Regional EFH Profile: New England

This document was prepared by the Fisheries Leadership & Sustainability Forum with input from council and NOAA Fisheries staff as briefing material for the National Essential Fish Habitat Summit, May 17-19, 2016.

Summary
The New England Fishery Management Council (Council) recently completed Omnibus Habitat Amendment 2, a comprehensive review of Essential Fish Habitat (EFH)/Habitat Area of Particular Concern (HAPC) for all Council-managed species and spatial management measures to minimize the adverse effects of fishing on EFH. EFH is identified by species and life history stage based on level 1 and 2 data, primarily from a long-term fishery independent trawl survey.

EFH timeline

Year	Action
1998	All Fishery Management Plans (FMPs) amended to identify EFH for 18 of 28 managed species (Omnibus EFH Amendment 1)
1999-2010	EFH identified for 10 remaining species not included in Omnibus EFH Amendment 1[1]
2016	Omnibus Habitat Amendment 2 was initiated in 2004 as an EFH review and grew into a more comprehensive council action addressing groundfish and habitat spatial management measures. *Implementation of the revised designations is expected in early 2017.*

EFH identification and review

Omnibus EFH Amendment 1
The Council first identified EFH for 18 species through Omnibus EFH Amendment 1 (1998) using level 1 and 2 presence/absence and relative abundance and distribution data from long-term fishery-independent resource surveys. The Council developed text descriptions that included geographic area, type of habitat (pelagic or benthic), and general information on substrates and ranges of depth, temperature and salinity for each species and life history stage. The EFH text descriptions were based on information from *Essential Fish Habitat Source Documents,* a series of technical memoranda developed by staff at the Northeast Fisheries Science Center (NEFSC).

The Council used different methods to develop EFH maps for different life history stages. For demersal life history stages (juveniles and adults except for Atlantic herring and Atlantic salmon), maps were based on average catch rates per ten-minute square of latitude and

[1] The EFH requirements of FMPs that were not included in Omnibus EFH Amendment 1 were completed on the following schedule: Monkfish FMP (April 1999), Red Crab FMP (October 2002), and Skate FMP (July 2003). Amendment 16 (2010) added Atlantic wolffish to the NE Multispecies FMP and identified EFH for the species. EFH was identified for offshore hake in Amendment 12 to the Multispecies FMP in 2000.

longitude (approx. 100 mi^2). For planktonic life history stages (eggs and larvae) and the juvenile and adult stages of Atlantic herring, maps were based on percentages of observed range. Primary information sources included the spring and fall NEFSC bottom trawl surveys (1963-1997), NEFSC Marine Resources Monitoring, Assessment and Prediction ichthyoplankton surveys (1977-1987), and NEFSC scallop dredge surveys (1982-1997). EFH maps for inshore areas were based primarily on the results of a nation-wide resource inventory of a number of coastal estuaries and embayments conducted by the National Ocean Service in the mid-1990s and also included a limited number of ten-minute squares based on state survey data.

The Council further refined EFH maps to focus on areas of high relative abundance. The EFH Technical Team (which is now referred to as the Habitat Plan Development Team) developed a series of alternative maps for each species and life stage based on the 50th, 75th, 90th and 100th cumulative percentiles of the average catch rates (numbers per tow) in each ten minute square. The Council's Habitat Oversight Committee and Council relied on their general knowledge of each species to select a designation that best represented the areas where any given species and life stage was relatively abundant over the course of each survey. By averaging catches made over a number of years and at different times of year, this approach accounted for seasonal and temporal shifts in distribution. EFH maps for over-fished species were more precautionary.

Omnibus Habitat Amendment 2

Omnibus Habitat Amendment 2 was initiated in 2004 as a multi-purpose review of both EFH designations and measures to minimize adverse impacts of fishing on EFH across all Council FMPs. The scope was eventually expanded to become a comprehensive review of existing groundfish closures as well as habitat closures. The EFH review process began with the Habitat Evaluation Working Group, a group of academic and agency fishery scientists tasked with exploring innovative methods and tools for identifying EFH. The Habitat Evaluation Working Group, the NMFS Northeast Regional Office and Council staff formed the Habitat Evaluation Review Committee to explore new approaches to defining EFH based on peer-reviewed methodologies and provide the Council with tools to help them with identifying and describing EFH.

The review process was coordinated by the Council's Habitat Plan Development Team (PDT), which includes staff from the Council, Northeast Fisheries Science Center, Greater Atlantic Regional Fisheries Office (GARFO), and other management partners such as the U.S. Geological Survey (USGS) and regional academic institutions. The Council also has a dedicated council Habitat Oversight Committee, which is responsible for developing, modifying, or adding new measures to FMPs and the Habitat Advisory Panel, which provides support and input to the oversight committee. The EFH review process was initiated in 2004, and EFH and HAPCs were reviewed and identified in 2007. After 2007 work on the amendment focused on development of spatial management measures.

Omnibus Habitat Amendment 2 updates EFH designations for all Council FMPs. The updated designations are based on relative abundance data from trawl surveys and the approach is similar to the one taken in the Council's 1998 amendment. For this most recent review the Habitat PDT used updated EFH Source Documents and updated survey catch rate data through 2005 and added data from all the inshore state surveys in the region. A change was made in the way the survey catch data were transformed which further reduced the effect of occasional

large catches on the averages. The updated EFH text descriptions include depth ranges, which are reflected in the EFH maps. Similar to Omnibus EFH Amendment 1, relative abundance was mapped by ten minute square, but ten minute squares were limited to those that conformed to species- and life stage-specific temperature ranges, and then the temperature-limited data layers were clipped by species- and life stage-specific depth limits. EFH is identified for all species individually, and most life stages have distinct text descriptions and maps, except when data limitations required combining more than one life stage for mapping purposes. The amendment is currently under review.

Swept Area Seabed Impact (SASI) Approach

During the development of Omnibus EFH Amendment 2, the Council utilized the SASI approach to inform the process of minimizing the adverse impacts of fishing across gear types, fisheries, and areas. The SASI model was developed by the Habitat PDT and reviewed by the Council's SSC and an external peer review panel. The model enables managers to quantify and map, by gear type, fishing impacts on the seabed, and supports development and analysis of management measures to minimize adverse effects from fishing gear. SASI model inputs include fishing effort data, seabed substrate and energy data, and gear-specific susceptibility and recovery parameters. The SASI model maps locations that are vulnerable to different fishing gear types and helps managers visualize areas of habitat more vulnerable to fishing impacts.

EFH consultations

As part of Omnibus Amendment 2 the Council has proposed a number of new HAPC designations, including some inshore areas, namely the Inshore Juvenile Cod HAPC. This HAPC encompasses a large stretch of inshore waters from Rhode Island to Maine (0-20 meters depth), and is intended to support the EFH consultation process by recognizing the importance of sensitive inshore habitat that is impacted by a wide range of development activities. EFH consultations are conducted by NOAA Fisheries GARFO staff. The Council occasionally comments on projects that could impact EFH.

Looking ahead

Regional scientists are in the process of developing the EFH Geodatabase project, which will integrate state and federal trawl survey data and create a web-based mapping and data analysis tool that is designed to automate the production of EFH maps for the New England and Mid-Atlantic councils. This database will give federal and state scientists and managers additional flexibility to process, query and use data in different ways to test different EFH mapping methods and develop EFH designations, and could also provide data to feed into habitat and assessment modeling processes.