PORTSMOUTH HARBOR AND PISCATAQUA RIVER
NEW HAMPSHIRE AND MAINE
NAVIGATION IMPROVEMENT STUDY
FEASIBILITY REPORT

APPENDIX P
ESSENTIAL FISHERIES HABITAT ASSESSMENT

PORTSMOUTH HARBOR AND PISCATAQUA RIVER
NAVIGATION IMPROVEMENT PROJECT
ESSENTIAL FISHERIES HABITAT ASSESSMENT

The following list of managed species and their appropriate life stage history for the designated 10' x 10' square which includes the Piscataqua River, Isle of Shoals-North, and the Wells, Maine, and Salisbury, Newburyport, and Newbury, Massachusetts nearshore disposal sites can be found below.

Atlantic Salmon (*Salmo salar*) –

Juveniles: Bottom habitats of shallow gravel/cobble riffles interspersed with deeper riffles and pools in rivers and estuaries. Generally, the following conditions exist where Atlantic salmon parr are found: clean, well-oxygenated fresh water, water temperatures below 25^0 C, water depths between 10 cm and 61 cm, and water velocities between 30 and 92 cm per second. As they grow, parr transform into smolts. Atlantic salmon smolts require access downstream to make their way to the ocean. Upon entering the sea, "post-smolts" become pelagic and range from Long Island Sound north to the Labrador Sea.

Adults: For adult Atlantic salmon returning to spawn, habitats with resting and holding pools in rivers and estuaries. Returning Atlantic salmon require access to their natal streams and access to the spawning grounds. Generally, the following conditions exist where returning Atlantic salmon adults are found migrating to the spawning grounds: water temperatures below 22.8^0 C, and dissolved oxygen above five ppm. Oceanic adult Atlantic salmon are primarily pelagic and range from the waters of the Continental Shelf off southern New England north throughout the Gulf of Maine.

Spawning Adults: Bottom habitats with a gravel or cobble riffle (redd) above or below a pool of river. Generally, the following conditions exist where spawning Atlantic salmon adults are found: water temperatures below 10^0 C, water depths between 30 cm and 61 cm, water velocities around 61 cm per second, and clean, well-oxygenated fresh water. Spawning Atlantic salmon adults are most frequently observed during October and November.

Atlantic cod (*Gadus morhua*) –

Eggs: Surface waters around the perimeter of the Gulf of Maine, George's Bank, and the eastern portion of the Continental Shelf off southern New England. Generally, the following conditions exist where cod eggs are found: sea surface temperatures below 12^0 C, water depths less than 110 meters, and a salinity range from 32-33‰. Cod eggs are most often observed beginning in the fall, with peaks in the winter and spring.

Larvae: Pelagic waters of the Gulf of Maine, Georges Bank, and the eastern portion of the Continental Shelf off of southern New England. Generally, the following conditions exist

where cod larvae found: sea surface temperatures below 10^0 C, water depths from 30 to 70 meters, and a salinity range from 32-33‰. Cod larvae are most often observed in the spring.

Juveniles: Bottom habitats with a substrate of cobble or gravel in the Gulf of Maine, Georges Bank, and the eastern portion of the Continental Shelf off southern New England. Generally, the following conditions exist where cod juveniles found: water temperatures below 20^0 C, water depths from 25 to 75 meters, and a salinity range from 30-35‰.

Adults: Bottom habitats with a substrate of rocks, pebbles, or gravel in the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where cod adults are found: water temperatures below 10^0 C, water depths from 10 to 150 meters, and a wide range of oceanic salinities.

Spawning Adults: Bottom habitats with a substrate of smooth sand, rocks, pebbles, or gravel in the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where spawning cod adults are found: water temperatures below 10^0 C, water depths from 10 to 150 meters, and a wide range of oceanic salinities. Cod are most often observed spawning during fall, winter, and early spring.

Haddock (*Melanogrammus aeglefinus*) –

Eggs: Surface waters over Georges Bank southwest to Nantucket Shoals and the coastal areas of the Gulf of Maine. Generally, the following conditions exist where haddock eggs are found: sea surface temperatures below 10^0 C, water depths from 50 to 90 meters, and salinity ranges from 34-36‰. Haddock eggs are most often observed during the months from March to May, April being the most important.

Larvae: Surface temperatures over Georges Bank southwest to the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where haddock larvae are found: sea surface temperatures below 14^0 C, water depths from 30 to 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. Generally, the following conditions exist where haddock juveniles are found: water temperatures below 11^0 C, depth from 35 to 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. Generally, the following conditions exist where haddock adults are found: water temperatures below 7^0 C, depths from 40 to 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. Generally, the following conditions exist where spawning haddock adults are found: water temperatures below 6^0 C, depths from 40 to 150 meters, and a salinity range from 31.5–34‰. Haddock are observed spawning most often during the months of January to June.

