Essential Fish Habitat Description
Haddock (*Melanogrammus aeglefinus*)

In its *Report to Congress: Status of the Fisheries of the United States* (September 1997), NMFS determined the Georges Bank stock of haddock is neither currently overfished nor approaching an overfished condition. The report also concluded that there is not enough information to determine if the Gulf of Maine stock is overfished or approaching an overfished condition. For both stocks of haddock, essential fish habitat is described as those areas of the coastal and offshore waters (out to the offshore U.S. boundary of the exclusive economic zone) that are designated on Figures 2.1 - 2.4 and in the accompanying table and meet the following conditions:

Eggs: Surface waters over Georges Bank southwest to Nantucket Shoals and the coastal areas of the Gulf of Maine as depicted in Figure 2.1. Generally, the following conditions exist where haddock eggs are found: sea surface temperatures below 10° C, water depths from 50 - 90 meters, and salinity ranges from 34 - 36‰. Haddock eggs are most often observed during the months from March to May, April being most important.

Larvae: Surface waters over Georges Bank southwest to the middle Atlantic south to Delaware Bay as depicted in Figure 2.2. Generally, the following conditions exist where haddock larvae are found: sea surface temperatures below 14° C, water depths from 30 - 90 meters, and salinity ranges from 34 - 36‰. Haddock larvae are most often observed in these areas from January through July with peaks in April and May.

Juveniles: Bottom habitats with a substrate of pebble gravel on the perimeter of Georges Bank, the Gulf of Maine, and the middle Atlantic south to Delaware Bay as depicted in Figure 2.3. Generally, the following conditions exist where haddock juveniles are found: water temperatures below 11° C, depths from 35 - 100 meters, and a salinity range from 31.5 - 34‰.

Adults: Bottom habitats with a substrate of broken ground, pebbles, smooth hard sand and smooth areas between rocky patches on Georges Bank and the eastern side of Nantucket Shoals, and throughout the Gulf of Maine, plus additional area of Nantucket Shoals and the Great South Channel inclusive of the historic range as depicted in Figure 2.4. This additional area more accurately reflects historic patterns of distribution and abundance. Generally, the following conditions exist where haddock adults are found: water temperatures below 7° C, depths from 40 - 150 meters, and a salinity range from 31.5 - 35‰.

Spawning Adults: Bottom habitats with a substrate of pebble gravel or gravelly sand on Georges Bank, Nantucket Shoals, along the Great South Channel, and throughout the Gulf of Maine, plus additional area inclusive of the historic range as depicted in Figure 2.4. Generally, the following conditions exist where spawning haddock adults are found: water temperatures below 6° C, depths from 40 - 150 meters, and a salinity range from 31.5 - 34‰. Haddock are observed spawning most often during the months January to June.

All of the above EFH descriptions include those bays and estuaries listed on the following table, according to life history stage. The Council notes the historic importance of areas where haddock were once commonly found (Rich 1929). The Council acknowledges potential seasonal and spatial variability of the conditions generally associated with this species.

EFH Designation of Estuaries and Embayments
Haddock (*Melanogrammus aeglefinus*)

Estuaries and Embayments	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Passamaquoddy Bay					
Englishman/Machias Bay					
Narraguagus Bay					
Blue Hill Bay					
Penobscot Bay					
Muscongus Bay					
Damariscotta River					
Sheepscot River					
Kennebec / Androscoggin Rivers					
Casco Bay					
Saco Bay					
Wells Harbor					
Great Bay	S	S			
Merrimack River					
Massachusetts Bay	S	S			
Boston Harbor	S	S			
Cape Cod Bay	S	S			
Waquoit Bay					
Buzzards Bay	S	S			
Narragansett Bay		S			
Long Island Sound					
Connecticut River					
Gardiners Bay					
Great South Bay					
Hudson River / Raritan Bay					
Barnegat Bay					
Delaware Bay					
Chincoteague Bay					
Chesapeake Bay					

S ≡ The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > 25.0‰).

M ≡ The EFH designation for this species includes the mixing water / brackish salinity zone of this bay or estuary (0.5 < salinity < 25.0‰).

F ≡ The EFH designation for this species includes the tidal freshwater salinity zone of this bay or estuary (0.0 < salinity < 0.5‰).

These EFH designations of estuaries and embayments are based on the NOAA Estuarine Living Marine Resources (ELMR) program (Jury *et al.* 1994; Stone *et al.* 1994). For a detailed view of the salinity zone boundaries, as described in the ELMR reports, please see Appendix B. The Council recognizes the spatial and temporal variability of estuarine and embayment environmental conditions generally associated with this species.

