NMFS, Southeast Regional Office, 904–415–3960, *Barb.Zoodsma@noaa.gov;* Lisa Manning, NMFS, Office of Protected Resources, 301–427–8466, *Lisa.Manning@noaa.gov.*

SUPPLEMENTARY INFORMATION:

The Draft Biological Source Document (NMFS 2014a) and Draft ESA Section 4(b)(2) Report (NMFS 2014b) prepared in support of this proposal for critical habitat for the North Atlantic right whale are available on our Web site at *www.greateratlantic.fisheries.noaa.gov,* on the Federal eRulemaking Web site at *http://www.regulations.gov,* or upon request (see **ADDRESSES**).

Background

In 1970, right whales, *Eubalaena* spp. were listed as endangered (35 FR 18319; December 2, 1970). At that time, we considered the northern right whale species (*Eubalaena glacialis*) to consist of two populations; one occurring in the North Atlantic Ocean and the other in the North Pacific Ocean. In 1994, we designated critical habitat for the northern right whale population in the North Atlantic Ocean (59 FR 28805; June 3, 1994). This critical habitat designation includes portions of Cape Cod Bay and Stellwagen Bank, the Great South Channel (each off the coast of Massachusetts), and waters adjacent to the coasts of Georgia and the east coast of Florida. These areas were determined to provide critical feeding, nursery, and calving habitat for the North Atlantic population of northern right whales. This critical habitat was revised in 2006 to include two foraging areas in the North Pacific Ocean—one in the Bering Sea and one in the Gulf of Alaska (71 FR 38277; July 6, 2006).

In 2006, we published a comprehensive right whale status review, which concluded that recent genetic data provided unequivocal support to distinguish three right whale lineages as separate phylogenetic species (Rosenbaum *et al.* 2000): (1) The North Atlantic right whale (*Eubalaena glacialis*) ranging in the North Atlantic Ocean; (2) The North Pacific right whale (*Eubalaena japonica*), ranging in the North Pacific Ocean; and (3) The southern right whale (*Eubalaena australis*), historically ranging throughout the southern hemisphere's oceans. Based on these findings, we published proposed and final determinations listing right whales in the North Atlantic, North Pacific, and southern hemisphere as separate endangered species under the ESA (71 FR 77704, December 27, 2006; 73 FR 12024, March 6, 2008). In April 2008, a final critical habitat designation was published for the North Pacific right whale (73 FR 19000, April 8, 2008).

On October 1, 2009, NMFS received a petition to revise the 1994 critical habitat designation for right whales in the North Atlantic. In response, pursuant to section 4(b)(3)(D), NMFS published a combined 90-day finding and 12-month determination on October 6, 2010, that the petition presented substantial scientific information indicating that the requested revision may be warranted, and that we intended to issue a proposed rule to revise critical habitat for the North Atlantic right whale (75 FR 61690). As noted in that finding, the biological basis and analysis for the 1994 critical habitat designation were based on the North Atlantic population of right whales, and we consider that designation to continue to apply to North Atlantic right whales after they were subsequently listed as a separate species in 2008. At this time, NMFS is proposing to replace the 1994 critical habitat designation for the population of right whales in the North Atlantic Ocean with two new areas of critical habitat for the North Atlantic right whale.

North Atlantic Right Whale Natural History and Status

The following discussion of the life history and reproductive biology and population status of North Atlantic right whales is based on the best scientific data available, including the North Atlantic right whale Status Review Report (NMFS 2006) and the Draft

Biological Source Document (NMFS 2014a).

The North Atlantic right whale (*Eubalaena glacialis*) is a member of the family *Balaenidae* and is closely related to the right whale species that inhabit the North Pacific Ocean (*Eubalaena japonica)* and the Southern hemisphere (*Eubalaena australis*). Right whales are large baleen whales that grow to lengths and weights exceeding 15 meters and 70 tons, respectively. Females are typically larger than males. The distinguishing features of right whales include a stocky body, generally black coloration (although some individuals have white patches on their undersides), lack of a dorsal fin, large head (about ¼ of the body length), strongly bowed margin of the lower lip, and hard white patches of callosities on the head region. Two rows of long (up to approximately eight feet in length) baleen plates hang from the upper jaw with approximately 225 plates on each side. The tail is broad, deeply notched, and all black with smooth trailing edge. Right whales attain sexual maturity at an average age of 8–10 years, and females produce a single calf at intervals of 3 to 5 years (Kraus *et al.* 2001). Their life expectancy is unclear, but individuals have been known to reach 70 years of age (Hamilton *et al.* 1998a, Kenney 2002).

Historically, right whale species occurred in all the world's oceans from temperate to subpolar latitudes. They primarily occur in coastal or shelf waters, although movements over deep waters are known to occur. Right whales are generally migratory, with at least a portion of the population moving between summer feeding grounds in temperate or high latitudes and winter calving areas in warmer waters, though during winter the whereabouts of a portion of the population remain unknown (Waring *et al.* 2013). Right whale populations were severely depleted by historic commercial whaling.

The distribution of North Atlantic right whales in the western North Atlantic Ocean ranges primarily from calving grounds in coastal waters of the southeastern United States to feeding grounds in New England waters and the Canadian Bay of Fundy, Scotian Shelf, and Gulf of St. Lawrence. The minimum number of right whales in the western North Atlantic Ocean is estimated to be at least 444 individuals, based on a census of individual whales identified using photo-identification techniques (Waring *et al.* 2013). Due to the past depletion from which they have not recovered, the continued anthropogenic threats to the species, and the whale's life history, the North Atlantic right whale is in danger of extinction throughout its range.

Waring *et al.* (2013) examined the minimum number alive population index calculated from the individual sightings database, as it existed on 21 October 2011, for the years 1990–2009, and found the data suggest a positive and slowly accelerating trend in population size. These data reveal a significant positive trend in the number of catalogued whales alive during this period, but with significant interannual variation due to apparent losses exceeding gains during 1998–1999. These data reveal a significant increase in the number of catalogued whales with a geometric mean growth rate for the period of 2.6% (Waring *et al.* 2013).

Critical Habitat Identification and Designation

Critical habitat is defined by section 3 of the ESA as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. This definition provides a step-wise approach to identifying areas that may be designated as critical habitat for North Atlantic right whales.

Geographical Areas Occupied by the Species

''Geographical areas occupied'' in the definition of critical habitat is interpreted to mean the entire range of the species at the time it was listed, inclusive of all areas they use and move through seasonally (45 FR 13011; February 27, 1980). Prior to extensive exploitation, the North Atlantic right whale was found distributed in temperate, subarctic, coastal and continental shelf waters throughout the North Atlantic Ocean rim (Perry *et al.* 1999). Considerable sightings data exist documenting use of areas in the western North Atlantic Ocean where right whales presently occur. The current known distribution of North Atlantic right whales is largely limited to the western North Atlantic Ocean. In the western North Atlantic, right whales migrate along the North American coast between areas as far south as Florida, and northward to the Gulf of Maine, the Bay of Fundy, the Gulf of St. Lawrence and the Scotian shelf, extending to the waters of Greenland and Iceland (Waring *et al.* 2011).

Right whales have also been rarely observed in the Gulf of Mexico. The few published sightings (Moore and Clark 1963, Schmidly and Melcher 1974, Ward-Geiger *et al.* 2011) represent either geographic anomalies or a more extensive historic range beyond the sole known calving and wintering ground in the waters of the southeastern United States (Waring *et al.* 2009). Therefore, the Gulf of Mexico is not considered part of the geographical area occupied by the species ''at the time it was listed.''

Our regulations at 50 CFR 424.12(h) state: ''Critical habitat shall not be designated within foreign countries or in other areas outside of United States jurisdiction.'' Although North Atlantic right whales have been sighted in coastal waters of Canada, Greenland, Iceland, and Norway, these areas cannot be considered for designation. The geographical area occupied by listed North Atlantic right whales that is within the jurisdiction of the United States is therefore limited to waters off the U.S. east coast between Maine and Florida, seaward to the boundary of the U.S. Exclusive Economic Zone.

Physical or Biological Features Essential for Conservation

As noted previously, NMFS produced a Draft Biological Source Document (NMFS 2014a) that discusses our application of the ESA's definition of critical habitat for right whales in detail. The following discussion is derived from that document.

Within the geographical area occupied, critical habitat consists of specific areas on which are found those physical or biological features essential to the conservation of the species (hereafter also referred to as ''essential features'') and that may require special management considerations or protection. Section 3 of the ESA (16 U.S.C. 1532(3)) defines the terms ''conserve,'' ''conserving,'' and ''conservation'' in part to mean: ''To use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.'' Further, our regulations at 50 CFR 424.12(b) for designating critical habitat state that physical and biological features that are essential to the conservation of a given species and that may require special management considerations or protection may include: (1) Space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and generally, (5) habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

For right whales, the 2005 Recovery Plan defines conservation as the use of all methods and procedures necessary to bring right whales to the point at which factors related to population ecology and vital rates indicate that the population may be: (1) Downlisted to threatened, and; (2) ultimately, delisted because it is no longer in danger of extinction throughout all or a significant portion of its range. Important factors related to right whale population ecology and vital rates include population size and trend, range, distribution, age structure, gender ratios, age-specific survival, age-specific reproduction, and lifetime reproductive success.

The 2005 Recovery Plan identifies five major objectives designed to increase population size and vital rates so that North Atlantic right whales may be reclassified to threatened. These objectives include significantly reducing sources of human-caused death, injury and disturbance; developing demographically-based recovery criteria; identifying, characterizing, protecting and monitoring important habitats; monitoring the status and trends of abundance and distribution of the species; and coordinating federal, state, local, international and private efforts to implement the Recovery Plan.

Based on the Recovery Plan's reclassification objectives and criteria for North Atlantic right whales, NMFS has identified four biological behaviors that are critical to the overarching recovery objectives of increased survival and population growth: (1) Feeding, (2) calving, (3) migration and (4) breeding. In the following section, we evaluate whether there are physical and biological features of the habitat areas known to be used for these behaviors that are essential to the species' conservation because they facilitate or are intimately tied to the behaviors. Because these behaviors are essential to the species' conservation, facilitating or protecting each one is considered a key conservation objective for any critical habitat designation for this species.

The Physical and Biological Features of Foraging Habitat That Are Essential to the Conservation of the Species

North Atlantic right whales are filter feeders whose prey consists exclusively of zooplankton, notably the copepod *Calanus finmarchicus.* Right whales forage by filtering large volumes of seawater through open mouths, trapping zooplanktonic organisms on the dense filamentous mat fringing the inner surface of their baleen (Mayo and Marx 1990). Foraging takes place at the surface or at depth depending on the habitat type and where in the water column the prey source aggregates (Mayo and Marx 1990, Baumgartner *et al.* 2003a).

Oceanic waters off New England and Nova Scotia are the primary feeding habitat for right whales during the late winter, spring, summer, and fall. Variation in the abundance and development of suitable food patches appears to modify the general patterns of right whale movement by reducing peak numbers, stay durations, and specific locales (Brown *et al.* 2001, Kenny *et al.* 2001). In particular, large changes in the typical pattern of food abundance can dramatically change the general pattern of right whale habitat use (Kenny *et al.* 2001, Baumgartner 2001). In New England, peak abundance of feeding right whales occurs in Cape Cod Bay beginning in late winter. In early spring (May), peak right whale abundance occurs in Wilkinson Basin to the Great South Channel (Kenney *et al.* 1995). In late June and July, right whale distribution gradually shifts to the Northern Edge of Georges Bank. In late summer (August) and fall, much of the population is found in waters in the Bay of Fundy and around Roseway Basin (Winn *et al.* 1986, Kenny *et al.* 1995, Kenny *et al.* 2001).

A right whale's mass is approximately 10 orders of magnitude larger than that of its prey, and the right whale's life history and reproductive strategies create very high energetic demands. Right whales are very specialized and restricted in their feeding requirements. They must locate and exploit feeding areas where copepods are concentrated into high-density patches. Efficient feeding on prey with high nutritional value is essential to the conservation of the North Atlantic right whale. Efficient feeding is not only important to meet the day-to-day caloric needs of individual right whales, but is important to achieve the overall goal of conservation because of the potential correlation between the abundance and caloric richness of copepods and the calving rates for right whales. Therefore, we conclude that facilitating successful feeding by protecting the physical and biological features that characterize feeding habitat is a key conservation objective that could be supported by designation of critical habitat for the species.

The features of right whale foraging habitat that are essential to the conservation of the North Atlantic right whale are a combination of the following biological and physical oceanographic features:

(1) The physical oceanographic conditions and structures of the Gulf of Maine and Georges Bank region that combine to distribute and aggregate *C. finmarchicus* for right whale foraging, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients, and temperature regimes;

(2) Low flow velocities in Jordan, Wilkinson, and Georges Basins that allow diapausing *C. finmarchicus* to aggregate passively below the convective layer so that the copepods are retained in the basins;

(3) Late stage *C. finmarchicus* in dense aggregations in the Gulf of Maine and Georges Bank region; and

(4) Diapausing *C. finmarchicus* in aggregations in the Gulf of Maine and Georges Bank region.

1. Physical Oceanographic Features Characteristic of Right Whale Foraging Habitat

Within the Gulf of Maine, right whale foraging activities are concentrated in areas where physical oceanographic conditions and structures, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients, and temperature regimes operate to concentrate copepods (Wishner *et al.* 1988, Mayo and Marx 1990, Murison and Gaskin 1989, Baumgartner *et al.* 2003a, Jiang, *et al* 2007, Pace and Merrick 2008). The bathymetry of the central Gulf of Maine is dominated by three large, deep basins: Jordan and Georges Basins to the northeast and east, respectively, and Wilkinson Basin in the southwest. The Jordan, Wilkinson, and Georges deep water basins serve as refugia habitat for the essential feature of diapausing copepods (Davis 1987, Meise and O'Reiley 1996, Lynch *et al.* 1998, Johnson *et al.* 2006). The oceanographic features of the Gulf of Maine are very dynamic, with strong currents, sharp frontal gradients, and high mixing rates. Additionally, the Gulf of Maine has a complex and highly variable circulation regime due to varying inflow of Atlantic

Ocean water, interactions between the eastern and western Maine coastal currents, freshwater inflow and temperature fluctuation. Water circulation within the Gulf is strongly influenced by its topography, with counterclockwise flow over Georges, Jordan, and Wilkinson Basins and clockwise circulation over Georges and Brown Banks and Nantucket Shoals (Smith 1989, Brown and Irish 1992, Bisgani and Pettigrew 1994). These physical features have a large effect on the distribution, abundance, and population dynamics of zooplankton populations including *C. finmarchicus* within the Gulf (Durbin 1997).

Major Gulf of Maine and Georges Bank oceanographic features include the Maine Coastal Current (MCC), Georges Bank anti-cyclonic frontal circulation system, the basin-scale cyclonic gyres (Jordan, Georges and Wilkinson), the deep inflow through the Northeast Channel, the shallow outflow via the Great South Channel and the shelf-slope front (Gangopadhyay *et al.* 2003, Pace and Merrick 2008). These features create the conditions that disperse, concentrate and retain copepods within the Gulf of Maine. The prevailing oceanographic features and conditions also create low energy environments within several of the deep ocean basins located within the Gulf of Maine.

Water from the Northwest Atlantic Ocean enters the Gulf of Maine over the Scotian Shelf and through the deep Northeast Channel, where it forms a general counterclockwise circulation pattern. These slope waters entering the Gulf of Maine from the Scotian Shelf are believed to transport considerable numbers of developing copepodites originating from both the Gulf of St. Lawrence and the Scotian Shelf (Plourde and Runge 1993, Greene and Pershing 2000, Conversi *et al.* 2001, Pace and Merrick 2008). Within the Gulf of Maine several smaller scale circulation patterns form over oceanographic features, including some of the deep water basins. Some of this water exits the Gulf of Maine through the Great South Channel, while some continues to the northwest where it flows onto Georges Bank in a clockwise circulation gyre (Chen *et al.* 1995, Durbin 1997).

Due to the strong influence of the Labrador Current, the water of the Gulf of Maine is significantly colder and more nutrient-rich than waters to the south. This relatively fresh, cold water flows to the northeast around the southern end of Nova Scotia, across the mouth of the Bay of Fundy and then flows southward. This water helps drive the Maine Coastal Current (Brooks 1985, Durbin 1997). The cold water inflow from the Nova Scotian Shelf and the Northeast Channel helps drive the primarily counterclockwise circulation of the Gulf, propelling the Maine Coastal Current in a southwesterly direction (Brooks 1985, Durbin 1997). The Maine Coastal Current has two major components, the Eastern Maine Coastal Current off Maine's east coast and the Western Maine Coastal Current off the coasts of western Maine, New Hampshire and Massachusetts. These currents are influenced by fluctuations in river outflow, often enhanced during spring runoff. Lower salinity surface water from spring runoff carried into this region by the Maine Coastal Current can cause strong stratification and increase the rate of horizontal transport, therefore having an impact on the abundance, distribution and population dynamics of *C. finmarchicus* in the Gulf of Maine (Durbin 1997).

The Gulf of Maine's circulation pattern is principally density driven largely because of seasonal temperature changes and salinity gradients. During spring and summer months, water within the Gulf warms, resulting in buoyant, less dense water that expands, setting up a westerly flowing coastal current. The seasonal warming pattern of waters within the Gulf of Maine also results in enhanced stratification of the water column. Warmer, less dense surface water is separated from the colder, more saline dense waters that persist at greater depth throughout the year. The currents in the Gulf of Maine are also strongly influenced by density gradients between high-salinity slope water entering from the Atlantic and fresher waters, which form in the Gulf of Maine or enter from the Scotian Shelf (Brooks 1985). Within the Gulf of Maine, the freshwater inflow from numerous rivers (*e.g.,* the St. John, Penobscot, Kennebec, Androscoggin, and Merrimac Rivers) within the Gulf of Maine watershed contributes to the density driven circulation pattern (Brooks 1985, Xue *et al.* 2000).

There is a distinct seasonal pattern associated with prevailing circulation patterns within the Gulf of Maine. During spring and summer, the surface circulation pattern in the Gulf of Maine is characterized by a predominantly cyclonic (*i.e.,* counterclockwise) circulation pattern with cyclonic and anti-cyclonic (clockwise) gyres over the three main basins and banks. As surface water cools during the fall months, it becomes denser and sinks, mixing with stratified water below and breaking down the stratification of the water column. As the stratification weakens, the counterclockwise circulation pattern within the Gulf of Maine slows until, by late winter, it is no longer evident (Xue *et al.* 2000).

In Cape Cod Bay, the general water flow is counter-clockwise, running from the Gulf of Maine south into the western half of Cape Cod Bay, over to eastern Cape Cod Bay, and back into the Gulf of Maine through the channel between the north end of Cape Cod and the southeast end of Stellwagen Bank, a submarine bank that lies just north of Cape Cod. Similar to the Maine Coastal Current, flow within the bay is driven by density gradients caused by freshwater river run-off from the Gulf of Maine and by a predominantly westerly wind (Franks and Anderson 1992a, 1992b, Geyer *et al.* 1992). Thermal stratification occurs in the bay during the summer months. Surface water temperatures typically range from 0 to 19 °C throughout the year. The circulation pattern in Cape Cod Bay allows for the entrainment of *C. finmarchicus* produced elsewhere.

The Great South Channel becomes thermally stratified during the spring and summer months. Surface waters typically range from 3 to 17 °C between winter and summer. Salinity is stable throughout the year at approximately 32–33 parts per thousand (Hopkins and Garfield 1979). In late-winter/early spring, mixing of warmer shelf waters with the cold Gulf of Maine water funneled through the channel causes a dramatic increase in faunal productivity in the Great South Channel. *C. finmarchicus* are concentrated north of the 100 m isobath at the northern end of the Great South Channel (Wishner *et al.* 1995, Durbin *et al.* 1997, Kenney 2001).