Pollock (*Pollachius virens*) –

Eggs: Pelagic waters of the Gulf of Maine and Georges Bank. Generally, the following conditions exist where pollock eggs are found: sea surface temperatures less than 17^0 C, water depths from 30 to 270 meters, and salinities between 32-32.8‰. Pollock eggs are often observed from October through June with peaks from November to February.

Larvae: Pelagic waters of the Gulf of Maine and Georges Bank. Generally, the following conditions exist where pollock larvae are found: sea surface temperatures less than 17^0 C, water depths from 10 to 250 meters. Pollock larvae are often observed from September to July with peaks from December to February.

Juveniles: Bottom habitats with aquatic vegetation or a substrate of sand, mud or rocks in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where pollock juveniles are found: water temperatures below 18^0 C, water depths from 0 to 250 meters, and salinities between 29-32‰.

Adults: Bottom habitats in the Gulf of Maine and Georges Bank and hard bottom habitats (including artificial reefs) off southern New England and the middle Atlantic south to New Jersey. Generally, the following conditions exist where pollock adults are found: water temperatures below 14^0 C, water depths from 15 to 365 meters, and salinities between 31-34‰.

Spawning Adults: Bottom habitats with a substrate of hard, stony, or rock bottom in the Gulf of Maine and hard bottom habitats (including artificial reefs) off southern New England and the middle Atlantic south to New Jersey. Generally, the following conditions exist where pollock adults are found: water temperatures below 8^0 C, water depths from 15 to 365 meters, and salinities between 32-32.8‰. Pollock are most often observed spawning during the months of September to April with peaks from December to February.

Whiting (*Merluccius bilinearis*) –

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. Generally, the following conditions exist where most whiting eggs are found: sea surface temperatures below 20^0 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. Generally, the

following conditions exist where most whiting larvae are found: sea surface temperatures below 20^0 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. Generally, the following conditions exist where most whiting juveniles are found: water temperatures below 21^0 C, water depths from 20 to 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. Generally, the following conditions exist where most whiting juveniles are found: water temperatures below 21^0 C, water depths from 20 to 270 meters, and salinities greater than 20‰.

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. Generally, the following conditions exist where most spawning whiting adults are found: water temperatures below 13^0 C and water depths from 30 to 325 meters.

Red hake (*Urophycis chuss*) –

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. Generally, the following conditions exist where hake eggs are found: sea surface temperatures below 10^0 C along the inner Continental Shelf with salinity less than 25‰. Hake eggs are most often observed during the months from May to November, with peaks in June and July.

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. Generally, the following conditions exist where red hake larvae are found: sea surface temperatures below 19^0 C, water depths less than 200 meters, and salinity greater than 0.5‰. Red hake larvae are most often observed from May through December, with peaks in September through October.

Juveniles: Bottom habitats with a substrate of shell fragments, including areas with an abundance of live scallops, in the Gulf of Maine, on Georges Bank, the Continental Shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where red hake juveniles are found: water temperatures below 16^o C, depths less than 100 meters and a salinity range from 31-33‰.

Adults: Bottom habitats in depressions with a substrate of sand and mud in the Gulf of Maine, on Georges Bank, the Continental Shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where red hake

adults are found: water temperatures below 12 ^{o} C, depths from 10 to 130 meters, and a salinity range from 33-34‰.

Spawning Adults: Bottom habitats in depressions with a substrate of sand and mud in the Gulf of Maine, the southern edge of Georges Bank, the Continental Shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where spawning red hake adults are found: water temperatures below 10^{o} C, depths less than 100 meters, and salinity less than 25‰. Red hake are most often observed spawning during the months from May – November, with peaks in June and July.

White hake (*Urophycis tenuis*) –

Eggs: Surface waters of the Gulf of Maine, Georges Bank, and southern New England. White hake eggs are most often observed in August and September.

Larvae: Pelagic waters of the Gulf of Maine, the southern edge of Georges Bank, and southern New England to the middle Atlantic. White hake larvae are most often observed in May in the mid-Atlantic area and August and September in the Gulf of Maine and Georges Bank.

Juveniles: *Pelagic stage* – Pelagic waters of the Gulf of Maine, the southern edge of Georges Bank, and southern New England to the middle Atlantic. White hake juveniles in the pelagic stage are most often observed from May through September. *Demersal stage* – Bottom habitats with seagrass beds or a substrate of mud or fine-grained sand in the Gulf of Maine, the southern edge of Georges Bank, and southern New England to the middle Atlantic. Generally, the following conditions exist where white hake juveniles are found: water temperatures below 19 ^{o} C and depths from 5 to 225 meter.

Adults: Bottom habitats with a substrate of mud or fine-grained sand in the Gulf of Maine, the southern edge of Georges Bank, and southern New England to the middle Atlantic. Generally, the following conditions exist where white hake adults are found: water temperatures below 14 ^{o} C and depths from 5 to 325 meter.

