

Essential Fish Habitat Description

Whiting (*Merluccius bilinearis*)

In its *Report to Congress: Status of the Fisheries of the United States* (September 1997), NMFS determined the Southern Georges Bank / Middle Atlantic stock of whiting is considered overfished, based on an assessment of the stock level. The Gulf of Maine / Northern Georges Bank stock of whiting is not considered currently overfished but it is considered to be approaching an overfished condition, also based on the stock level associated with this stock. Essential Fish Habitat for whiting 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 13.1 - 13.4 and in the accompanying table and meet the following conditions:

Eggs: Surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras as depicted in Figure 13.1. Generally, the following conditions exist where most whiting eggs are found: sea surface temperatures below 20° C and water depths between 50 and 150 meters. Whiting eggs are observed all year, with peaks from June through October.

Larvae: Surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras as depicted in Figure 13.2. Generally, the following conditions exist where most whiting larvae are found: sea surface temperatures below 20° C and water depths between 50 and 130 meters. Whiting larvae are observed all year, with peaks from July through September.

Juveniles: Bottom habitats of all substrate types in the Gulf of Maine, on Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras as depicted in Figure 13.3. Generally, the following conditions exist where most whiting juveniles are found: water temperatures below 21° C, depths between 20 and 270 meters and salinities greater than 20‰.

Adults: Bottom habitats of all substrate types in the Gulf of Maine, on Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras as depicted in Figure 13.4. Generally, the following conditions exist where most whiting adults are found: water temperatures below 22° C and depths between 30 and 325 meters.

Spawning Adults: Bottom habitats of all substrate types in the Gulf of Maine, on Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras as depicted in Figure 13.4. Generally, the following conditions exist where most spawning whiting adults are found: water temperatures below 13° C and depths between 30 and 325 meters.

All of the above EFH descriptions include those bays and estuaries listed on the following table, according to life history stage. The Council acknowledges potential seasonal and spatial variability of the conditions generally associated with this species.

EFH Designation of Estuaries and Embayments
Whiting (*Merluccius bilinearis*)

Estuaries and Embayments	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Passamaquoddy Bay			m,s	m,s	
Englishman/Machias Bay			m,s	m,s	
Narraguagus Bay			m,s	m,s	
Blue Hill Bay			m,s	m,s	
Penobscot Bay			m,s	m,s	
Muscongus Bay			m,s	m,s	
Damariscotta River			m,s	m,s	
Sheepscot River			m,s	m,s	
Kennebec / Androscoggin Rivers			m,s	m,s	
Casco Bay			m,s	m,s	
Saco Bay					
Wells Harbor					
Great Bay					
Merrimack River	m				
Massachusetts Bay	s	s	s	s	s
Boston Harbor	s	s	m,s	m,s	
Cape Cod Bay	s	s	m,s	m,s	s
Waquoit Bay					
Buzzards Bay					
Narragansett Bay					
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
Whiting (*Merluccius bilinearis*) Eggs