Baumgartner *et al.* (2007) note that several studies have suggested ocean fronts, areas that demarcate the convergence of different water masses, as a possible mechanism for concentrating the copepod, *C. finmarchicus* at densities suitable to support right whale foraging requirements. However, the available information is somewhat contradictory, with some studies finding associations between right whale foraging and oceanic fronts and others finding no evidence of associations (Wishner *et al.* 1995, Beardsley *et al.* 1996, Epstein and Beardsley 2001, Baumgartner el al. 2007). Given the evidence that in some cases oceanic fronts are contributing factors to concentrating copepods and their role is uncertain in other cases, we are identifying oceanic fronts as one of the combination of physical oceanographic features that are essential to right whale conservation. In combination, these features and mechanisms have been linked to increased copepod densities (Baumgartner *et al.* 2007). Therefore, we identified the following as a physical feature of North Atlantic right whale feeding habitat essential to its conservation: The physical oceanographic conditions and structures of the Gulf of Maine and Georges Bank region that combine to distribute and aggregate *C. finmarchicus* for right whale foraging, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients and temperature regimes.

In addition to the combination of physical oceanographic conditions and structures identified previously, the hydrographic conditions of the deep ocean basins are important because they are conducive to low flow velocities. Within the low velocity environments of the deep ocean basins, the neutrally buoyant diapausing copepods passively aggregate below the convective mixed layer (Lynch *et al.* 1998, Visser and Jónasdóttir 1999, Baumgartner *et al.* 2003a, Pace and Merrick 2008). The ability of copepods within the deep basins in the Gulf of Maine to repopulate the Gulf of Maine is dependent on how well they are retained within the basins during this period of dormancy. Researchers have developed models that predict that the deep basins in the Gulf of Maine are sources of copepods for other areas within the Gulf of Maine (Lynch *et al.* 1998, Johnson *et al.* 2006). These modeling results support the existence of deep resting *C. finmarchicus* populations present in these basins and help to explain their age distribution and abundance in the rest of the Gulf of Maine (Lynch *et al.* 1998, Johnson *et al.* 2006).

Johnson *et al.* (2006) concluded that ''surface waters of the Gulf of Maine both supply the deep Gulf of Maine with *C. finmarchicus* and in turn are supplied with *C. finmarchicus* from deep water.'' Modeling has suggested that endogenous *C. finmarchicus* (*i.e.* offspring of copepods that emerged locally) can re-stock Wilkinson Basin in the western Gulf of Maine, while self-stocking is minimal in Jordan and Georges Basins (Miller *et al.* 1998). Jordan and Georges Basins are restocked by external sources of copepods entering in surface Scotian Shelf and continental slope waters or in the 230-m deep Northeast Channel (Johnson *et al.* 2006). These copepods subsequently enter dormancy in these deep water basins (Lynch *et al.,* 1998, Johnson 2006).

Johnson *et al.* (2006) also examined the influence of environmental forcing and copepod behavior on transport and retention of dormant *C. finmarchicus* in the deep Gulf of Maine. Based on model simulations, they concluded that both transport and retention of *C. finmarchicus* within the Gulf of Maine was high. The copepod transport and retention simulations demonstrate transport of copepods from the eastern Gulf of Maine into the western Gulf of Maine, as well as the recruitment of copepods from slope and Scotian Shelf waters into the eastern Gulf of Maine (Johnson *et al.* 2006). The researchers concluded that while a high proportion of dormant copepods are retained in the Gulf of Maine as a whole, transport within the Gulf of Maine was significant during the summer and fall, and loss from individual basin regions can be high (Johnson *et al.* 2006). Simulation results suggest the Wilkinson Basin region is the most retentive of the three major basins and receives copepods transported from Jordan and Georges Basins.

As noted earlier, Jordan and Georges Basins are themselves recipients of copepods from upstream sources in the Northeast Channel, continental slope water, and Scotian Shelf (Johnson *et al.* 2006). Simulations of population dynamics of *C. finmarchicus* in the Gulf of Maine indicate that the deep basins of the Gulf (*i.e.,* Wilkinson, Jordan and Georges Basins) are capable of supplying copepods to Georges Bank at the onset of the growing season (Lynch *et al.* 1998). Lynch *et al.* (1998) conclude that Jordan and Wilkinson Basins provide habitat for resting stocks of *C. finmarchicus* and that Georges Basin may also serve this function.

Miller *et al.* (1998) provides an individual-based population model of *C. finmarchicus* for the Georges Bank region demonstrating the importance of Georges Basin, as well as Wilkinson and Jordan Basins, as sources of *C. finmarchicus* to Georges Bank. As for specific zones within the Gulf of Maine, Miller *et al.* (1998) point to the Marine Resources Monitoring, Assessment, and Prediction (MARMAP) samples that support Jordan and Wilkinson Basins as sources, and suggest that Georges Basin may also be a contributor. The role of Georges Basin has been debated due to the considerable water movement and relative connection between Georges Basin and the shelf edge (Lynch *et al.* 1998, Pace and Merrick 2008). Recent simulation models combining plankton sampling results of the last two decades and earlier, robust circulation models of the Gulf of Maine, and life history dynamics of *C. finmarchicus* corroborate earlier conclusions about the importance of the Jordan, Wilkinson, and Georges Basins, in addition to the Scotian shelf and its sources, as a copepod source for the Gulf of Maine ecosystem. Li *et al.* (2006) suggest that copepod sources within the Gulf of Maine are sufficient to account for the early *C. finmarchicus* population of Georges Bank, with an increased importance of advected sources later in the year. Models by Lynch *et al.* (1998) support all three deep basins (Jordan, Wilkinson and Georges) as contributors of *C. finmarchicus* to Georges Bank and the Great South Channel. The simulation models of Johnson *et al.* (2006) support the importance of Jordan and Wilkinson Basins in the population dynamics of *C. finmarchicus* within the Gulf of Maine.

Given that low velocity environments are important for aggregating dormant copepods, and given that the best available data indicate that the ability of the Jordan, Wilkinson, and Georges Basins to retain dormant copepods is high, we conclude another physical feature of North Atlantic right whale foraging habitat essential to its conservation is: Low flow velocities in Jordan, Wilkinson, and Georges Basins that allow diapausing *C. finmarchicus* to aggregate passively below the convective layer so that the copepods are retained in the basins.

2. Biological Features Characteristic of Right Whale Foraging Habitat

The biological features of foraging habitat that are essential to the conservation of the North Atlantic right whale are: (1) Late stage *C. finmarchicus* in dense aggregations in the Gulf of Maine and Georges Bank region; and (2) Diapausing *C. finmarchicus* in aggregations in Jordan, Wilkinson, and Georges Basins.

For much of the year, the distribution of the North Atlantic right whale is strongly correlated to the distribution of their prey. Right whale distribution in the Gulf of Maine is largely controlled by zooplankton distribution (Mayo *et al.* 2004, Singer and Ludwig 2005). As discussed in the Biological Source Document (NMFS 2014a), North Atlantic right whales prey primarily on zooplankton, specifically the later juvenile stages (copepodites) of a species of copepod, *C. finmarchicus* (Baumgartner *et al.* 2007). Kenney *et al.* (1986) estimated the minimum caloric intake required by a right whale, using standard mammalian metabolic models. Not only must right whales meet their basal (*i.e.,* resting) metabolic needs but they must obtain an energy surplus in the long-term (Brodie 1975, Sameoto

1983, Kenney *et al.* 1986, Kenney and Wishner 1995). Using estimates of mouth opening area, swimming speed, and daily foraging time, Kenney *et al.*'s (1986) model suggests an average 40 ton right whale's basal energetic requirements range from 7.57 to 2,394 kcal/m^3 or a concentration of 4.67×10^3 to 1.48×10^6/m^3 stage C5 *C. finmarchicus.*

In order to maximize their caloric intake, right whales must target dense layers containing large, energetically rich prey (Wishner *et al.* 1995). The late developmental life stages (stages C4–C5) of the copepod *C. finmarchicus* are generally recognized as the North Atlantic right whale's primary prey (Watkins and Schevill 1976, 1979, Kenney *et al.* 1986, 1995, Wishner *et al.* 1988, 1995, Murison and Gaskin 1989, Mayo and Marx 1990, Beardsley *et al.* 1996, Kenney *et al.* 2001, Baumgartner 2003b). When compared to other copepods, *C. finmarchicus* has a much larger biomass and higher caloric content (Baumgartner *et al.* 2007). Late stage *C. finmarchicus,* especially C5, contain high lipid content and are therefore the most energetically rich zooplankton prey source available to right whales. Baumgartner *et al.* (2003a) found a correlation between right whale diving depths and depth of maximum stage C5 *C. finmarchicus* abundances in Grand Manan Basin in the lower Bay of Fundy. By focusing their foraging efforts on the energetically rich late stage *C. finmarchicus,* right whales are able to maximize their energy intake. If sufficient densities of late stage *C. finmarchicus* become unavailable to feeding right whales, it is uncertain if the remaining developmental stages of *C. finmarchicus* and other prey species (independent of abundance) could provide right whales with the required energetic densities to meet their metabolic and reproductive demands (Kenney *et al.* 1986, Payne *et al.* 1990).

As the principal prey source of right whales, *C. finmarchicus* abundance may play a key role in determining conditions favorable for right whale reproduction (Greene and Pershing 2004) (Kenney *et al.* 2001). Greene *et al.* (2003) linked right whale calving rates to changes in the North Atlantic Oscillation and concurrent changes in the abundance of *C. finmarchicus.* Greene *et al.* (2003) found that major multi-year declines in right whale calving rates have tracked major multi-year declines in *C. finmarchicus* abundance since 1982. Greene *et al.* (2003) also found that calving rates were relatively stable from 1982 to 1992, with a mean rate of 12.4 ± 0.9 (standard error (SE)) calves per year. These researchers note that the stable calving rates were consistent with the relatively high abundance of *C. finmarchicus* observed during the 1980s. From 1993 to 2001, right whale calving rates exhibited two major, multi-year declines, with the mean rate dropping and becoming much more variable at 11.2 ± 2.7 (SE) calves per year. Greene *et al.* (2003) found that these declines coincided with the two precipitous drops in *C. finmarchicus* abundance observed during the early and late 1990s.

In terms of biomass *C. finmarchicus* is the dominant copepod in the Gulf of Maine (Bigelow 1926, Fish and Johnson 1937, Durbin 1996). The annual life cycle of the copepod *C. finmarchicus* includes a relatively complex series of interconnected life stages. Beginning in late spring and early summer (May and June), as seasonal water temperature increases and phytoplankton levels decrease, *C. finmarchicus* C5 undergo a vertical migration to deep waters where they enter a state of dormancy (Bigelow 1927, Davis 1987, Durbin *et al.*1995). Most of the *C. finmarchicus* population can be found in diapause in deep water in the summer and fall (Durbin *et al.* 2000, Baumgartner *et al.* 2003). These dormant, diapausing pre-adult C5 copepodites form dense layers near the bottom of deep basins and continental slope waters. Diapausing *C. finmarchicus* are characterized by their stage of development, deep distribution, large oil sacs on which they rely for energy, and low activity rates (Baumgartner *et al.* 2003a). This behavior may be an adaptive measure for surviving periods of low food availability and/or for reducing predation rates (Davis 1987, Kaartvdet 1996, Dale *et al* 1999, Baumgartner *et al.* 2003a). In late winter, diapausing *C. finmarchicus* emerge from their dormant state and molt to the adult stage, migrating to the phytoplankton rich surface layer (Marshall and Orr 1955, Davis 1987, Baumgartner *et al* 2007). These diapausing copepods serve as one of the primary source populations for the copepods that later form the dense aggregations of late stage *C. finmarchicus* upon which North Atlantic right whales feed.

Given that these dormant, diapausing pre-adult C5 copepodites serve as one of the primary source populations for annual recruitment of the essential feature of late stage *C. finmarchicus* to the waters of the Gulf of Maine and Georges Bank region, and given that the Jordan, Wilkinson, and Georges Basins within the Gulf of Maine support both transport and retention of copepods, another biological feature of North Atlantic right whale feeding habitat essential to its conservation is aggregations of diapausing *C. finmarchicus* in the Jordan, Wilkinson, and Georges Basins.

The Physical and Biological Features of Calving Habitat That Are Essential to the Conservation of the Species

Like most large whales, North Atlantic right whales tend to calve in warm subtropical waters during winter, and migrate to feed in the highly productive cold temperate and subpolar waters in spring and summer (Green and Pershing 2004). The only known calving habitat for North Atlantic right whales occurs along the southeastern U.S. coast (Kraus *et al.* 1986, Knowlton *et al.* 1994, Reeves *et al.* 2001). Recent aerial survey data indicate calving and nursing occur from northeastern Florida and southeastern Georgia as far north as North Carolina (*e.g.,* Good 2008, McClellan *et al.* 2004). Reproductive females, the most valuable portion of this species' population, are sighted in the calving ground off the coast of Florida and Georgia (Fujiwara and Caswell 2001, Garrison 2007, Hamilton *et al.* 2007) and typically arrive during late November and early December after migrating south from feeding grounds in the northeastern United States and Canada. Mothers and newborn calves reside within the southeast through winter and generally depart the calving grounds by the end of March or early April (Reeves *et al.* 2001). Given that the area off the southeastern U.S. is the only known calving ground for North Atlantic right whales, and that the most biologically valuable portion of the species' population is utilizing this habitat, we conclude that facilitating successful calving by protecting the species' calving area is a key conservation objective. Thus, to identify specific areas that may meet the definition of critical habitat, we focused first on specifically defining what constitutes a ''calving'' area for North Atlantic right whales; that is, what are the functions this area provides that promote successful calving and rearing. We then examined these functions and next identified those physical or biological features that are essential to the conservation of the species because they provide calving area functions to the species in these areas.

The physical features of right whale calving habitat that are essential to the conservation of the North Atlantic right whale are: (1) Calm sea surface conditions of Force 4 or less on the Beaufort Wind Scale; (2) Sea surface temperatures from a minimum of 7 °C, and never more than 17 °C; and (3) Water depths of 6 to 28 meters, where these features simultaneously co-occur over contiguous areas of at least 231 km2 of ocean waters during the months of November through April. When these features are available, they are selected by right whale cows and calves in dynamic combinations that are suitable for calving, nursing, and rearing, and which vary, within the ranges specified, depending on factors such as weather and age of the calves.

As discussed in the Biological Source Document (NMFS 2014a), habitat characteristics common to lower latitude calving areas for large whales include warmer water temperatures, lower average wind speeds, less frequent storms, and lower wave heights compared to conditions at higher latitudes (Garrison 2007). These common calving habitat characteristics for large whales likely provide an energy benefit to both lactating mothers and calves. Female baleen whales do not typically feed during movement to, or the residence period in, the calving ground, and endure a significant energetic cost with reproduction (Garrison 2007). Mother whales fast during part of or throughout lactation, and maternal reserves are heavily exploited for milk production (Oftedal 1997, 2000). Fasting in warm water during lactation is likely more efficient than feeding, or even fasting, in colder water where energy reserves must be spent to keep body temperatures up as discussed later. Warm-water may also aid in the conversion of maternal body fat to high-fat milk, hence contributing to rapid calf growth (Oftedal 2000, Whitehead and Mann 2000).

Females in calmer, shallower waters require less energy for surfacing, and thus reserve energy for calving and nursing. Additionally, newborn animals may have increased survival, and/or lower energy expenditure in warmer, calmer, or less predator-infested waters (Brodie 1975, Lockyer 1987, as cited in Whitehead and Mann 2000, Corkeron and Connor 1999). Calves have been reported to have difficulty surfacing to breathe in extremely rough waters (Thomas and Taber 1984). Further, calves are relatively weak swimmers (Thomas and Taber 1984) and are more likely to be separated from their mothers during storm events and in areas with high winds and waves; separation from the mother for even a short time is likely fatal for newborn calves (Garrison 2007).

Although direct data about thermal tolerances in right whales are lacking (Kenney 2007), warmer water temperatures likely provide a thermoregulatory benefit to calving right whales. As homoeothermic (warm-blooded) animals, right whales expend additional energy for thermoregulation when temperatures are either too cold or too hot compared to some thermal optimum. North Atlantic right whales have a mean blubber thickness of 12.2 cm (range 8 to 22 cm) (3 to 8.6 inches), and the blubber of new mothers is thicker than that of females in late lactation or nulliparious females (*i.e.,* females that have not given birth to a calf yet) (Angell 2006). The thick blubber of parturient females may pose a thermal constraint, and it is expected that new mothers will be more sensitive to warm temperatures (*e.g.,* Atlantic Ocean Gulf Stream water) than to colder temperatures, compared to females in late lactation or nulliparious females (Good 2008). Calves are unlikely to face such constraints (Good 2008) because calves do not have a thick blubber layer; blubber from newborn southern right whale calves in South Africa averaged 5 cm (2 inches) in thickness (Reeb *et al.* 2007). Therefore, newborn calves without the thick blubber layer of adults do not have the same thermal tolerance as adult whales (Garrison 2007). Because of the differences in the thermoregulatory needs of mothers (*i.e.,* preferring waters that are not too warm so as to avoid heat stress) and newborns and calves (*i.e.,* preferring waters that are not too cold so as to avoid cold stress), it is likely that pairs of new mothers (*i.e.* blubber rich) and newborns or calves (*i.e.* blubber poor) on a calving ground have relatively narrow combined thermal tolerances (Garrison 2007).

North Atlantic right whales are observed calving off the southeastern U.S. coast, in an area known as the South Atlantic Bight (SAB). The SAB extends roughly from Cape Hatteras, North Carolina, to West Palm Beach, Florida. The SAB continental shelf varies from 40 to 140 km wide, with a shallow bathymetric slope. In the inner shelf, where the water depth is shallow and friction is large, the current responds almost instantaneously to local wind stress; as a result, water moves in the same direction as the wind (Chen 2000). In the middle and outer shelves, where the water is deep and friction is weak, the wind-driven current flows perpendicular to the wind direction (*i.e.,* Ekman spiral pattern). Average winter wind speeds in the region increase when moving farther offshore. With increasing wind speeds comes a corresponding deterioration in sea state conditions: Wave size increases and the sea surface becomes more turbulent.

Winter sea surface temperatures across the SAB range from 8 °C to 25 °C (Good 2008). Gulf Stream waters typically have temperatures greater than 20 °C during winter, and water closer to shore is cooler, ranging between 8 and 17 °C in the southeastern U.S. during winter months (Garrison 2007). Pulses of warm water frequently move shoreward as the result of Gulf Stream meanders, but a steady tongue of colder water persists directly adjacent to shore and out to the continental shelf break in winter (Stegmann and Yoder 1996, Keller *et al.* 2006). These waters are warmer than those in the northern feeding grounds during winter, yet cooler than the waters located farther offshore the southeastern U.S. that are influenced by the warm waters of the Gulf Stream.

Aerial surveys for calving right whales have been conducted in the southeastern U.S. each winter (December–March) since 1992. Survey effort has varied throughout the area with the core calving area being surveyed most consistently (Keller *et al.* 2006). The bias created by this uneven survey effort can be reduced by standardizing mother-calf sightings by level of survey effort on a spatial scale (*i.e.,* effort-corrected sightings or sightings per unit of effort). Based on effort-corrected sightings data, the densest distribution of observed North Atlantic right whale mother-calf pairs is generally between St. Augustine, Florida, and just south of Savannah, Georgia in waters of the inner shelf of the SAB. Garrison (2007) and Keller *et al.* (2012) assessed habitat correlations and spatial patterns in the distribution of right whale mother-calf pairs using sightings data, satellite derived sea surface temperature, bathymetry, modeled average wind data, and several other spatial variables. The modeling results indicate that sea surface temperature and water depth are significant predictors of calving right whale spatial distribution. Wind intensity did not explain the spatial distribution of calving right whales in these two studies (Garrison 2007, Keller *et al.* 2012). Using the significant predictor variables of sea surface temperature and water depth, these studies showed that peak predicted right whale mother-calf pair sighting rates (95th percentile) occur at water temperatures from 13 to 15 °C and water depths from 10 to 20 m. The 95th percentile of predicted rates of right mother-calf pair sightings accounts for only 43.5 percent of all observed right whale mother-calf pair sightings. The 75th percentile of predicted sighting rates, however, accounts for 91 percent of all observed right whale mother-calf pair sightings and occurs at water temperatures between 7 and 17 °C and water depths ranging from 6 to 28 m. Predicted sighting rates decline dramatically at water temperatures greater than 17 °C. As calving season progresses from December through February, the model shows the predicted number of right whale sightings extending farther south, following the seasonal latitudinal progression of favorable water temperatures and the seasonal change in the distribution of observed right whale sightings. In the southern portion of the predicted optimal habitat area, the predicted number of right whale sightings are relatively close to shore, confined by both the narrow shelf and the incursion of warm water temperatures influenced by the Gulf stream close to shore (Garrison 2007, Keller *et al.* 2012).