Spawning Adults: Bottom habitats with a substrate of mud or fine-grained sand in deep water in the Gulf of Maine, the southern edge of Georges Bank, and southern New England to the middle Atlantic. Generally, the following conditions exist where white hake adults are found: water temperatures below 14 ^{o} C and depths from 5 to 325 meter. White hake are most often observed spawning during the months April – May in the southern portion of their range and August – September in the northern portion of their range.

Redfish (*Sebastes fasciatus*) –

Larvae: Pelagic waters in the Gulf of Maine and southern Georges Bank. Generally, the following conditions exist where redfish larvae are found: sea surface temperatures below 15^{0} C and water depths between 50 and 270 meters. Redfish larvae are most often observed from March through October, with a peak in August.

Juvenile: Bottom habitats with a substrate of silt, mud or hard bottom in the Gulf of Maine and on the southern edge of Georges Bank. Generally, the following conditions exist where redfish juveniles are found: water temperatures below 13^0 C, depths from 25 to 400 meters, and a salinity range from 31-34‰.

Adults: Bottom habitats with a substrate of silt, mud or hard bottom in the Gulf of Maine and on the southern edge of Georges Bank. Generally, the following conditions exist where redfish adults are found: water temperatures below 13^0 C, depths from 50 to 350 meters, and a salinity range from 31-34‰.

Spawning Adults: Bottom habitats with a substrate of silt, mud or hard bottom in the Gulf of Maine and on the southern edge of Georges Bank. Generally, the following conditions exist where redfish adults are found: water temperatures below 13^0 C, depths from 50 to 350 meters, and a salinity range from 31-34‰. Redfish females are most often observed spawning (larvae) during the months of April through August.

Witch flounder (*Glyptocephalus cynoglossus*) –

Juveniles: Bottom habitats with a fine-grained substrate in the Gulf of Maine and along the outer continental shelf from Georges Bank south to Cape Hatteras. Generally, the following conditions exist where witch flounder juveniles are found: water temperatures below 13^0 C, depths from 50 to 450 meters, although they have been observed as deep as 1500 meters, and salinity from 34-36‰.

Winter flounder (*Pleuronectes americanus*) –

Eggs: Bottom habitats with a substrate of sand, muddy sand, mud, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to the Delaware Bay. Generally, the following conditions exist where winter flounder eggs are found: water temperatures below 10^0 C, salinities between 10-30‰ and water depths less than five meters. On Georges Bank, winter flounder eggs are generally found in water less than 8^0 C, and less than 90 meters deep. Winter flounder eggs are often observed from February to June with a peak in April on Georges Bank.

Larvae: Pelagic and bottom waters of Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to the Delaware Bay. Generally, the following conditions exist where winter flounder larvae are found: sea surface temperatures less than 15^0 C, salinities between 4-30‰, and water depths less than six meters. On Georges Bank, winter flounder larvae are generally found in water less than 8^0 C, and less than 90 meters deep. Winter flounder larvae are often observed from March to July with peaks in April and May on Georges Bank.

Juveniles: *Young-of-the-Year*: Bottom habitats with a substrate of mud or fine-grained sand on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, the following conditions exist where

winter flounder young-of-the-year are found: water temperatures below 28^0 C, and depths from 0.1 to10 meters, and salinities between 5-33‰. *Age 1 + Juveniles*: Bottom habitats with a substrate of mud or fine-grained sand on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, the following conditions exist where juvenile winter flounder are found: water temperatures below 25^o C, and depths from 1 to 50 meters, and salinities between 10-30‰.

Adults: Bottom habitats including estuaries with a substrate of mud, sand and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, the following conditions exist where adult winter flounder are found: water temperatures below 25^o C, and depths from 1 to 100 meters, and salinities between 15-33‰.

Spawning Adults: Bottom habitats including estuaries with a substrate of sand, muddy sand, mud, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, the following conditions exist where spawning adult winter flounder are found: water temperatures below 15^o C, depths less than six meters, except on Georges Bank where they spawn as deep as 80 meters, and salinities 5.5-36‰. Winter flounder are most often observed spawning during the months of February to June.

Yellowtail flounder (*Pleuronectes ferruginea*) –

Eggs: Surface waters of Georges Bank, Massachusetts Bay, Cape Cod Bay, and the southern New England continental shelf south to Delaware Bay. Generally, the following conditions exist where yellowtail eggs are found: sea surface temperatures below 15^0 C, water depths from 30 to 90 meters and a salinity range from 32.4-33.5‰. Yellowtail flounder eggs are most often observed during the months from mid-March to July, with peaks in April to June in southern New England.

Larvae: Surface waters of Georges Bank, Massachusetts Bay, Cape Cod Bay, the southern New England shelf and throughout the middle Atlantic south to the Chesapeake Bay. Generally, the following conditions exist where yellowtail larvae are found: sea surface temperatures below 17^0 C, water depths from 10 to 90 meters, and a salinity range from 32.4–33.5‰. Yellowtail flounder larvae are most often observed from March through April in the New York bight and from May through July in southern New England and southeastern Georges Bank.

