SAILING DIRECTIONS CORRECTIONS

PUB 146 16 Ed 2014 LAST NM 12/15

Pub. 146 has been updated to 26 March 2016, including Notice to Mariners 13/2016, and can be downloaded from the NGA Maritime Website
http://msi.nga.mil/NGAPortal/MSI.portal
(NGA) 18/16

PUB 175 12 Ed 2014 LAST NM 38/14

Pub. 175 has been updated to 2 April 2016, including Notice to Mariners 14/2016, and can be downloaded from the NGA Maritime Website
http://msi.nga.mil/NGAPortal/MSI.portal
(NGA) 18/16

COAST PILOT CORRECTIONS

COAST PILOT 1 45 Ed 2015 20 MAR 2016
LAST NM 47/15

Chapter 2—Paragraphs 2738 to 2749.25; read:

(2738) **§226.203 Critical habitat for North Atlantic right whales (Eubalaena glacialis).**

(2739) 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.

(2740) (a) Physical and biological features essential to the conservation of endangered North Atlantic right whales.

(2741) (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.

(2742) (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:

(2743) (i) Sea surface conditions associated with Force 4 or less on the Beaufort Scale,

(2744) (ii) Sea surface temperatures of 7°C to 17°C, and

(2745) (iii) Water depths of 6 to 28 meters, where these features simultaneously co-occur over contiguous areas of at least 231 nm^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.

(2746) (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).

(2747) (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:

(2748) (i) The southern tip of Nauset Beach (Cape Cod) (41°38.39′N., 69°57.32′W.).

(2749) (ii) From this point, southwesterly to 41°37.19′N., 69°59.11′W.

(2749.01) (iii) From this point, southward along the eastern shore of South Monomoy Island to 41°32.76′N., 69°59.73′W.

(2749.02) (iv) From this point, southeasterly to 40°50′N., 69°12′W.

(2749.03) (v) From this point, east to 40°50′N., 68°50′W.

(2749.04) (vi) From this point, northeasterly to 42°00′N., 67°55′W.

(2749.05) (vii) From this point, east to 42°00′N., 67°30′W.

(2749.06) (viii) From this point, northeast to the intersection of the U.S.-Canada maritime boundary and 42°10′N.

(2749.07) (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:

(2749.08) Insert table titled **Table 226.203** from back of this Subsection.

COAST PILOT 1 (Continued)

(2749.09) (x) From this point (43°2.55′N., 70°43.33′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:

(2749.10) Insert table titled **Table 226.203a** from back of this Subsection.

(2749.11) (xi) In addition, the specific area does not include waters landward of the 72 COLREGS lines (33 CFR part 80) described below.

(2749.12) (A) Portland Head, ME to Cape Ann, MA.

(2749.13) (1) A line drawn from the northernmost extremity of Farm Point to Annisquam Harbor Light.

(2749.14) (2) [Reserved]

(2749.15) (B) Cape Ann MA to Marblehead Neck, MA.

(2749.16) (1) A line drawn from Gloucester Harbor Breakwater Light to the twin towers charted at latitude 42°35′06.177"N., longitude 70°41′32.330"W.

(2749.17) (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.

(2749.18) (C) Hull, MA to Race Point, MA.

(2749.19) (1) A line drawn from Canal Breakwater Light 4 south to the shoreline.

(2749.20) (2) [Reserved]

(2749.21) (2) Unit 2. Unit 2 includes marine waters from Cape Fear, North Carolina, southward to 28°N latitude (approximately 31 miles south 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.foraging area and southeastern calving area. (See 50 CFR 226.203, chapter 2 for limits, regulations and exceptions).

(2749.22) Insert new table titled **Table 226.203b** from back of this Subsection.

(2749.23) (c) Overview maps of the designated critical habitat for the North Atlantic right whale follow.

(2749.24) Insert new table titled **North Atlantic Right Whale Critical Habitat Northeastern U.S. Foraging Area Unit 1** from back of this Subsection.

(2749.25) Insert new table titled **North Atlantic Right Whale Critical Habitat Southeastern U.S. Calving Area Unit 2** from back of this Subsection.

(L 85-2016; FR 1/27/16) 18/16

COAST PILOT 1 45 Ed 2015 27 MAR 2016

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and

COAST PILOT 1 (Continued)

sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

Chapter 2—Paragraphs 2168 to 2168.11; read:

(2168) **§165.120 Security Zone, John Joseph Moakley United States Courthouse, Boston, MA.**

(2168.01) (a) Location. This security zone encompasses all U.S. navigable waters, from surface to bottom, within five hundred (500) yards of the John Joseph Moakley United States Courthouse (Moakley Courthouse) in Boston, MA, and following any natural waterside seawall configuration.

(2168.02) (b) Regulations. While this security zone is being enforced, the following regulations, along with those contained in 33 CFR 165.33, apply:

(2168.03) (1) No person or vessel may enter or remain in this security zone without the permission of the Captain of the Port (COTP), Sector Boston. However, the COTP hereby grants vessels permission to enter this security zone as long as such vessels proceed through the area with caution and operate at a speed no faster than that speed necessary to maintain a safe course, unless otherwise required by the Navigation Rules as published in 33 CFR part 83 and remain beyond one hundred (100) yards of the Moakley Courthouse in Boston, MA, following any natural waterside seawall configuration enclosed by a line connecting the following points:

(2168.04) <Insert new table titled **Table 165** from back of this Subsection.>

(2168.05) (2) Although vessels have permission to enter the five hundred (500) yards security zone under the conditions mentioned in the preceding paragraph, no person or vessel may come within one hundred (100) yards of the Moakley Courthouse under any conditions unless given express permission from the COTP or the COTP's designated representatives.

(2168.06) (3) Any person or vessel permitted to enter the security zone shall comply with the directions and orders of the COTP or the COTP's representatives. Upon being hailed by siren, radio, flashing lights, or other means, the operator of a vessel within the zone shall proceed as directed. Any person or vessel within the security zone shall exit the zone when directed by the COTP or the COTP's representatives.

(2168.07) (4) To obtain permissions required by this regulation, individuals may reach the COTP or a COTP representative via VHF channel 16 or 617–223–5757 (Sector Boston Command Center) to obtain permission.

(2168.08) (5) Penalties. Those who violate this section are subject to the penalties set forth in 33 U.S.C. 1232 and 50 U.S.C. 192.

(2168.09) (c) Effective and enforcement period. This security zone is in effect permanently but will only be enforced when deemed necessary by the COTP. Anyone, including members of federal, state or local law enforcement agencies, may request that this security zone be enforced.

(2168.10) (d) Notification. The COTP will notify the public of the enforcement of this security zone by publishing a Notice of Enforcement (NOE) in the Federal Register and via the other means listed in 33 CFR 165.7. Such notifications will include the date and times of enforcement, along with any predetermined conditions of entry.

(2168.11) (e) COTP representative. The COTP's representative may be any Coast Guard commissioned, warrant, or petty officer or any Federal, state, or local law enforcement officer who has been designated by the COTP to act on the COTP's behalf. The COTP's representative may be on a Coast Guard vessel, a Coast Guard Auxiliary vessel, federal, state or local law enforcement or safety vessel, or a location on shore.

(FR 3/1/16) 18/16

COASTPILOT1 45Ed2015

Chapter 3—Paragraph 61; read:

(61) Seasonal occurrence of North Atlantic right whales—During seasons and in areas where right whales may occur, vessel operators should maintain a sharp lookout for whales and reduce speeds when consistent with safe navigation. In any given year oceanographic variability may affect the seasonal distribution of right whales. In 1986, right whales were frequently sighted within the Stellwagen Bank National Marine Sanctuary throughout the summer, and in the early spring of 1998 a large number of right whales were documented near the Narragansett/Buzzards Bay Traffic Separation Scheme. Two areas in U.S. waters have been designated as critical habitats for North Atlantic right whales; the northeastern foraging area and southeastern calving area. (See 50 CFR 226.203, chapter 2 for limits, regulations and exceptions).

(L 85-2016) 18/16

COAST PILOT 1 (Continued)

Chapter 11—Paragraph 141; read:

(141) Endangered North Atlantic right whales may occur in the Stellwagen Bank and Jefferys Ledge area year-round (peak season for Jefferys Ledge: October through December; peak season in the Stellwagen Bank: early spring). This area has been designated as the Gerry E. Studds-Stellwagen Bank National Marine Sanctuary, and includes the North Atlantic Right Whale Critical Habitat Northeastern Foraging Area (See 50 CFR 226.203, chapter 2, for limits and regulations.) The Pilots distribute educational material to mariners in an effort to reduce right whale ship strikes. (See North Atlantic Right Whales, indexed as such, chapter 3, for more information on right whales and recommended measures to avoid collisions with whales.)

(L 85-2016) 18/16

Chapter 12—Paragraph 64; read:

(64) Cape Cod Bay lies within the federally designated critical habitat for North Atlantic right whales. The Northeastern Foraging Area is a primary winter/spring feeding area, and may be inhabited by right whales year-round (peak season: December through May). (See 50 CFR 226.101 and 226.203, chapter 2 for habitat boundary and regulations.) It is illegal to approach closer than 500 yards of any right whale (see 50 CFR 224.103(c), chapter 2, for limits and regulation).

(L 85-2016) 18/16

COAST PILOT 2 45 Ed 2016 20 MAR 2016
LAST NM 5/16

Chapter 2—Paragraphs 4037 to 4048.24; read:

(4037) **§226.203 Critical habitat for North Atlantic right whales (Eubalaena glacialis).**

(4038) (a) Physical and biological features essential to the conservation of endangered North Atlantic right whales.

(4039) (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.

(4040) (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:

(4041) (i) Sea surface conditions associated with Force 4 or less on the Beaufort Scale,

(4042) (ii) Sea surface temperatures of 7°C to 17°C, and

(4043) (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.

(4044) (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).

(4045) (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:

(4046) (i) The southern tip of Nauset Beach (Cape Cod) (41°38.39′N., 69°57.32′W.).

(4047) (ii) From this point, southwesterly to 41°37.19′N., 69°59.11′W.

(4048) (iii) From this point, southward along the eastern shore of South Monomoy Island to 41°32.76′N., 69°59.73′W.

(4048.01) (iv) From this point, southeasterly to 40°50′N., 69°12′W.

(4048.02) (v) From this point, east to 40°50′N., 68°50′W.

(4048.03) (vi) From this point, northeasterly to 42°00′N., 67°55′W.

(4048.04) (vii) From this point, east to 42°00′N., 67°30′W.

(4048.05) (viii) From this point, northeast to the intersection of the U.S.-Canada maritime boundary and 42°10′N.

(4048.06) (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:

COAST PILOT 2 (Continued)

(4048.07) Insert table titled **Table 226.203** from back of this Subsection.

(4048.08) (x) From this point (43°2.55′N., 70°43.33′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:

(4048.09) Insert table titled **Table 226.203a** from back of this Subsection.

(4048.10) (xi) In addition, the specific area does not include waters landward of the 72 COLREGS lines (33 CFR part 80) described below.

(4048.11) (A) Portland Head, ME to Cape Ann, MA.

(4048.12) (1) A line drawn from the northernmost extremity of Farm Point to Annisquam Harbor Light.

(4048.13) (2) [Reserved]

(4048.14) (B) Cape Ann MA to Marblehead Neck, MA.

(4048.15) (1) A line drawn from Gloucester Harbor Breakwater Light to the twin towers charted at latitude 42°35′06.177"N., longitude 70°41′32.330"W.

(4048.16) (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.

(4048.17) (C) Hull, MA to Race Point, MA.

(4048.18) (1) A line drawn from Canal Breakwater Light 4 south to the shoreline.

(4048.19) (2) [Reserved]

(4048.20) (2) Unit 2. Unit 2 includes marine waters from Cape Fear, North Carolina, southward to 28°N latitude (approximately 31 miles south 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.foraging area and southeastern calving area. (See 50 CFR 226.203, chapter 2 for limits, regulations and exceptions).

(4048.21) Insert new table titled **Table 226.203b** from back of this Subsection.

(4048.22) (c) Overview maps of the designated critical habitat for the North Atlantic right whale follow.

(4048.23) Insert new table titled **North Atlantic Right Whale Critical Habitat Northeastern U.S. Foraging Area Unit 1** from back of this Subsection.

(4048.24) Insert new table titled **North Atlantic Right Whale Critical Habitat Southeastern U.S. Calving Area Unit 2** from back of this Subsection.

(L 85-2016) 18/16

Chapter 3—Paragraph 52; read:

(52) Seasonal occurrence of North Atlantic right whales—During seasons and in areas where right whales may occur, vessel operators should maintain a sharp lookout for whales and reduce speeds when consistent with safe navigation. In any given year oceanographic variability may affect the seasonal distribution of right whales. In 1986, right whales were frequently sighted within the Stellwagen Bank National Marine Sanctuary throughout the summer, and in the early spring of 1998 a large number of right whales were documented near the Narragansett/ Buzzards Bay Traffic Separation Scheme. Two areas in U.S. waters have been designated as critical habitats for North Atlantic right whales; the northeastern foraging area and southeastern calving area. (See 50 CFR 226.203, chapter 2 for limits, regulations and exceptions).

(L 85-2016) 18/16

Chapter 3—Paragraph 141; read:

(141) Great South Channel lies within the federally designated critical habitat for North Atlantic right whales. In some years, more than a third of the remaining population of North Atlantic right whales can be found in the Great South Channel at any one time. It is illegal to approach closer than 500 yards of any right whale. (See 50 CFR 224.103(c), chapter 2, for limits and regulations.) It is recommended that all large vessels (over 100 gross tons) avoid operating in the critical habitat during the peak period of right whale occurrence (March through July). When the area cannot be avoided, precautionary measures should be taken to reduce the risk of ship strikes. (See North Atlantic Right Whales, indexed as such, in chapter 3 for more information on right whales and recommended measures to avoid collisions with whales.)

(L 85-2016) 18/16

COAST PILOT 2 45 Ed 2016 27 MAR 2016

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000

COAST PILOT 2 (Continued)

scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

COAST PILOT 3 49 Ed 2016 20 MAR 2016
LAST NM 10/16

Chapter 3—Paragraphs 3326 to 3337.25; read:

(3326) **§226.203 Critical habitat for North Atlantic right whales (Eubalaena glacialis).**

(3327) 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.

(3328) (a) Physical and biological features essential to the conservation of endangered North Atlantic right whales.

(3329) (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.

(3330) (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:

(3331) (i) Sea surface conditions associated with Force 4 or less on the Beaufort Scale,

(3332) (ii) Sea surface temperatures of 7°C to 17°C, and

(3333) (iii) Water depths of 6 to 28 meters, where these features simultaneously co-occur over contiguous areas of at least 231 nm^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.

(3334) (b) Critical habitat boundaries. Critical habitat includes two areas (Units) located in the Gulf of Maine and

COAST PILOT 3 (Continued)

Georges Bank Region (Unit 1) and off the coast of North Carolina, South Carolina, Georgia and Florida (Unit 2).

(3335) (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:

(3336) (i) The southern tip of Nauset Beach (Cape Cod) (41°38.39′N., 69°57.32′W.).

(3337) (ii) From this point, southwesterly to 41°37.19′N., 69°59.11′W.

(3337.01) (iii) From this point, southward along the eastern shore of South Monomoy Island to 41°32.76′N., 69°59.73′W.