These results are corroborated by Good's (2008) predictive model of optimal right whale calving habitat, which assesses topological and physical conditions associated with the presence of North Atlantic right whale calves in the SAB. The model was used to evaluate the importance of water depth, sea surface temperature, and sea surface roughness in relation to the distribution of right whale mother-calf pairs over a period of 6 years (2000–2005). The model showed that sightings of right whale mother-calf pairs occurred within a narrow range of physical parameters. Over the course of the winter season (December through March), Good's (2008) model showed that the distribution of female right whales and their calves in the SAB is correlated with water depth, sea surface temperature, and surface roughness, with the importance of each variable differing by month. Sightings of mothers and calves occurred within a mean depth range between 13.8 m and 15.5 m where mean sea surface temperature varied between 14.2 and 17.7 °C and mean surface roughness varied from −24.8 dB to −23.3 dB. Higher backscatter values (*e.g.,* −25 dB) reflect a calmer surface, while lower values (*e.g.* −20 dB) indicate rougher, choppier conditions (Good 2008). Sea surface roughness had the strongest correlation with right whale mother-calf pair distribution early in the calving season (December) when most mother-calf pairs were located in waters calmer than the rest of the study area; preferred values widened as the calving season progressed (February/March) when whales occupied rougher surface waters, especially in March. Further, the habitat used by non-calving whales differed from that used by mother-calf pairs with respect to surface roughness and sea surface temperatures. The highest rates (70 to 76 percent) of right whale mother-calf pair sightings occurred in areas predicted as habitat in both 3 and 4 months out of the calving season, which accounts for approximately 86 percent of all observed right whale mother-calf pair sightings. Good's (2008) modeling results are similar to the modeling results reported by Garrison (2007) and Keller *et al.* (2012), confirming bathymetry and sea surface temperature importance to right whale mother-calf pair distribution on the calving ground. Good's (2008) model also shows that sea surface roughness is a significant predictor of right whale mother-calf pair distribution in the SAB.

Together, the sightings data and predictive modeling results show that mother-calf pairs of North Atlantic right whales are observed and are likely to be observed in relatively shallow waters (10–20 m) within a narrow range of water temperatures (7 to 17 °C) (Keller *et al.* 2012, Good 2008), in relatively calm waters (>23.3 dB), and in close proximity to shore (within 60 km of the coast) (Good 2008). The ranges noted in parentheses represent the 75th percentile of right whale mother-calf pair sightings predicted by Garrison (2007) and Keller *et al.* (2012), which also capture the mean ranges of sea surface temperature, sea surface roughness, and water depth associated with right whale mother-calf pair sightings reported by Good (2008). Garrison's (2007) and Keller *et al.*'s (2012) 75th percentile of predicted sighting rates for calving right whales account for the greatest portion of all observed calving right whales (91 percent) and captures the means reported by Good (2008). Additionally, Good's (2008) rates of right whale mother-calf pair sightings in predicted habitat includes the most consistent habitat features over time and accounts for 86 percent or more of all observed right whale mother-calf pair sightings. Therefore, we conclude Garrison's (2007) and Keller *et al.*'s (2012) 75th percentile and Good's (2008) habitat selected in 3 and 4 months are the most appropriate bases for determining the essential features of right whale calving habitat in the southeastern U.S.

Calving right whales can be observed in waters exhibiting some or all of the features described previously within the specified ranges depending on factors such as the weather (*e.g.,* storms, prevailing winds) and age of the calf (*e.g.,* neonate versus more mature calf). For example, early in the calving season mother-calf pair distribution is most strongly correlated with sea surface roughness (Good 2008). Most mother-calf pairs are located in calm waters at this time, consistent with reports that calves have difficulty surfacing to breathe in extremely rough waters (Thomas and Taber 1984), and separation from the mother for even a short time is likely fatal for newborn calves (Garrison 2007). Therefore, mother-calf pairs are likely to select locations with the calmest sea surface conditions to facilitate the needs of the neonate, which is a weak swimmer and needs to remain close to the mother to feed, and the needs of the mother who is fasting and lactating. If weather conditions are persistently poor (*e.g.,* windy and/or stormy conditions), then it is likely the mother may search for and locate conditions more conducive to the needs of a weak-swimming neonate.

Because sea surface roughness has the strongest correlation to mother-calf pair distribution early in the calving season, areas of calm water in which these mother-calf pairs are located may also contain sea surface temperatures and water depths within the preferred ranges; however, as these two features are relatively less important for calf survival than calm water early in the calving season, areas in which mother-calf pairs are located are more likely to contain sea surface temperatures and water depths at the extremities of the preferred ranges (*e.g.,* 17 °C or upper range of values for sea surface temperatures, and 10 m or lower range of values for water depths). Early in the season, these shallow waters have not cooled to the seasonal minimum, yet still provide the necessary thermal balance for both a fasting, lactating, blubber-rich mother and a hungry, weak, blubber-poor neonate. As the calving season progresses and young calves mature and become stronger swimmers, however, calm waters become relatively less important to calf survival. Mother-calf pairs begin occupying rougher surface waters and the distribution of mother-calf pairs begins correlating more strongly with the preferred ranges of sea surface temperatures and water depths.

It is evident from the distribution patterns of mother-calf pairs throughout the calving season (see Garrison 2007, Keller *et al.* 2012, and Good 2008) that calving North Atlantic right whales are moving throughout the SAB to select optimal combinations of sea surface roughness, sea surface temperatures, and water depths depending on factors such as the weather and the age of the calves. Younger, weaker calves are present earlier in the calving season and Good's (2008) model shows that this is when sea surface roughness had the strongest correlation with right whale mother-calf pair distribution. Therefore, calmer waters are an essential feature for the conservation of the species because they facilitate right whale calf survival. Additionally, the distribution of mother-calf right whale pairs correlates with (1) a narrow sea surface temperature range (7 °C to 17 °C), which provides for the thermal balance needs of both a fasting, lactating, blubber-rich mother and a hungry, weak, blubber-poor neonate; and with (2) a range of water depths (6 to 28 m) that provide for protection from open ocean swell, which increases the likelihood of calf survival. Therefore, waters within these sea surface temperature and depth ranges are essential features for the conservation of the species because they facilitate successful calving, which is essential to the conservation of endangered North Atlantic right whales.

Further illustrated by the modeling results reported by Garrison (2007), Keller *et al.* (2012), and Good (2008) is that the features of sea surface roughness, sea surface temperatures, and water depth are present in the SAB during calving season over large, contiguous areas of ocean waters (at least 231 nm^2), which is the core use area of a mother/calf pair in any given season. As such, mother-calf-pairs can move throughout the SAB to select dynamic, optimal combinations of some or all of these features depending on factors such as the weather and the age of the calves. The ability of mother-calf pairs to move throughout the SAB to use these features also contributes to growth and fitness of young calves. At the end of the calving season, these calves that are only a few months old must be strong enough to complete the lengthy trip back to the northern feeding grounds. It is believed the swimming abilities of young calves is strengthened by mother-calf pairs looping many miles up and down the coast in the calving area (S. Kraus, New England Aquarium, pers. comm. to S. Heberling, NMFS, June 25, 2010). Such transit of mother-calf pairs is evidenced by one tracking study in which a tagged right whale with a young calf covered as much as 30 NM in one 24-hour period (Slay *et al.* 2002) and by annual tracking data of mother-calf pairs (Right Whale Consortium 2010). Therefore, calf survival is facilitated by the presence of the features over large, contiguous areas of the SAB such that mother-calf pairs can move throughout the SAB to select dynamic, optimal combinations of some or all of these features, which are influenced by weather and the age of the calves.

The Physical and Biological Features of Migratory Habitat That Are Essential to the Conservation of the Species

Large-scale migratory movements between feeding habitat in the northeast and calving habitat in the southeast are a necessary component in the life-history of the North Atlantic right whale. A proportion of the population makes this migration annually, and the most valuable life-history stage (calving females) must make this migration for successful reproduction. The subset of the North Atlantic right whale population that has been observed migrating between the northern feeding grounds and southern calving grounds is comprised disproportionately of reproductively mature females, pregnant females, juveniles, and young calves (Ward- Geiger *et al.* 2005; Fujiwara and Caswell 2001; Kraus *et al.* 1986, as cited by Firestone *et al.* 2008). For logistical reasons, survey efforts have also been disproportionally focused in the nearshore area (within 30 nm of shore).

During migratory periods it is difficult to locate and sample marine mammals systematically or to observe them opportunistically, because they surface less frequently and cover large distances in any given day during migration (Hiby and Hammond 1989; Morreale *et al.* 1996; Mate *et al.* 1997; Knowlton *et al.* 2002, as cited by Firestone *et al.* 2008). The space used by right whales during their migrations remains almost entirely unknown (Schick *et al.* 2009). Defining a particular migratory corridor is further complicated by the fact that the available data are largely spatially constrained to nearshore areas (*i.e.,* 30 nm of shore), and consist of opportunistic sightings. Based on the low numbers of whales observed migrating close to shore between foraging and calving habitats, it is apparent that not all right whales migrate within 30 nm of shore. A study by Schick *et al.* (2009), who tracked the movements of two tagged female right whales, also suggests that movement of right whales are much broader and more variable than suggested by results based solely on opportunistic sightings from surveys limited to nearshore areas (see Schick *et al.* (2009)).

Beyond the uncertainty over the location of one or more migratory corridors, we cannot currently identify any specific physical or biological features that define migratory habitat.

Therefore, we have concluded that it is not currently possible to define critical habitat associated with right whale migratory behaviors. The draft Biological Source Document (NMFS 2014a) contains a thorough discussion of the available data we considered in our analysis.

The Physical and Biological Features of Breeding Habitat That Are Essential to the Conservation of the Species

We have concluded that it is not possible to identify essential physical or biological features related to breeding habitat, primarily because we cannot identify areas where breeding occurs. Right whales are known to aggregate in large groups called Surface Active Groups (SAGs). While indicative of courtship and reproductive behavior, not all SAGs are reproductive in nature (Kraus *et al.* 2007). SAGs are observed year round, both in the northeast feeding areas as well as in the southeast calving grounds. SAGS are usually observed opportunistically during directed survey efforts as well as other random sightings.

Between 2002 and 2008, aerial surveys identified half the North Atlantic population in the central Gulf of Maine between November and January (Cole *et al.* 2013). Right whale presence in the central Gulf of Maine during the estimated conception period strongly suggests that this region is a mating ground for the species. However, there has not been any systematic evaluation of the particular physical or biological features that facilitate or are necessary for breeding and reproduction to occur. Therefore, it is also not possible to identify physical or biological features related to breeding and reproduction that are essential to the conservation of the species.

Specific Areas Within the Geographical Area Occupied by the Species

The definition of critical habitat further instructs us to identify specific areas on which are found the physical or biological features essential to the species' conservation. Our regulations state that critical habitat will be defined by specific limits using reference points and lines on standard topographic maps of the area, and referencing each area by the State, county, or other local governmental unit in which it is located (50 CFR 424.12(c)). Our regulations also state that when several habitats, each satisfying requirements for designation as critical habitat, are located in proximity to one another, an inclusive area may be designated as critical habitat (50 CFR 424.12(d)). We identified two ''specific areas'' within the geographical area occupied by the species, at the time of listing, that contain the essential features for right whale foraging and calving habitat. The following paragraphs describe the methods we used to determine the boundaries for each specific area.

(1) Specific Areas on Which Are Found the Physical and Biological Features of Foraging Habitat (Unit 1)

All of the identified essential features are present within Unit 1 (Figure 1). The physical oceanographic conditions, late stage *C. finmarchicus* aggregations, and aggregations of diapausing *C. finmarchicus* that have been identified as essential features are dynamically distributed throughout this specific area. The specific area includes the large embayments of Cape Cod Bay and Massachusetts Bay and deep underwater basins. The area incorporates state waters from Maine through Massachusetts as well as federal waters, but does not include inshore areas, bays, harbors, and inlets.

While *C. finmarchicus* are found throughout the Gulf of Maine, some regions within the Gulf of Maine show more seasonal variation in abundance and age group distribution than others. Based on 10 years of data collected through the MARMAP program, Meise and O'Reilly (1996) found the total *C. finmarchicus* abundance peaked in early spring (March–April) on the Mixed Georges Bank, Tidal Front Georges Bank and Mass Bay, and in late summer (July–August) in the Northern Gulf of Maine and Scotian-Coastal Gulf of Maine. *C. finmarchicus* abundance peaked in the remaining areas of the Gulf of Maine during May through June. A sharp decrease in overall copepod abundance was found by Meise and O'Reilly (1996) in the months of July through October. During this time period, copepod abundance decreased in all areas except for waters 50–300 m located over Jordan and Wilkinson Basins in the Gulf of Maine and the 200–500 m slope water seaward of Georges Bank. In these areas, densities of stage C5 *C. finmarchicus* exceeded densities of other life stages. Additionally, overall abundance throughout the entire Gulf of Maine increased ten-fold from January through April when diapausing *C. finmarchicus* migrate to the surface to molt, spawn, and are advected to the rest of the Gulf of Maine via depth-associated increased flow and transport (Meise and O'Reilly 1996).

While the seasonal distributions and general patterns of abundance of *C. finmarchicus* within the Gulf of Maine and Cape Cod Bay have been documented, the geographic scales and depths where copepods are sampled only rarely match the fine-scale at which right whales forage (Mayo and Marx 1990, Baumgartner and Mate 2003). Basin-scale zooplankton monitoring schemes have proved ineffective in detecting the high concentrations usually present in the vicinity of actively feeding whales. Furthermore, using direct copepod sampling efforts to identify where dense aggregations occur is also confounded by the fact that sufficient data are not available to establish a specific threshold density of *C. finmarchicus* that triggers feeding. For these reasons, the specific area on which are found dense aggregations of late stage *C. finmarchicus* cannot be defined by relying on data from such efforts to sample copepod aggregations directly throughout the vast Gulf of Maine and Georges Bank region.

Though the means by which right whales locate and exploit food resources is not well understood, the presence of foraging right whales is a reasonable proxy for determining where critical food densities are located (Kenney *et al.* 1995, Baumgartner *et al.* 2003b). The protocol for determining the whale density and residency indicative of feeding behavior was developed by Clapham and Pace (2001) for the Dynamic Area Management (DAM) program. The DAM protocol identifies a sighting of >3 right whales close enough to each other to produce a density of 0.04 right whales/nm^2 as the minimum number and density of right whales that reliably indicates the presence of foraging whales. The DAM protocol was used retrospectively using sighting histories from 1970–2005. Pace and Merrick (2008) identified 7,761 sightings events representing 15,395 whales over the time period. The DAM protocol was then applied to calculate the circular core sightings area and, as necessary, circular zones joined. This provided 1,292 unique ''pseudo-DAM'' events that were subsequently mapped using ARCView GIS software (a ''pseudo-DAM'' event is an aggregation of foraging right whales identified in this retrospective analysis that met the definition of foraging right whales and would have met the DAM trigger if the protocol had been in place at the time). The analyses of right whale sightings data in U.S. Northwest Atlantic waters indicate that foraging habitat is expansive and that *C. finmarchicus* is ubiquitous in the Gulf of Maine and Georges Bank region.

Seasonal movement patterns of right whales and the available literature on the distribution, abundance, and population dynamics of calanoid copepods, indicate that several areas are important for right whale foraging in the Gulf of Maine/Georges Bank region: Cape Cod Bay (January–April), Great South Channel (April–June), western Gulf of Maine (April–May and July–October), northern edge of Georges Bank (May–July), Jordan Basin (August–October), and Wilkinson Basin (April–July). Analyses show that each of these areas has a defined pattern of repeated DAM events and thus whale feeding events, particularly in the past decade when more observations are available due to increased survey coverage, and/or are the source areas that supply the copepod prey to foraging areas (Pace and Merrick 2008).

Cape Cod Bay exhibits high densities of copepods during winter, spring, and, possibly fall, as evidenced by the large numbers of feeding right whales. Of the 17,257 right whale sightings in New England during 1970 through 2005, 7,498 were in Cape Cod Bay. A total of 543 pseudo-DAM events occurred in this area, most during January–April.

The Great South Channel has high copepod concentrations at depth, especially during March–July, as evidenced by the large numbers of feeding right whales, owing to bathymetric features and water circulation patterns. A total of 5,753 right whales were sighted in the area during 1970–2005; this included 344 pseudo-DAM events. Most right whale sightings occurred during April–June, but also in July in some years. Right whale use of the Great South Channel area is not nearly as uniform as in Cape Cod Bay, but is widespread enough to indicate that the Channel is a critical foraging area in almost every year.

The Western Gulf of Maine possesses a complex set of bathymetric features which markedly affect the spatial/temporal concentration of copepods among years. From 1970 through 2005, 1,749 right whale sightings (including 153 pseudo-DAM events) occurred in this area, mostly during April–May and July–October.

The northern edge of Georges Bank has high copepod densities at depth, especially during May–July, as evidenced by the large numbers of feeding right whales, emanating from physical features (*e.g.,* currents and upwelling) which concentrate late-stage copepods during spring and summer. Foraging right whales in this area are thought to be following an eastward progression of dense copepod patch development, which begins in late spring and early summer. A total of 32 pseudo-DAM events have occurred in this area. Recent surveys have documented that Jordan and Wilkinson Basins are also important feeding areas. Wilkinson Basin serves as a foraging area for right whales in spring. The limited survey sightings effort in Wilkinson Basin during 1970–2005 documented 1,058 individual right whales during this period, including 104 pseudo-DAM events. Surveys have repeatedly found concentrations of right whales in this area during April-July. Right whale surveys conducted in Jordan Basin during the winter of 2004–2005 (perhaps the first winter surveys ever in this Basin) sighted up to 24 foraging right whales at a time (NMFS unpubl. data). The limited survey efforts in the area during 1970–2005 recorded a total 21 pseudo-DAM events. The available data suggest that Jordan Basin is an important right whale foraging area, at least during August–October.

As part of our analysis of areas on which are found the essential foraging features, we considered an analysis of right whale sightings data along the east coast (70 FR 35849, June 25, 2005, NMFS 2007, 72 FR 57104, October 5, 2007). This analysis indicates that endangered large whales rarely venture into bays, harbors, or inlets. Based on this analysis, NMFS (2007) concluded that it is unlikely that right whales spend substantial amounts of time in the coastal waters of Maine, particularly inshore areas such as bays, harbors, or inlets (70 FR 35849, June 25, 2005, NMFS 2007, 72 FR 57104, October 5, 2007). Similarly, right whales are seldom reported in the small bays and harbors along the inside edge of Cape Cod, with the exception of Provincetown Harbor where foraging right whales have been observed. Due to the absence or rarity of foraging right whales in inshore areas, bays, harbors and inlets, we conclude that the essential feature of dense aggregations of late-stage *C. finmarchicus* is not present in the areas shoreward of the boundaries delineated in Table 1a and Table 1b.

Lastly, we considered right whale sightings (and pseudo-DAM events) that have occurred to the south and east of the area described previously. Typically, whales are sighted in these areas in one year, but are not seen again for a number of years and evaluation of data across time series do not demonstrate any predictable repeated presence of whales. As a result, we conclude those areas do not provide predictable foraging habitat which is evident in the Gulf of Maine-Georges Bank region. Most likely, sightings in these areas consist of whales that feed opportunistically while migrating to the Gulf of Maine. This includes the large number of feeding right whales sighted in Block Island Sound in April 2010 and the smaller aggregation observed 2011. The sightings off Rhode Island represents the largest group of right whales ever documented in those waters. However, right whales have not been observed in Block Island Sound in subsequent years and a pattern of repeated annual observations is not evident in these areas.

The large area depicted in Figure 1 encompasses all of the physical oceanographic conditions and structures of the Gulf of Maine and Georges Bank region, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients, and temperature regimes that combine to distribute and aggregate *C. finmarchicus* for right whale foraging in that region. The essential physical feature of the Gulf of Maine-Georges Bank region important to supporting these aggregations is low flow velocity environments that allow the neutrally buoyant, high lipid content copepods to passively aggregate below the convective mixed layer and be retained for a period of time. As discussed previously, these low flow environments are present in the three deep basins—Wilkinson, Jordan and Georges Basins—within the Gulf of Maine, with boundaries approximated by the 200 m isopleths. Therefore, these basins contain the essential features for right whale foraging habitat.