Adults: Bottom habitats with a substrate of sand or sand and mud on Georges Bank, the Gulf of Maine, and the southern New England shelf south to Delaware Bay. Generally, the following conditions exist where yellowtail flounder adults are found: water temperatures below 15^0 C, water depths from 20 to 50 meters, and a salinity range from 32.4–33.5‰.

Spawning Adults: Bottom habitats with a substrate of sand or sand and mud on Georges Bank, the Gulf of Maine, and the southern New England shelf south to Delaware Bay.

Generally, the following conditions exist where spawning yellowtail flounder adults are found: water temperatures below 17^0 C, water depths from 10 to 125 meters, and a salinity range from 32.4–33.5‰.

Windowpane flounder (*Scopthalmus aquosus*) –

Eggs: Surface waters around the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where windowpane flounder eggs are found: sea surface temperatures less than 20^0 C, water depths less than 70 meters. Windowpane flounder eggs are often observed from February to November with peaks in May and October in the middle Atlantic and July through August on Georges Bank.

Larvae: Pelagic waters around the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where windowpane flounder larvae are found: sea surface temperatures less than 20^0 C, water depths less than 70 meters. Windowpane flounder larvae are often observed from February to November with peaks in May and October in the middle Atlantic and July through August on Georges Bank.

Juveniles: Bottom habitats with a substrate of mud or fine-grained sand around the perimeter of the Gulf of Maine, on Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where windowpane flounder juveniles are found: water temperatures below 25^0 C, water depths from 1 to 100 meters, and a salinity range from 5.5–36‰.

Adults: Bottom habitats with a substrate of mud or fine-grained sand around the perimeter of the Gulf of Maine, on Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border. Generally, the following conditions exist where windowpane flounder adults are found: water temperatures below 26.8^0 C, water depths from 1 to 75 meters, and salinities between 5.5–36‰.

Spawning Adults: Bottom habitats with a substrate of mud or fine-grained sand in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border. Generally, the following conditions exist where spawning windowpane flounder adults are found: water temperatures below 21^0 C, water depths from 1 to 75 meters, and salinities between 5.5–36‰. Windowpane flounder are most often observed spawning during the months February to December with a peak in May in the middle Atlantic.

American plaice (*Hippoglossoides platessoides*) –

Eggs: Surface waters of the Gulf of Maine and Georges Bank. Generally, the following conditions exist where the most American plaice eggs are found: sea surface temperatures below 12^0 C, water depths between 30 and 90 meters and a wide range of salinities.

American plaice eggs are observed all year in the Gulf of Maine, but only from December through June on Georges Bank, with peaks in both areas in April and May.

Juveniles: Bottom habitats with fine-grained sediments or a substrate of sand or gravel in the Gulf of Maine. Generally, the following conditions exist where the most American plaice juveniles are found: water temperatures below 17^0 C, water depths between 45 and 150 meters and a wide range of salinities.

Adults: Bottom habitats with fine-grained sediments or a substrate of sand or gravel in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where most American plaice adults are found: water temperatures below 17^0 C, water depths between 45 and 175 meters, and a wide range of salinities.

Spawning Adults: Bottom habitats of all substrate types in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where most spawning American plaice adults are found: water temperatures below 14^0 C, water depths less than 90 meters, and a wide range of salinities. Spawning begins in March and continues through June.

Ocean pout (*Macrozoarces americanus*) –

Eggs: Bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay. Due to low fecundity, relatively few eggs (<4200) are laid in gelatinous masses, generally in hard bottom sheltered nests, holes, or crevices where they are guarded by either female or both parents. Generally, the following conditions exist where ocean pout eggs are found: water temperatures below 10^0 C, depths less than 50 meters, and a salinity range from 32-34%. Ocean pout egg development takes two to three months during late fall and winter.

Larvae: Bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay. Larvae are relatively advanced in development ad are believed to remain in close proximity to hard bottom nesting area. Generally, the following conditions exist where ocean pout larvae are found: sea surface temperatures below 10^0 C, depths less than 50 meters, and salinities greater than 25‰. Ocean pout larvae development are most often observed from late fall through spring.

Juveniles: Bottom habitats, often smooth bottom near rocks or algae in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where ocean pout juveniles are found: water temperatures below 14^0 C, depths less than 80 meters, and salinities greater than 25‰.

Adults: Bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where ocean pout adults are found: water temperatures below 15^0 C, depths less than 110 meters, and a salinity range from 32-34‰.

Spawning Adults: Bottom habitats with a hard bottom substrate, including artificial reefs and shipwrecks, in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where spawning ocean pout adults are found: water temperatures below 10^0 C, depths less than 50 meters, and a salinity range from 32-34‰. Ocean pout spawn from late summer though early winter, with peaks in September and October.