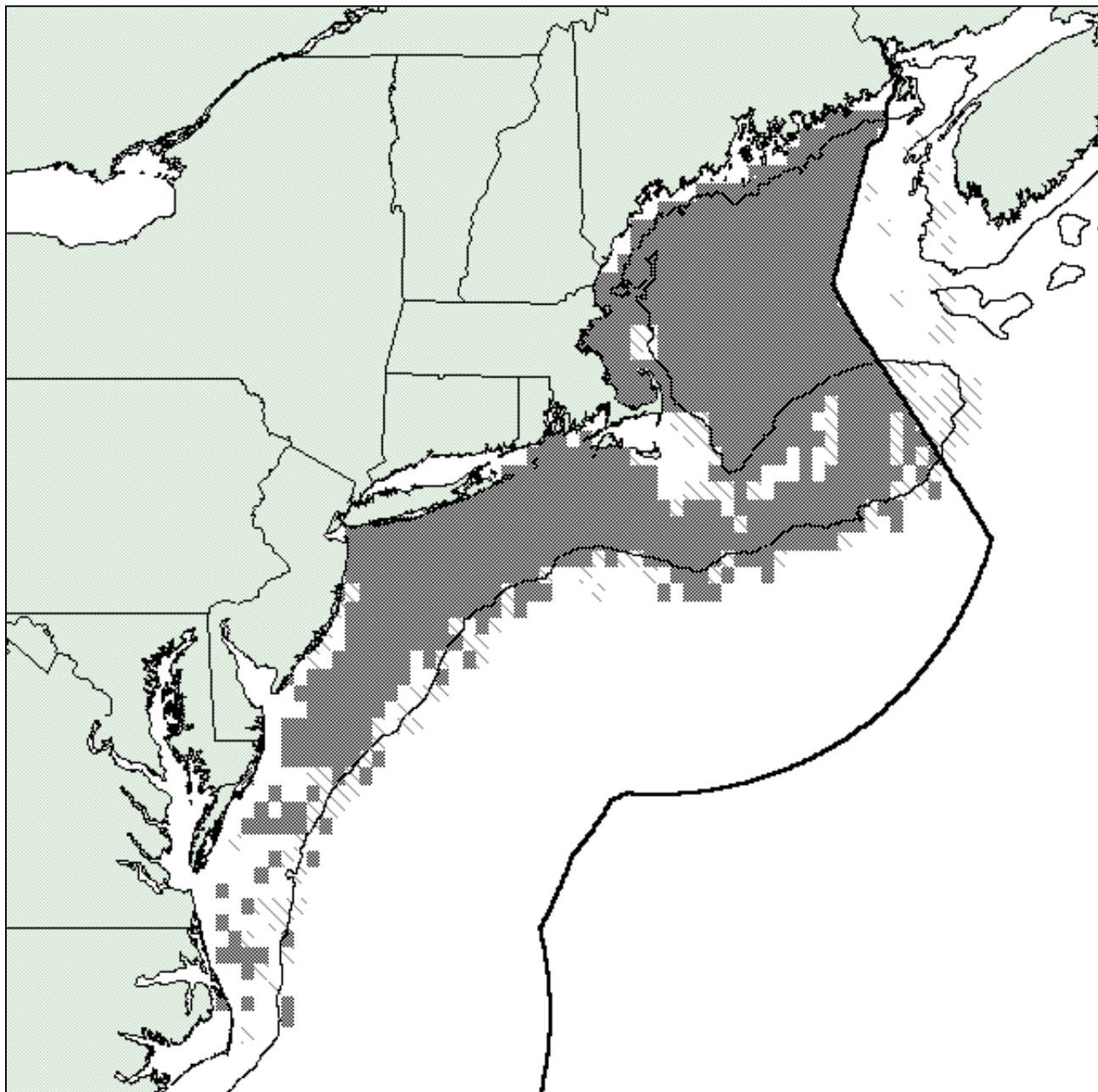


Figure 13.1: The EFH designation for whiting eggs is based upon alternative 3 for whiting juveniles. Whiting spawn in the summer months in the Gulf of Maine, but there has been very limited MARMAP sampling during this period. This is thought to explain why there have been few eggs observed in the Gulf of Maine despite the high concentrations of juveniles and adults. The use of the juvenile distribution serves as a proxy to identify those areas where whiting eggs are most likely to be. The EFH designation also includes those bays and estuaries identified by the NOAA ELMR program as supporting whiting eggs at the "common" or "abundant" level. The light shading represents the entire observed range of whiting eggs.