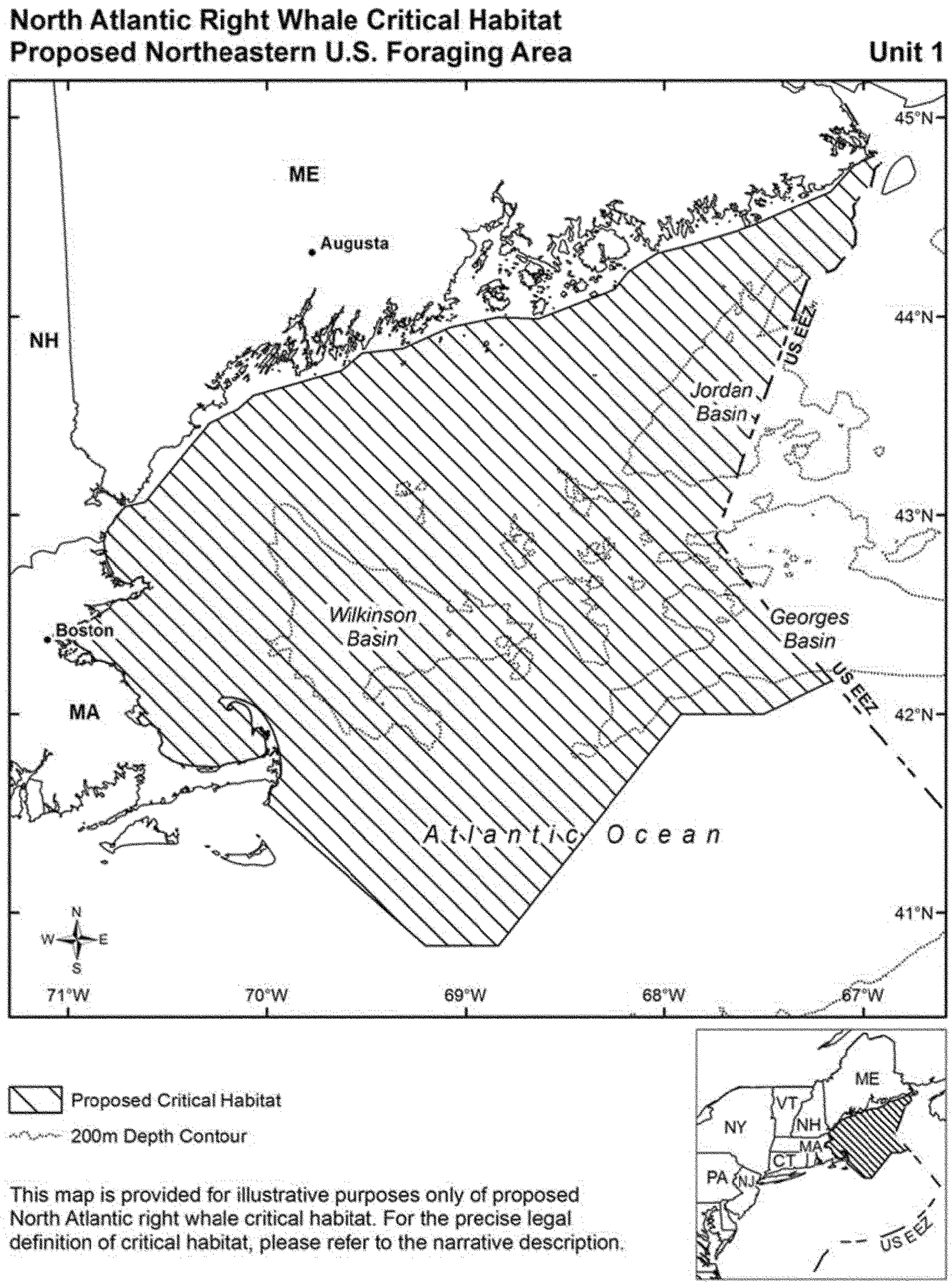


Figure 1: Specific area on which are found the essential features of North Atlantic right whale foraging habitat

Consistent with our regulations (50 CFR 424.12(c)), we have identified one "specific area" within the geographical area occupied by the species at the time of listing, that contains the identified physical and biological features of foraging habitat that are essential to the conservation of North Atlantic right whales. This area encompasses a large area within the Gulf of Maine and Georges Bank region, including the large embayments of Cape Cod Bay and Massachusetts Bay and deep underwater basins. This area also incorporates state waters, except for inshore areas, bays, harbors, and inlets, from Maine through Massachusetts in addition to federal waters.

The specific area on which are found the physical and biological features essential to foraging and thus to the conservation of the North Atlantic right whale include all waters, seaward of the boundary depicted in Figure 1 (for actual coordinates see below). The boundary of the proposed critical habitat for Unit 1 is delineated generally by a line connecting the geographic coordinates and landmarks as follows: From the southern tip of Monomoy Island (Cape Cod) (41°38.39′ N, 69°57.32′ W) extending southeasterly to 40°50′ N, 69°12′ W (the Great South Channel); then east to 40°50′ N 68°50′ W. From this point, the proposed boundary extends northeasterly direction to 42°00′ N, 67°55′ W and then in an easterly direction to 42°00′ N 67°30′ W. From this point, the proposed boundary extends northeast along the northern edge of Georges Bank to the intersection of the U.S.-Canada maritime boundary at 42°10′ N, 67°09.38′ W. The proposed boundary then follows the U.S.-Canada maritime boundary north to the intersection of 44°49.727′ N, 66°57.952′ W. From this point, moving southwest along the coast of Maine, the specific area is located seaward of the Maine exemption line developed for the Atlantic Large Whale Take Reduction Plan to the point (43°02.55′ N, 70°43.33′ W) on the coast of New Hampshire south of Portsmouth, NH. The boundary of the proposed area then follows the coastline southward along the coasts of New Hampshire and Massachusetts along Cape Cod to Provincetown southward along the eastern edge of Cape Cod to the southern tip of Monomoy Island. As noted, the specific area includes the large embayments of Cape Cod Bay and Massachusetts Bay but does not include inshore areas, bays, harbors and inlets. In addition, the specific area does not include waters landward of the 72 COLREGS lines (33 CFR part 80) as described below.

(2) Specific Areas on Which Are Found the Physical Features of Calving Habitat (Unit 2)

The essential features of right whale calving habitat are dynamic in their distributions throughout the South Atlantic Bight in that they vary over both time and space, and their variations do not necessarily correlate with each other. Calving right whales therefore likely select areas containing varying combinations of the preferred ranges of the essential features available within the SAB, as identified previously, depending on factors such as the weather (*e.g.,* storms, prevailing winds) and the age of the calves (*e.g.,* neonate or more mature calf).

In order to identify specific areas that may contain the essential features, we used analyses based on two predictive habitat models (Garrison (2007) and Keller *et al.* (2012), and Good *et al* (2008). These models help identify areas within the SAB where the essential features are likely to be present throughout the calving season.

The Garrison (2007) and Keller *et al.* (2012) models base the spatial extent of potential calving habitat on average environmental conditions at a 4 km x 4 km sampling unit and the resulting use of these areas by calving right whales. These models also reflect the processes observed in the Florida-Georgia region only. From the mean water temperatures between December and March in this region, the models predict calving habitat for right whales in waters typically between 10 and 50 km from shore extending from New Smyrna Beach, Florida north to Cape Fear, North Carolina. The optimal temperature range within the 75th percentile of predicted sighting rates for calving right whales occurs throughout much of the spatial range. Over the course of the entire calving season (December through March) the preferred water depth (6 to 28 m) and sea surface temperature (7 to 17 °C) ranges for calving right whales correspond with predicted sighting rates of calving right whales in the 75th percentile, which accounts for 91 percent of all observed calving right whales. The area containing the 75th percentile of predicted sighting rates for calving right whales extends from approximately Daytona Beach, Florida north to just beyond the Georgia/South Carolina state border. The geographic area included in the 75th percentile of predicted sighting rates encompasses seasonal and annual variability of the distribution of the essential features, particularly sea surface temperatures as evaluated by Garrison (2007) and Keller *et al.* (2012), and provides the broadest availability of contiguous areas of dynamic combinations of the essential features for selection by calving right whales.

Because the models used by Garrison (2007) and Keller *et al.* (2012) selected annual effects, sea surface temperature, and water depth, but not sea state (roughness) or wind conditions and right whale mother-calf distribution, we also considered the results by Good (2008) that predicted potential right whale calving habitat based on sea state roughness as well as sea surface temperature and water depth. Good (2008) calculated the relative density of calf sightings at a 5 km x 5 km sampling unit and measured the habitat conditions where right whale mother-calf pairs were sighted. These calculated habitat values (sea surface temperature, sea surface roughness, and water depth) were used to derive a ''likelihood surface'' of calving habitat to predict potential habitat for each month of the calving season and for all months combined. This combined model provided a measure of temporal continuity by delineating the number of months (December through March) a given area was selected as potential calving habitat. This combined model is the best representation of potential calving habitat both in time and space (Good 2008). Overall, the Good (2008) model predicted the presence of potential right whale calving habitat extending within 40 to 50 km of shore from Cape Lookout, North Carolina south to approximately New Smyrna, Florida. Areas predicted by the model to be potential right whale calving habitat in three or more months accounted for 85 percent or more of all observed right whale mother-calf sightings. Finally, as illustrated by the results of both habitat predictive models and the movements of cow-calf pairs during their time on the calving grounds, the features of sea surface roughness, sea surface temperatures, and water depth in the preferred ranges used by right whales are present in the SAB during calving season over large, contiguous areas (at least 231 nmi^2 of ocean area).

To determine the boundaries of the specific area containing the essential features identified for North Atlantic right whale calving, we overlaid two ArcGIS shape files generated by the habitat models as follows: 1) The 75th percentile reported by Garrison (2007) and Keller *et al.* (2012), and 2) Good's (2008) habitat area selected by at least three of the monthly models. Given that the 75th percentile from Garrison (2007) and Keller *et al.* (2012) and Good's (2008) habitat area selected by at least three of the monthly models account for 91 and 85 percent of all observed right whale mother-calf pair sightings, respectively, and Good's (2008) combined (four month) model is the best representation of potential calving habitat both in time and space, we believe these predicted habitat areas are the best basis for determining right whale calving habitat in the southeastern U.S.

Based on the information from these models and other information previously described, which we consider to be the best available information, the southeast right whale calving area consists of all marine waters from Cape Fear, North Carolina, southward to 29° N latitude (approximately 43 miles north of Cape Canaveral, Florida) within the area bounded on the west by the shoreline and the 72 COLREGS lines, and on the east by rhumb lines connecting the specific points described below.

Based on the prior discussion and consistent with our regulations (50 CFR 424.12(d)), we identified one ''specific area'' within the geographical area occupied by the species, at the time of listing, that contains the essential features for calving right whales in the southeastern U.S. (Figure 2). This area comprises waters of Brunswick County, North Carolina; Horry, Georgetown, Charleston, Colleton, Beaufort, and Jasper Counties, South Carolina; Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden Counties, Georgia; and Nassau, Duval, St. John's, Flagler, and Volusia Counties, Florida.

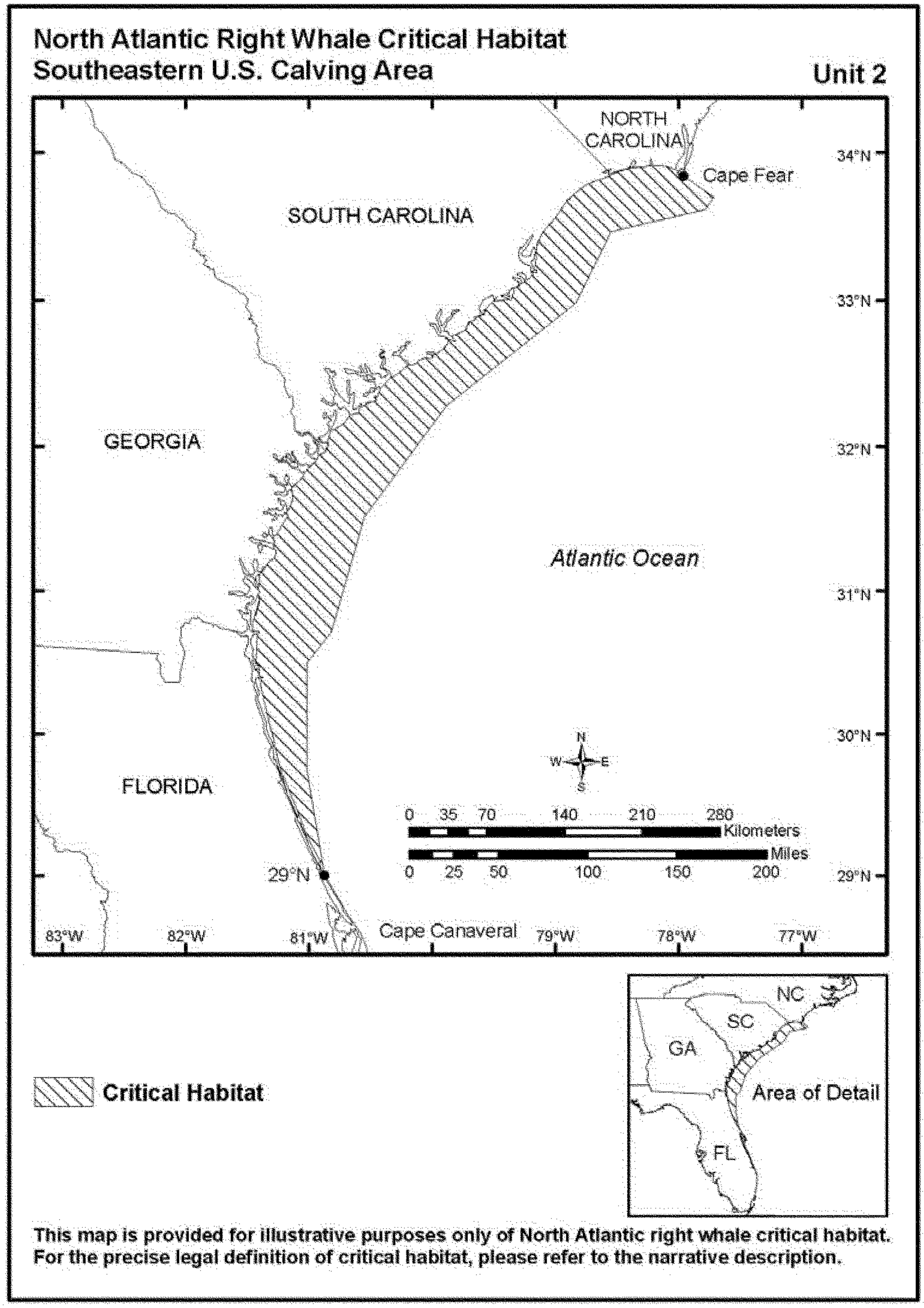


Figure 2. Area considered for designation as North Atlantic right whale southeastern calving critical habitat.

Special Management Considerations or Protection

Specific areas within the geographical area occupied by a species may be designated as critical habitat only if they contain physical or biological features that ''may require special management considerations or protection.'' To meet the definition of critical habitat, it is not necessary that the features currently require special management considerations or protection, only that they *may require* special management considerations or protections. NMFS' regulations define ''special management considerations or protections'' to mean ''any methods or procedures useful in protecting physical and biological features of the environment for the conservation of listed species'' (50 CFR 424.02(j)). As noted previously, NMFS produced a Draft Biological Source Document (NMFS 2014a) that discusses our application of the ESA's definition of critical habitat for right whales in detail, including evaluation of whether proposed essential features ''may require special management considerations or protections.'' The following discussion is derived from that document.

(1) Essential Features of Foraging Habitat

As summarized in the following sections, the essential features of right whale foraging habitat may require special management considerations or protections because of possible negative impacts from the following activities and events: (1) Zooplankton fisheries; (2) effluent discharge from municipal outfalls; (3) discharges and spills of petroleum products to the marine environment as a result of oil and gas exploration, development and transportation; and (4) climate change.

Zooplankton Fisheries

The essential foraging habitat features that may be affected by zooplankton fisheries are late stage *C. finmarchicus* copepods in dense aggregations and diapausing *C. finmarchicus* aggregations in Jordan, Wilkinson, and Georges Basins in the Gulf of Maine and Georges Bank region.

While directed zooplankton fisheries have primarily focused efforts on the larger krill species, with the most significant harvests taking place in Antarctica (targeting *Euphasia superba*) and in the Pacific (targeting *Euphasia pacifica*), copepod fisheries have also been permitted, attempted or researched by Canadian and Norwegian interests in North Atlantic waters beginning in the 1990s(NMFS 2014a). In January 2008, the Norwegian Directorate of Fisheries awarded Calanus AS a renewed and expanded license to harvest *C. finmarchicus* in the Norwegian Economic Zone (Calanus® 2008a). In April 2008, the company also entered into a contract with Skretting, the world's largest salmon and trout aquaculture feed production firm, for research and development and subsequent distribution of the Calanus®-derived sea lice deterrent (Calanus® 2008b). Calanus AS is also currently engaged in the development of other uses for *C. finmarchicus* in aquarium feed, health and nutritional products, dietary supplements, flavoring ingredients, bioactive compounds for cosmetics, and pharmaceuticals (Calanus® 2009.)

Several analyses predict the demand for krill will increase, including increased future demands for pharmaceutical and aquaculture products derived from copepods (Nicol and Endo (1997), Payne *et al.* 2001, Suontama 2004). As harvesting technology for *C. finmarchicus* becomes more efficient, demands for *C. finmarchicus* products may increase to the point where zooplankton fishing is economically feasible (Nicol and Endo 1997, Suontama 2004, Piasecki *et al.* 2004).

The essential biological features of foraging habitat in the Gulf of Maine and Georges Bank region may be negatively affected if worldwide demand for *C. finmarchicus* products continues to rise. Therefore, the essential biological features—late stage *C. finmarchicus* copepods in dense aggregations and diapausing *C. finmarchicus* aggregations in Jordan, Wilkinson, and Georges Basins in the Gulf of Maine and Georges Bank region—may require special management considerations or protections.

Sewage Outfalls

Several municipalities from Maine to Massachusetts have waste discharge facilities that empty into the Gulf of Maine. These discharges as well as coastal runoff result in increased nutrient inputs to the ocean. Increased nutrient input in the Gulf of Maine region may result in changes to the overall phytoplankton community structure and enhance nuisance and/or less desirable forage species. These changes may result in changes in productivity and/or changes in the distribution and densities of *C. finmarchicus* populations.

While a single outfall facility may not have a significant impact on the entire Gulf of Maine ecosystem, the cumulative impacts of all sewage outfalls may pose the need for management considerations or protection for *C. finmarchius.* Monitoring results from the Boston outfall in Massachusetts Bay support this concern. In 2000, the Massachusetts Water Resource Authority (MWRA) implemented a new ocean outfall system 15.2 miles offshore in Massachusetts Bay, as part of a Boston Harbor Cleanup program. This new system relocated an estimated 350 million gallons of treated effluent per day from Boston Harbor to the hydrodynamic system of Massachusetts and Cape Cod Bays (PCCS 2005, Bothner and Butman 2007).

In 2002, Provincetown Center for Coastal Studies (PCCS) documented a ''shift from the predominant winter-spring zooplankton resources, *C. finmarchicus,* to the estuarine copepod *Acartia* spp.'' as well as a significant increase in nuisance algae, *Phaeocystis pouchetti,* in Cape Cod Bay (PCCS 2003). PCCS (2005) noted that ''further work may be required to fully assess cumulative or long-term impacts to plankton and higher trophic levels within this dynamic system.''

The MWRA monitoring program further noted that though the structure of the zooplankton community in 2005 was similar to many earlier years, there was a measurable decrease in total zooplankton abundance during 2001 through 2005 compared to the baseline period. Overall lower abundance during the late spring and early summer and during the fall was observed across Massachusetts Bay, but not in the shallower waters of Boston Harbor or Cape Cod Bay (Werme and Hunt 2006).