Atlantic halibut (*Hippoglosus hippoglossus*) –

Eggs: Pelagic waters to the sea floor of the Gulf of Maine and Georges Bank. Generally, the following conditions exist where Atlantic halibut eggs are found: water temperatures between 4 and 7^0 C, water depths less than 700 meters, and salinities less than 35‰. Atlantic halibut eggs are observed between late fall and early spring, with peaks in November and December.

Larvae: Surface waters of the Gulf of Maine and Georges Bank. Generally, the following conditions exist where Atlantic halibut larvae are found: salinities between 30 and 35‰.

Juveniles: Bottom habitats with a substrate of sand, gravel, or clay in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where Atlantic halibut juveniles are found: water temperatures above 2^0 C, water depths from 20 to 60 meters.

Adults: Bottom habitats with a substrate of sand, gravel, or clay in the Gulf of Maine and Georges Bank. Generally, the following conditions exist where Atlantic halibut adults are found: water temperatures below 13.6^0 C, water depths from 100 to 700 meters, and salinities between 30.4–35.3‰.

Spawning Adults: Bottom habitats with a substrate of soft mud, clay, sand, or gravel in the Gulf of Maine and Georges Bank, as well as rough or rocky bottom locations along the slopes of the outer banks. Generally, the following conditions exist where spawning Atlantic halibut adults are found: water temperatures below 7^0 C, water depths less than 700 meters, and salinities less than 35‰. Atlantic halibut are most often observed spawning between late fall and early spring, with peaks in November and December.

Atlantic sea scallop (*Placopecten magellanicus*) –

Eggs: Bottom habitats in the Gulf of Maine, Georges Bank, southern New England the middle Atlantic south to the Virginia-North Carolina border. Eggs are heavier than seawater and remain on the seafloor until they develop into the first free-swimming larval stage. Generally, sea scallop eggs are thought to occur where water temperatures are below 17^0 C. Spawning occurs from May through October, with peaks in May and June in the middle Atlantic area and in September and October on Georges Bank and in Gulf of Maine.

Larvae: Pelagic waters and bottom habitats with a substrate of gravelly sand, shell fragments, and pebbles, or on various red algae, hydroids, amphipod tubes and bryozoans in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to the Virginia-

North Carolina border. Generally, the following conditions exist where sea scallop larvae are found: sea surface temperatures below 18^0 C and salinities between 16.9-30‰.

Juveniles: Bottom habitats with a substrate of cobble, shells and silt in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border that support the highest densities of sea scallops. Generally, the following conditions exist where most sea scallop juveniles are found: water temperatures below 15^0 C, and water depths from 18 to 110 meters and salinities above 16.5‰.

Adults: Bottom habitats with a substrate of cobble, shells, coarse/gravelly sand, and sand in the Gulf of Maine, Georges Bank, southern New England and middle Atlantic south to the Virginia-North Carolina border that support the highest densities of sea scallops. Generally, the following conditions exist where most sea scallop adults are found: water temperatures below 21^0 C, water depths from 18 to110 meters, and salinities above 16.5‰.

Spawning Adults: Bottom habitats with a substrate of cobble, shells, coarse/gravelly sand, and sand in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border that support the highest densities of sea scallop adults are found: water temperatures below 16^0 C, depths from 18 to 110 meters, and salinities above 16.5‰. Spawning occurs from May through October, with peaks in May and June in the middle Atlantic area, and in September and October on Georges Bank and in the Gulf of Maine.

Atlantic sea herring (*Clupea harengus*) –

Larvae: Pelagic waters in the Gulf of Maine, Georges Bank, and southern New England that comprise 90% of the observed range of Atlantic herring larvae. Generally, the following conditions exist where Atlantic herring larvae are found: sea surface temperatures below 16^0 C, water depths from 50 to 90 meters, and salinities around 32‰. Atlantic herring larvae are observed between August and April, with peaks from September through November.

Juveniles: Pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where Atlantic herring juveniles are found: water temperatures below 10^0 C, water depths from 15 to 135 meters, and salinity range from 26 to 32‰.

Adults: Pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where Atlantic herring adults are found: water temperatures below 10^0 C, water depths from 20 to 130 meters, and salinities above 28‰.

Spawning Adults: Bottom habitats with a substrate of gravel, sand, cobble and shell fragments, but also on aquatic macrophytes, in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay. Generally, the following conditions exist where spawning Atlantic herring adults are found: water temperatures below

15^0 C, water depths from 20 to 80 meters, and salinity range from 32-33‰. Herring eggs are spawned in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots. Atlantic herring are most often observed spawning during the months from July through November.

Monkfish (*Lophius americanus*) –

Eggs: Surface waters of the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where monkfish egg veils are found: sea surface temperatures below 18^0 C and water depths from 15 to 1000 meters. Monkfish egg veils are most often observed during the months from March to September.