Essential Fish Habitat
Whiting (*Merluccius bilinearis*) Larvae

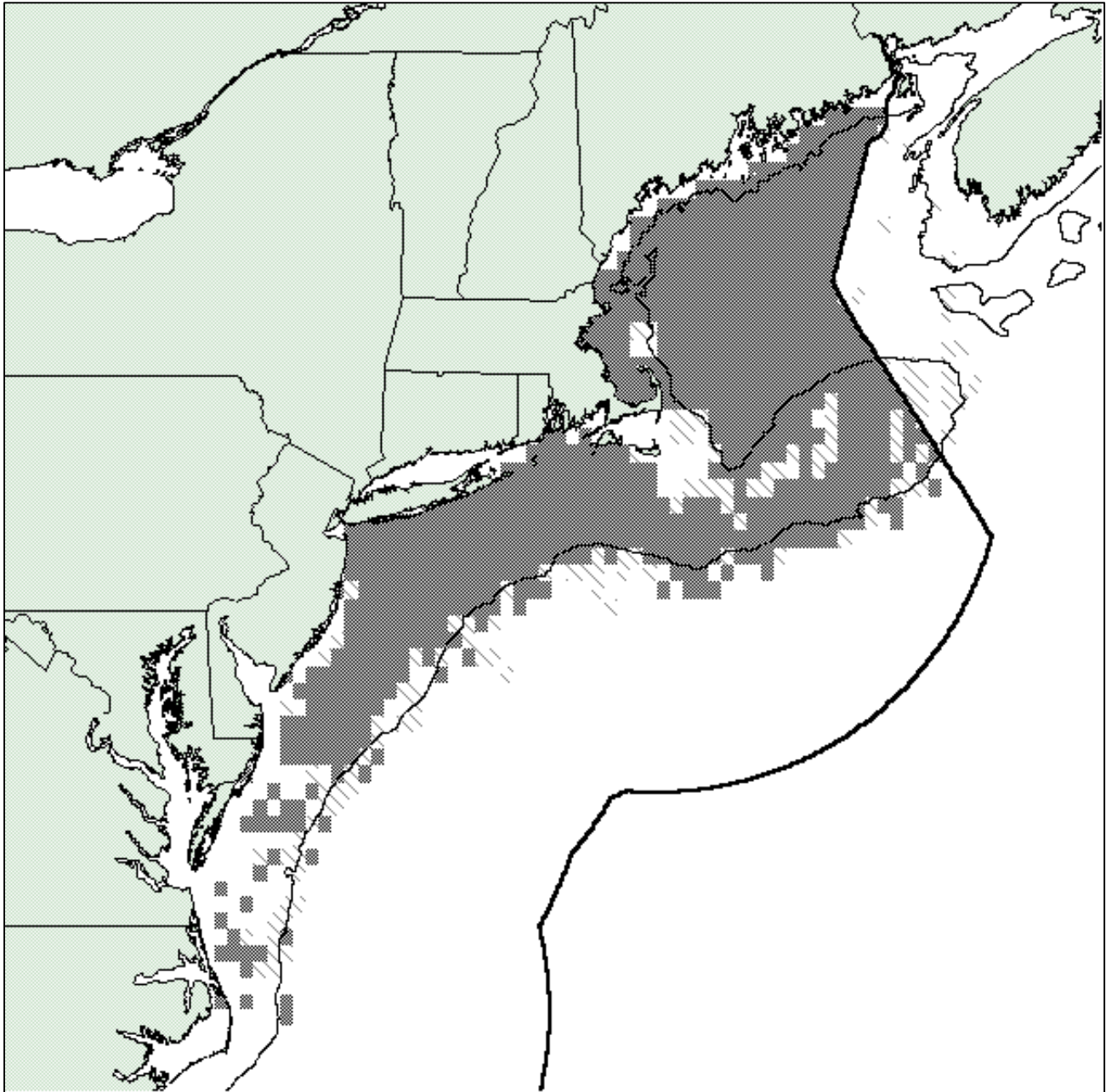


Figure 13.2: The EFH designation for whiting larvae is based upon alternative 3 for whiting juveniles. Whiting spawn in the summer months in the Gulf of Maine, but there has been very limited MARMAP sampling during this period. This is thought to explain why there have been very few larvae observed in the Gulf of Maine despite the high concentrations of juveniles and adults. The use of the juvenile distribution serves as a proxy to identify those areas where whiting larvae are most likely to be. The EFH designations also include those bays and estuaries identified by the NOAA ELMR program as supporting whiting larvae at the "common" or "abundant" level. The light shading represents the entire observed range of whiting larvae.