Essential Fish Habitat
Haddock (*Melanogrammus aeglefinus*) Eggs

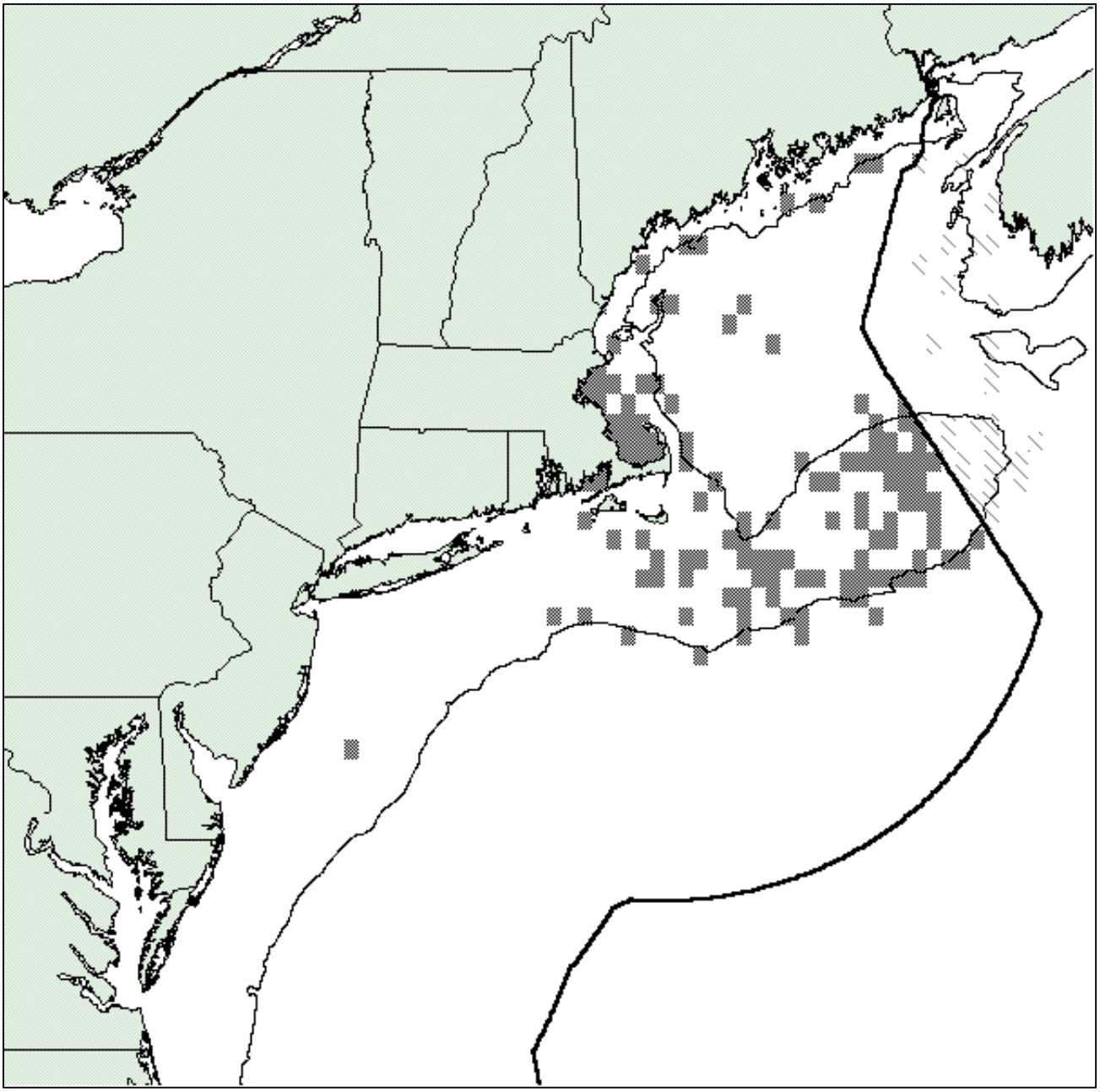

Figure 2.1: The EFH designation for haddock eggs is based upon alternative 4 for haddock eggs. In addition, this designation includes those bays and estuaries identified in the NOAA ELMR program as supporting haddock eggs at the "rare", "common", or "abundant" level. This alternative was selected to be as inclusive as possible, given the distribution of haddock eggs. The light shading represents the entire observed range of haddock eggs.