Larvae: Pelagic waters of the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where monkfish larvae are found: water temperatures 15^0 C and water depths from 25 to 1000 meters. Monkfish larvae are most often observed during the months from March to September.

Juveniles: Bottom habitats with substrates of a sand-shell mix, algae covered rocks, hard sand, pebbly gravel, or mud along the outer continental shelf in the middle Atlantic, the mid-shelf off southern New England, and all areas of the Gulf of Maine. Generally, the following conditions exist where monkfish juveniles are found: water temperatures below 13^0 C, depths from 25 to 200 meters, and a salinity range from 29.9–36.7‰.

Adults: Bottom habitats with substrates of a sand-shell mix, algae covered rocks, hard sand, pebbly gravel, or mud along the outer continental shelf in the middle Atlantic, the mid-shelf off southern New England, along the outer perimeter of Georges Bank, and all areas of the Gulf of Maine. Generally, the following conditions exist where monkfish adults are found: water temperatures below 15^0 C, depths from 25 to 200 meters, and a salinity range from 29.9–36.7‰.

Spawning Adults: Bottom habitats with substrates of a sand-shell mix, algae covered rocks, hard sand, pebbly gravel, or mud along the outer continental shelf in the middle Atlantic, the mid-shelf off southern New England, along the outer perimeter of Georges Bank, and all areas of the Gulf of Maine. Generally, the following conditions exist where spawning monkfish adults are found: water temperatures below 13^0 C, depths from 25 to 200 meters, and a salinity range from 29.9–36.7‰. Monkfish are observed spawning most often during the months from February to August.

Bluefish (*Pomatomus saltatrix*) –

Juveniles: 1) North of Cape Hatteras, pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ) from Nantucket Island, Massachusetts south to Cape Hatteras, in the highest 90% of the area where juvenile bluefish are collected in the NEFSC trawl survey; 2) south of Cape Hatteras, 100% of the pelagic waters over the Continental

Shelf (from the coast out to the eastern wall of the Gulf Stream) through Key West, Florida; 3) the "slope sea" and Gulf Stream Between latitudes 29^0 00 N and 40^0 00 N; and 4) all major estuaries between Penobscot Bay, Maine and St. Johns River, Florida. Generally, juvenile bluefish occur in North Atlantic estuaries from June through October, mid-Atlantic estuaries from May through October, and south Atlantic estuaries March through December, within the "mixing" and "seawater" zone. Distribution of juveniles by temperature, salinity, and depth over the Continental Shelf is undescribed.

Adults: 1) North of Cape Hatteras, over the Continental Shelf (from the coast out to the limits of the EEZ), from Cape Cod Bay, Massachusetts south to Cape Hatteras, in the highest 90% of the area where adult bluefish were collected in the NEFSC trawl survey; 2) south of Cape Hatteras, 100% of the pelagic waters over the continental shelf (from the coast out to the eastern wall of the Gulf Stream) through Key West, Florida; and all major estuaries between Penobscot Bay, Maine and St. Johns River, Florida. Adult bluefish are found in North Atlantic estuaries from June through October, mid-Atlantic estuaries from April through October, and south Atlantic estuaries from May through January in the "mixing" and "seawater" zones. Bluefish adults are highly migratory and distribution varies seasonally and according to the size of the individuals comprising the schools. Bluefish are generally found in normal shelf salinities (>25 ppt).

Long finned squid (*Loligo pealei*) –

Juveniles: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where juvenile squid were collected. Generally, juvenile long finned squid are collected from shore to 700 feet and in temperatures between 4^0 F and 27^0 F.

Adults: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where adult squid were collected. Generally, adult long finned squid are collected from shore to 1000 feet and in temperatures between 39^0 F and 81^0 F.

Short finned squid (*Illex illecebrosus*) –

Juveniles: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where juvenile squid were collected. Generally, juvenile short finned squid are collected from shore to 600 feet and in temperatures between 36^0 F and 73^0 F.

Adults: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where adult squid were collected. Generally, adult short finned squid are collected from shore to 600 feet and in temperatures between 39^0 F and 66^0 F.

Atlantic butterfish (*Peprilus triacanthus*) –

Eggs: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish eggs were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, butterfish eggs are collected from shore to 6000 feet and in temperatures between 52^0 F and 63^0 F.

Larvae: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish larvae were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, butterfish larvae are collected from 33 feet to 6000 feet and in temperatures between 48^0 F and 66^0 F.

Juveniles: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish juvenile were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, butterfish larvae are collected from 33 feet to 1200 feet and in temperatures between 37^0 F and 82^0 F.

Adults: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish adults were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, adult butterfish are collected in depths from 33 feet to 1200 feet and in temperatures between 37^0 F and 82^0 F.

Atlantic mackerel (*Scomber scombrus*) –

Eggs: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where Atlantic mackerel eggs were collected. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, Atlantic mackerel eggs are collected from shore to 50 feet and temperatures between 41^0 F and 73^0 F.