(3337.02) (iv) From this point, southeasterly to 40°50′N., 69°12′W.

(3337.03) (v) From this point, east to 40°50′N., 68°50′W.

(3337.04) (vi) From this point, northeasterly to 42°00′N., 67°55′W.

(3337.05) (vii) From this point, east to 42°00′N., 67°30′W.

(3337.06) (viii) From this point, northeast to the intersection of the U.S.-Canada maritime boundary and 42°10′N.

(3337.07) (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:

(3337.08) Insert table titled **Table 226.203** from back of this Subsection.

(3337.09) (x) From this point (43°2.55′N., 70°43.33′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:

(3337.10) Insert table titled **Table 226.203a** from back of this Subsection.

(3337.11) (xi) In addition, the specific area does not include waters landward of the 72 COLREGS lines (33 CFR part 80) described below.

(3337.12) (A) Portland Head, ME to Cape Ann, MA.

(2749.13) (1) A line drawn from the northernmost extremity of Farm Point to Annisquam Harbor Light.

(3337.14) (2) [Reserved]

(3337.15) (B) Cape Ann MA to Marblehead Neck, MA.

(3337.16) (1) A line drawn from Gloucester Harbor Breakwater Light to the twin towers charted at latitude 42°35′06.177"N., longitude 70°41′32.330"W.

(3337.17) (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.

(3337.18) (C) Hull, MA to Race Point, MA.

(3337.19) (1) A line drawn from Canal Breakwater Light 4 south to the shoreline.

(3337.20) (2) [Reserved]

(3337.21) (2) Unit 2. Unit 2 includes marine waters from Cape Fear, North Carolina, southward to 28°N latitude (approximately 31 miles south 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.foraging area and southeastern calving area. (See 50 CFR 226.203, chapter 2 for limits, regulations and exceptions).

(3337.22) Insert new table titled **Table 226.203b** from back of this Subsection.

(3337.23) (c) Overview maps of the designated critical habitat for the North Atlantic right whale follow.

(3337.24) Insert new table titled **North Atlantic Right Whale Critical Habitat Northeastern U.S. Foraging Area Unit 1** from back of this Subsection.

(3337.25) Insert new table titled **North Atlantic Right Whale Critical Habitat Southeastern U.S. Calving Area Unit 2** from back of this Subsection.

(L 85-2016) 18/16

COAST PILOT 3 49 Ed 2016 27 MAR 2016

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

COAST PILOT 3 (Continued)

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

COAST PILOT 4 47 Ed 2015 20 MAR 2016
LAST NM 7/16

Chapter 2—Paragraph 3250.01; read:

(3250.01) **§334.405 South of entrance to Chesapeake Bay off Camp Pendleton, Virginia; firing range.**

(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.02; read:

(3250.02) (a) The danger zone. An area directly from Camp Pendleton extending offshore as designated by lines drawn as follows: Beginning at latitude 36°49'00"N., longitude 75°58'04"W.; thence to latitude 36°49'19"N., longitude 75°57'41"W.; thence to latitude 36°49'21"N., longitude 75°57'32"W.; thence to latitude 36°49'13"N., longitude 75°56'44"W.; thence to latitude 36°49'22"N., longitude 75°55'48"W.; thence to latitude 36°49'12"N., longitude 75°55'46"W.; thence to latitude 36°49'02"N., longitude 75°55'45"W.; thence to latitude 36°48'52"N., longitude 75°55'45"W.; thence to latitude 36°48'54"N., longitude 75°56'42"W.; thence to latitude 36°48'41"N., longitude 75°57'28"W.; thence to latitude 36°48'41"N., longitude 75°57'37"W.; thence to latitude 36°48'57"N., longitude 75°58'04"W. The datum for these coordinates is WGS84.

(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.03; read:

(3250.03) (b) *The regulations*. (1) Persons and vessels shall proceed through the area with caution and shall remain therein no longer than necessary for purpose of transit.

(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.04; read:

(3250.04) (2) When firing is in progress during daylight hours, red flags will be displayed at conspicuous locations on the beach. No firing will be done during the hours of darkness or low visibility.

(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.05; read:

(3250.05) (3) Firing on the ranges shall be suspended as long as any persons or vessels are within the danger zone.

(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.06; read:

(3250.06) (4) Lookout posts shall be manned by the activity or agency operating the firing range State Military Reservation, Camp Pendleton.

(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.07; read:

(3250.07) (5) There shall be no firing on the range during

COAST PILOT 4 (Continued)

periods of low visibility which would prevent the recognition of a vessel (to a distance of 7,500 yards) which is properly displaying navigation lights, or which would preclude a vessel from observing the red range flags or lights.
(FR 2/29/16) 18/16

Chapter 2—Paragraph 3250.08; read:

(3250.08) (c) *Enforcement*. The regulations in this section shall be enforced by the Adjutant General of Virginia, and such agencies as he or she may designate.
(FR 2/29/16) 18/16

Chapter 2—Paragraph 3902; read:

(3902) **§226.203 Critical habitat for North Atlantic right whales (*Eubalaena glacialis*).**
(L 85-2016) 18/16

Chapter 2—Paragraph 3903; read:

(3903) 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.
(L 85-2016) 18/16

Chapter 2—Paragraph 3904; read:

(3904) (a) Physical and biological features essential to the conservation of endangered North Atlantic right whales.
(L 85-2016) 18/16

Chapter 2—Paragraph 3905; read:

(3905) (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.
(L 85-2016) 18/16

Chapter 2—Paragraph 3906; read:

(3906) (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:
(L 85-2016) 18/16

Chapter 2—Paragraph 3907; read:

(3907) (i) Sea surface conditions associated with Force 4 or less on the Beaufort Scale,
(L 85-2016) 18/16

Chapter 2—Paragraph 3908; read:

(3908) (ii) Sea surface temperatures of 7°C to 17°C, and
(L 85-2016) 18/16

Chapter 2—Paragraph 3909; read:

(3909) (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.
(L 85-2016) 18/16

Chapter 2—Paragraph 3910; read:

(3910) (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).
(L 85-2016) 18/16

Chapter 2—Paragraph 3911; read:

(3911) (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:
(L 85-2016) 18/16

Chapter 2—Paragraph 3912; read:

(3912) (i) The southern tip of Nauset Beach (Cape Cod) (41°38.39′N., 69°57.32′W.).
(L 85-2016) 18/16

Chapter 2—Paragraph 3913; read:

(3913) (ii) From this point, southwesterly to 41°37.19′N., 69°59.11′W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.01; read:

(3913.01) (iii) From this point, southward along the eastern

COAST PILOT 4 (Continued)

shore of South Monomoy Island to 41°32.76′N., 69°59.73′W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.02; read:
(3913.02) (iv) From this point, southeasterly to 40°50′N., 69°12′W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.03; read:
(3913.03) (v) From this point, east to 40°50′N., 68°50′W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.04; read:
(3913.04) (vi) From this point, northeasterly to 42°00′N., 67°55′W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.05; read:
(3913.05) (vii) From this point, east to 42°00′N., 67°30′W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.06; read:
(3913.06) (viii) From this point, northeast to the intersection of the U.S.-Canada maritime boundary and 42°10′N.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.07; read:
(3913.07) (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:
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.08; replace with below:
(3913.08) New table titled **Table 226.203** from back of this Subsection.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.09; read:
(3913.09) (x) From this point (43°02.55′N., 70°43.33′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:
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.10; replace with below:
(3913.10) New table titled **Table 226.203a** from back of this Subsection.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.11; read:
(3913.11) (xi) In addition, the specific area does not include waters landward of the 72 COLREGS lines (33 CFR part 80) described below.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.12; read:
(3913.12) (A) *Portland Head, ME to Cape Ann, MA.*
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.13; read:
(3913.13) (1) A line drawn from the northernmost extremity of Farm Point to Annisquam Harbor Light.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.14; read:
(3913.14) (2) [Reserved]
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.15; read:
(3913.15) (B) *Cape Ann MA to Marblehead Neck, MA.*
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.16; read:
(3913.16) (1) A line drawn from Gloucester Harbor Breakwater Light to the twin towers charted at latitude 42°35′06.177"N., longitude 70°41′32.330"W.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.17; read:
(3913.17) (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.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.18; read:
(3913.18) (C) *Hull, MA to Race Point, MA.*
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.19; read:
(3913.19) (1) A line drawn from Canal Breakwater Light 4 south to the shoreline.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.20; read:
(3913.20) (2) [Reserved]
(L 85-2016) 18/16

COAST PILOT 4 (Continued)

Chapter 2—Paragraph 3913.21; read:

(3913.21) (2) *Unit 2*. Unit 2 includes marine waters from Cape Fear, North Carolina, southward to 28°N latitude (approximately 31 miles south 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.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.22; replace with below:

(3913.22) New table titled **Table 226.203b** from back of this Subsection.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.23; read:

(3913.23) (c) Overview maps of the designated critical habitat for the North Atlantic right whale follow.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.24; replace with below:

(3913.24) New graphic titled **North Atlantic Right Whale Critical Habitat Northeastern U.S. Foraging Area Unit 1** from back of this Subsection.
(L 85-2016) 18/16

Chapter 2—Paragraph 3913.25; replace with below:

(3913.25) New graphic titled **North Atlantic Right Whale Critical Habitat Southeastern U.S. Calving Area Unit 2** from back of this Subsection.
(L 85-2016) 18/16

Chapter 3—Paragraph 119; read:

(119) **Seasonal occurrence of North Atlantic right whales**—During seasons and in areas where right whales may occur, vessel operators should maintain a sharp lookout for whales and reduce speeds when consistent with safe navigation. In any given year oceanographic variability may affect the seasonal distribution of right whales. In 1986, right whales were frequently sighted within the Stellwagen Bank National Marine Sanctuary throughout the summer, and in the early spring of 1998 a large number of right whales were documented near the Narragansett/Buzzards Bay Traffic Separation Scheme. Two areas in U.S. waters have been designated as critical habitats for North Atlantic right whales; the northeastern foraging area and southeastern calving area. (See **50 CFR 226.203**, chapter 2 for limits, regulations and exceptions).
(L 85-2016) 18/16

Chapter 4—Paragraph 30; read:

(30) **Firing range danger zones** are between 7 and 9 miles southward of Cape Henry. (See **33 CFR 334.380, 334.390 and 334.405**, chapter 2, for limits and regulations.)
(L 85-2016) 18/16

Chapter 8—Paragraphs 13 to 16; read:

(13) <Deleted paragraph>
(14) <Deleted paragraph>
(15) <Deleted paragraph>
(16) <Deleted paragraph>
(L 85-2016) 18/16

Chapter 8—Paragraphs 254 to 257; read:

(254) <Deleted paragraph>
(255) <Deleted paragraph>
(256) <Deleted paragraph>
(257) <Deleted paragraph>
(L 85-2016) 18/16

Chapter 9—Paragraphs 8 to 11; read:

(8) <Deleted paragraph>
(9) <Deleted paragraph>
(10) <Deleted paragraph>
(11) <Deleted paragraph>
(L 85-2016) 18/16

Chapter 10—Paragraphs 90 to 92; read:

(90) <Deleted paragraph>
(91) <Deleted paragraph>
(92) <Deleted paragraph>
(L 85-2016) 18/16

COAST PILOT 4 47 Ed 2015 27 MAR 2016

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the

COAST PILOT 4 (Continued)

diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

Chapter 10—Paragraphs 457 to 459; read:

(457) The Miami area is served by the Biscayne Bay Pilots Association, at the far east end of the Port of Miami on Dodge Island, 2911 Port Blvd., Miami, FL 33132; telephone 305–374–2791 (office), 305–375–9453 (dispatch); fax 305–374–2375; VHF-FM radiotelephone channel 16. All types of vessels are served.

(458) Biscayne Bay Pilots have three boats: MIAMI, 42 feet long; BISCAYNE, 42 feet long; VIZCAYA, 52 feet long; all boats have black hulls with buff superstructures, and the word PILOT in black letters on the sides. International Code Flag H is flown by day, and the standard pilot lights are displayed at night. The pilot boats monitor VHF-FM channel 16 and work on channel 12. The pilot boarding and cruising area is close seaward about 3 nautical miles E of Miami Lighted Buoy M (25°46′06″N., 80°05′00″W.). The buoy is equipped with a racon. Unless directed to come closer by the Biscayne Bay Pilots, ships should approach no closer. Pilots will board vessels day or night. Vessels are requested to rig the pilot ladder on the leeward side about 1 meter above the water, and maintain a speed of about 6 knots. Swift variable currents, usually E of the sea buoy, may affect boarding procedures. Cargo vessels exceeding 965 feet in length are requested to stay 3 nautical miles eastward of the sea buoy for pilot boarding. All other large deep-draft vessels are requested to stay at least 2 nautical miles eastward of the sea buoy for pilot boarding because of the strength and proximity of the Gulf stream current.

(459) Pilotage is usually arranged by telephone or fax through ship's agents. Vessels are requested to give a 24-hour advance notice of arrival with confirmation 2 hours before ETA by radiotelephone on VHF-FM channel 12.

(L 168-2016; L 1574-2015) 18/16

COAST PILOT 5 43 Ed 2015 27 MAR 2016
LAST NM 17/16

Chapter 1—Paragraphs 101 to 103; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed

COAST PILOT 5 (Continued)

when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

COAST PILOT 6 46 Ed 2016 27 MAR 2016
LAST NM 17/16

Chapter 1—Paragraphs 99 to 111; read:

(99) **Source and Zone of Confidence (ZOC) Diagrams**

(100) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(100.1) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(100.02) Add table titled **ZOC Categories** from back of this Subsection.

(100.03) Add graphic titled **ZOC Source Diagram** from back of this Subsection.

(101) Add table titled **Source Diagrams** from back of this Subsection.

(102) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(103) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(104) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(105) <Paragraph deleted>

COAST PILOT 6 (Continued)

(106) <Paragraph deleted>
(107) <Paragraph deleted>
(108) <Paragraph deleted>
(109) <Paragraph deleted>
(110) <Paragraph deleted>
(111) <Paragraph deleted>
(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

COAST PILOT 7 48 Ed 2016 27 MAR 2016
LAST NM 17/16

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>
(107) <Paragraph deleted>
(108) <Paragraph deleted>
(109) <Paragraph deleted>
(110) <Paragraph deleted>
(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.
(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

COAST PILOT 8 37 Ed 2015 27 MAR 2016
LAST NM 5/16

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

COAST PILOT 8 (Continued)

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

COAST PILOT 9 33 Ed 2015 27 MAR 2016
LAST NM 38/15

Chapter 1—Paragraphs 101 to 113; read:

(101) **Source and Zone of Confidence (ZOC) Diagrams**

(102) The age and accuracy of hydrographic survey data that support nautical charts can vary. Depth information on nautical charts, paper or digital, is based on data from the latest available hydrographic survey, which in many cases may be quite old. Diagrams are provided on nautical charts to assist mariners in assessing hydrographic survey data and the associated level of risk to navigate in a particular area. There are currently two types of diagrams shown on NOAA paper and raster navigational charts (RNCs) of 1:500,000 scale and larger—Zone of Confidence (ZOC) diagrams and source diagrams. ZOC information (designated CATZOC) is also found on electronic navigational charts (ENCs). This provides consistency in the display of source data between ENCs and newer paper charts.