Essential Fish Habitat
Whiting (*Merluccius bilinearis*) Juveniles

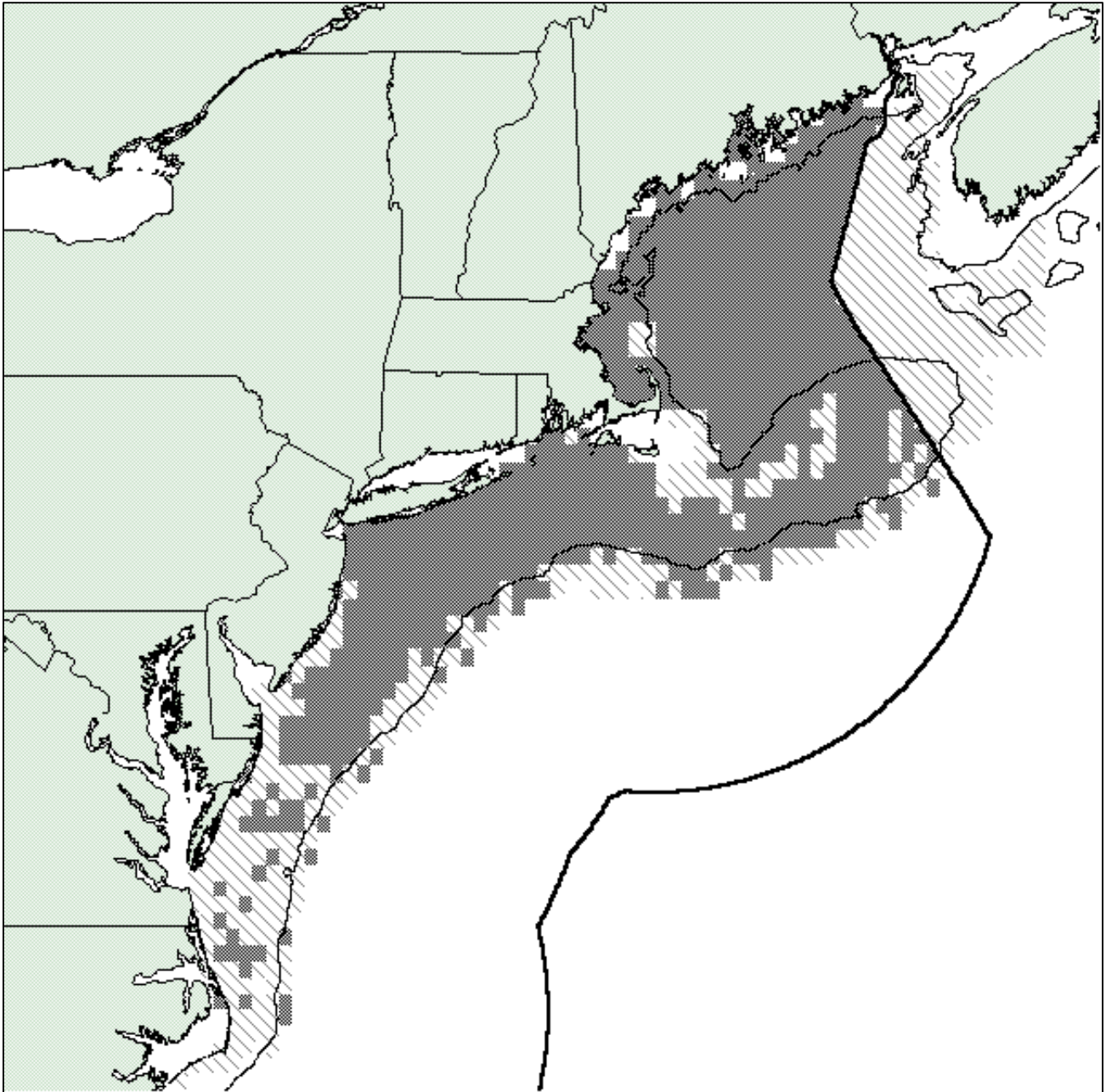


Figure 13.3: The EFH designation for juvenile whiting is based upon alternative 3 for whiting juveniles. The EFH designations also include the areas identified by the fishing industry and the inshore surveys as important for whiting, as well as those bays and estuaries identified by the NOAA ELMR program as supporting juvenile whiting at the "common" or "abundant" level. The other alternatives were not selected because they either include too little area (less than half of the range of this overfished species), or include areas where whiting occur in relatively low concentrations. The light shading represents the entire observed range of juvenile whiting.