These observations support the hypothesis that with increased nutrient input and increased primary productivity, Massachusetts Bay plankton communities could shift to being dominated by *Acartia* and other inshore copepods, therefore displacing the high concentrations of offshore copepods such as *C. finmarchicus* from these areas during seasons when they are normally present and serve as a food source for right whales (Werme and Hunt 2006). In addition, increased nutrient input to offshore areas, ''particularly nitrogen, could over-stimulate algal blooms, which would be followed by low levels of dissolved oxygen in the bottom waters when the phytoplankton die, sink, and decompose,'' thereby providing habitat unsuitable for *C. finmarchicus* (Werme and Hunt 2006). We conclude that the essential features of late-stage *C. finmarchicus* in dense aggregations in that region, as well as diapausing *C.*

finmarchicus in Jordan, Wilkinson, and Georges Basins, may require special management considerations or protection due to outfall effluents and other sources of nutrients entering the Gulf of Maine and Georges Bank region.

Oil and Gas Exploration and Development

Currently, there is no oil or natural gas exploration or development activity in the Gulf of Maine and Georges Bank area. Since 1980, all of the area has been under a moratorium on such natural resource development. A leasing moratorium has also been in effect on the Canadian portion of Georges Bank since 1988. The Nova Scotian and Canadian governments extended the moratorium on exploration of eastern Georges Bank through 2015, matching the adjoining U.S. moratorium. Outside the area under the moratorium, oil and gas exploration and production has proceeded in Canadian waters offshore of Nova Scotia.

There is reason to believe that oil or natural gas exploration and development may occur at some point in the future in the specific area proposed for designation as critical foraging habitat for right whales. There is economic interest in opening up new domestic sources for oil and gas, including OCS lands within the specific area proposed for designation as critical foraging habitat for right whales. In addition, emerging deep water drilling technologies now provide the potential to explore deep water basins and other areas within the Gulf of Maine and Georges Bank region.

Activities associated with offshore oil and gas exploration, development, and production include drilling, extraction, and transportation. Oil spills and discharges are associated with all of these activities. Very low concentrations (from less than 1µg/l to 1 mg/l) of oil and petroleum hydrocarbons have been found to have harmful effects on various marine organisms in laboratory tests (Jacobson and Boylan 1973, Johnson 1977, Steele 1977, Kuhnhold *et al.* 1978, Howarth 1987). Sublethal effects from hydrocarbon exposure can occur at concentrations several orders of magnitude lower than concentrations that induce acute toxic effects (Vandermeulen and Capuzzo 1983). Impairment of feeding mechanisms, growth rates, development rates, energetics, reproductive output, recruitment rates and increased susceptibility to disease are some examples of the types of sublethal effects that may occur with exposure to petroleum hydrocarbons (Capuzzo 1987). Early developmental stages of marine organisms, including *C. finmarchicus,* can be especially vulnerable to hydrocarbon exposure. Recruitment failure in chronically contaminated habitats may be related to direct toxic effects of hydrocarbon contaminated sediments (Krebs and Burns 1977, Cabioch *et al.* 1980, Sanders *et al.* 1980, Elmgren *et al.* 1983). A major oil spill could have the potential to engulf dense concentrations of copepods, resulting in smothering and asphyxiation of any organisms coated with oil (NAS 1975). Early life history stages such as eggs and larvae may be particularly susceptible to both acute and chronic effects of oil exposure because even small releases can kill or damage organisms (NRC 2003).

As discussed in the Biological Source Document (NMFS 2014a), both acute and chronic exposure to oil pollution could result in changes to the species composition of phytoplankton communities. It is conceivable that species replacing one another due to differential sensitivities to oil exposure could result in shifts in phytoplankton community structure. Such shifts may then negatively affect the abundance, availability, and density of aggregations of late-stage *C. finmarchicus* on which right whales feed. These shifts also may negatively affect the abundance of diapausing *C. finmarchicus,* which serve as source populations for late-stage *C. finmarchicus.* We conclude that the essential features of late-stage *C. finmarchicus* in dense aggregations in that region, as well as diapausing *C. finmarchicus* in Jordan, Wilkinson, and Georges Basins, may require special management considerations or protection due to impacts associated with oil and gas exploration and development as well as oil spills and discharges entering the Gulf of Maine and Georges Bank region.

Global Climate Change

The projected effects of global climate change include a variety of potential impacts based on a variety of greenhouse gas emissions scenarios, including: Increased average global surface air temperatures; sea level rise, increased global precipitation; and increased atmospheric carbon dioxide concentrations and ocean acidification (IPCC 20142007).

As discussed in detail in the Biological Source Document (NMFS 2014a), there are a number of ways that global climate change may affect the biological and physical features of foraging habitat essential to the conservation of the North Atlantic right whale. The distribution of marine fish and plankton are predominantly determined by climate. The distribution of marine species in U.S. waters is moving northward, and the timing of plankton blooms is shifting (Karl *et al.* 2009). The potential effects of global climate change also include shifts in productivity, biomass, and species composition of zooplankton, including *C. finmarchicus,* which could negatively impact the foraging success of right whales. Inter-annual, decadal, and longer time-scale variability in climate can alter the distribution and biomass of prey available to right whales. For example, decade-scale climatic regime shifts have been related to changes in zooplankton in the North Atlantic (Fromentin and Planque 1996). Decadal trends in the North Atlantic Oscillation (Hurrell 1995) can affect the position of the Gulf Stream (Taylor *et al.* 1998) and other circulation patterns in the North Atlantic that may influence the oceanographic conditions responsible for distributing, aggregating and retaining *C. finmarchicus.*

The predicted range of increase in water temperatures, combined with other factors such as increased precipitation and runoff, may alter seasonal stratification in the northeast coastal waters. Increased stratification of the water column in the Gulf of Maine region could affect copepod abundance and densities by limiting or preventing the exchange of surface and nutrient rich deep water. Increased stratification could affect primary and secondary productivity by altering the composition of phytoplankton and zooplankton (Mountain 2002). This in turn may negatively impact the abundance and distribution of *C. finmarchicus* patches that support right whale foraging and energetic requirements.

Diapausing *C. finmarchicus* populations could also be impacted by predicted climate change-induced changes to the physical oceanographic conditions that create the low-energy environments present within deep ocean basins. The low-flow velocity environments of the deep basins where aggregations of diapausing copepods are found allow the neutrally buoyant, high lipid content copepods to passively aggregate below the convective mixed layer and be retained for a period of time (Lynch *et al.* 1998, Visser and Jónasdóttir 1999, Baumgartner *et al.* 2003, Pace and Merrick 2008). Changes to the physical oceanographic features in the Gulf of Maine region, such as potential increased stratification of the water column, may negatively impact the retention and subsequent emergence and distribution of diapausing copepod source populations in deep ocean basins.

Given these expected negative impacts to the essential features for foraging, NMFS concludes these features may require special management considerations or protections due to climate change.

(2) Essential Features of Calving Habitat

As summarized in the following sections, the essential features of right whale calving habitat may require special management considerations or protections because of possible negative impacts from the following activities and events: Offshore energy development, large-scale offshore aquaculture operations, and global climate change. These activities and their potential broad-scale impacts on the essential features are discussed in detail in the Biological Source Document (NMFS 2014a)

Offshore Energy Development

There is growing interest in diversifying domestic energy sources, including offshore oil and gas exploration and production (including liquid natural gas (LNG) terminals), exploration and development of techniques for mining mineral deposits from the continental shelf, and development and production of offshore energy alternatives in the Atlantic (*e.g.,* wind farms, wave energy conversion) (*e.g.,* see DOE 2008, DOE 2009). Installation and operation of offshore energy development facilities are not likely to negatively impact the preferred ranges of sea surface roughness, sea surface temperatures, or water depths, in that it will not result in lowering or raising the available value ranges for these features. However, installation and operation of these technologies may fragment the large, contiguous areas containing the optimum ranges of all the essential features that are necessary for right whale calving and rearing (NMFS 2014a).

Availability of the essential features may be limited by large arrays or fields of permanent structures that may act as physical barriers and prevent or limit the ability of right whale mothers and calves to move about and find (''select'') the optimal combinations of the essential features. The effective size of offshore energy facilities includes and is increased by all of the associated structures, lines and cables, and activities and noise. There are numerous floating, submerged, and emergent structures, mooring lines, and transmission cables associated with large ocean energy facilities (DOE 2009). Larger whales may have difficulty passing through an energy facility with numerous, closely spaced mooring or transmission lines (DOE 2009). If the density of structures, lines, and cables associated with a facility is sufficiently great and spacing is close, cables could have a ''wall effect'' that could force whales around, or preclude them from using the areas (Boehlert *et al.* 2008).

Therefore, these facilities may limit the availability of the essential features such that right whales are not able to move about, find and use the optimal combinations of the features necessary for successful calving and rearing. These are negative impacts on what makes these features essential to the conservation of the species. Therefore, we conclude the essential features for right whale calving habitat may require special management considerations or protections.

Large-Scale Offshore Aquaculture Operations

Approximately 20 percent of U.S. aquaculture production is based on marine species (NOAA 2010), and there is growing interest in expanding aquaculture operations to offset the increasing demand for seafood (NOAA 2007). Recent advances in offshore aquaculture technology have resulted in several commercial finfish and shellfish operations in more exposed, open-ocean locations (*e.g.,* Hawaii, California) (NOAA 2010). NOAA's 10-year plan (2007) includes establishing new offshore farms in the U.S. Exclusive Economic Zone (EEZ) for finfish, shellfish, and algae.

Large-scale aquaculture operations involve numerous floating or submerged structures and mooring lines, and associated activities and noise. Offshore aquaculture operations utilize large net-pens (*e.g.,* 3000 m^3 capacity) that are partially or fully submerged below the sea surface, and are typically anchored to the sea floor. Partially submerged net-pens typically employ a floating collar that is flexible or strong enough to withstand rough sea conditions and from which the containment net is hung (NOAA 2008). Offshore aquaculture operations typically include aggregations of several net pens and associated structures.

Installation and operation of large-scale offshore aquaculture facilities are not likely to negatively impact the preferred ranges of sea surface roughness, sea surface temperatures, or water depths, in that it will not result in lowering or raising the available value ranges for these features. However, like offshore energy development, the construction and operation of large-scale offshore aquaculture facilities within the specific calving area have the potential to limit the availability of the essential features. Large scale aquaculture facilities could force whales to abandon these areas (Young 2001) by acting as a barrier, or limiting the whales' ability to move about, and find and use the optimal combinations of essential features necessary for successful calving and rearing. Installation and operation of these facilities may also fragment the large contiguous areas containing optimal combinations of the essential features needed for calving and rearing. These are negative impacts on what makes these features essential to the conservation of the species. Therefore, we conclude the essential features for right whale calving habitat may require special management considerations or protections.

Global Climate Change

Global climate change and its potential effects on the environment is a very complex issue. Several of the projected future effects of global climate change are discussed previously.

In the specific area identified as potential right whale calving critical habitat, sea surface temperatures are influenced by the ''Atlantic Multi-decadal Oscillation,'' or AMO. The essential feature of sea surface temperature may be negatively impacted by global climate change, depending on the degree to which the influence of the AMO is reduced. The AMO is an ongoing series of long-duration changes in the sea surface temperature of the North Atlantic Ocean, with cool and warm phases that may last for periods of 20 to 40 years and result in a difference of about 1 °F between extremes (NOAA AOML 2010). The AMO also influences the frequency of hurricanes that originate in the Atlantic Warm Pool (AWP), with fewer major hurricanes and hurricanes making landfall during AMO cool phases.

However, over the next generation, global climate change is projected to be nonlinear, and it is likely that the AMO will have less influence over sea surface temperature oscillations than anthropogenic global climate change in the North Atlantic (Enfield and Serrano 2009). Depending on the degree to which the influence of the AMO is reduced, sea surface temperatures may increase by 1 to 3 °C IPCC AR4 (2014). There is the potential that the preferred temperature range (7 °C to 17 °C) identified for right whales may no longer be available within the specific area, or may become available only within smaller areas co-occurring with the preferred water depth and sea surface conditions, thereby reducing the area available to support the key conservation objective of facilitating successful calving.

Further, relaxation of the present rate of increase in hurricane activity may never occur (Enfield and Serrano 2009), potentially impacting seasonal sea state conditions in the specific area by increasing the frequency of major hurricanes passing through the specific area. The essential physical features for North Atlantic right whales on their calving grounds are calm sea surface conditions associated with Force 4 or less on the Beaufort Scale. Neonate right whale calves are relatively weak swimmers and are more vulnerable to changes from calm to rough sea state conditions.

We conclude global climate change may result in negative impacts to the preferred ranges identified for the essential features, and to the ability of these features to support successful calving. Therefore, the essential features may require special management considerations or protections to preserve the ability of these features to provide for successful calving and rearing of North Atlantic right whales.

Unoccupied Areas

ESA section 3(5)(A)(ii) defines critical habitat to include specific areas outside the geographical area occupied if the areas are determined by the Secretary to be essential for the conservation of the species. Regulations at 50 CFR 424.12(e) specify that we shall designate as critical habitat areas outside the geographical area presently occupied by a species only when a designation limited to its present range would be inadequate to ensure the conservation of the species. Our regulations at 50 CFR 424.12(h) also state: ''Critical habitat shall not be designated within foreign countries or in other areas outside of United States jurisdiction.'' At the present time, the geographical area occupied by listed North Atlantic right whales which is within the jurisdiction of the United States is limited to waters off the U.S. east coast from Maine through Florida, seaward to the boundary of the U.S. Exclusive Economic Zone. As discussed previously, the Gulf of Mexico is not considered part of the geographical area occupied by the species, nor do we consider it an unoccupied area essential to the species' conservation given the rare, errant use of the area by right whales in the past. We have not identified any other areas outside the geographical area occupied by the species that are essential for their conservation and therefore are not proposing to designate any unoccupied areas as critical habitat for the North Atlantic right whale.

Application of ESA Section 4(a)(3)(B)(i) (Military Lands)

Section 4(a)(3)(B)(i) prohibits designating as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DOD), or designated for its use, that are subject to an integrated natural resources management plan (INRMP), if we determine that such a plan provides a benefit to the species (16 U.S.C. 1533(a)(3)(B)).

No areas within the specific areas being proposed for designation are covered by INRMPs; therefore, there are no military lands ineligible for designation as critical habitat within the proposed areas of Unit 1 and Unit 2.

Application of ESA Section 4(b)(2)

The foregoing discussion described the specific areas within U.S. jurisdiction that fall within the ESA section 3(5) definition of critical habitat in that they contain the physical and biological features essential to the North Atlantic right whale's conservation that may require special management considerations or protection. Section 4(b)(2) of the ESA requires that we consider the economic impact, impact on national security, and any other relevant impact, of designating any particular area as critical habitat. Additionally, the Secretary has the discretion to consider excluding any area from critical habitat if she determines the benefits of exclusion (that is, avoiding some or all of the impacts that would result from designation) outweigh the benefits of designation based upon the best scientific and commercial data available. The Secretary may not exclude an area from designation if exclusion will result in the extinction of the species. Because the authority to exclude is discretionary, exclusion is not required for any particular area under any circumstances.

The following discussion of impacts summarizes the analysis contained in our Draft ESA Section 4(b)(2) Report (NMFS 2014b), which identifies the economic, national security, and other relevant impacts that we projected would result from including each of the two specific areas in the proposed critical habitat designation. We considered these impacts when deciding whether to exercise our discretion to propose excluding particular areas from the designation. Both positive and negative impacts were identified and considered (these terms are used interchangeably with benefits and costs, respectively). Impacts were evaluated in quantitative terms where feasible, but qualitative appraisals were used where that is more appropriate to particular impacts. The Draft ESA Section 4(b)(2) Report (NMFS 2014b) is available on NMFS' Greater Atlantic Region Web site at [*www.greateratlantic.fisheries.noaa.gov*].

The primary impacts of a critical habitat designation result from the ESA section 7(a)(2) requirement that Federal agencies ensure their actions are not likely to result in the destruction or adverse modification of critical habitat, and that they consult with NMFS in fulfilling this requirement. Determining these impacts is complicated by the fact that section 7(a)(2) also requires that Federal agencies ensure their actions are not likely to jeopardize the species' continued existence. One incremental impact of designation is the extent to which Federal agencies modify their proposed actions to ensure they are not likely to destroy or adversely modify the critical habitat beyond any modifications they would make because of listing and the jeopardy requirement. When the same modification would be required due to impacts to both the species and critical habitat, the impact of the designation is co-extensive with the ESA listing of the species (*i.e.,* attributable to both the listing of the species and the designation critical habitat). To the extent possible, our analysis identified impacts that were incremental to the proposed designation of critical habitat—meaning those impacts that are over and above impacts attributable to the species' listing or any other existing regulatory protections. Relevant, existing regulatory protections (including the species' listing) are referred to as the ''baseline'' and are also discussed in the Draft Section 4(b)(2) Report.

The Draft ESA Section 4(b)(2) Report describes the projected future federal activities that would trigger section 7 consultation requirements because they may affect the essential features, and consequently may result in economic costs or negative impacts. Additionally, the report describes broad categories of project modifications that may reduce impacts to the essential features, and states whether the modifications are likely to be solely a result of the critical habitat designation or co-extensive with another regulation, including the ESA listing of the species. The report also identifies the potential national security and other relevant impacts that may arise due to the proposed critical habitat designation, such as positive impacts that may arise from conservation of the species and its habitat, state and local protections that may be triggered as a result of designation, and education of the public to the importance of an area for species conservation.

Economic Impacts

Economic impacts of the critical habitat designation result through implementation of section 7 of the ESA in consultations with Federal agencies to ensure their proposed actions are not likely to destroy or adversely modify critical habitat. These economic impacts may include both administrative and project modification costs; economic impacts that may be associated with the conservation benefits of the designation are described later.

We examined the ESA section 7 consultation record over the last 10 years, as compiled in our Public Consultation Tracking System (PCTS) database, to identify the types of Federal activities that may adversely affect North Atlantic right whale critical habitat. We requested that federal action agencies provide us with information on future consultations if we omitted any future actions likely to affect the proposed critical habitat. No new activities were identified through this process. Of the types of past consultations that ''may affect'' some or all of the essential features in either unit of proposed critical habitat, we determined that no activities would solely affect the essential features. That is, all categories of the activities identified would also require consultation for potential impacts to the listed species.

Five categories of activities were identified as likely to recur in the future and have the potential to affect the essential features:

1. Environmental Protection Agency (EPA) Clean Water Act permitting or management of pollution discharges through the NPDES programs in Unit 1;

2. United States Coast Guard (USCG) authorization or use of dispersants during an oil spill response in Unit 1;

3. U.S. Army Corps of Engineers (USACE) maintenance dredging or permitting of dredge and disposal activities under the Clean Water Act in Unit 2;

4. USACE permitting of marine construction, including shoreline restoration and artificial reef placement under the Rivers and Harbors Act and/or Clean Water Act in Unit 2;

5. The Maritime Administration's permitting of siting and construction of offshore liquefied natural gas facilities in Unit 1.

As discussed in more detail in our Draft ESA Section 4(b)(2) Report (NMFS, 2014b), we determined that two of these federal actions, Water Quality/NPDES related actions and oil spill response activities implemented respectively by the EPA and the USCG, could result in incremental impacts from section 7 consultations related to the proposed critical habitat.

Additionally, we identified four categories of activities that have not occurred in the proposed areas in the past but based on available information and discussions with action agencies, may occur in the future. If they do occur, these activities may adversely affect the essential features. These projected activities are: Oil and gas exploration and development activities, directed copepod fisheries, offshore alternative energy development activities, and marine aquaculture. As with past or ongoing federal activities in the proposed critical habitat areas, these four categories of projected future actions may trigger consultation because they have the potential to adversely affect both the essential features and the whales themselves. Three categories of future activities were judged as being likely to have incremental impacts due to the proposed critical habitat: Oil and gas exploration and development activities (Unit 1), directed copepod fishery (Unit 1), and offshore alternative or renewable energy activities (Unit 2). Consequently, costs of project modifications required through section 7 were considered to be incremental impacts of the proposed designation.

In order to avoid underestimating impacts, we assumed that all projected categories of future actions resulting in incremental impacts to essential features will require formal consultations, in order to estimate both administrative and project modification costs. This assumption likely results in an overestimation of the number of future formal consultations.