Larvae: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where juvenile Atlantic mackerel were collected in NEFSC trawl surveys. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the

Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, Atlantic mackerel larvae are collected in depths between 33 feet to 425 feet and temperatures between 43^0 F and 72^0 F.

Juveniles: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where juvenile Atlantic mackerel were collected in NEFSC trawl surveys. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, juvenile Atlantic mackerel are collected from shore to 1,050 feet and temperatures between 39^0 F and 72^0 F.

Adults: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where adult Atlantic mackerel were collected in NEFSC trawl surveys. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, adult Atlantic mackerel are collected from shore to 1,250 feet and temperatures between 39^0 F and 61^0 F.

Summer flounder (*Paralicthys dentatus*) –

Adults: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where adult summer flounder were collected. Generally, summer flounder inhabit shallow coastal and estuarine waters during the warmer months and move offshore on the outer continental shelf at depths of 500 feet in colder months. Inshore, EFH is the estuaries where summer flounder were identified as being common, abundant, or highly abundant for the “mixing” and “seawater” salinity zones.

Scup (*Stenotomus chrysops*) –

Juveniles: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where juvenile scup were collected. Generally, juvenile scup are found in water temperatures greater than 45^0 F and where salinities are greater than 15 ppt. Inshore, EFH is the estuaries where scup were identified as being common, abundant, or highly abundant for the “mixing” and “seawater” salinity zones. Juvenile scup are generally found in water temperatures greater than 45^0 F and where salinities are greater than 15 ppt. Juvenile scup, in general during the summer and spring are found in estuaries and bays between Virginia and Massachusetts. They are found in association with various sands, mud, mussel and eelgrass bed type substrates.

Adults: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where adult scup were collected. Wintering adults (November through April) are usually offshore, south of New York to North Carolina, in waters above 45^0 F. Inshore, EFH is the estuaries where scup were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones.

Black sea bass (*Centropristus striata*) –

Juveniles: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where juvenile black sea bass were collected. Temperature preference is for areas warmer than 6^0 F with salinities greater than 18 ppt. Juvenile black sea bass are found in association with rough bottom, shellfish, and eelgrass beds, man-made structures in sandy-shelly areas; offshore clam beds and shell patches may also be used during the winter. They are found in coastal areas between Massachusetts and Virginia, but they winter offshore from New Jersey and south. Inshore, EFH is the estuaries where black sea bass were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones. Juveniles are found in the estuaries in the summer and spring.

Surf clam (*Spisula solidissima*) –

Juveniles and adults: Throughout the substrate to a depth of three feet within federal waters from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ, in areas that encompass the top 90% of the area where surf clams were caught. Surf clams generally occur from the beach zone to depth of about 200 feet, but beyond about 125 feet abundance is low.

Ocean quahog (*Artica islandica*) –

Juveniles and Adults: Throughout the substrate to a depth of three feet within Federal waters from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ, in areas that encompass the top 90% of the area where ocean quahogs were caught. Distribution in the western Atlantic ranges in depths from 25 feet to about 800 feet. Ocean quahogs are rarely found where bottom water temperatures exceed 65^0 F, and occur progressively further offshore between Cape Cod and Cape Hatteras.

Spiny dogfish (*Squalus acanthias*) –

Juveniles: EFH ranges from the Gulf of Maine through Cape Hatteras, North Carolina across the continental shelf in areas that encompass the highest 90% of the area where juvenile dogfish were collected. Generally, dogfish are collected in depths between 33 feet and 1,280 feet and temperatures between 37^0 F and 68^0 F. EFH is also the "seawater" portions of all estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy

Bay, Maine to Cape Cod Bay, Massachusetts, generally in water temperatures ranging between 37^0 F and 82^0 F.

Adults: EFH ranges from the Gulf of Maine through Cape Hatteras, North Carolina across the continental shelf in areas that encompass the highest 90% of the area where adult dogfish were collected. Generally, dogfish are collected in depths between 33 feet and 1,476 feet and temperatures between 37^0 F and 66^0 F. EFH is also the "seawater" portions of all estuaries where dogfish are common or abundant on the Atlantic coast, from Passamaquoddy Bay, Maine to Cape Cod Bay, Massachusetts, generally in water temperatures ranging between 37^0 F and 82^0 F.

Bluefin tuna (*Thunnus thynnus*)

Juveniles and subadults: All inshore and pelagic surface waters warmer than 12^0 C of the Gulf of Maine and Cape Cod Bay from Cape Ann, east including waters of the Great South Channel; continuing south to and including Nantucket Shoals to off Cape Hatteras, North Carolina. In pelagic surface waters warmer than 12^0 C between the 25 to 200 meter isobaths.

Adults: In pelagic waters of the Gulf of Maine from the 50 m isobath to the EEZ boundary, including the Great South Channel, then south of Georges Bank to 39^0 N from the 50 m isobath to the EEZ boundary; also, south of 39^0 N, from the 50 m isobath to the 2,000 m isobath to offshore Cape Lookout, North Carolina at 34.5^0 N.