Essential Fish Habitat
Haddock (*Melanogrammus aeglefinus*) Larvae

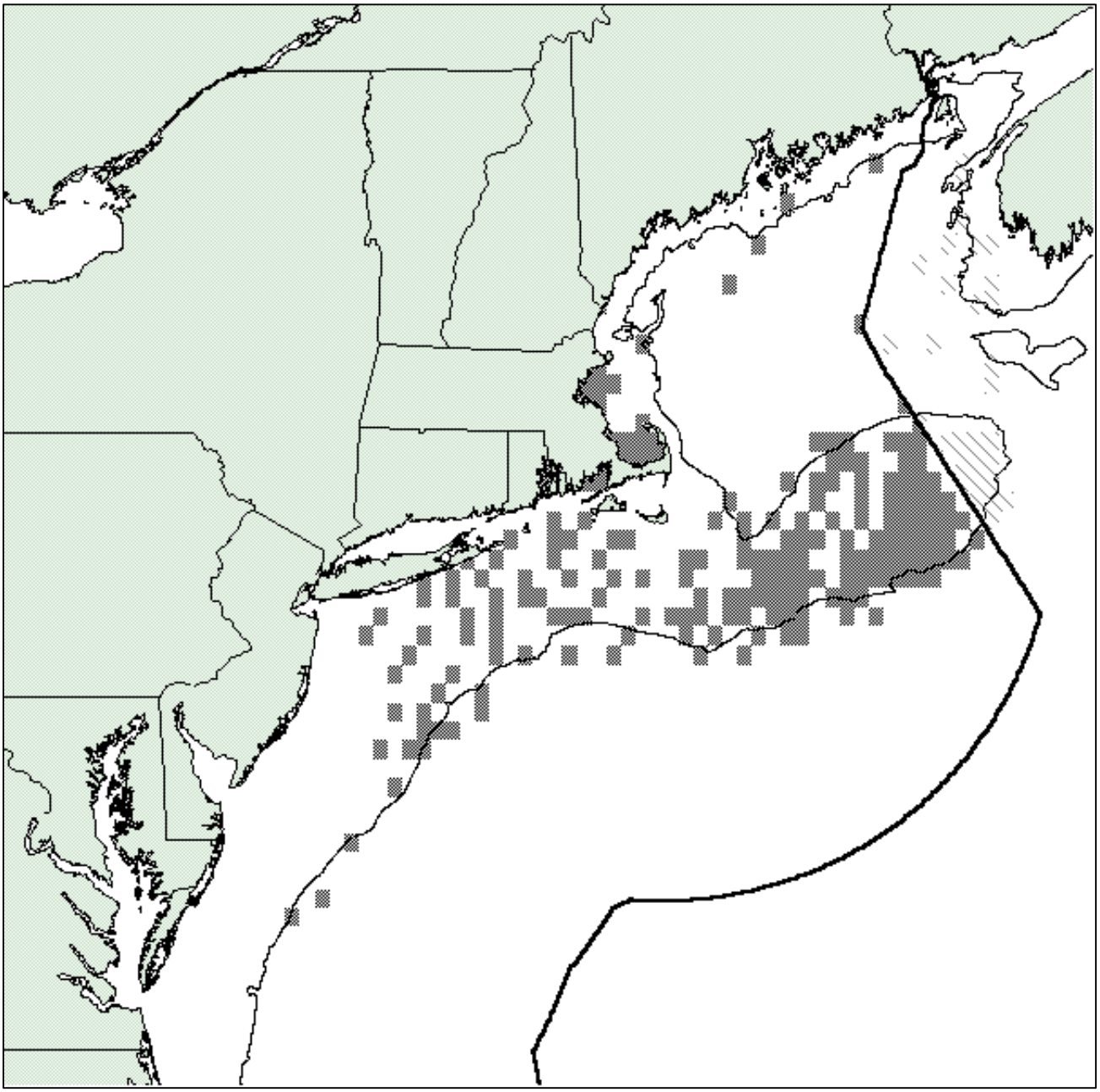

Figure 2.2: The EFH designation for haddock larvae is based upon alternative 4 for haddock larvae. In addition, this designation includes those bays and estuaries identified in the NOAA ELMR program as supporting haddock larvae at the "rare", "common", or "abundant" level. This alternative was selected to be as inclusive as possible, given the distribution of haddock larvae. The light shading represents the entire observed range of haddock larvae.