Of the ongoing or current activities expected to recur in Unit 1, EPA's activities under the Clean Water Act related to water quality and NPDES programs and the USCG's authorization or use of dispersants during an oil spill response are likely to result in incremental impacts due to effects on the essential features than the species. Based on our analysis of past consultation history we project that over the next ten years, there will be 21 consultations involving Water Quality/NPDES activities. We also project that there will be 6 consultations involving oil spill response.

Of the past or ongoing activities expected to recur in Unit 2, all the federal activities identified as having the potential to adversely affect the essential features also have the potential to adversely affect right whales. These activities are not likely to require additional project modifications to address impacts to essential features beyond those that may be required to address impacts to the whales. Therefore we conclude that the only incremental costs resulting from consultations for these activities are the additional administrative costs associated with analysis of impacts to the essential features.

Consultations resulting from activities affecting the essential features include both administrative and project modification costs. Administrative costs include the cost of time spent in meetings, preparing letters, and in some cases, developing a biological assessment and biological opinion, identifying and designing RPMs, and so forth. For this impacts report, we estimated per-project administrative costs based on IeC 2013. That impacts report estimates administrative costs for different categories of consultations as follows: (1) New consultations resulting entirely from critical habitat designation; (2) new consultations considering only adverse modification (unoccupied habitat); (3) re-initiation of consultation to address adverse modification; and (4) additional consultation effort to address adverse modification in a new consultation. Given that all the consultations we project to result from this proposed rulemaking will be co-extensive consultations on new actions that would be evaluating impacts to the whales as well as impacts to critical habitat, the administrative costs would all be in category 4 above.

As previously mentioned, we assumed that all future activities that may affect the proposed essential features will require formal consultations. Based on IeC 2013, we project that each formal consultation will result in the following additional costs to address critical habitat impacts: $1,400 in NMFS'costs; $1,600 in action agency costs; and $880 in third party (*e.g.,* permittee) costs, if applicable. Annual estimated administrative costs for the projected number of formal consultations representing incremental costs of the critical habitat designation are expected to total approximately $82,296 per year.

Of the four categories of activities that have not occurred in the proposed areas in the past but may occur in the future, and which have the potential to adversely affect the essential features resulting in ESA section 7 consultations, only oil and gas exploration and development and a directed copepod fishery in the proposed foraging area, and renewable energy activities in the proposed calving area, would result in incremental impacts due to effects on the essential features. However, because these are categories of future activity for which there is no past consultation history and no specific or planned project proposals, we are unable to quantify the number of potential future consultations and thus the incremental administrative costs for these activities.

In our impacts analysis, we assumed that categories of activities that ''may affect'' the proposed essential features may result in the need for some sort of project modification to avoid destruction or adverse modification of critical habitat. Thus, we considered the range of broad categories of modifications we might seek for these activities to avoid negative impacts to the essential features. The cost of project modifications depends on the specific project and the circumstances of the actual project, for example, its size, timing and location. Although we have a projection of the number of future formal consultations, we were unable to identify the exact modification or combinations of modifications that would be required for any future actions. Thus, it is not possible to estimate the costs for project modifications that would be required to address adverse effects that may occur from all projected future agency actions requiring consultation. The same limitation applies to projecting the type, size, scale, and thus cost, of project modifications that may be necessary to avoid jeopardizing the whales' existence—we are only able to identify broad categories of types of potential future project modifications. The same categories of potential project modifications that might be recommended to avoid impacts to the species could also address potential impacts to the essential features. In our analysis, we identified where it is possible that unique modifications could be required to address impacts to critical habitat, above and beyond those needed to address impacts to the whales.

National Security Impacts

Previous critical habitat designations have recognized that impacts to national security result if a designation would trigger future ESA section 7 consultations because a proposed military activity ''may affect'' the physical or biological feature(s) essential to the listed species' conservation. Anticipated interference with mission-essential training or testing or unit readiness, either through delays caused by the consultation process or through expected requirements to modify the action to prevent adverse modification of critical habitat, has been identified as a negative impact of critical habitat designations. (See, *e.g.,* Proposed Designation of Critical Habitat for the Pacific Coast Population of the Western Snowy Plover, 71 FR 34571, June 15, 2006, at 34583; and Proposed Designation of Critical Habitat for Southern Resident Killer Whales; 69 FR 75608, Dec. 17, 2004, at 75633.)

Based on the past consultation history and information submitted by DOD for this analysis, it is unlikely that consultations with respect to DOD activities will be triggered as a result of the proposed critical habitat designation.

On September 21, 2009, and again in November 2010, NMFS sent letters to DOD requesting information on national security impacts of the proposed critical habitat designation, and we received responses from the Navy, United States Marine Corps (USMC), USCG, Department of Homeland Security (DHS), and the Air Force (USAF). We discuss the information contained within the responses thoroughly in the Draft Section 4(b)(2) Report (NMFS 2014b) and summarize the information below.

The Navy noted that several of the areas under consideration for designation as right whale critical habitat overlap with important Navy testing and training or operational areas. The Navy stated that while current activities will not destroy or adversely modify the essential features of right whale critical habitat, national security impacts would result if mitigation measures to protect right whales themselves, currently in place in existing critical habitat, were required for naval activities conducted within the boundaries of the expanded proposed critical habitat. However, measures to protect whales themselves are not an impact of the critical habitat designation.

In 2013, NMFS completed consultation with the Navy on its Atlantic Fleet Training and Testing activities (AFFT) conducted within the expanded areas proposed in this rulemaking as critical habitat and concluded that these activities would not likely jeopardize the continued existence of North Atlantic Right Whales. As part of the 4(b)(2) analysis for this proposed critical habitat designation, NMFS reviewed the AFTT activities conducted within the areas proposed as critical habitat and concluded the Navy's activities would not likely affect the proposed essential features of right whale habitat. U.S. Navy training and testing activities are not likely to affect the physical or biological features essential to foraging in Unit 1, or fragment large, continuous areas of the essential features or alter the optimal ranges of these essential features in Unit 2 such that they are rendered unsuitable for calving, and calf survival.

The USCG considers it unlikely that its exercises, operations, and training associated with National and Homeland Security, separately or in aggregate, would affect the essential features for foraging or calving right whale habitat. The USCG asserted in its response that should new or existing regulations intended to protect the species be applied to the expanded area under consideration for designation as critical habitat, National and Homeland Security impacts would likely result. As with naval actions discussed previously, measures imposed on USCG activities to prevent or minimize harm to whales themselves are not an impact of the critical habitat designation.

The Air Force noted in its reply that while the critical habitat area proposed is heavily used for flight operations, restrictions on flight operations are not currently imposed in critical habitat for right whales. Based on our analysis, Air Force flights in the proposed area are not likely to affect the essential features; therefore, there would be no need for consultations or operation modifications.

Based on a review of the information provided by the Navy, USMC, and USCG, DHS, and USAF, and on our review of the activities conducted by these entities associated with national security within the specific areas proposed for designation as right whale critical habitat, their activities have no routes of potential adverse effects to the proposed essential features and will not require consultation to prevent adverse effects to critical habitat (see Draft Section 4(b)(2) Report, NMFS 2014b). Therefore, based on information available at this time, we do not anticipate there will be national security impacts associated with the proposed critical habitat for the North Atlantic right whale.

Other Relevant Impacts

Other relevant impacts of critical habitat designations can include conservation benefits to the species and to society, and impacts to governmental and private entities. Our Draft Section 4(b)(2) Report (NMFS 2014b) discusses conservation benefits of designating the two specific areas, and the benefits of conserving the right whale to society, in both ecological and economic metrics.

As discussed in the Draft Section 4(b)(2) Report (NMFS 2014b) and summarized here, large whales, including the North Atlantic right whale, currently provide a range of benefits to society. Given the positive benefits of protecting the physical and biological features essential to the conservation of the right whale, this protection will in turn contribute to an increase in the benefits of this species to society in the future as the species recovers. While we cannot quantify nor monetize these benefits, we believe they are not negligible and would be an incremental benefit of this designation. However, although the features are essential to the conservation of right whales, critical habitat designation alone will not bring about the recovery of the species. The benefits of conserving right whales are, and will continue to be, the result of several laws and regulations.

We identified in the Draft Section 4(b)(2) Report (NMFS 2014b) both consumptive (*e.g.,* commercial and recreational fishing) and non-consumptive (*e.g.,* wildlife viewing) activities that occur in the areas proposed as critical habitat. Commercial and recreational fishing are components of the economy related to the ecosystem services provided by the resources within the proposed right whale critical habitat areas. The essential features provide for abundant fish species diversity. Commercial fishing is the largest revenue generating activity occurring within the proposed critical habitat area, and protection of the essential features will contribute to sustaining this activity.

Further, the economic value of right whales can be estimated in part by such metrics as increased visitation and user enjoyment measured by the value of whale watching activities.

Education and awareness benefits stem from the critical habitat designation when non-federal government entities or members of the general public responsible for, or interested in, North Atlantic right whale conservation change their behavior or activities when they become aware of the designation and the importance of the critical habitat areas and features. Designation of critical habitat raises the public's awareness that there are special considerations that may need to be taken within the area. Similarly, state and local governments may be prompted to carry out programs to complement the critical habitat designation and benefit the North Atlantic right whale. Those programs would likely result in additional impacts of the designation. However, it is impossible to quantify the beneficial effects of the awareness gained or the secondary impacts from state and local programs resulting from the critical habitat designation.

Proposed Exclusions Under Section 4(b)(2)

On the basis of our impacts analysis, we are not proposing to exercise our discretion to propose excluding any particular areas from the proposed critical habitat designation.

We could not reasonably quantify the total economic costs and benefits of the proposed critical habitat designation due to limited information. Nevertheless, we believe that our characterization of the types of costs and benefits that may result from the designation, in particular circumstances, may provide some useful information to Federal action agencies and permit applicants that may implement the types of activities discussed in our analyses within the designated critical habitat. We have based the proposed designation on very specifically defined features essential to the species' conservation, which allowed us to identify the few, specific effects of federal activities that may adversely affect such features and thus require section 7 consultation under the ESA. We have discussed to the extent possible the circumstances under which section 7 impacts will be incremental impacts of this proposed rule. We believe that the limitations of current information about potential future projects do not allow us to be more specific in our estimates of the section 7 impacts (administrative consultation and project modification costs) of the proposed designation.

We have analyzed the economic, national security, and other relevant impacts of designating critical habitat. While we have utilized the best available information and an approach designed to avoid underestimating impacts, many of the potential impacts are speculative and may not occur in the future. Our conservative identification of potential incremental economic impacts indicates that any such impacts would be very small, resulting from very few (less than 17) federal section 7 consultations annually. Further, the analysis indicates that there is no particular area within the areas proposed for designation as critical habitat where economic impacts would be particularly high or concentrated. No impacts to national security are expected. Other relevant impacts include conservation benefits of the designation, both to the species and to society. Because the features that form the basis of the critical habitat designation are essential to the conservation of North Atlantic right whales, the protection of critical habitat from destruction or adverse modification may at minimum prevent loss of the benefits currently provided by the species and may contribute to an increase in the benefits of these species to society in the future. While we cannot quantify nor monetize the benefits, we believe they are not negligible and would be an incremental benefit of this designation. Moreover, our analysis indicates that all potential future section 7 consultations on impacts to critical habitat features would also be conducted for the projects' potential impacts on the species, resulting in at least partial co-extensive impacts of the designation and the baseline listing of the species. Therefore, we have concluded that there is no basis to exclude any particular area from the proposed critical habitat.

Critical Habitat Designation

We are proposing to designate approximately 29,945 nm² of marine habitat within the geographical area occupied by North Atlantic right whales at the time of its listing. The two units proposed for designations are in the Gulf of Maine and Georges Bank region (Unit 1) and in waters off the Southeast U.S coast (Unit 2).

The specific area where the essential foraging features are located (''Unit 1'') is in the Gulf of Maine and Georges Bank region and covers a total area of approximately 21,334 nm². In Unit 1, the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection are:

1. The physical oceanographic conditions and structures of the Gulf of Maine and Georges Bank region that combine to distribute and aggregate *C. finmarchicus* for right whale foraging, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients, and temperature regimes;

2. Low flow velocities in Jordan, Wilkinson, and Georges Basins that allow diapausing *C. finmarchicus* to aggregate passively below the convective layer so that the copepods are retained in the basins;

3. Late stage *C. finmarchicus* in dense aggregations in the Gulf of Maine and Georges Bank region; and

4. Diapausing *C. finmarchicus* in aggregations in the Gulf of Maine and Georges Bank region.

The specific area where the essential calving features are located (''Unit 2'') is in the South Atlantic Bight and covers a total area of approximately 8,611 nm^2. Within Unit 2, the essential features are:

1. Sea surface conditions associated with Force 4 or less on the Beaufort Scale,
2. Sea surface temperatures of 7 °C to 17 °C, and
3. Water depths of 6 to 28 meters.

These features simultaneously co-occur over contiguous areas of at least 231 nmi^2 of ocean waters during the months of November and April. When these features are available, they are selected by right whale cows and calves in dynamic combinations that are suitable for calving, nursing, and rearing, and which vary, within the ranges specified, depending on factors such as weather and age of the calves.

No unoccupied areas are proposed for designation of critical habitat.

Effects of Critical Habitat Designations

Section 7(a)(2) of the ESA requires Federal agencies, including NMFS, to insure that any action authorized, funded, or carried out by the agency (agency action) does not jeopardize the continued existence of any threatened or endangered species or destroy or adversely modify designated critical habitat. Federal agencies are also required to confer with NMFS regarding any actions likely to jeopardize a species proposed for listing under the ESA, or likely to destroy or adversely modify proposed critical habitat, pursuant to section 7(a)(4). A conference involves informal discussions in which NMFS may recommend conservation measures to minimize or avoid adverse effects. The discussions and conservation recommendations are to be documented in a conference report provided to the Federal agency. If requested by the Federal agency, a formal conference report may be issued, including a biological opinion prepared according to 50 CFR 402.14. A formal conference report may be adopted as the biological opinion when the species is listed or critical habitat designated, if no significant new information or changes to the action alter the content of the opinion. When a species is listed or critical habitat is designated, Federal agencies must consult with NMFS on any agency actions to be conducted in an area where the species is present and that may affect the species or its critical habitat. During the consultation, NMFS would evaluate the agency action to determine whether the action may adversely affect listed species or critical habitat and issue its findings in a biological opinion. If NMFS concludes in the biological opinion that the agency action would likely result in the destruction or adverse modification of critical habitat, NMFS would also recommend any reasonable and prudent alternatives to the action. Reasonable and prudent alternatives are defined in 50 CFR 402.02 as alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that would avoid the destruction or adverse modification of critical habitat. Regulations at 50 CFR 402.16 require federal agencies that have retained discretionary involvement or control over an action, or where such discretionary involvement or control is authorized by law, to reinitiate consultation on previously reviewed actions in instances where: (1) Critical habitat is subsequently designated; or (2) new information or changes to the action may result in effects to critical habitat not previously considered in the biological opinion. Consequently, some Federal agencies may request reinitiation of consultation or conference with NMFS on actions for which formal consultation has been completed, if those actions may affect designated critical habitat or adversely modify or destroy proposed critical habitat.

Activities subject to the ESA section 7 consultation process include activities on Federal lands and activities on private or state lands requiring a permit from a Federal agency or some other Federal action, including funding. In the marine environment, activities subject to the ESA section 7 consultation process include activities in Federal waters and in state waters that (1) have the potential to affect listed species or critical habitat, and (2) are carried out by a Federal agency, need a permit or license from a Federal agency, or receive funding from a Federal agency. ESA section 7 consultation would not be required for Federal actions that do not affect listed species or critical habitat and for actions in the marine environment or on non-Federal and private lands that are not Federally funded, authorized, or carried out.

Activities That May Be Affected

ESA section 4(b)(8) requires in any proposed or final regulation to designate or revise critical habitat an evaluation and brief description of those activities (whether public or private) that may adversely modify such habitat or that may be affected by such designation. A variety of activities may affect the proposed critical habitat and may be subject to the ESA section 7 consultation process when carried out, funded, or authorized by a Federal agency. As indicated above and in the 4(b)(2) report, activities (3) through (6) and (9) are only predicted to result in incremental administrative costs of consultation. As discussed previously, the activities most likely to be affected by this critical habitat designation, once finalized, are: (1) Water Quality/NPDES permitting and regulatory activities (Unit 1); (2) Oil Spill Response (Unit 1); (3) Maintenance Dredging and Disposal or Dredging (Unit 2); (4) Construction Permitting (Unit 2); (5) Offshore Liquid Natural Gas Facilities (Unit 1); (6) Oil and Gas Exploration and Development (Unit 1); (7) Offshore alternative energy development activities (Unit 2); (8) Directed copepod fisheries (Unit 1); and (9) Marine aquaculture (Unit 2). Private entities may also be affected by this proposed critical habitat designation if a Federal permit is required, Federal funding is received, or the entity is involved in or receives benefits from a Federal project. These activities will need to be evaluated with respect to their potential to destroy or adversely modify critical habitat. Changes to the actions to avoid destruction or adverse modification of proposed critical habitat may result in changes to some activities. Please see the ESA Section 4(b)(2) Report (NMFS 2014b) for more details and examples of changes that may need to occur in order for activities to minimize or avoid destruction or adverse modification of designated critical habitat. Questions regarding whether specific activities will constitute destruction or adverse modification of critical habitat should be directed to NMFS (see **ADDRESSES** and **FOR FURTHER INFORMATION CONTACT**).

Public Comments Solicited

We request that interested persons submit comments, information, maps, and suggestions concerning this proposed rule during the comment period (see **DATES**). We are soliciting comments or suggestions from the public, other concerned governments and agencies, the scientific community, industry, or any other interested party concerning this proposed rule. We are also soliciting economic data and information pertaining to our economic analysis and our Initial Regulatory Flexibility Analysis to improve our assessment of the impacts of this proposed rule on small entities. You may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES**). The proposed rule, maps, fact sheets, references, and other materials relating to this proposal can be found on the NMFS Greater Atlantic Region Web site at *www.greateratlantic.fisheries.noaa.gov/*. We will consider all comments pertaining to this designation received during the comment period in preparing the final rule. Accordingly, the final designation may differ from this proposal.

Public Hearings

50 CFR 424.16(c)(3) requires the Secretary of Commerce (Secretary) to promptly hold at least one public hearing if any person requests one within 45 days of publication of a proposed rule to designate critical habitat. Such hearings provide the opportunity for interested individuals and parties to give comments, exchange information and opinions, and engage in a constructive dialogue concerning this proposed rule.

Information Quality Act and Peer Review

The data and analyses supporting this proposed action have undergone a pre-dissemination review and have been determined to be in compliance with applicable information quality guidelines implementing the Information Quality Act (IQA) (Section 515 of Public Law 106–554). On July 1, 1994, a joint USFWS/NMFS policy for peer review was issued stating that the Services would solicit independent peer review to ensure the best biological and commercial data is used in the development of rulemaking actions and draft recovery plans under the ESA (59 FR 34270). In addition, on December 16, 2004, the Office of Management and Budget (OMB) issued its Final Information Quality Bulletin for Peer Review (Bulletin). The Bulletin was published in the **Federal Register** on January 14, 2005 (70 FR 2664), and went into effect on June 16, 2005. The primary purpose of the Bulletin is to improve the quality and credibility of scientific information disseminated by the Federal government by requiring peer review of ''influential scientific information'' and ''highly influential scientific information'' prior to public dissemination. ''Influential scientific information is defined as information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions.'' The Bulletin provides agencies broad discretion in determining the appropriate process and level of peer review. Stricter standards were established for the peer review of ''highly influential scientific assessments,'' defined as information whose ''dissemination could have a potential impact of more than $500 million in any one year on either the public or private sector or that the dissemination is novel, controversial, or precedent-setting, or has significant interagency interest.''

The Draft Biological Source Document (NMFS 2014a) and Draft Section 4(b)(2) Report (NMFS 2014b) supporting this proposed critical habitat rule are considered influential scientific information and subject to peer review. To satisfy our requirements under the OMB Bulletin, we obtained independent peer review of those draft documents, which support this critical habitat proposal, and incorporated the peer review comments prior to dissemination of this proposed rulemaking. For this action, compliance with the OMB Peer Review Bulletin satisfies any peer review requirements under the 1994 joint peer review policy.