Essential Fish Habitat
Whiting (*Merluccius bilinearis*) Adults

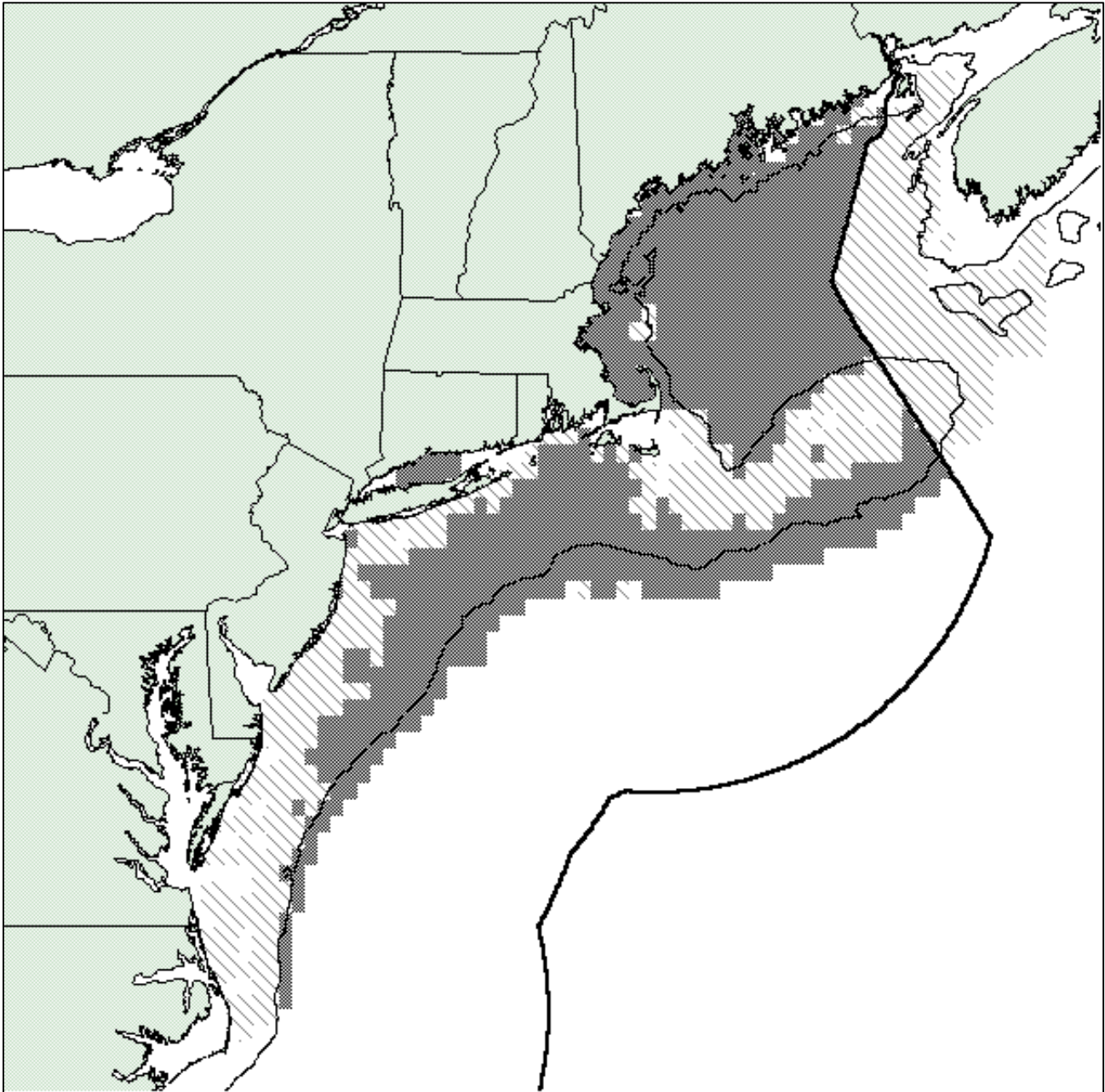


Figure 13.4: The EFH designation for adult whiting is based upon alternative 3 for whiting adults. The EFH designations also include the areas identified by the fishing industry and the inshore surveys as important for whiting, as well as those bays and estuaries identified by the NOAA ELMR program as supporting adult whiting at the "common" or "abundant" level. The other alternatives were not selected because they either include too little area (less than half of the range of this overfished species), or include areas where whiting occur in relatively low concentrations. The light shading represents the entire observed range of adult whiting.