Essential Fish Habitat
Haddock (*Melanogrammus aeglefinus*) Juveniles

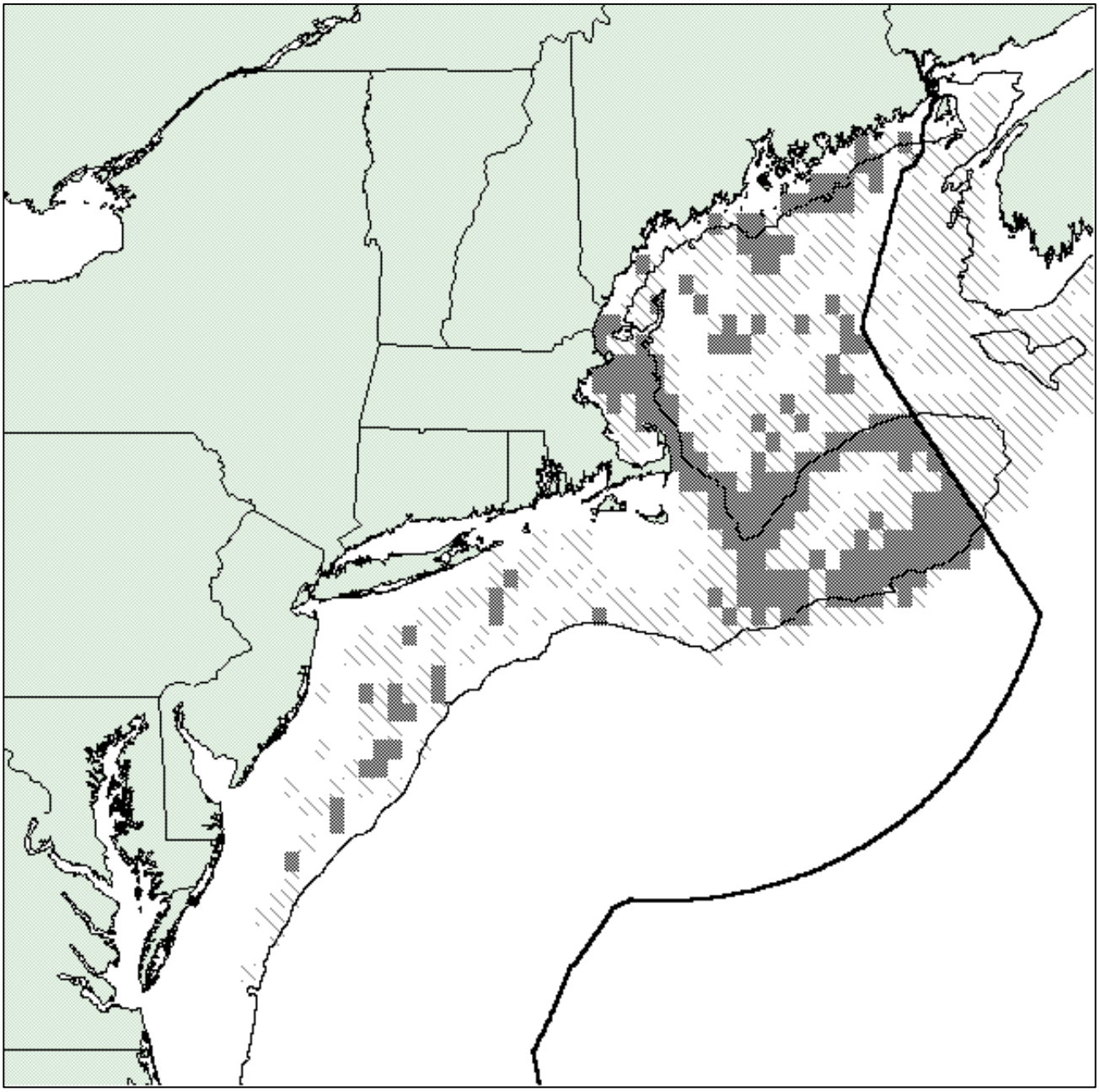

Figure 2.3: The EFH designation for juvenile haddock is based upon alternative 3 for haddock juveniles. This alternative was selected because it included all areas where haddock juveniles were observed in relatively high concentrations, but did not include areas where they occurred in low concentrations. The light shading represents the entire observed range of juvenile haddock.