The Draft Biological Source Document (2014a) and Draft ESA Section 4(b)(2) Report (NMFS 2014b) prepared in support of this proposal for critical habitat for the North Atlantic right whale are available on our Web site at *www.greateratlantic.fisheries.noaa.gov,* on the Federal eRulemaking Web site at *http://www.regulations.gov,* or upon request (see **ADDRESSES**).

Required Determinations

Regulatory Planning and Review (E.O. 12866)

This proposed rule has been determined to be significant under Executive Order (E.O.) 12866.

National Environmental Policy Act

An environmental analysis as provided for under the National Environmental Policy Act (NEPA) for critical habitat designations made pursuant to the ESA is not required. See *Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied, 116 S.Ct. 698 (1996).

Regulatory Flexibility Act

We prepared an initial regulatory flexibility analysis (IRFA) pursuant to section 603 of the Regulatory Flexibility Act (5 U.S.C. 601, *et seq.*), which describes the economic impact this proposed rule, if adopted, would have on small entities. The IRFA is found in Appendix B of the Draft ESA Section 4(b)(2) Report and is available upon request (see **ADDRESSES**). A summary of that document follows.

This proposed action would replace the 1994 critical habitat for right whales in the North Atlantic with two new areas of critical habitat for the North Atlantic right whale pursuant to ESA sections 4(a)(3)(A)(i) and 4(b)(3)(D). The areas under consideration contain approximately 29,953 nm^2 of marine habitat in the Gulf of Maine-Georges Bank region (Unit 1) and off the coasts of northern Florida, Georgia, South Carolina and the southern part of North Carolina (Unit 2). The purpose of this action is to designate, within the geographical area occupied by the species at the time it was listed, the specific areas that contain the physical and biological features essential to the conservation of the species and which may require special management considerations or protection. No areas outside the species' geographical range have been identified as essential to its conservation; therefore, none are proposed for designation in this action. The objective is to help conserve endangered North Atlantic right whales.

The proposed critical habitat rule does not directly apply to any particular entity, small or large. The rule would be implemented under ESA Section 7(a)(2), which requires that Federal agencies insure, in consultation with NMFS, that any action they authorize, fund, or carry out is not likely to destroy or adversely modify critical habitat. That consultation process may result in the recommendation or requirement of project modifications in order to protect critical habitat.

The proposed rule, in conjunction with the section 7(a)(2) consultation process, may indirectly affect small businesses, small nonprofit organizations, and small governmental jurisdictions if they engage in activities that may affect the essential features identified in this proposed designation and if they receive funding or authorization for such activity from a federal agency. Such activities would trigger ESA section 7 consultation requirements and potential requirements to modify proposed activities to avoid destroying or adversely modifying the critical habitat. The proposed rule may also indirectly benefit small entities that benefit from or strive for the protection of the essential features, such as commercial fishing and whale watching industries. The past consultation record from which we have projected likely federal actions over the next 10 years indicates that applicants for federal permits or funds have included small entities in the past.

A review of historical ESA section 7 consultations involving projects in the areas proposed for designation is described in Section 3.2 of the Draft ESA Section 4(b)(2) Report prepared for this rulemaking. We have concluded, based on our review of past section 7 consultations, and analyses in our draft 4(b)(2) report (NMFS 2014b), that no category of activity would trigger consultation on the basis of the critical habitat designation alone. Based on our review of past consultations, we have identified five categories of activities that may affect the proposed critical habitat: in Unit 1 National Pollution Discharge Elimination System (NPDES) permitting and oil spill response and; in Unit 2 dredging and spoil disposal, marine construction permitting, and construction, and operation of energy facilities. Of those, we identified the following categories of actions that may have incremental impacts: for Unit 1, water quality/NPDES and, oil spill response. We did not identify any for Unit 2. We also identified four new (*i.e.,* not previously consulted on) categories of federal activities that may occur in the future and, if they do occur, may affect the essential features. In Unit 1 these potential activities are: (1) Oil and gas exploration and development activities; and (2) directed copepod fisheries. In Unit 2 we have identified three categories of federal activities that could occur in the future: (1) Oil and gas exploration; (2) offshore alternative energy developments; and (3) marine aquaculture. Of those, we identified the following categories of actions that may have incremental impacts: Oil and gas exploration; (2) offshore alternative energy developments. Potential project modifications we have identified that may be required to prevent these types of projects from destroying or adversely modifying critical habitat include: Project relocation, project redesign, conditions monitoring, water quality standard modification, pollution control measures, timing restrictions, and area restrictions as outlined in Table 11 of the Draft ESA Section 4(b)(2) Report (NMFS 2014b).

While we cannot determine relative numbers of small and large entities that may be affected by this proposed rule, there is no indication that affected project applicants would be limited to, nor disproportionately comprise, small entities. It is unclear whether small entities would be placed at a competitive disadvantage compared to large entities. However, as described in the Draft ESA Section 4(b)(2) Report (NMFS 2014b), consultations and project modifications will be required based on the type of permitted action and its associated impacts on the essential critical habitat feature. Because the costs of many potential project modifications that may be required to avoid adverse modification of critical habitat are unit costs such that total project modification costs would be proportional to the size of the project, it is not unreasonable to assume that larger entities would be involved in implementing the larger projects with proportionally larger project modification costs.

It is also unclear whether the proposed rule will significantly reduce profits or revenue for small businesses. As discussed throughout the Draft ESA Section 4(b)(2) Report (NMFS 2014b), we assumed all of the future consultations that may result in incremental costs attributable to the proposed critical habitat will be formal consultations. This conclusion likely results in an overestimate of the impacts of the proposed action. In addition, as stated previously, though it is not possible to determine the exact cost of any given project modification resulting from consultation, the smaller projects most likely to be undertaken by small entities would likely result in relatively small modification costs.

Economic impacts of the proposed action consist of two main components: administrative costs, and costs of modifying projects in order to avoid destroying or adversely modifying the critical habitat. These costs may be incurred by NMFS, the Federal action agency, or a third party proposing the activity in areas proposed as critical habitat. The only quantitative cost estimates we can provide for this proposed action are the estimated administrative costs associated with ESA section 7 consultations required due to potential impacts to both the proposed critical habitat and the listed species. Based on our analysis in the 4(b)(2) report (NMFS 2014b), we have identified categories of federal actions that ''may affect'' the essential features in the future, but all of these projects will also affect the listed species. We considered whether any of these future activities may pose a greater threat to the essential features than to the listed species in order to identify any incremental costs of the designation. Based on our review (NMFS 2014b), we have determined that impacts resulting from EPA's management of municipal wastewater discharges to offshore waters and EPA's activities implementing the NPDES programs, as well as the USCG authorization or use of dispersants during an oil spill response in Unit 1, are more attributable to the critical habitat designation and are therefore incremental. In addition, we have identified two potential future activities that may have greater effects on the essential features than the species, and thus the impacts are incremental. These are oil and gas exploration and development in Unit 1 and the development of offshore renewable energy in Unit 2. Therefore, we conclude that there are incremental impacts attributable to this critical habitat designation. The associated estimated administrative annual costs for the projected number of formal consultations projected to be focused more on critical habitat are expected to cost approximately $82,296 per year. Economic effects from the action are not expected to be significant and are not anticipated to affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities.

Third party applicants or permittees would be expected to incur costs associated with participating in the administrative process of consultation along with the permitting federal agency. The average per consultation administrative costs for third parties is approximately $880. Because we have assumed all potential future consultations will be formal this may represent an overestimation of the costs. It is not possible to identify which third parties would qualify as small business entities. This action does not contain any new collection-of-information, reporting, recordkeeping, or other compliance requirements. Any reporting requirements associated with reporting on the progress and success of implementing project modifications are not likely to require special skills to satisfy.

In Unit 1, commercial fishing is the largest revenue generating activity occurring within the proposed critical habitat Unit 1; commercial fishing is not identified as an activity for which project modifications might be necessary. We have concluded, that with the exception of a possible future proposal to conduct a directed copepod fishery, the proposed action to designate critical habitat for the North Atlantic right whale will not have a direct impact on the profitability of small commercial fishing entities. That is because we have concluded that current fishing practices and techniques will not affect the essential foraging features in Unit 1. In 2014, based on a review of the number of active fishing vessels and dealers and trips landed in ME, NH, MA or RI in the Gulf of Maine Region, we have determined that there were 483 dealers and 8,094 fishing vessels that meet the definition of small business entities. These numbers likely provide an overestimate of the total number of vessels and fish dealers engaged in the harvest of seafood within Unit 1 as it includes some non-federally-permitted vessels fishing only in state waters. As noted in the 4(b)(2) report, with the exception of a potential future proposal for a directed copepod fishery there are no fishery related activities that would trigger consultation on the basis of the critical habitat designation.

In Unit 1, another potentially impacted small entity identified is small municipalities. A review of the consultation history indicates that we have consulted with the U.S. EPA on small governmental jurisdictions' (population less than or equal to 50,000) municipal wastewater discharges adjacent to the area under consideration for designation as critical habitat. Based on our review of past consultation history we are projecting a total of 2l consultations over the next 10 years involving primarily small municipalities and NPDES/Water Quality activities. Any small municipality that proposes to discharge pollutants to waters of the United States must obtain a discharge permit from EPA or their appropriate state environmental protection agency, depending on which agency administers the permit program, to ensure compliance with the Clean Water Act. The Section 7 consultation requirement applies to the EPA's, but not state agencies', authorization of discharges that may affect listed species and critical habitat. Of the states bordering proposed Unit 1, EPA administers the discharge permit program only in Massachusetts and New Hampshire; therefore, consultations with EPA would be required for municipal discharges only from those two states. Thus, the number of small municipalities that might be impacted would be less than the 20 predicted to be involved in consultations from all states bordering Unit 1, over the next 10 years. Generally, discharge permits need to be renewed every 5 years unless they are administratively extended, so there is the potential for consultation approximately every 5 years or so. In the past, we have consulted with EPA on discharges from publicly owned treatment works operated by small municipalities. Based on the past consultation history, we believe that any future economic impact to small municipalities due to consultation to analyze impacts to right whale critical habitat from wastewater discharge would be small.

Other small business entities include the approximately 55–70 whale-watching companies that operate within the area on which are found the essential foraging features under consideration for designation as critical habitat. While these small businesses may benefit indirectly from the preservation of the current ecosystem, approach regulations prohibit the targeting of right whales by these whale watching operations. Whale watching companies would not be negatively affected by this action as their activities were not identified as having the potential to affect the features. There is the potential for some unquantifiable positive benefit to accrue to these small businesses as a result of the preservation and maintenance of the ecosystem benefits associated with the essential foraging features.

In Unit 2, the only category of potentially impacted small entities is wind energy firms. Structures associated with these activities could fragment large, continuous areas of the essential features such that Unit 2 is rendered unsuitable for calving right whales. Potential project modifications to minimize impacts to essential features would likely focus on project design and density of structures. The SBA revised the size standards for 13 industries in the North American Industry Classification system (NAICS) Sector 22, Utilities. Relevant to this proposed action, the revised SBA small business now categorizes the small business entity for wind electric power generation as any firm with 250 employees or less. We are unable to quantify the incremental impacts at this time due to the lack of past consultation history and any specific or planned federal proposals for these projects. Thus, we would only be speculating in estimating the number of potential projects in this category that may require consultation due to critical habitat impacts over the next 10 years, and further speculating in predicting the number of small entities that might be involved.

No federal laws or regulations duplicate or conflict with the proposed rule. Existing Federal laws and regulations overlap with the proposed rule only to the extent that they provide protection to marine natural resources or whales generally. However, no existing laws or regulations specifically prohibit destruction or adverse modification of critical habitat for, and focus on the recovery of, North Atlantic right whales.

We encourage all small businesses, small governmental jurisdictions, and other small entities that may be affected by this proposed rule to comment on the potential economic impacts of the proposed designation, such as anticipated costs of consultation and potential project modifications, to improve the draft analysis.

The alternatives to the proposed designation considered consisted of a no-action alternative, our preferred alternative, and an alternative with larger areas designated in both Unit 1 and Unit 2 areas. The no-action, or no designation, alternative would result in no additional ESA section 7 consultations relative to the status quo of the species' listing and existing critical habitat. However, the physical and biological features forming the basis for our proposed critical habitat designation are essential to North Atlantic right whale conservation, and conservation for this species will not succeed without the availability of these features. Thus, the lack of protection of the critical habitat features from adverse modification could result in continued declines in abundance of the right whale, and loss of associated economic values right whales provide to society.

Under the preferred alternative two specific areas that provide foraging (Unit 1) and calving (Unit 2) functions for the North Atlantic right whale are proposed as critical habitat. These areas contain the physical and biological features essential to the conservation of the North Atlantic right whale. The preferred alternative was selected because it reflects the best available scientific information on right whale habitat, best implements the critical habitat provisions of the ESA by defining the specific features that are essential to the conservation of the species, and offers greater conservation benefits relative to the no action alternative.

Under the Unit 1 alternative, we considered an area that would encompass additional right whale sightings within the Gulf of Maine-Georges Bank region (particularly inshore waters along the coasts of Maine, New Hampshire and Massachusetts), as well as additional right whale sightings to the south and east of the southern boundary of proposed Unit 1 resulting in a much larger geographic area. However, these sightings did not constitute a pattern of repeated annual observations. In addition, North Atlantic right whales are seldom reported in small coastal bays and inshore waters and feeding aggregations are not in these areas, indicating that the physical and biological features present in these areas do not provide the foraging functions essential to the conservation of the species in these areas. Therefore, we rejected this alternative because the inshore waters along the coasts of Maine, New Hampshire and Massachusetts are not considered to meet the definition of critical habitat.

In addition we considered including areas to the south and east of the southern boundary of the proposed Unit 1 to encompass additional right whale sightings. These right whale sightings were not included within the proposed areas because a pattern of repeated annual observations is not evident in these areas. Typically, whales are sighted in these areas in one year, but are not seen again for a number of years. Most likely, these are sightings of migrating whales (Pace and Merrick 2008).

In Unit 2, we considered extending the boundaries to just south of Cape Canaveral, Florida, similar to existing SE calving critical habitat. Moving the proposed boundary southward would have captured southern habitat predicted by Good's (2008) calving habitat model for one month. However, Garrison's (2007) habitat model didn't predict suitable calving habitat that far south when based on the 75th percentile of predicted sightings per unit effort (SPUE) (91% of historical sightings). Since Garrison's 75th percentile captures 91% of historical sightings, we were comfortable with not examining additional model results by Garrison (*e.g.,* habitat based on 65th–70th percentile of predicted SPUE which would represent >91% of historical sightings). Good's model also predicted suitable habitat for one month north of our proposed Unit 2 boundary along much of North Carolina. However, Good stated that the combined model using all four months (Jan-March) best represented calving habitat in space and time. Garrison (2007) and Keller *et al.* (2012) cautioned against extending their models too far north of where the underlying data were collected because other ecological variables may come into play. Given that the 75th percentile from Garrison (2007) and Keller *et al.* (2012) and Good's (2008) habitat selected in three and four months account for 91 and 85 percent of all observed right whale mother-calf pair sightings, respectively, and Good's (2008) combined (four month) model is the best representation of potential calving habitat both in time and space, we believe these predicted habitat areas are the best basis for determining right whale calving habitat in the southeastern U.S. Consequently, we considered, but eliminated, the alternatives of farther south (to ~Canaveral) or farther north (along the entire North Carolina coast), based on the reasons stated above.

Coastal Zone Management Act

We have determined that this action will have no reasonably foreseeable effects on the enforceable policies of approved Coastal Zone Management Program of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia and Florida. Upon publication of this proposed rule, these determinations will be submitted for review by the responsible state agencies under section 307 of the Coastal Zone Management Act.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This proposed rule does not contain a new or revised collection of information. This rule would not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations.

Federalism (E.O. 13132)

Pursuant to the Executive Order on Federalism, E.O. 13132, we determined that this proposed rule does not have significant Federalism effects and that a Federalism assessment is not required. However, in keeping with Department of Commerce policies and consistent with ESA regulations at 50 CFR 424.16(c)(1)(ii), we request information from, and will coordinate development of this proposed critical habitat designation with, appropriate state resource agencies in Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. The proposed designations may have some benefit to state and local resource agencies in that the proposed rule more clearly defines the physical and biological features essential to the conservation of the species and the areas on which those features are found. It may also assist local governments in long-range planning (rather than waiting for case by-case ESA section 7 consultations to occur).

Energy Supply, Distribution, and Use (E.O. 13211)

On May 18, 2001, the President issued an Executive Order on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking an action expected to lead to the promulgation of a final rule or regulation that is a significant regulatory action under E.O. 12866 and is likely to have a significant adverse effect on the supply, distribution, or use of energy. OMB Guidance on Implementing E.O. 13211 (July 13, 2001) states that significant adverse effects could include any of the following outcomes compared to a world without the regulatory action under consideration: (1) Reductions in crude oil supply in excess of 10,000 barrels per day; (2) reductions in fuel production in excess of 4,000 barrels per day; (3) reductions in coal production in excess of 5 million tons per year; (4) reductions in natural gas production in excess of 25 million mcf per year; (5) reductions in electricity production in excess of 1 billion kilowatt-hours per year or in excess of 500 megawatts of installed capacity; (6) increases in energy use required by the regulatory action that exceed any of the thresholds above; (7) increases in the cost of energy production in excess of one percent; (8) increases in the cost of energy distribution in excess of one percent; or (9) other similarly adverse outcomes. A regulatory action could also have significant adverse effects if it: (1) Adversely affects in a material way the productivity, competition, or prices in the energy sector; (2) adversely affects in a material way productivity, competition or prices within a region; (3) creates a serious inconsistency or otherwise interfere with an action taken or planned by another agency regarding energy; or (4) raises novel legal or policy issues adversely affecting the supply, distribution or use of energy arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866 and 13211. This rule, if finalized, will not have a significant adverse effect on the supply, distribution, or use of energy. Therefore, we have not prepared a Statement of Energy Effects. The rationale for this determination follows.

We have considered the potential impacts of this action on the supply, distribution, or use of energy. The proposed critical habitat designation will not affect the distribution or use of energy and would not affect supply. We have concluded that oil and gas exploration and development that might occur in the future, offshore liquid natural gas (LNG) facilities, and alternative energy projects may affect both the species and the essential features of critical habitat. As discussed in the Draft Section 4(b)(2) Report, we anticipate that there may be small additional incremental administrative and project modification costs associated with the section 7 consultations on oil/gas exploration/development in Unit 1 and alternative energy projects in Unit 2 due to this proposed rule.

With regard to LNG facilities in Unit 1, we do not anticipate incremental impacts from this rule on LNG activities based on our analysis of the potential impacts of this activity. Absent this proposed critical habitat rule, federal agencies authorizing, funding, or carrying out these energy-related activities would be required to consult with NMFS regarding impacts to right whales themselves, and other listed species such as sea turtles, under the jeopardy standard. However, if this critical habitat rule were finalized, we would expect the additional, critical habitat-related administrative costs to be miniscule, and we would expect any critical habitat-related project modification costs to insignificant.

The proposed action might result in project modifications that result in changes to how energy extraction is conducted, but these modifications would not result in a reduction of energy supply or production or increases in energy use. The proposed action would not result in an increase in the cost of energy production in excess of one percent.

In Unit 2, depending on the size, scale, and configuration of a potential wind farm, the installation and operation of an array of wind turbines may fragment large, continuous areas of the essential features such that Unit 2 is rendered unsuitable for calving right whales. Therefore, potential project modifications may be recommended during a section 7 consultation including project relocation or project redesign. Recommending relocation of a proposed wind farm may result in increased costs per kilowatt (kW). These increased costs may stem from increased distance from shore, increased water depths, or different environmental conditions at the alternative site, each of which may drive up construction, installation, or operation and maintenance costs. Because potential project modifications recommended during a section 7 consultation are dependent on the specific project and the circumstances of the new project's routes of effect on the species and the essential features, an estimate of the average cost or range of costs resulting from these recommendations cannot be reasonably made at this time.