(103) Both source and ZOC diagrams consist of a graphic representation of the extents of hydrographic surveys within the chart and accompanying table of related survey quality categories. CATZOC information on an ENC, unlike the diagrams on a paper chart or RNC, is displayed over the ENC data using symbols rather than letters. These symbols are displayed on a separate layer, which can be viewed when planning a route, then switched off until needed again at another time.

(103.01) Add table titled **ZOC Categories** from back of this Subsection.

(103.02) Add graphic titled **ZOC Source Diagram** from back of this subsection/

(104) On ZOC diagrams, the quality of the hydrographic data is assessed according to six categories; five quality categories for assessed data (A1, A2, B, C and D) and a sixth category (U) for data that has not yet been assessed. On the ENC, the categories are shown using a rating system of stars—the higher the quality, the greater the number of stars. Assessment of hydrographic data quality and classification into zones of confidence is based on a combination of: survey date, position accuracy, depth accuracy and sea floor coverage (the survey's ability to detect objects on the seafloor.)

(105) Source diagrams will be replaced with ZOC diagrams as new editions are created. Similar to the ZOC diagram, they provide the mariner with additional information about the density and adequacy of the sounding data depicted on the chart. The adequacy with which sounding data reflects the configuration of the bottom depends on the following factors: survey technology employed (sounding and navigation equipment), survey specifications in effect (prescribed survey line spacing and sounding interval) and type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(106) <Paragraph deleted>

(107) <Paragraph deleted>

(108) <Paragraph deleted>

(109) <Paragraph deleted>

(110) <Paragraph deleted>

(111) <Paragraph deleted>

COAST PILOT 9 (Continued)

(112) Add table titled **Source Diagrams** from back of this Subsection.

(113) Add table titled **Bottom Coverage and Survey Methods** from back of this Subsection.

(TXT 1-5/16; NCM 04/16; NOS 18622) 18/16

DIGITAL PUBS - QUARTERLY CORRECTIONS

DIGITAL PUBS - QUARTERLY (1ST QUARTER)	**161 Ed 2016 NEW EDITION**
(NGA)	N18/16

Table 226.203

Latitude	Longitude
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°02.87'W.
44°37.07'N.	67°09.75'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°02.05'W.
44°13.55'N.	68°10.71'W.
44°08.36'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°04.89'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°03.98'W.
43°31.94'N.	70°08.68'W.
43°27.63'N.	70°17.48'W.
43°20.23'N.	70°23.64'W.
43°04.06'N.	70°36.70'W.
43°02.93'N.	70°41.47'W.
43°02.55'N.	70°43.33'W.

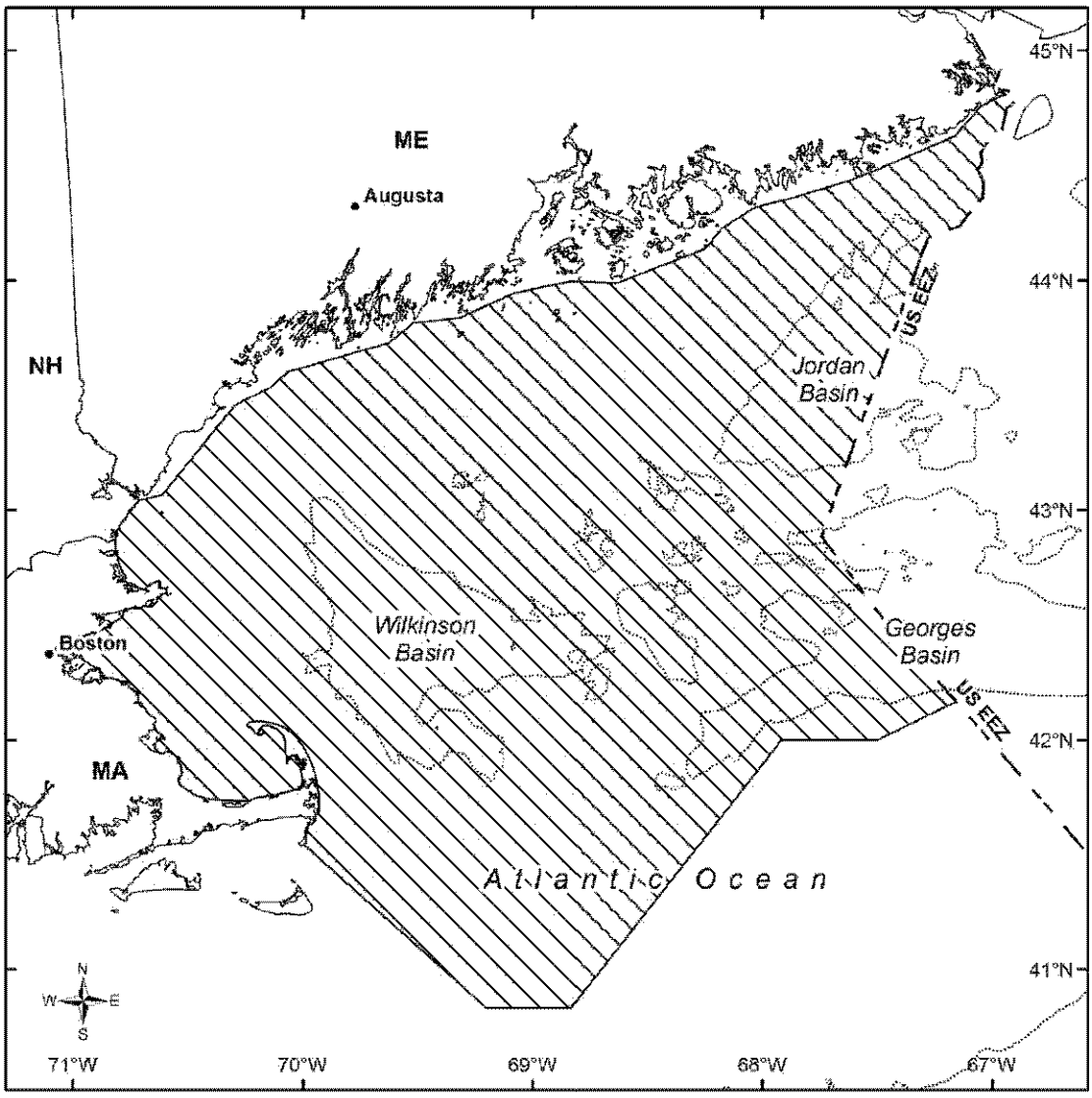
Table 226.203a

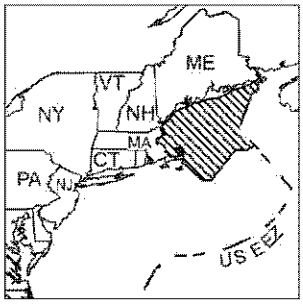
42°59.986'N.	70°44.654'W.	to	Rye Harbor
42°59.956'N.	70°44.737'W.		Rye Harbor
42°53.691'N.	70°48.516'W.	to	Hampton Harbor
42°53.519'N.	70°48.748'W.		Hampton Harbor
42°49.136'N.	70°48.242'W.	to	Newburyport Harbor
42°48.964'N.	70°48.282'W.		Newburyport Harbor
42°42.145'N.	70°46.995'W.	to	Plum Island Sound
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°45.87'N.	70°28.62'W.	to	Sandwich Harbor
41°45.75'N.	70°28.40'W.		Sandwich Harbor
41°44.93'N.	70°25.74'W.	to	Scorton Harbor
41°44.90'N.	70°25.60'W.		Scorton Harbor
41°44.00'N.	70°17.50'W.	to	Barnstable Harbor
41°44.00'N.	70°13.90'W.		Barnstable 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°48.432'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
41°03.601'N.	70°14.269'W.	to	Hatches Harbor
41°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

Table 226.203b

Latitude	Longitude
33°51'N.	at shoreline
33°42'N.	77°43'W.
33°37'N.	77°47'W.
33°28'N.	78°33'W.
32°59'N.	78°50'W.
32°17'N.	79°53'W.
31°31'N.	80°33'W.
30°43'N.	80°49'W.
30°30'N.	81°01'W.
29°45'N.	81°01'W.
29°15'N.	80°55'W.
29°08'N.	80°51'W.
28°50'N.	80°39'W.
28°38'N.	80°30'W.
28°28'N.	80°26'W.
28°24'N.	80°27'W.
28°21'N.	80°31'W.
28°16'N.	80°31'W.
28°11'N.	80°33'W.
28°00'N.	80°29'W.
28°00'N.	at shoreline

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

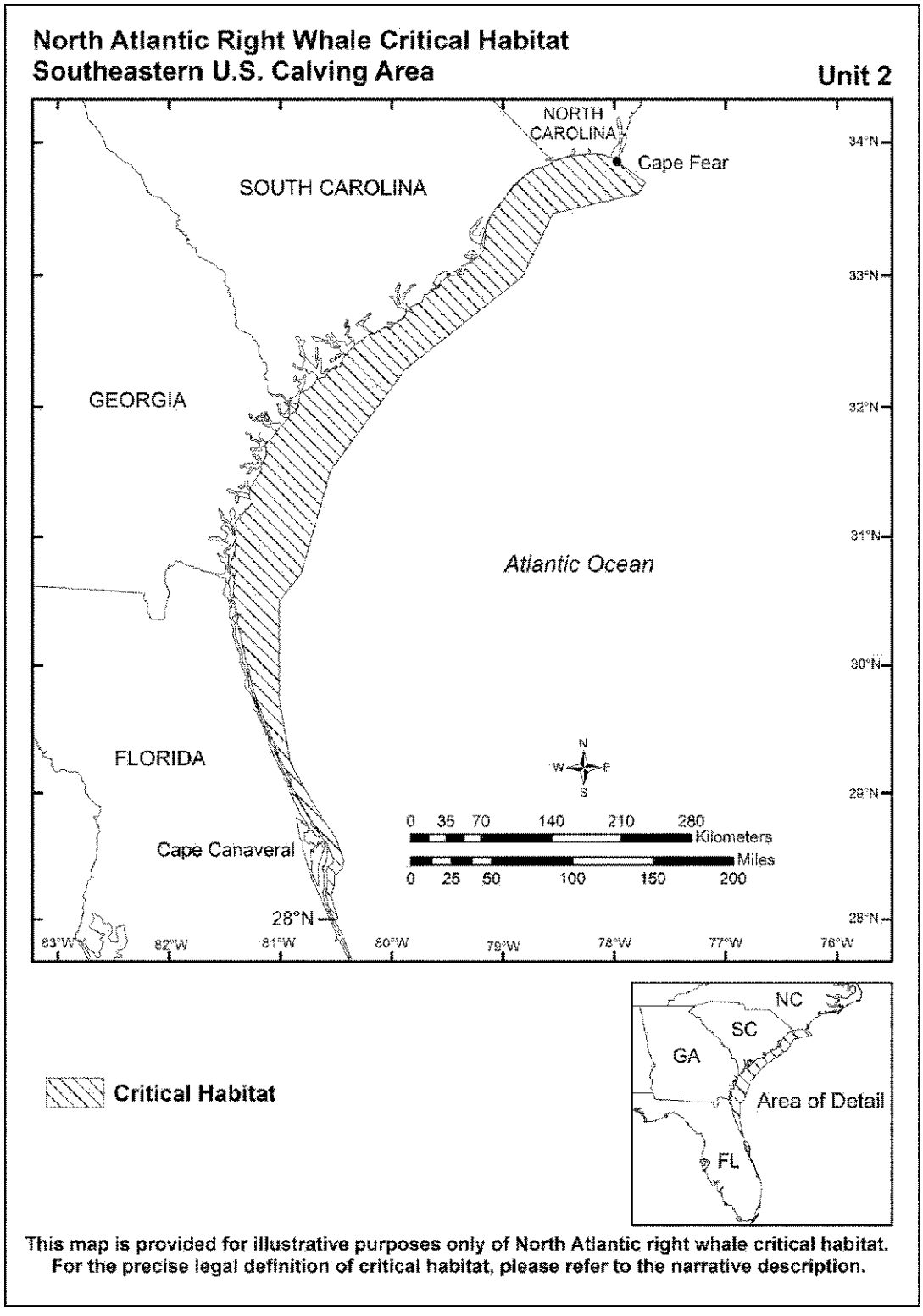




Critical Habitat

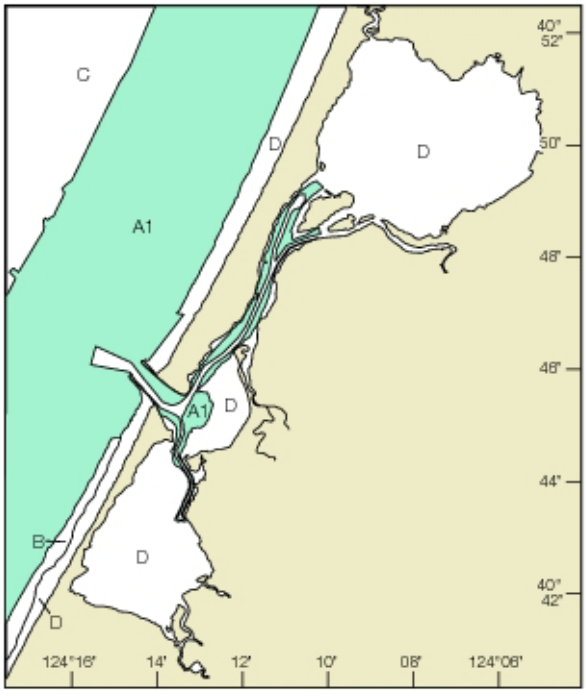
200m Depth Contour

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


North Atlantic Right Whale Critical Habitat
Southeastern U.S. Calving Area
Unit 2
NORTH CAROLINA
Cape Fear
SOUTH CAROLINA
GEORGIA
FLORIDA
Atlantic Ocean
Cape Canaveral
28°N
34°N
33°N
32°N
31°N
30°N
29°N
83°W
82°W
81°W
80°W
79°W
78°W
77°W
76°W
N
W
E
S
0 35 70 140 210 280
Kilometers
0 25 50 100 150 200
Miles
Critical Habitat
NC
SC
GA
FL
Area of Detail
This map is provided for illustrative purposes only of North Atlantic right whale critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.

ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

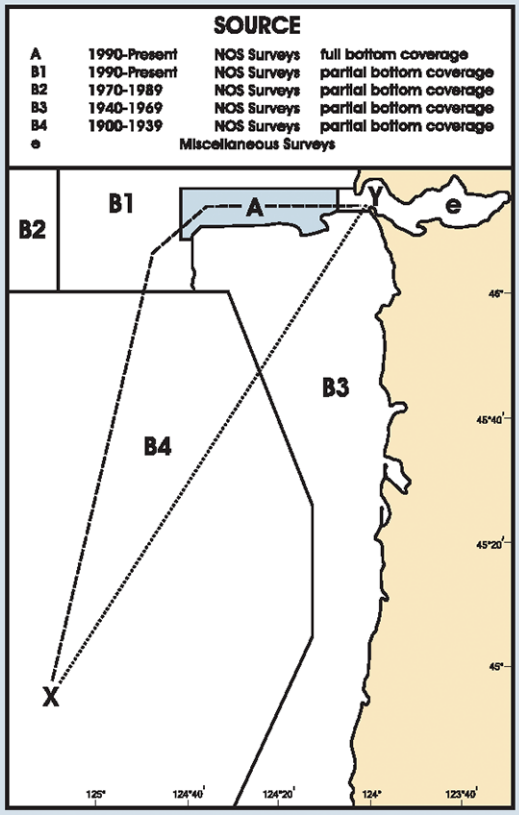
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

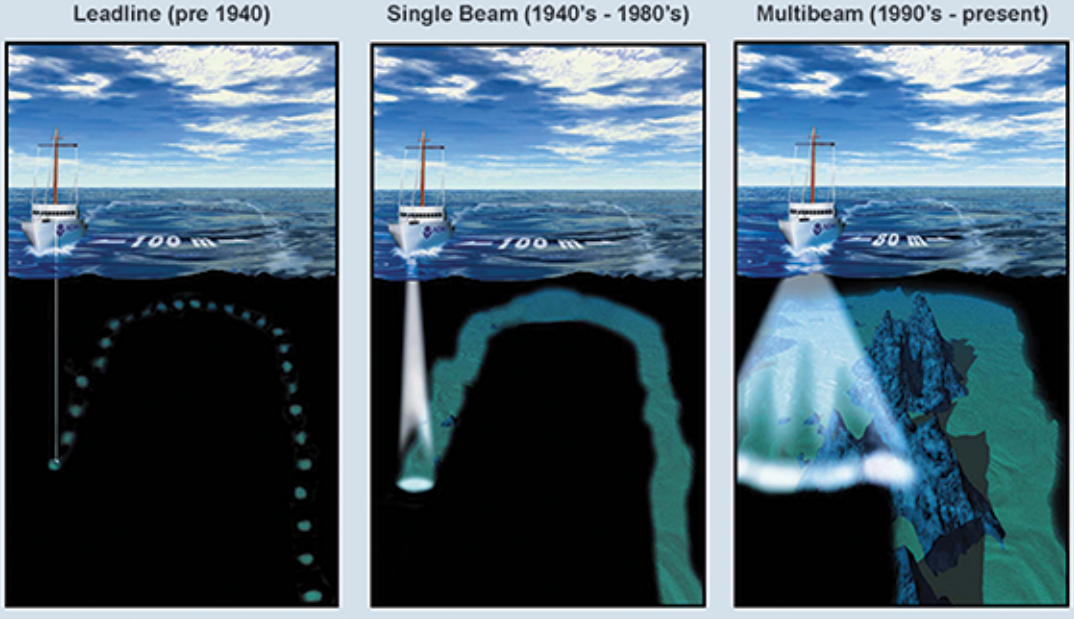
Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.



Chapter 2

Table 165

Latitude	Longitude
42°21'15"N.	71°02'54"W.; Bounded by the curvature of the seawall, thence to
42°21'18"N.	71°02'43"W.; thence to
42°21'20"N.	71°02'40"W.; Bounded by 100 yards off the curvature of the seawall, thence to
42°21'16"N.	71°02'57"W.; thence to point of origin.

COAST PILOT 1

Chapter 2

Table 226.203

Latitude	Longitude
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°02.87'W.
44°37.07'N.	67°09.75'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°02.05'W.
44°13.55'N.	68°10.71'W.
44°08.36'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°04.89'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°03.98'W.
43°31.94'N.	70°08.68'W.
43°27.63'N.	70°17.48'W.
43°20.23'N.	70°23.64'W.
43°04.06'N.	70°36.70'W.
43°02.93'N.	70°41.47'W.
43°02.55'N.	70°43.33'W.

COAST PILOT 2

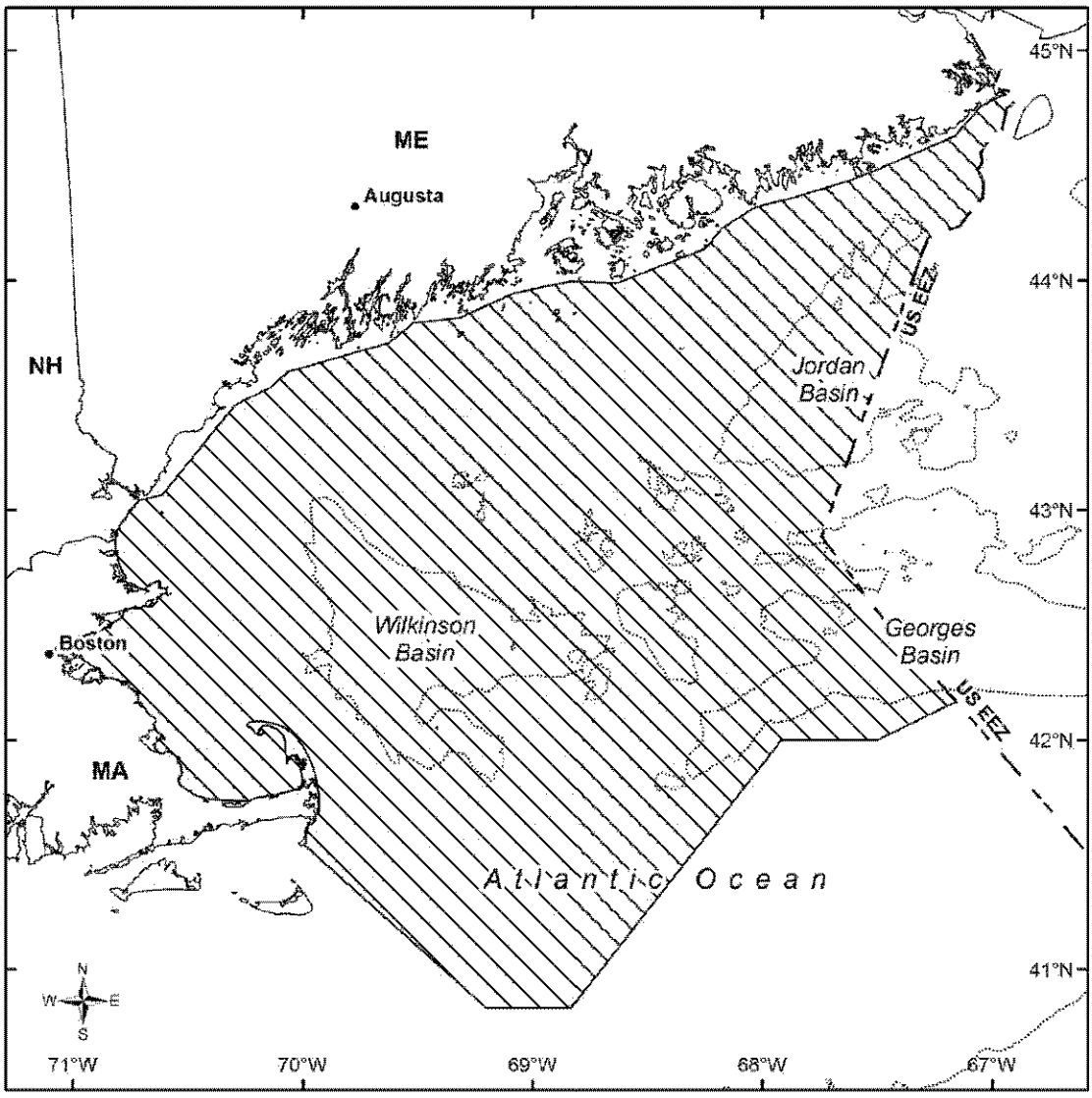
Table 226.203a

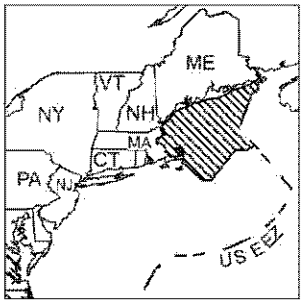
42°59.986'N.	70°44.654'W.	to	Rye Harbor
42°59.956'N.	70°44.737'W.		Rye Harbor
42°53.691'N.	70°48.516'W.	to	Hampton Harbor
42°53.519'N.	70°48.748'W.		Hampton Harbor
42°49.136'N.	70°48.242'W.	to	Newburyport Harbor
42°48.964'N.	70°48.282'W.		Newburyport Harbor
42°42.145'N.	70°46.995'W.	to	Plum Island Sound
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°45.87'N.	70°28.62'W.	to	Sandwich Harbor
41°45.75'N.	70°28.40'W.		Sandwich Harbor
41°44.93'N.	70°25.74'W.	to	Scorton Harbor
41°44.90'N.	70°25.60'W.		Scorton Harbor
41°44.00'N.	70°17.50'W.	to	Barnstable Harbor
41°44.00'N.	70°13.90'W.		Barnstable 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°48.432'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
41°03.601'N.	70°14.269'W.	to	Hatches Harbor
41°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

Table 226.203b

Latitude	Longitude
33°51'N.	at shoreline
33°42'N.	77°43'W.
33°37'N.	77°47'W.
33°28'N.	78°33'W.
32°59'N.	78°50'W.
32°17'N.	79°53'W.
31°31'N.	80°33'W.
30°43'N.	80°49'W.
30°30'N.	81°01'W.
29°45'N.	81°01'W.
29°15'N.	80°55'W.
29°08'N.	80°51'W.
28°50'N.	80°39'W.
28°38'N.	80°30'W.
28°28'N.	80°26'W.
28°24'N.	80°27'W.
28°21'N.	80°31'W.
28°16'N.	80°31'W.
28°11'N.	80°33'W.
28°00'N.	80°29'W.
28°00'N.	at shoreline

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

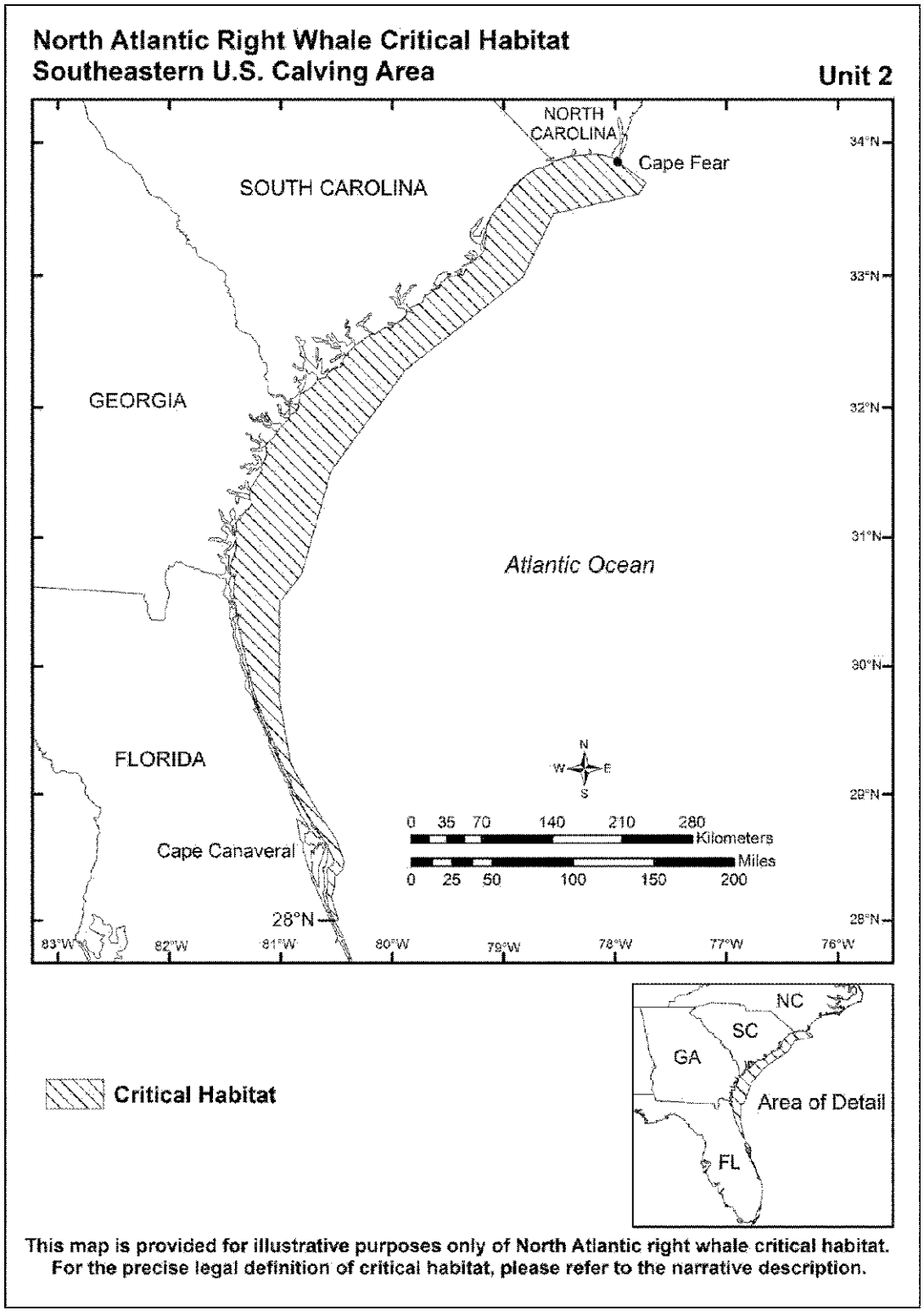




Critical Habitat

200m Depth Contour

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

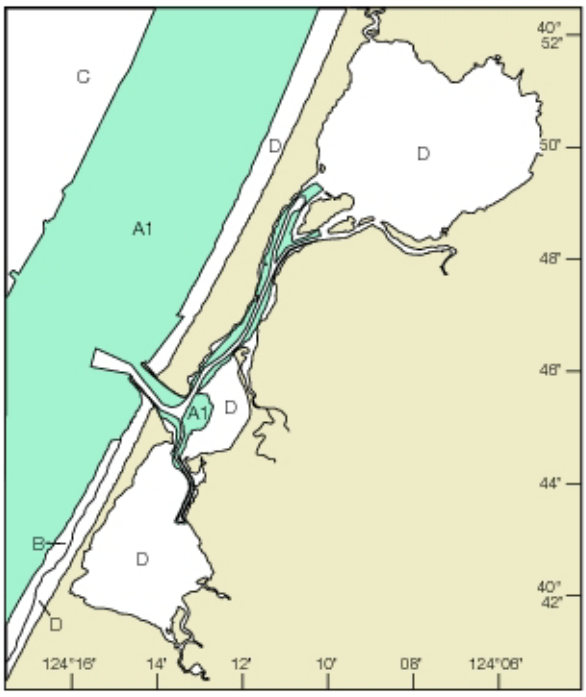

North Atlantic Right Whale Critical Habitat
Southeastern U.S. Calving Area
Unit 2
NORTH CAROLINA
Cape Fear
SOUTH CAROLINA
GEORGIA
Atlantic Ocean
FLORIDA
Cape Canaveral
28°N
34°N
33°N
32°N
31°N
30°N
29°N
83°W
82°W
81°W
80°W
79°W
78°W
77°W
76°W
N
W
E
S
0 35 70 140 210 280
Kilometers
0 25 50 100 150 200
Miles
Critical Habitat
NC
SC
GA
FL
Area of Detail
This map is provided for illustrative purposes only of North Atlantic right whale critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.