Atlantic butterfish (*Peprilus triacanthus*)

Eggs: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish eggs were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, butterfish eggs are collected from shore to 6000 feet and in temperatures between 52^0 F and 63^0 F.

Larvae: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish larvae were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, butterfish larvae are collected from 33 feet to 6000 feet and in temperatures between 48^0 F and 66^0 F.

Juveniles: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish juvenile were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, butterfish larvae are collected from 33 feet to 1200 feet and in temperatures between 37^0 F and 82^0 F.

Adults: Pelagic waters found over the continental shelf, from the Gulf of Maine through Cape Hatteras in areas that encompass the highest 75% of the catches where butterfish adults were collected. The "mixing" and/or "seawater" portions of all the estuaries where butterfish are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, adult butterfish are collected in depths from 33 feet to 1200 feet and in temperatures between 37^0F and 82^0F.

Atlantic mackerel (*Scomber scombrus*)

Eggs: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where Atlantic mackerel eggs were collected. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, Atlantic mackerel eggs are collected from shore to 50 feet and temperatures between 41^0 F and 73^0 F.

Larvae: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where juvenile Atlantic mackerel were collected in NEFSC trawl surveys. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, Atlantic mackerel larvae are collected in depths between 33 feet to 425 feet and temperatures between 43^0 F and 72^0 F.

Juveniles: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where juvenile Atlantic mackerel were collected in NEFSC trawl surveys. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, juvenile Atlantic mackerel are collected from shore to 1,050 feet and temperatures between 39^0 F and 72^0 F.

Adults: EFH is the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina; in areas that encompass the highest 75% of the catch where adult Atlantic mackerel were collected in NEFSC trawl surveys. EFH is also the "mixing" and/or "seawater" portions of all the estuaries where Atlantic mackerel are "common", "abundant", or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, adult Atlantic mackerel are collected from shore to 1,250 feet and temperatures between 39^0 F and 61^0 F.

Summer flounder (*Paralicthys dentatus*)

Adults: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where adult summer flounder were collected. Generally, summer flounder inhabit shallow coastal and estuarine waters during the warmer months and move offshore on the outer continental shelf at depths of 500 feet in colder months. Inshore, EFH is the estuaries where summer flounder were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones.

Scup (*Stenotomus chrysops*)

Juveniles: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where juvenile scup were collected. Generally, juvenile scup are found in water temperatures greater than 45^0 F and where salinities are greater than 15 ppt. Inshore, EFH is the estuaries where scup were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones. Juvenile scup are generally found in water temperatures greater than 45^0 F and where salinities are greater than 15 ppt. Juvenile scup, in general during the summer and spring are found in estuaries and bays between Virginia and Massachusetts. They are found in association with various sands, mud, mussel and eelgrass bed type substrates.

Adults: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where adult scup were collected. Wintering adults (November through April) are usually offshore, south of New York to North Carolina, in waters above 45^0 F. Inshore, EFH is the estuaries where scup were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones.

Black sea bass (*Centropristus striata*)

Juveniles: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where juvenile black sea bass were collected. Temperature preference is for areas warmer than 6^0 F with salinities greater than 18 ppt. Juvenile black sea bass are found in association with rough bottom, shellfish, and eelgrass beds, man-made structures in sandy-shelly areas; offshore clam beds and shell patches may also be used during the winter. They are found in coastal areas between Massachusetts and Virginia, but they winter offshore from New Jersey and south. Inshore, EFH is the estuaries where black sea bass were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones. Juveniles are found in the estuaries in the summer and spring.

Adults: North of Cape Hatteras, EFH is the demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras, in the highest 90% of the area where adult black sea bass were collected. Wintering adults (November through April) are usually offshore, south of

New York to North Carolina. Temperatures above 6^0 F seem to be the minimum requirements. Structured habitats (natural and man-made), sand and shell are substrate preferences. Inshore, EFH is the estuaries where adult black sea bass were identified as being common, abundant, or highly abundant for the "mixing" and "seawater" salinity zones. Black sea bass are generally found in estuaries from May through October.

Surf clam (*Spisula solidissima*)

Juveniles and adults: Throughout the substrate to a depth of three feet within federal waters from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ, in areas that encompass the top 90% of the area where surf clams were caught. Surf clams generally occur from the beach zone to depth of about 200 feet, but beyond about 125 feet abundance is low.

Bluefin tuna (*Thunnus thynnus*)

Juveniles and subadults: All inshore and pelagic surface waters warmer than 12^0 C of the Gulf of Maine and Cape Cod Bay from Cape Ann, east including waters of the Great South Channel; continuing south to and including Nantucket Shoals to off Cape Hatteras. In pelagic surface waters warmer than 12^0 C between the 25 to 200 meter isobaths.