As discussed, above and in the Draft ESA Section 4(b)(2) Report, any potential project modification that would be recommended to avoid impacts to the species would also address potential impacts to the essential features. In addition, in some cases, potential project modifications are common environmental mitigation measures that are already being performed under existing laws and regulations that seek to prevent or minimize adverse impacts to marine resources in general. Therefore, it appears unlikely that the energy industry will experience ''a significant adverse effect'' as a result of the critical habitat designation for North Atlantic right whale.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act, NMFS makes the following findings:

(A) This final rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, Tribal governments, or the private sector and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or Tribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal government's responsibility to provide funding'' and the State, local, or Tribal governments ''lack authority'' to adjust accordingly. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance; or (ii) a duty arising from participation in a voluntary Federal program.'' The designation of critical habitat does not impose an enforceable duty on non-Federal government entities or private parties. The only regulatory effect of a critical habitat designation is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under ESA section 7. Non-Federal entities who receive funding, assistance, or permits from Federal agencies, or otherwise require approval or authorization from a Federal agency for an action may be indirectly affected by the designation of critical habitat. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed previously to State governments.

(B) We do not anticipate that this final rule will significantly or uniquely affect small governments. As such, a Small Government Agency Plan is not required.

Takings (E.O. 12630)

Under E.O. 12630, Federal agencies must consider the effects of their actions on constitutionally protected private property rights and avoid unnecessary takings of property. A taking of property includes actions that result in physical invasion or occupancy of private property, and regulations imposed on private property that substantially affect its value or use. In accordance with E.O. 12630, this proposed rule would not have significant takings implications. A takings implication assessment is not required. The designation of critical habitat in the marine environment does not affect private property, and it affects only Federal agency actions.

References

A complete list of all references cited in this rulemaking can be found on our Web site at *www.greateratlantic.fisheries.noaa.gov/* and is available upon request from the NMFS Greater Atlantic Regional Office in Gloucester, Massachusetts (see **ADDRESSES**).

List of Subjects in 50 CFR Part 226

Endangered and threatened species.

Dated: February 12, 2015.

Samuel D. Rauch, III,

Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.

For the reasons set out in the preamble, we propose to amend 50 CFR part 226 as follows:

PART 226—DESIGNATED CRITICAL HABITAT

■ 1. The authority citation for part 226 continues to read as follows:

Authority: 16 U.S.C. 1533.

■ 2. Revise § 226.203 to read as follows:

§ 226.203 Critical habitat for North Atlantic right whales (Eubalaena glacialis).

Critical habitat is designated for North Atlantic right whales as described in this section. The textual descriptions in paragraph (b) of this section are the definitive source for determining the critical habitat boundaries. The maps of the critical habitat units provided in paragraph (c) of this section are for illustrative purposes only.

(a) Physical and biological features essential to the conservation of endangered North Atlantic right whales.

(1) *Unit 1.* The physical and biological features essential to the conservation of the North Atlantic right whale, which provide foraging area functions in Unit 1 are: The physical oceanographic conditions and structures of the Gulf of Maine and Georges Bank region that combine to distribute and aggregate *C. finmarchicus* for right whale foraging, namely prevailing currents and circulation patterns, bathymetric features (basins, banks, and channels), oceanic fronts, density gradients, and temperature regimes; low flow velocities in Jordan, Wilkinson, and Georges Basins that allow diapausing *C. finmarchicus* to aggregate passively below the convective layer so that the copepods are retained in the basins; late stage *C. finmarchicus* in dense aggregations in the Gulf of Maine and Georges Bank region; and diapausing *C. finmarchicus* in aggregations in the Gulf of Maine and Georges Bank region.

(2) *Unit 2.* The physical features essential to the conservation of the North Atlantic right whale, which provide calving area functions in Unit 2, are:

(i) Sea surface conditions associated with Force 4 or less on the Beaufort Scale,

(ii) Sea surface temperatures of 7 °C to 17 °C, and

(iii) Water depths of 6 to 28 meters, where these features simultaneously co-occur over contiguous areas of at least 231 nmi^2 of ocean waters during the months of November through April. When these features are available, they are selected by right whale cows and calves in dynamic combinations that are suitable for calving, nursing, and rearing, and which vary, within the ranges specified, depending on factors such as weather and age of the calves.

(b) Critical habitat boundaries. Critical habitat includes two areas (Units) located in the Gulf of Maine and Georges Bank Region (Unit 1) and off the coast of North Carolina, South Carolina, Georgia and Florida (Unit 2).

(1) Unit 1. The specific area on which are found the physical and biological features essential to the conservation of the North Atlantic right whale include all waters, seaward of the boundary delineated by the line connecting the geographic coordinates and landmarks identified herein:

(i) The southern tip of Nauset Beach (Cape Cod) (41°38.39′ N/69°57.32′ W)

(ii) From this point, southwesterly to 41°37.19′ N/69°59.11′ W

(iii) From this point, southward along the eastern shore of South Monomoy Island to 41°32.76′ N/69°59.73′ W

(iv) From this point, southeasterly to 40°50′ N/69°12′ W

(v) From this point, east to 40°50′ N 68°50′ W

(vi) From this point, northeasterly to 42°00′ N 67°55′ W

(vii) From this point, east to 42°00′ N 67°30′ W

(viii) From this point, northeast to the intersection of the U.S.-Canada maritime boundary and 42°10′ N

(ix) From this point, following the U.S.-Canada maritime boundary north to the intersection of 44°49.727′ N/66°57.952′ W; From this point, moving southwest along the coast of Maine, the specific area is located seaward of the line connecting the following points:

Lat	Long
44°49.727′ N	66°57.952′ W.
44°49.67′ N	66°57.77′ W.
44°48.64′ N	66°56.43′ W.
44°47.36′ N	66°59.25′ W.
44°45.51′ N	67°2.87′ W.
44°37.7′ N	67°9.75′ W.
44°27.77′ N	67°32.86′ W.
44°25.74′ N	67°38.39′ W.
44°21.66′ N	67°51.78′ W.
44°19.08′ N	68°2.05′ W.
44°13.55′ N	68°10.71′ W.
44°8.36′ N	68°14.75′ W.
43°59.36′ N	68°37.95′ W.
43°59.83′ N	68°50.06′ W.
43°56.72′ N	69°4.89′ W.
43°50.28′ N	69°18.86′ W.
43°48.96′ N	69° 31.15′ W.
43°43.64′ N	69°37.58′ W.
43°41.44′ N	69°45.27′ W.
43°36.04′ N	70°3.98′ W.
43°31.94′ N	70°8.68′ W.
43°27.63′ N	70°17.48′ W.
43°20.23′ N	70°23.64′ W.
43°4.06′ N	70°36.70′ W.
43°2.93′ N	70°41.47′ W.

(x) From this point (43°2.93′ N/70°41.47′ W) on the coast of New Hampshire south of Portsmouth, the boundary of the specific area follows the coastline southward along the coasts of New Hampshire and Massachusetts along Cape Cod to Provincetown southward along the eastern edge of Cape Cod to the southern tip of Nauset Beach (Cape Cod) (41°38.39′ N/69°57.32′ W) with the exception of the area landward of the lines drawn by connecting the following points:

42°59.986′ N	70°44.654′ W	TO	Rye Harbor.
42°59.956′ N	70°44.737′ W		Rye Harbor.
42°53.691′ N	70°48.516′ W	TO	Hampton Harbor.
42°53.516′ N	70°48.748′ W		Hampton Harbor.
42°49.136′ N	70°48.242′ W	TO	Newburyport Harbor.
42°48.964′ N	70°48.282′ W		Newburyport Harbor.
42°42.145′ N	70°46.995′ W	TO	Plum Island Sound.
42°41.523′ N	70°47.356′ W		Plum Island Sound.
42°40.266′ N	70°43.838′ W	TO	Essex Bay.
42°39.778′ N	70°43.142′ W		Essex Bay.
42°39.645′ N	70°36.715′ W	TO	Rockport Harbor.
42°39.613′ N	70°36.60′ W		Rockport Harbor.
42° 20.665′ N	70° 57.205′ W	TO	Boston Harbor.
42° 20.009′ N	70° 55.803′ W		Boston Harbor.
42° 19.548′ N	70° 55.436′ W	TO	Boston Harbor.
42° 18.599′ N	70° 52.961′ W		Boston Harbor.
42°15.203′ N	70°46.324′ W	TO	Cohasset Harbor.
42°15.214′ N	70°47.352′ W		Cohasset Harbor.
42°12.09′ N	70°42.98′ W	TO	Scituate Harbor.
42°12.211′ N	70°43.002′ W		Scituate Harbor.
42°09.724′ N	70°42.378′ W	TO	New Inlet.
42°10.085′ N	70°42.875′ W		New Inlet.
42°04.64′ N	70°38.587′ W	TO	Green Harbor.

42°04.583′ N	70°38.631′ W		Green Harbor.
41°59.686′ N	70°37.948′ W	TO	Duxbury Bay/Plymouth Harbor.
41°58.75′ N	70°39.052′ W		Duxbury Bay/Plymouth Harbor.
41°50.395′ N	70°31.943′ W	TO	Ellisville Harbor.
41°50.369′ N	70°32.145′ W		Ellisville Harbor.
41°45.53′ N	70°09.387′ W	TO	Sesuit Harbor.
41°45.523′ N	70°09.307′ W		Sesuit Harbor.
41°45.546′ N	70°07.39′ W	TO	Quivett Creek.
41°45.551′ N	70°07.32′ W		Quivett Creek.
41°47.269′ N	70°01.411′ W	TO	Namskaket Creek.
41°47.418′ N	70°01.306′ W		Namskaket Creek.
41°47.961′ N	70°0.561′ W	TO	Rock Harbor Creek.
41°48.07′ N	70°0.514′ W		Rock Harbor Creek.
41°48.932′ N	70°0.286′ W	TO	Boat Meadow River.
41°48.483′ N	70°0.216′ W		Boat Meadow River.
41°48.777′ N	70°0.317′ W	TO	Herring River.
41°48.983′ N	70°0.196′ W		Herring River.
41°55.501′ N	70°03.51′ W	TO	Herring River, inside Wellfleet Harbor.
41°55.322′ N	70°03.191′ W		Herring River, inside Wellfleet Harbor.
41°53.922′ N	70°01.333′ W	TO	Blackfish Creek/Loagy Bay.
41°54.497′ N	70°01.182′ W		Blackfish Creek/Loagy Bay.
41°55.503′ N	70°02.07′ W	TO	Duck Creek.
41°55.753′ N	70°02.281′ W		Duck Creek.
41°59.481′ N	70°04.779′ W	TO	Pamet River.
41°59.563′ N	70°04.718′ W		Pamet River.
42°03.601′ N	70°14.269′ W	TO	Hatches Harbor.
42°03.601′ N	70°14.416′ W		Hatches Harbor.
41°48.708′ N	69°56.319′ W	TO	Nauset Harbor.
41°48.554′ N	69°56.238′ W		Nauset Harbor.
41°40.685′ N	69°56.781′ W	TO	Chatham Harbor.
41°40.884′ N	69°56.28′ W		Chatham Harbor.

(xi) In addition, the specific area does not include waters landward of the 72 COLREGS lines (33 CFR part 80) as described in paragraphs (b)(1)(xi)(A), (B), and (C) of this section.

(A) Portland Head, ME to Cape Ann, MA—A line drawn from the northernmost extremity of Farm Point to Annisquam Harbor Light.

(B) Cape Ann MA to Marblehead Neck, MA—(*1*) A line drawn from Gloucester Harbor Breakwater Light to the twin towers charted at latitude 42°35.1′ N. longitude 70°41.6′ W.

(*2*) A line drawn from the westernmost extremity of Gales Point to the easternmost extremity of House Island; thence to Bakers Island Light; thence to Marblehead Light.

(C) Hull, MA to Race Point, MA—(*1*) A line drawn from Canal Breakwater Light 4 south to the shoreline.

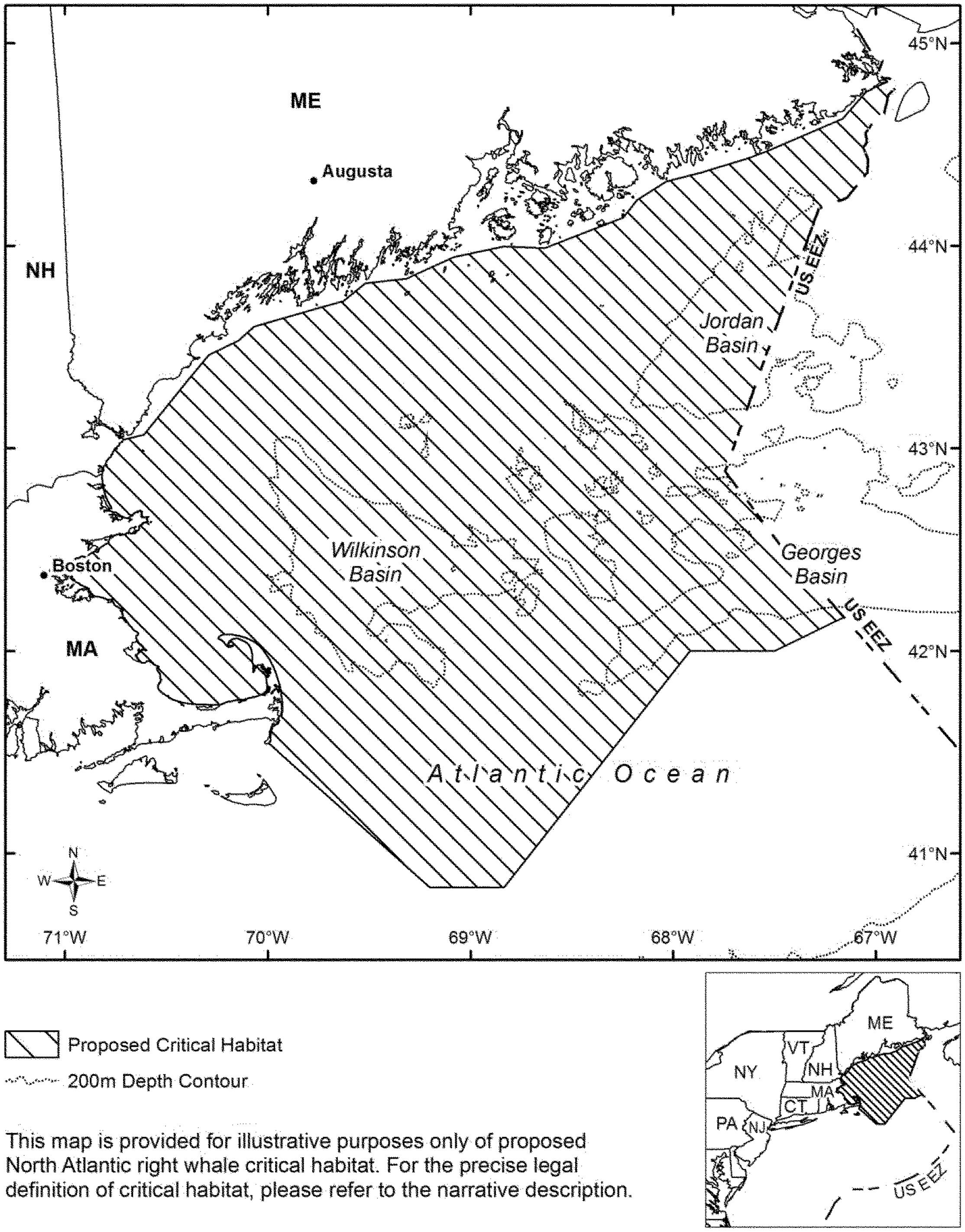
(xii) The specific area does not include inshore areas, bays, harbors and inlets, as delineated in paragraphs (b)(1)(x) and (xi) of this section.

(2) *Unit 2.* Unit 2 includes marine waters from Cape Fear, North Carolina, southward to 29°N latitude (approximately 43 miles north of Cape Canaveral, Florida) within the area bounded on the west by the shoreline and the 72 COLREGS lines, and on the east by rhumb lines connecting the following points in the order stated from north to south.

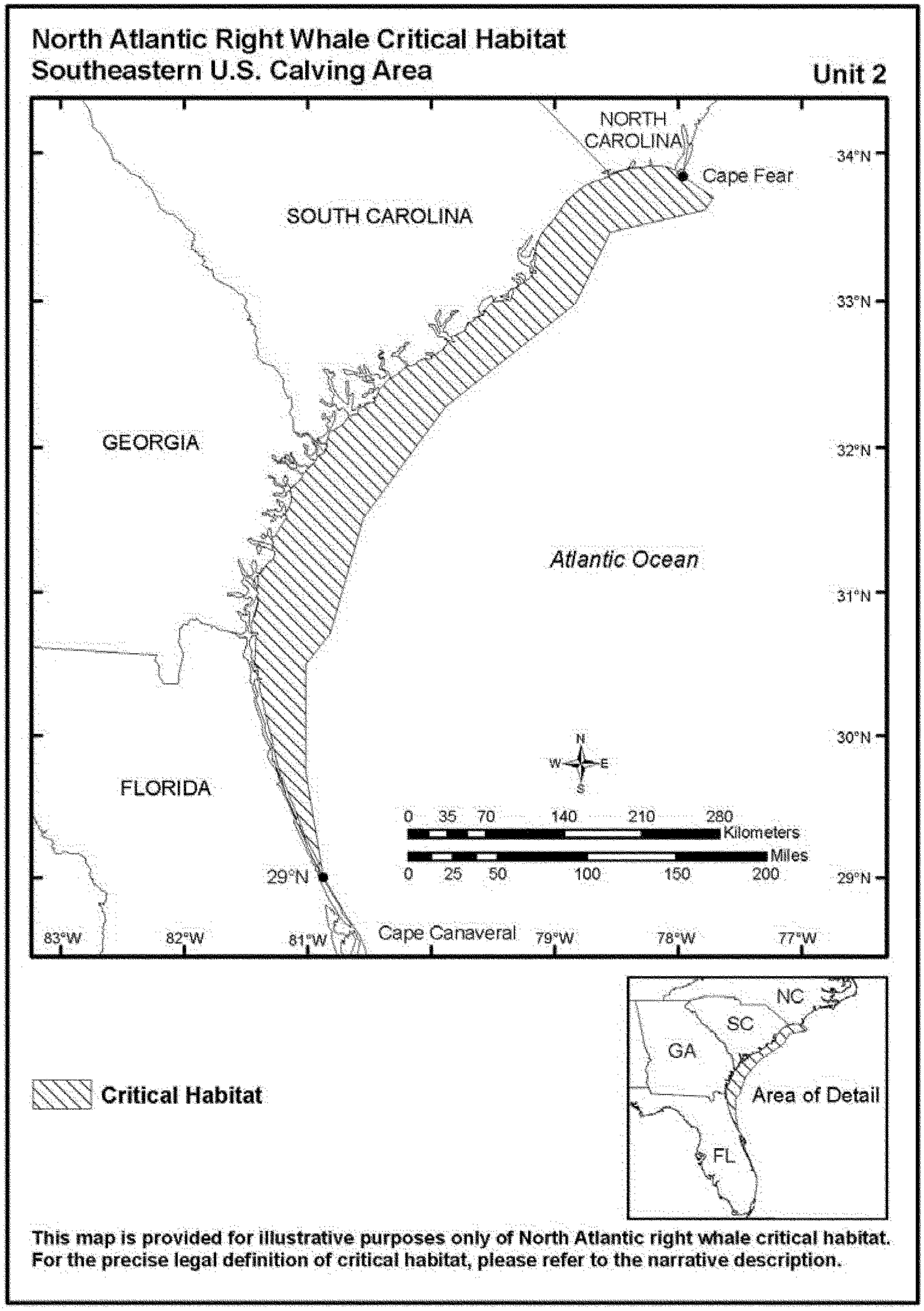
N Latitude	W Longitude
33°51′	at shoreline
33°42′	77°43′
33°37′	77°47
33°28′	78°33
32°59′	78°50′
32°17′	79°53′
31°31′	80°33′
30°43′	80°49′
30°30′	81°01′
29°45′	81°01′
29°00′	at shoreline

(c) Overview maps of the designated critical habitat for the North Atlantic right whale follow.

North Atlantic Right Whale Critical Habitat
Proposed Northeastern U.S. Foraging Area **Unit 1**



This map is provided for illustrative purposes only of proposed North Atlantic right whale critical habitat. For the precise legal definition of critical habitat, please refer to the narrative description.



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