Chapter 1

ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

Chapter 1

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

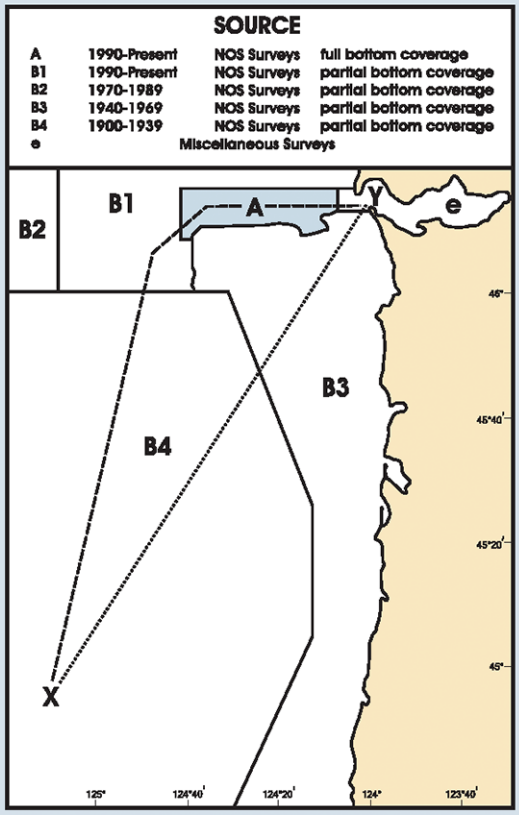
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.

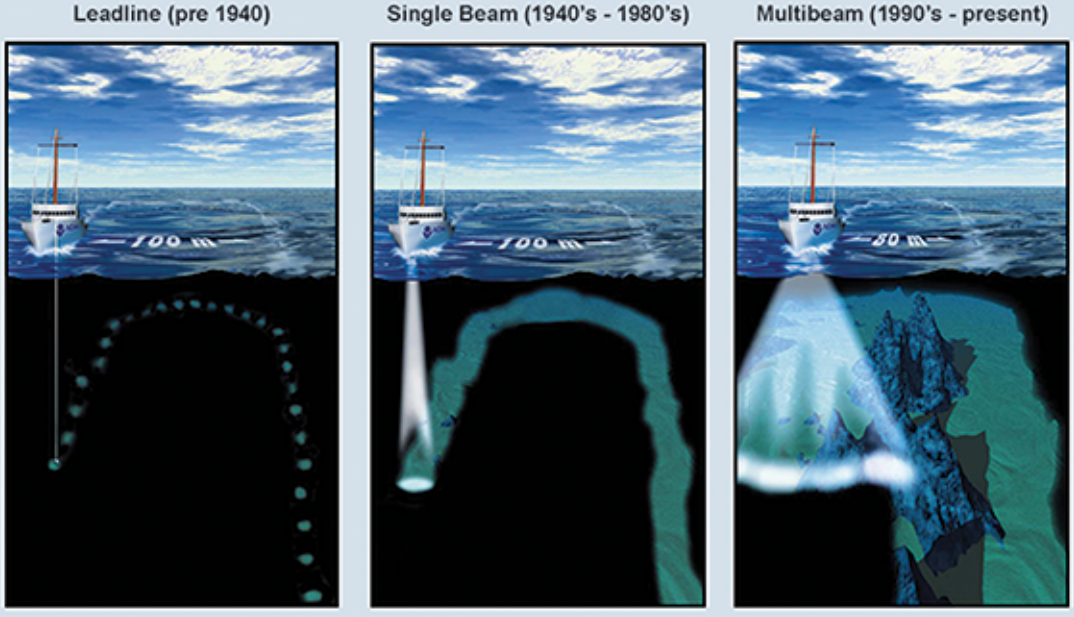


Table 226.203

Latitude	Longitude
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°02.87'W.
44°37.07'N.	67°09.75'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°02.05'W.
44°13.55'N.	68°10.71'W.
44°08.36'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°04.89'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°03.98'W.
43°31.94'N.	70°08.68'W.
43°27.63'N.	70°17.48'W.
43°20.23'N.	70°23.64'W.
43°04.06'N.	70°36.70'W.
43°02.93'N.	70°41.47'W.
43°02.55'N.	70°43.33'W.

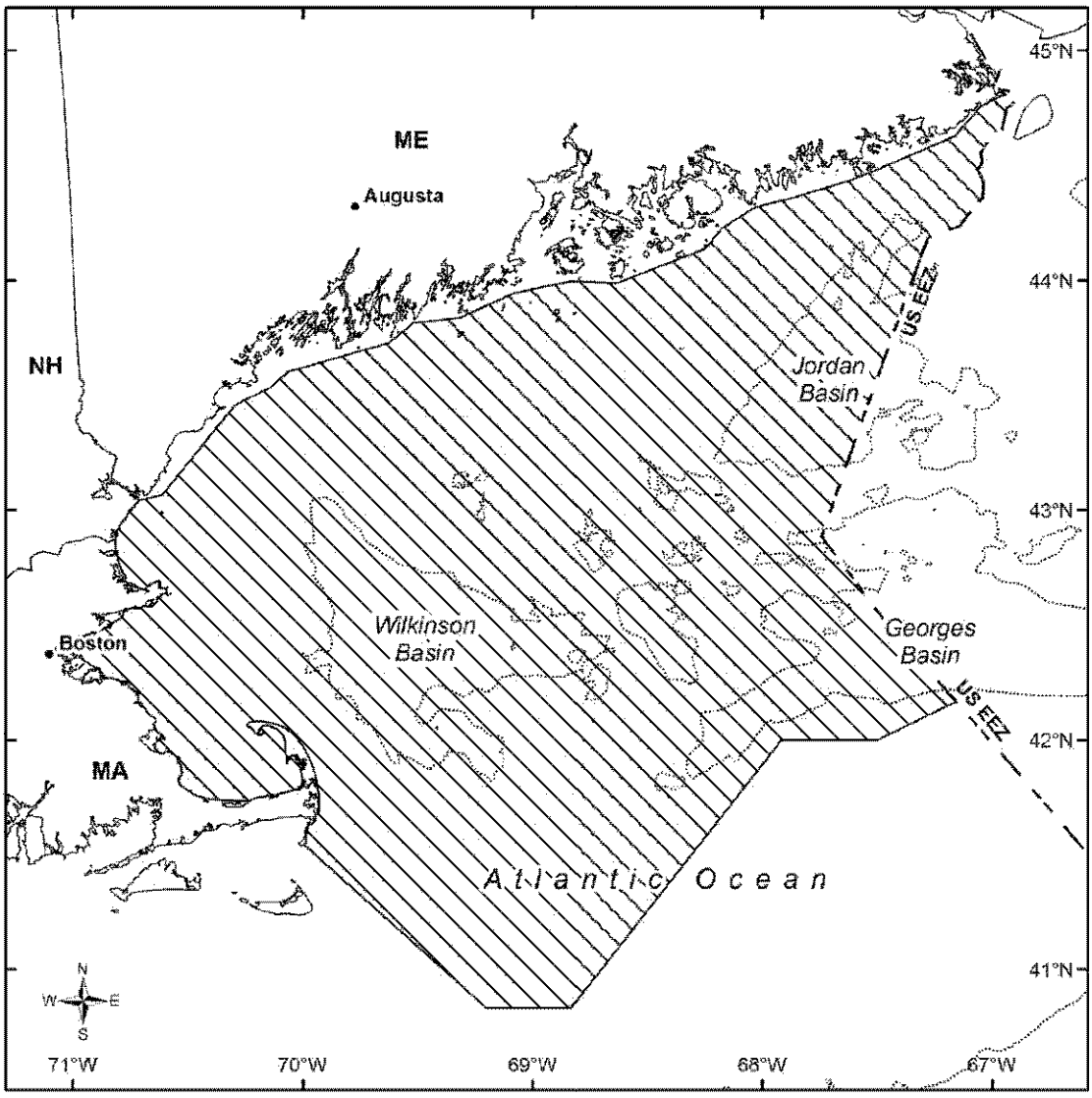
Table 226.203a

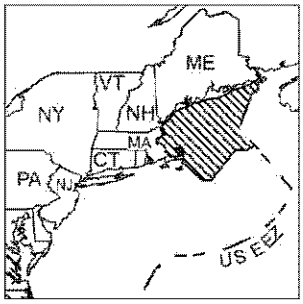
42°59.986'N.	70°44.654'W.	to	Rye Harbor
42°59.956'N.	70°44.737'W.		Rye Harbor
42°53.691'N.	70°48.516'W.	to	Hampton Harbor
42°53.519'N.	70°48.748'W.		Hampton Harbor
42°49.136'N.	70°48.242'W.	to	Newburyport Harbor
42°48.964'N.	70°48.282'W.		Newburyport Harbor
42°42.145'N.	70°46.995'W.	to	Plum Island Sound
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°45.87'N.	70°28.62'W.	to	Sandwich Harbor
41°45.75'N.	70°28.40'W.		Sandwich Harbor
41°44.93'N.	70°25.74'W.	to	Scorton Harbor
41°44.90'N.	70°25.60'W.		Scorton Harbor
41°44.00'N.	70°17.50'W.	to	Barnstable Harbor
41°44.00'N.	70°13.90'W.		Barnstable 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°48.432'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
41°03.601'N.	70°14.269'W.	to	Hatches Harbor
41°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

Table 226.203b

Latitude	Longitude
33°51'N.	at shoreline
33°42'N.	77°43'W.
33°37'N.	77°47'W.
33°28'N.	78°33'W.
32°59'N.	78°50'W.
32°17'N.	79°53'W.
31°31'N.	80°33'W.
30°43'N.	80°49'W.
30°30'N.	81°01'W.
29°45'N.	81°01'W.
29°15'N.	80°55'W.
29°08'N.	80°51'W.
28°50'N.	80°39'W.
28°38'N.	80°30'W.
28°28'N.	80°26'W.
28°24'N.	80°27'W.
28°21'N.	80°31'W.
28°16'N.	80°31'W.
28°11'N.	80°33'W.
28°00'N.	80°29'W.
28°00'N.	at shoreline

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

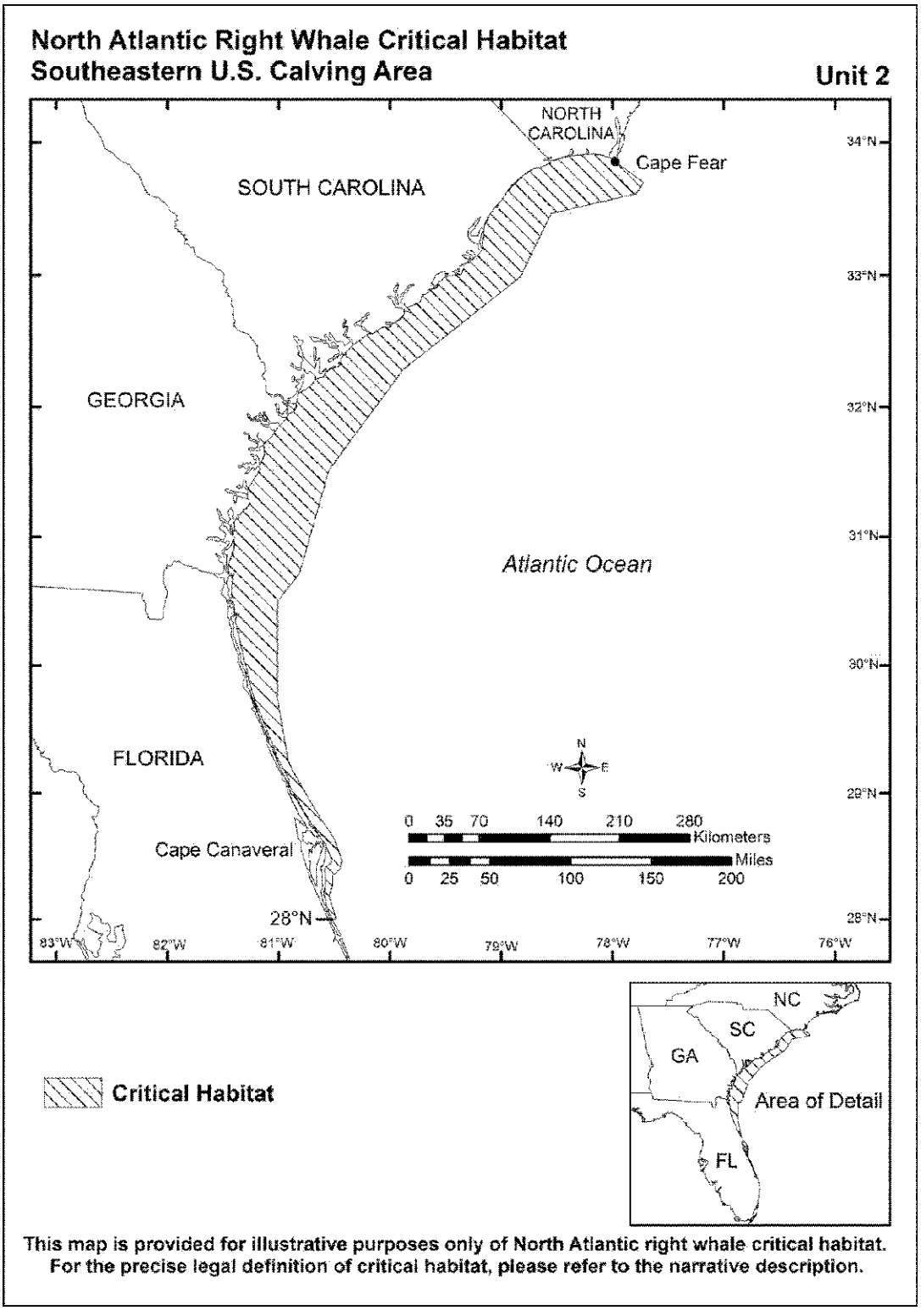




Critical Habitat

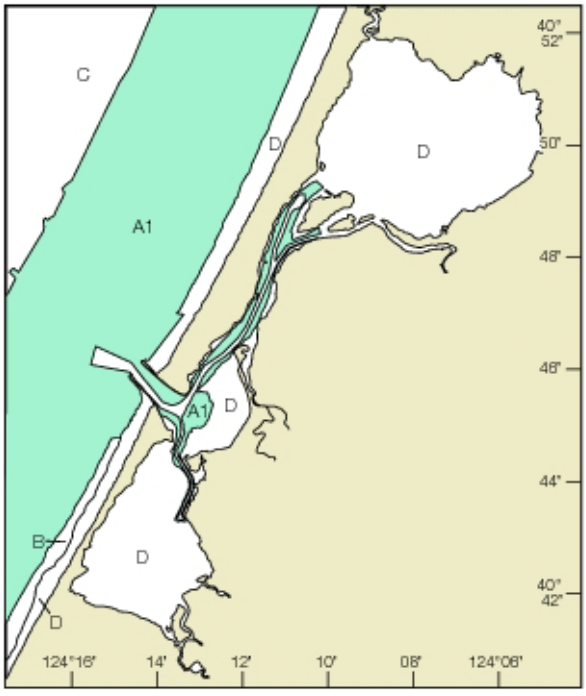
200m Depth Contour

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


North Atlantic Right Whale Critical Habitat
Southeastern U.S. Calving Area
Unit 2
NORTH CAROLINA
Cape Fear
SOUTH CAROLINA
GEORGIA
FLORIDA
Atlantic Ocean
Cape Canaveral
34°N
33°N
32°N
31°N
30°N
29°N
28°N
83°W
82°W
81°W
80°W
79°W
78°W
77°W
76°W
N
W
E
S
0 35 70 140 210 280 Kilometers
0 25 50 100 150 200 Miles
Critical Habitat
NC
SC
GA
FL
Area of Detail
This map is provided for illustrative purposes only of North Atlantic right whale critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.

ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

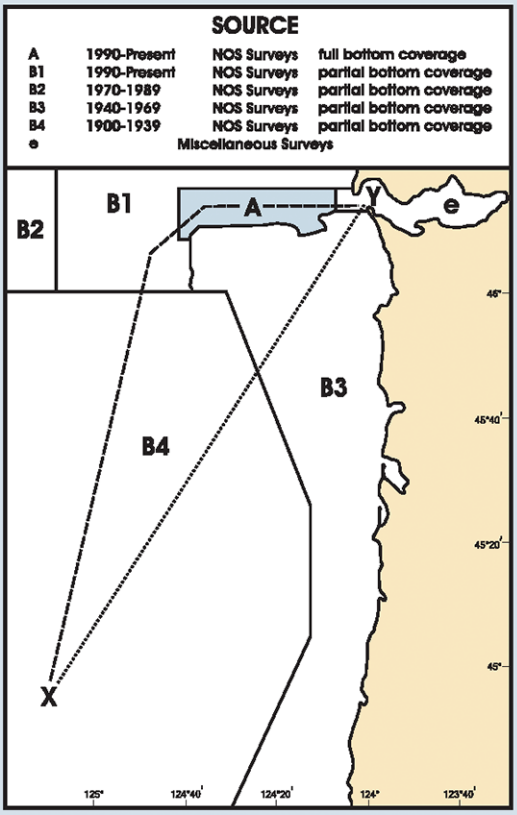
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.

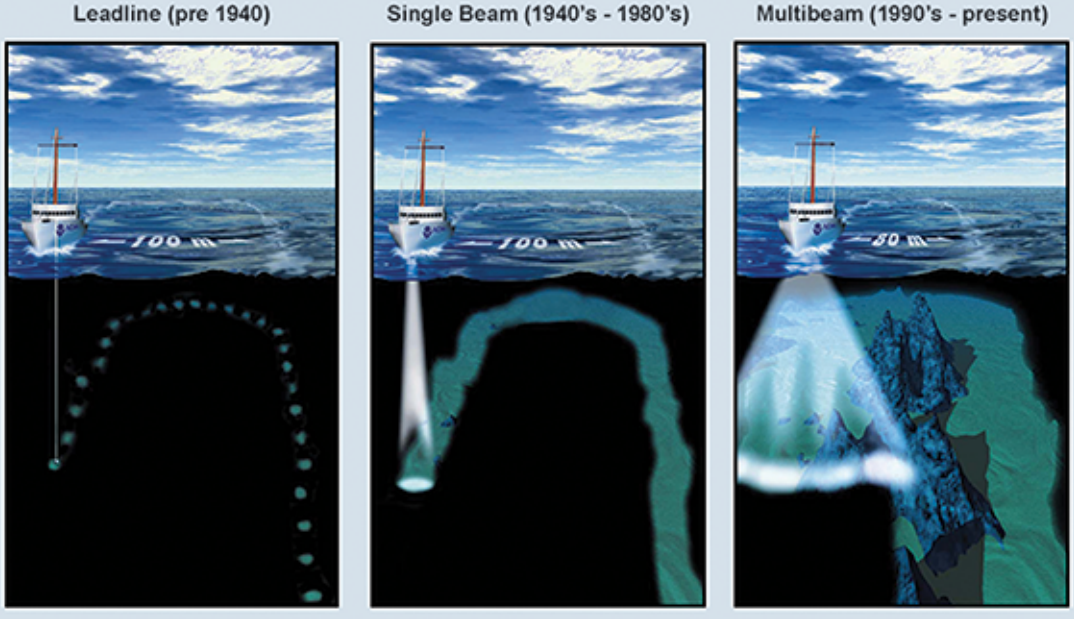


Table 226.203

Latitude	Longitude
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°02.87'W.
44°37.07'N.	67°09.75'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°02.05'W.
44°13.55'N.	68°10.71'W.
44°08.36'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°04.89'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°03.98'W.
43°31.94'N.	70°08.68'W.
43°27.63'N.	70°17.48'W.
43°20.23'N.	70°23.64'W.
43°04.06'N.	70°36.70'W.
43°02.93'N.	70°41.47'W.
43°02.55'N.	70°43.33'W.

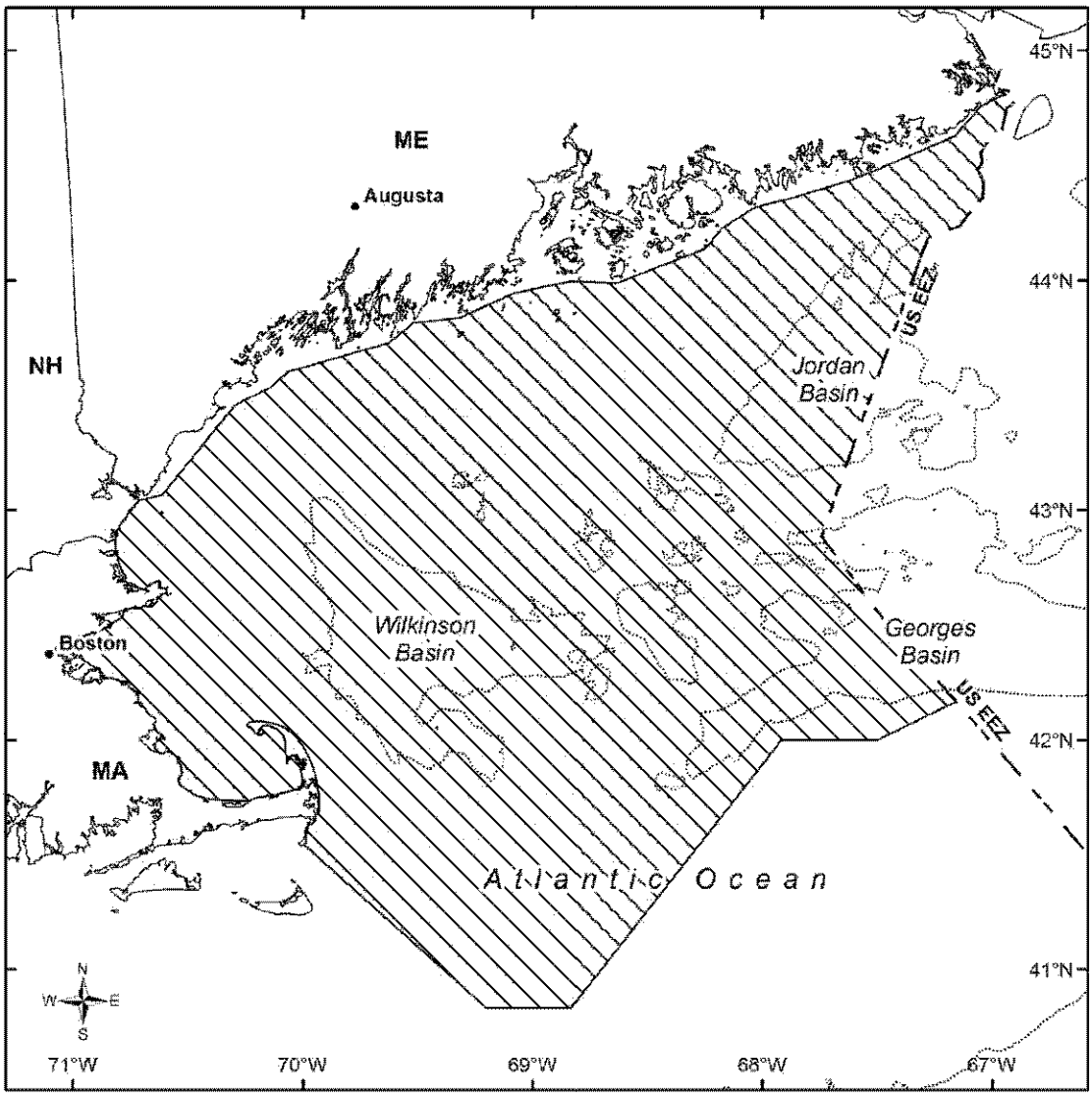
Table 226.203a

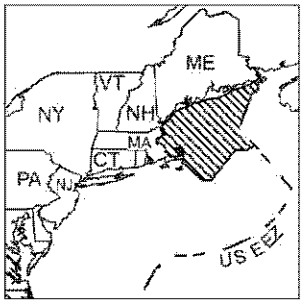
42°59.986'N.	70°44.654'W.	to	Rye Harbor
42°59.956'N.	70°44.737'W.		Rye Harbor
42°53.691'N.	70°48.516'W.	to	Hampton Harbor
42°53.519'N.	70°48.748'W.		Hampton Harbor
42°49.136'N.	70°48.242'W.	to	Newburyport Harbor
42°48.964'N.	70°48.282'W.		Newburyport Harbor
42°42.145'N.	70°46.995'W.	to	Plum Island Sound
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°45.87'N.	70°28.62'W.	to	Sandwich Harbor
41°45.75'N.	70°28.40'W.		Sandwich Harbor
41°44.93'N.	70°25.74'W.	to	Scorton Harbor
41°44.90'N.	70°25.60'W.		Scorton Harbor
41°44.00'N.	70°17.50'W.	to	Barnstable Harbor
41°44.00'N.	70°13.90'W.		Barnstable 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°48.432'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
41°03.601'N.	70°14.269'W.	to	Hatches Harbor
41°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

Table 226.203b

Latitude	Longitude
33°51'N.	at shoreline
33°42'N.	77°43'W.
33°37'N.	77°47'W.
33°28'N.	78°33'W.
32°59'N.	78°50'W.
32°17'N.	79°53'W.
31°31'N.	80°33'W.
30°43'N.	80°49'W.
30°30'N.	81°01'W.
29°45'N.	81°01'W.
29°15'N.	80°55'W.
29°08'N.	80°51'W.
28°50'N.	80°39'W.
28°38'N.	80°30'W.
28°28'N.	80°26'W.
28°24'N.	80°27'W.
28°21'N.	80°31'W.
28°16'N.	80°31'W.
28°11'N.	80°33'W.
28°00'N.	80°29'W.
28°00'N.	at shoreline

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

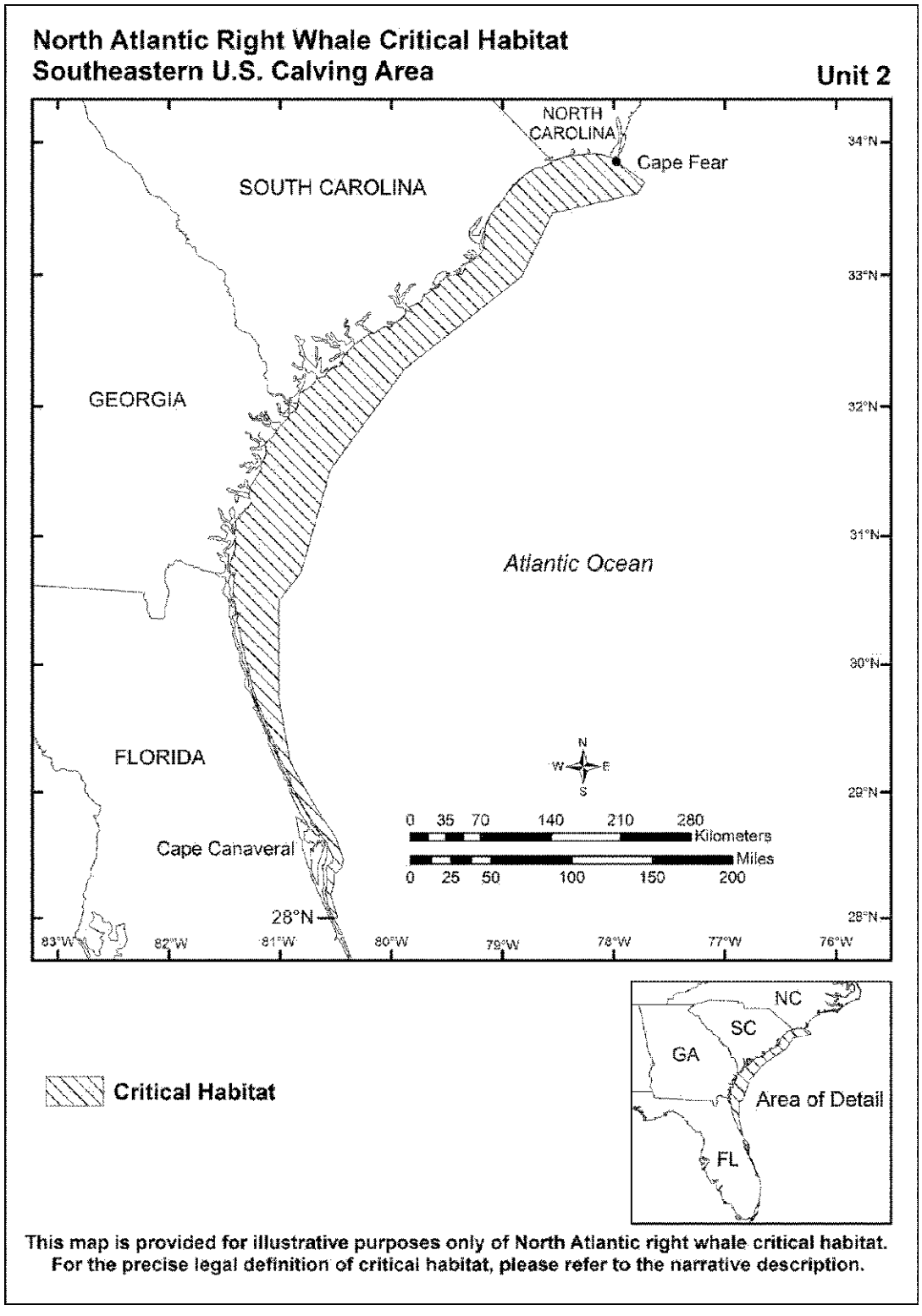




Critical Habitat

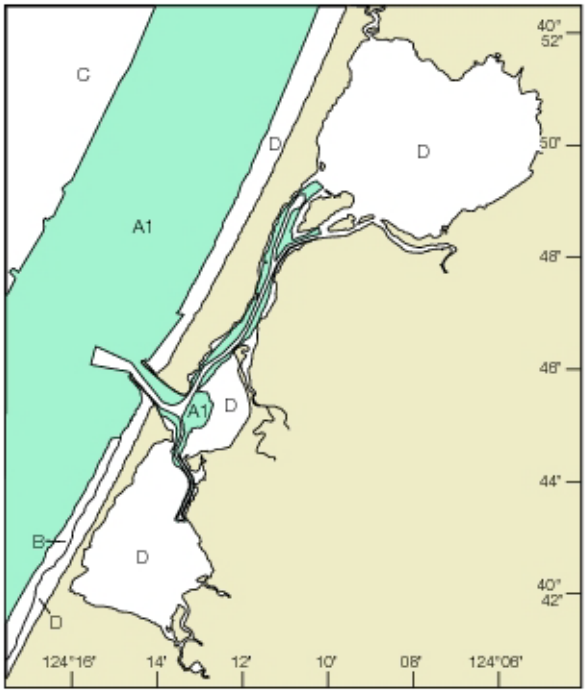
200m Depth Contour

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


North Atlantic Right Whale Critical Habitat
Southeastern U.S. Calving Area
Unit 2
NORTH CAROLINA
Cape Fear
SOUTH CAROLINA
GEORGIA
FLORIDA
Atlantic Ocean
Cape Canaveral
28°N
34°N
33°N
32°N
31°N
30°N
29°N
83°W
82°W
81°W
80°W
79°W
78°W
77°W
76°W
N
W
E
S
0 35 70 140 210 280
Kilometers
0 25 50 100 150 200
Miles
Critical Habitat
NC
SC
GA
FL
Area of Detail
This map is provided for illustrative purposes only of North Atlantic right whale critical habitat.
For the precise legal definition of critical habitat, please refer to the narrative description.

ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

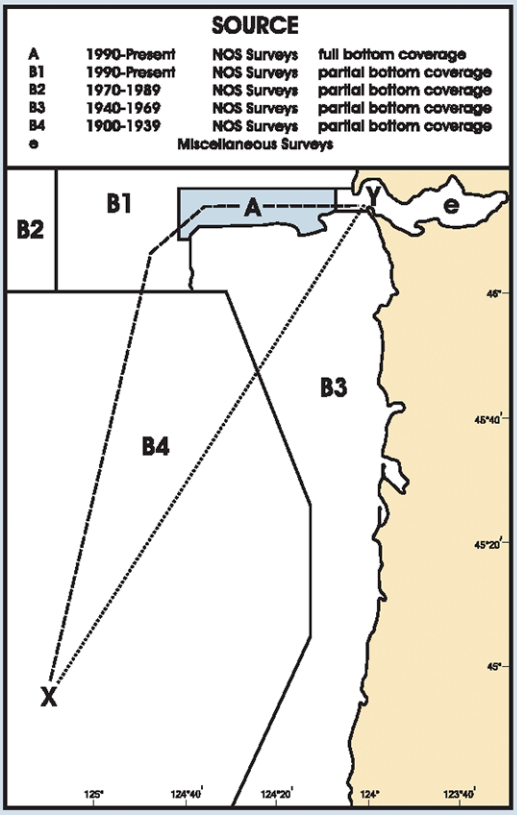
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

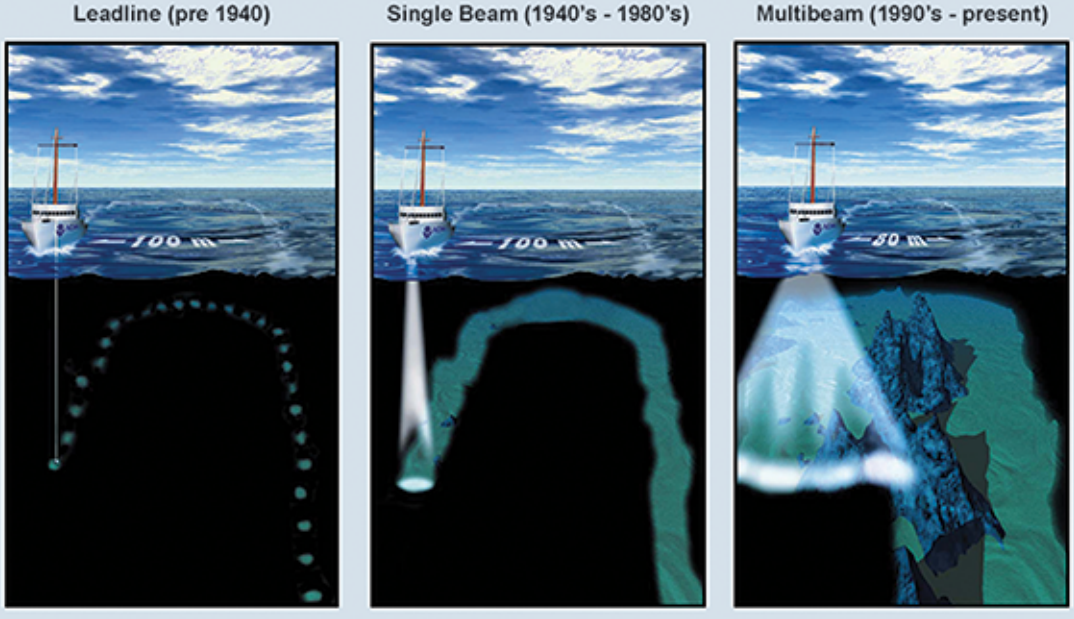
Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

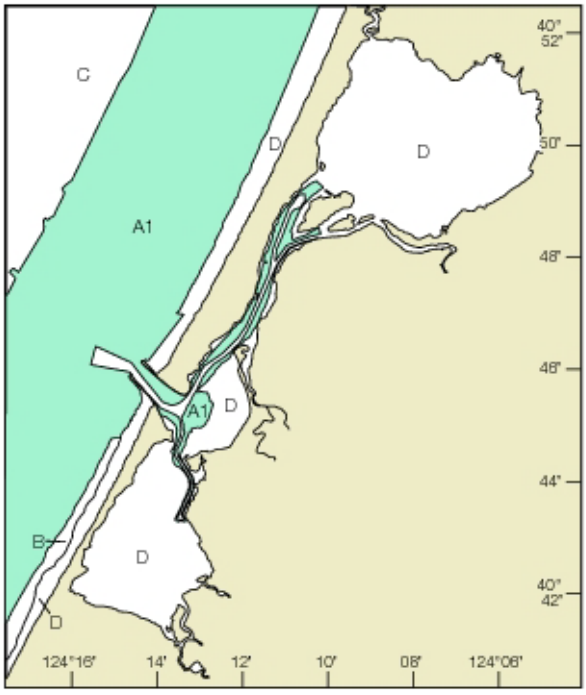
Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.



ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

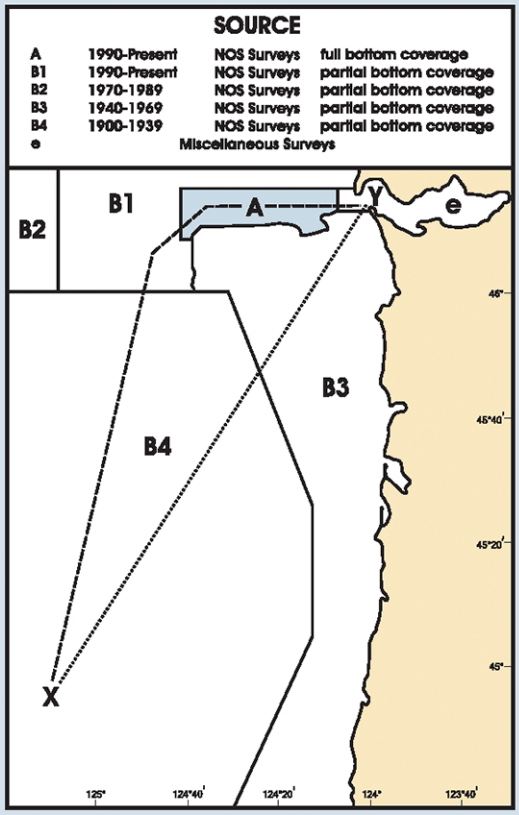
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

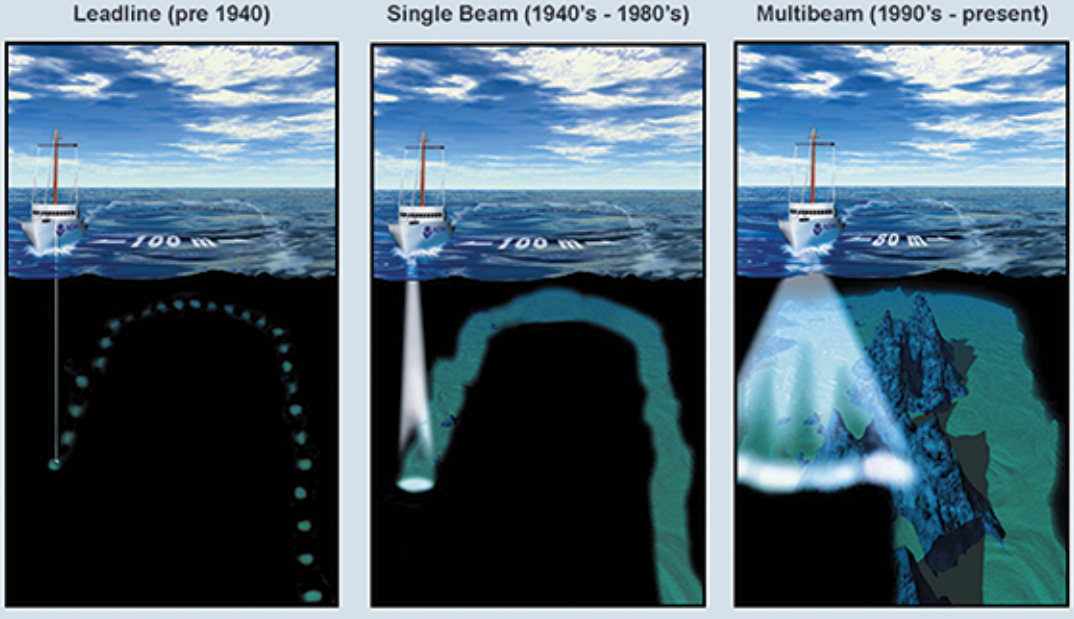
Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

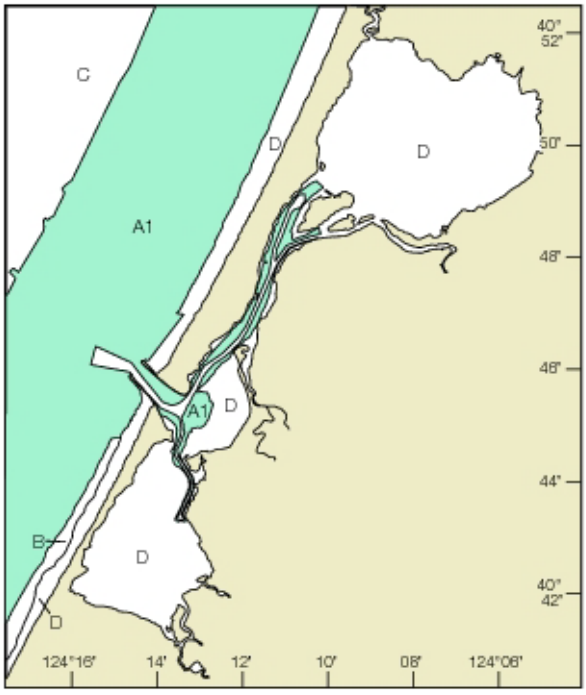
Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.



ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

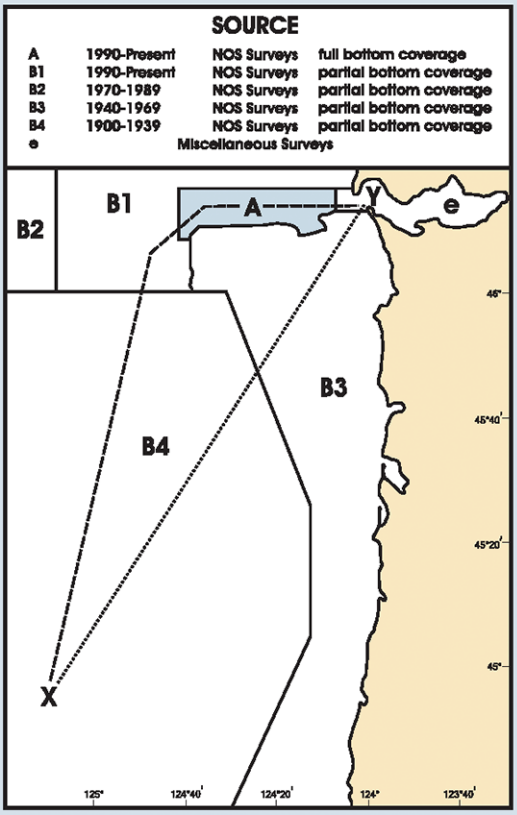
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

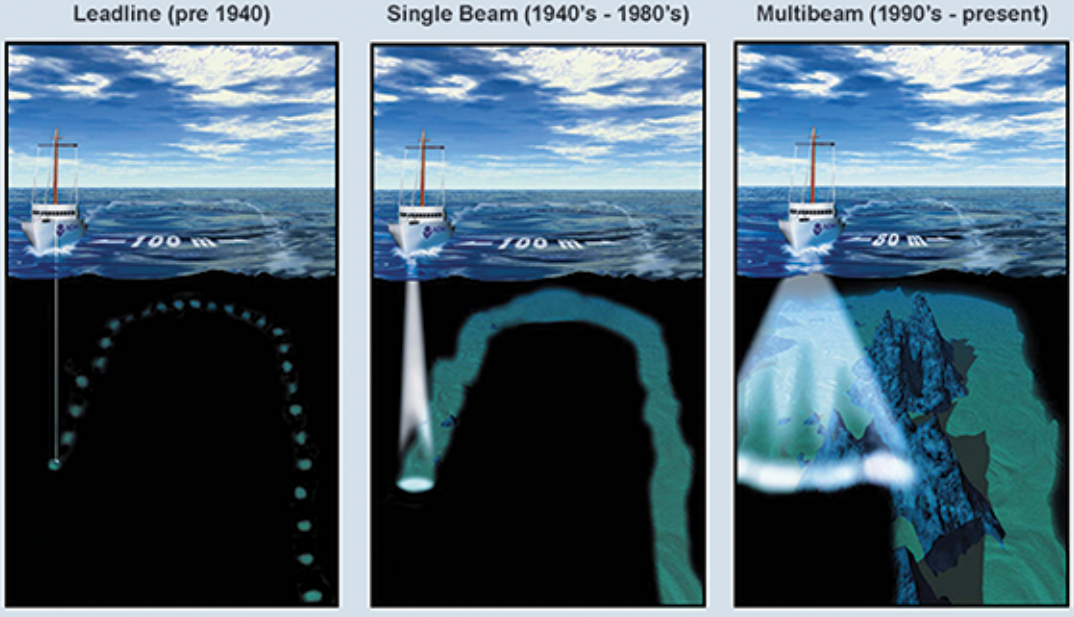
Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

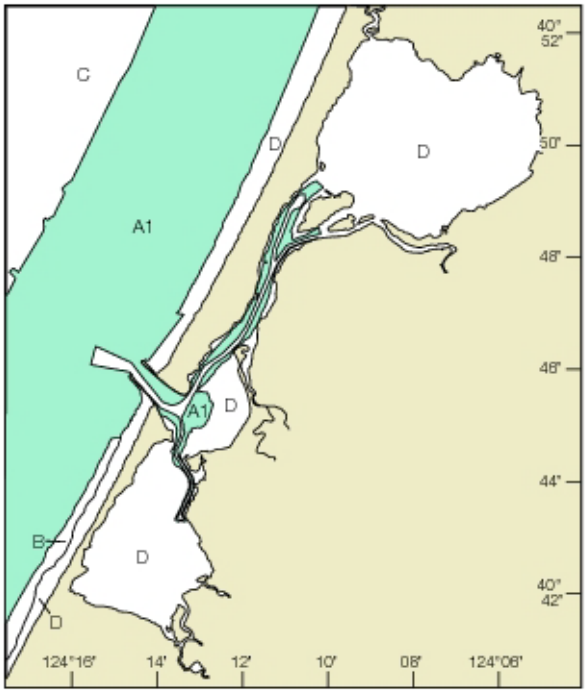
Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.



ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

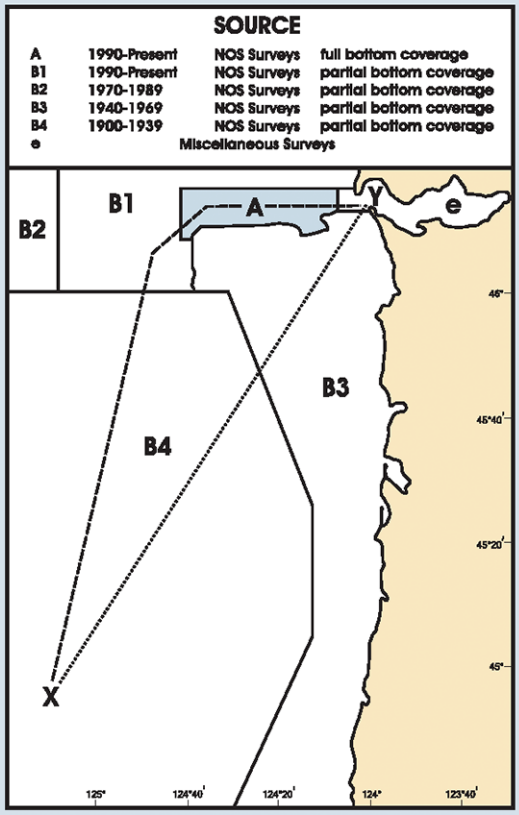
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

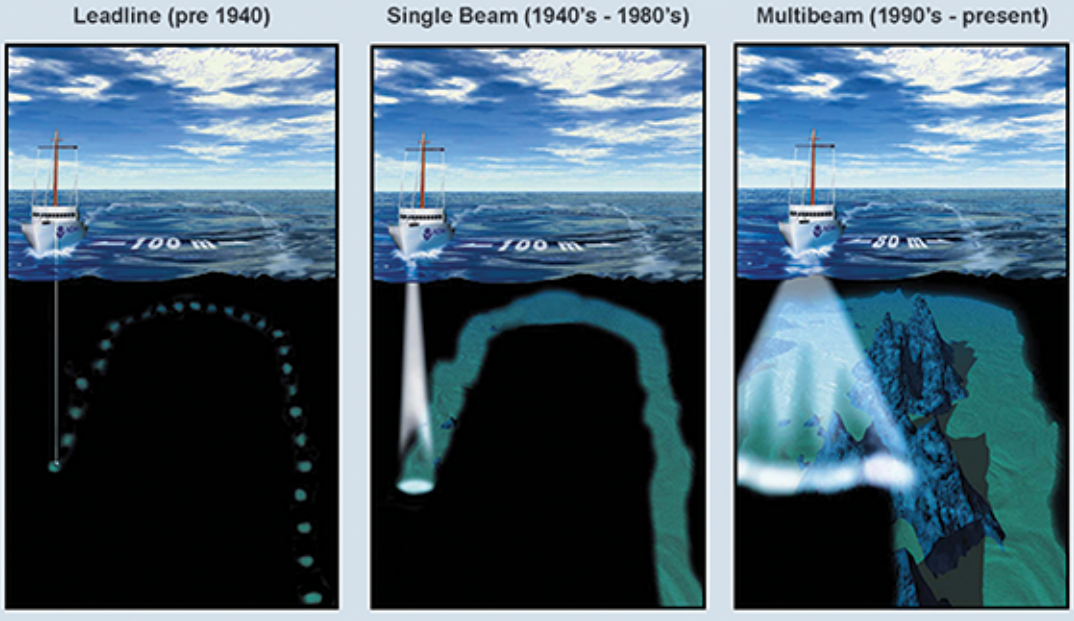
Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

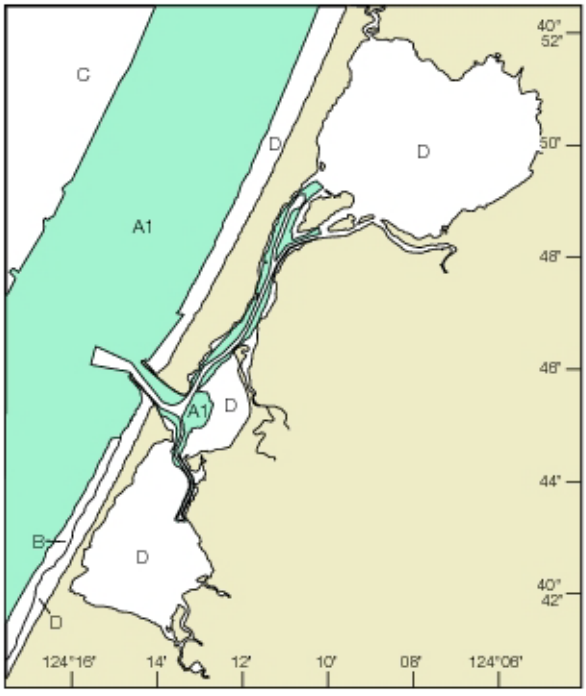
Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.



ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

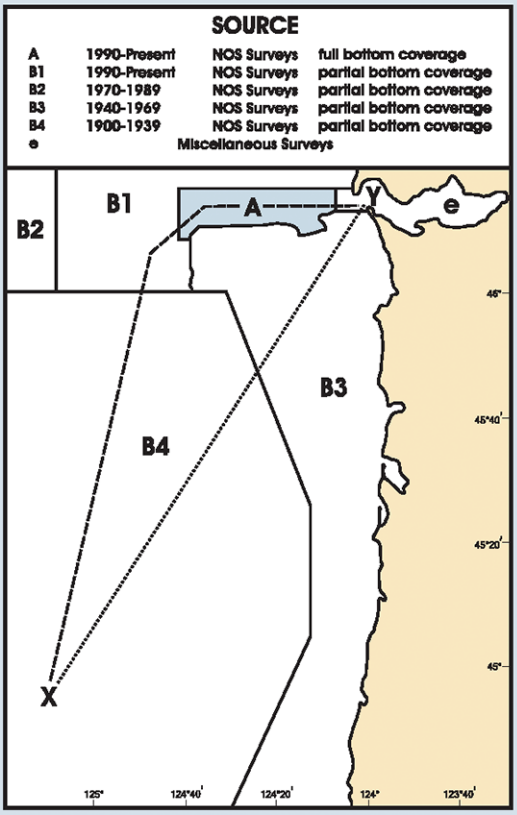
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

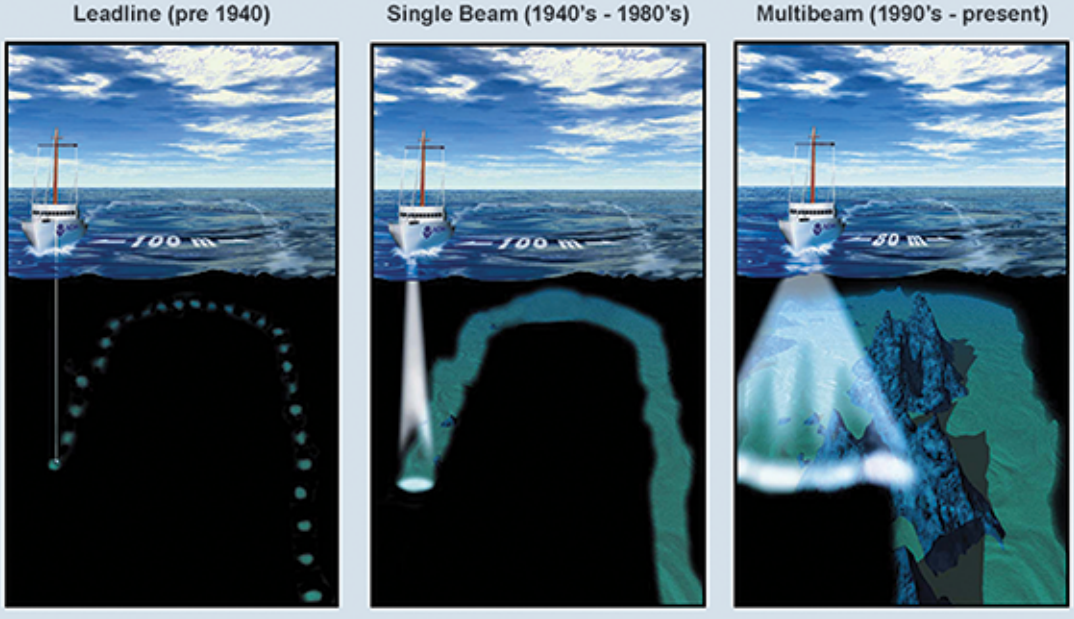
Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

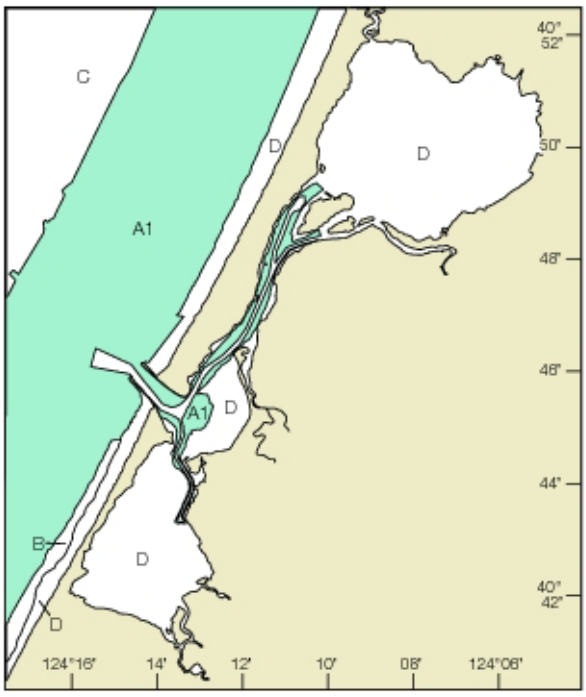
Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.



ZOC CATEGORIES (Refer to Chapter 1, United States Coast Pilot)				
ZOC	DATE	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	2008–2009	± 16 ft	= 1.6 ft + 1% depth	All significant seafloor features detected
B	1949	± 160 ft	= 3.2 ft + 2% depth	Uncharted features hazardous to surface navigation are not expected but may exist
C	1949	± 1600 ft	= 6.5 ft + 2% depth	Depth anomalies may be expected
D	–	Worse than ZOC C	Worse than ZOC C	Large depth anomolies may be expected

ZOC Source Diagram



Source Diagrams

Referring to the accompanying sample Source Diagram below and the previous discussion of survey methods over time, transiting from Point X to Point Y, along the track indicated by the dotted line, would have the following information available about the relative quality of the depth information shown on the chart.

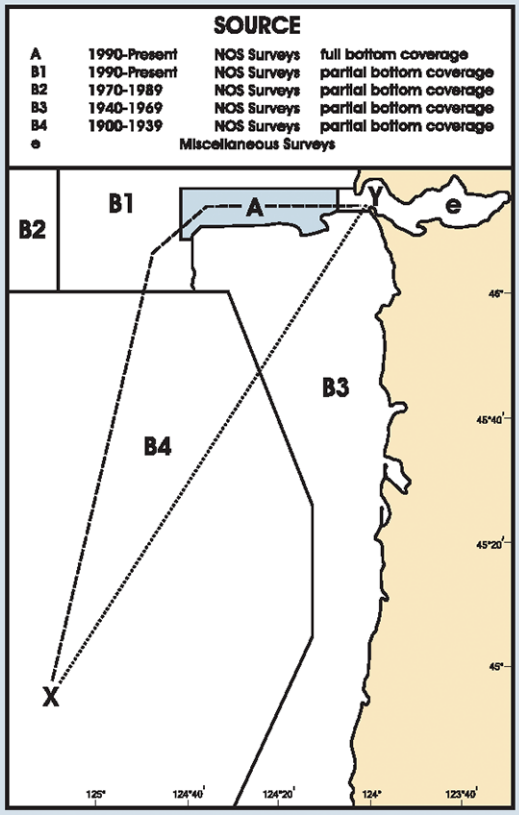
Point X lies in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

The transit then crosses an area surveyed by NOAA within the 1940-1969 time period. The sounding data would have been collected by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

Referring again to the accompanying sample Source Diagram, and the previous discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a dashed line.

The transit starts again in an area surveyed by NOAA within the 1900-1939 time period. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might still exist between the sounding points in areas of irregular relief. Caution should be exercised.



The transit then crosses an area surveyed by NOAA within the 1990 - present time period, with partial bottom coverage. The data is collected in metric units and acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between the sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

The transit then crosses into an area surveyed by NOAA within the 1990 - present time period, having full bottom coverage. This area of the charted diagram is shaded with a blue screen to draw attention to the fact that full bottom coverage has been achieved. The data would have been collected in metric units and acquired by side scan sonar or multibeam sonar technology. Undetected features in this area, at the time of the survey, would be unlikely.

The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or may vary in age, reliability, origin or technology used. No inferences about the fitness of the data can be made in this area from the diagram. By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of survey information that is more recent and collected with modern technology.

Bottom Coverage and Survey Methods

Prior to 1940, most survey data was acquired by lead line, and soundings were positioned using horizontal sextant angles. This positioning method is considered to be accurate for near shore surveys. However, lead line surveys only collect discrete single-point depths. The depths between the soundings can only be inferred and undetected shoals and other uncharted features may exist in these areas, especially in areas of irregular relief.

From 1940 to 1990, sounding data acquisition typically used continuous-recording single beam echo sounders as stand-alone survey systems, which resulted in partial bottom sounding coverage. Although the sampling is continuous along the track of the sounding vessel, features such as discrete objects or small area shoals between sounding lines may not have been detected. Positioning of the sounding vessel in this period progressed from horizontal sextant angles, through land based electronic positioning systems, to differentially corrected Global Positioning System (DGPS) satellite fixes.

From 1990 to the present, most surveys have been conducted using either multi-beam sonar systems or a combination of side scan sonar and single beam echo sounder systems to achieve full bottom coverage. The term full bottom coverage refers to survey areas in which the field party has acquired continuously recorded, high-resolution sonar data in overlapping swaths. This sonar data, either multi-beam bathymetry or side scan imagery, has been analyzed in an attempt to locate all hazards to navigation within the survey's limits; all position data has been determined using DGPS. NOAA began utilizing airborne light detection and ranging systems (LIDAR) for near shore bathymetric surveying in the late 1990s. This type of survey method provided sounding data at a lower resolution than sonar systems, thus making small obstructions and hazards difficult to identify. Although LIDAR systems provide continuously recorded swath data, the resulting sounding resolution is not dense enough for the survey to be considered full bottom coverage. However, LIDAR surveys in which significant anomalies have been further investigated using multi-beam sonar are considered adequate for the full bottom coverage designation. Stand-alone LIDAR surveys are depicted on the source diagram as partial bottom coverage areas.

Although full bottom coverage surveys are not feasible in all areas, this method is typically preferred over lead line, single beam echo sounder, and LIDAR technologies. Full bottom coverage surveys typically extend inshore to depths of 4-8 meters (13-26 feet). Due to scaling factors, a full bottom coverage survey area may appear to extend further inshore once depicted on the source diagram. Generally, sounding data in depths of 6 meters (20 feet) and shoaler – 8 meters (26 feet) and shoaler in Alaskan waters – has been acquired using a partial bottom coverage method. Caution and prudent seamanship should be used when transiting these near shore areas.

The spacing of sounding lines required to survey an area using a single beam echo sounder depends on several factors such as water depths, bottom configuration, survey scale, general nature of the area and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.