Essential Fish Habitat
Haddock (*Melanogrammus aeglefinus*) Adults

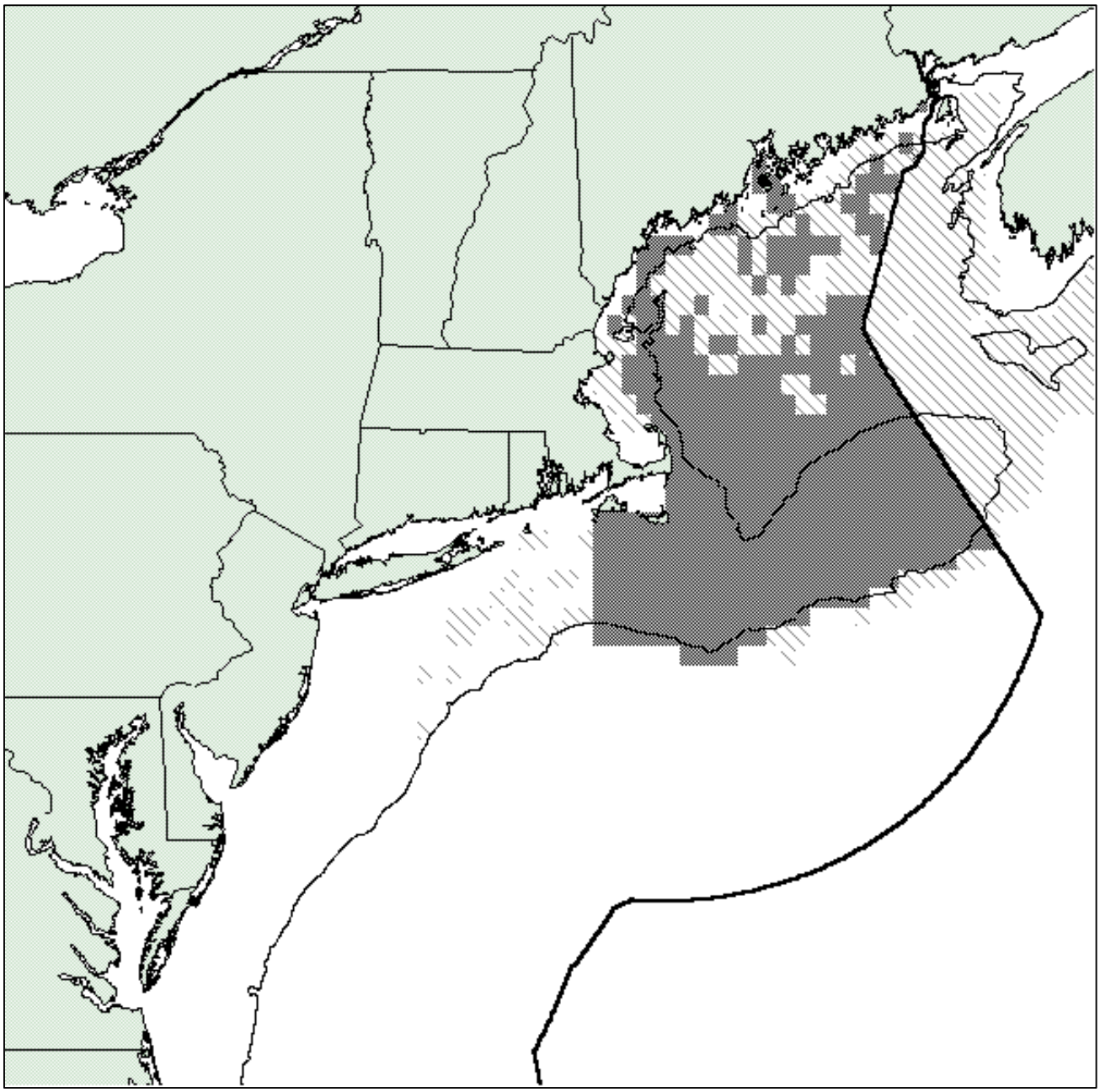

Figure 2.4: The EFH designation for adult haddock is based upon alternative 3 for haddock adults. In addition, this designation includes a portion of the historic range and known spawning areas to more accurately reflect traditional patterns of distribution and abundance. This alternative was selected because it included all areas where haddock adults were observed in relatively high concentrations, but did not include areas where they occurred in low concentrations. Areas of historic importance were included to ensure that potentially important historic habitat was reflected in the EFH designation. The light shading represents the entire observed range of adult haddock.