

NORTHERN SHORTFIN SQUID ILLEX ILLECEBROSUS



MID-ATLANTIC FISHERY MANAGEMENT COUNCIL (MAFMC) - ESSENTIAL FISH HABITAT (EFH) PROFILE

1. Management Unit

The management unit is all *Illex* squid (*Illex illecebrosus*) under U.S. jurisdiction.

2. Stock Status

The most recent stock assessment was not able to determine exploitation rates or stock biomass; therefore, it is not known if the stock is overfished or overfishing is occurring. For current stock status:

<https://www.fisheries.noaa.gov/national/status-stocks-reports>

3. Current Text Designations

Source: MAFMC. 2011. Amendment 11 to the Atlantic Mackerel, Squids, and Butterfish Fishery Management Plan. Available at: www.mafmc.org.

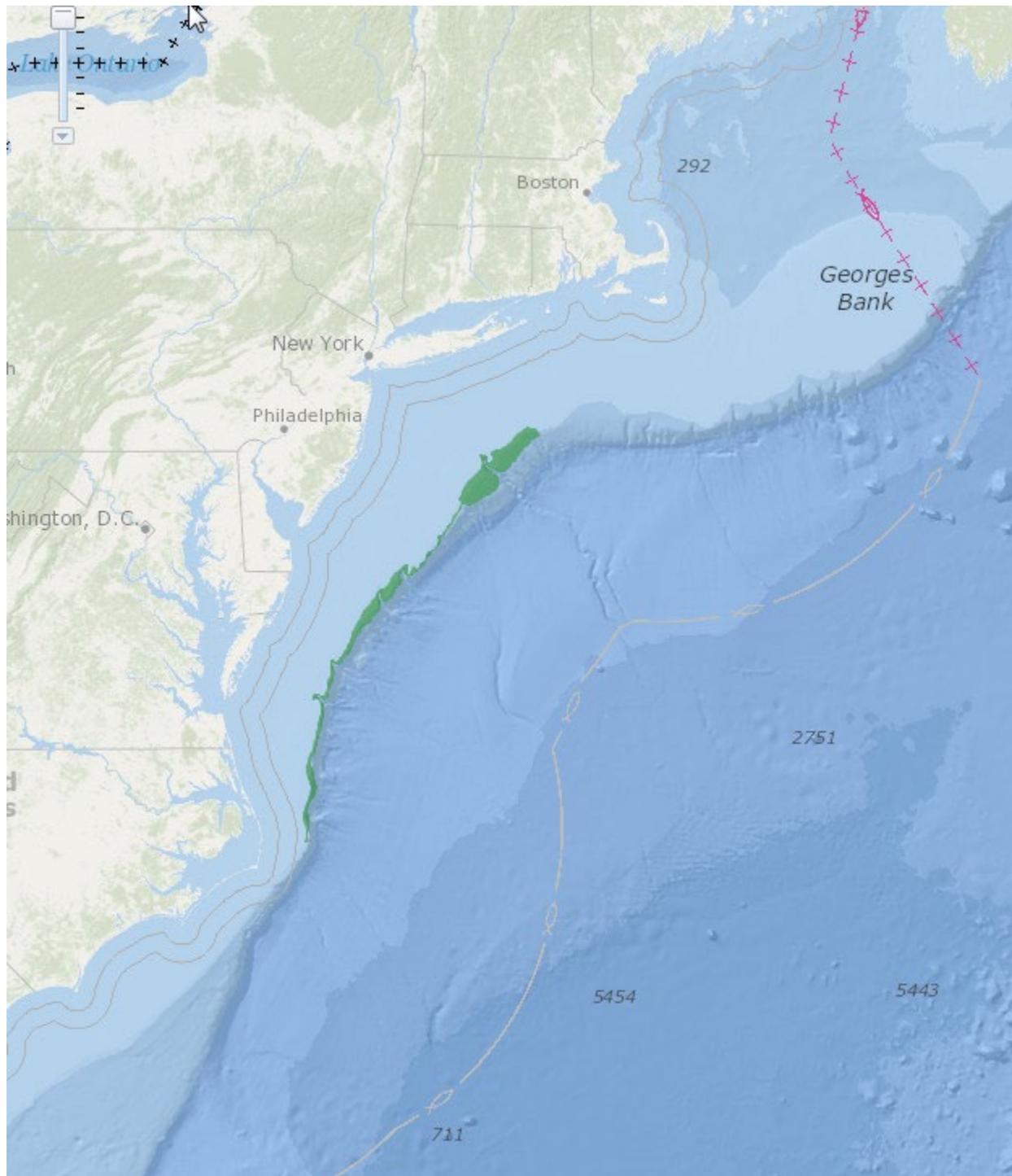
Eggs: EFH is pelagic habitats along the outer continental shelf and slope within the latitudinal range of 40°N to 35°50 N, where bottom depths are 113-377 meters and water temperatures are between 12.5 and 26°C, as depicted in Figure 21 [section 4]. The gelatinous egg balloons (0.5 – 1 meter in diameter) are presumed to be found in the midwater zone above the thermocline because laboratory studies indicate they are neutrally buoyant.

Pre-recruits: EFH is pelagic habitats along the outer continental shelf and slope as far south as South Carolina, on Georges Bank, and on the inner continental shelf off New Jersey and southern Maine and New Hampshire, as depicted in Figure 22 [section 4]. EFH for pre-recruit Northern shortfin squid is generally found over bottom depths between 41 and 400 meters where bottom temperatures are 9.5-16.5°C and salinities are 34.5-36.5 ppt. They also inhabit pelagic habitats in the Gulf Stream where water temperatures are above 16°C and migrate onto the shelf as they grow. Pre-recruits make daily vertical migrations, moving up in the water column at night and down in the daytime. They feed primarily on euphausiids at night near the surface.

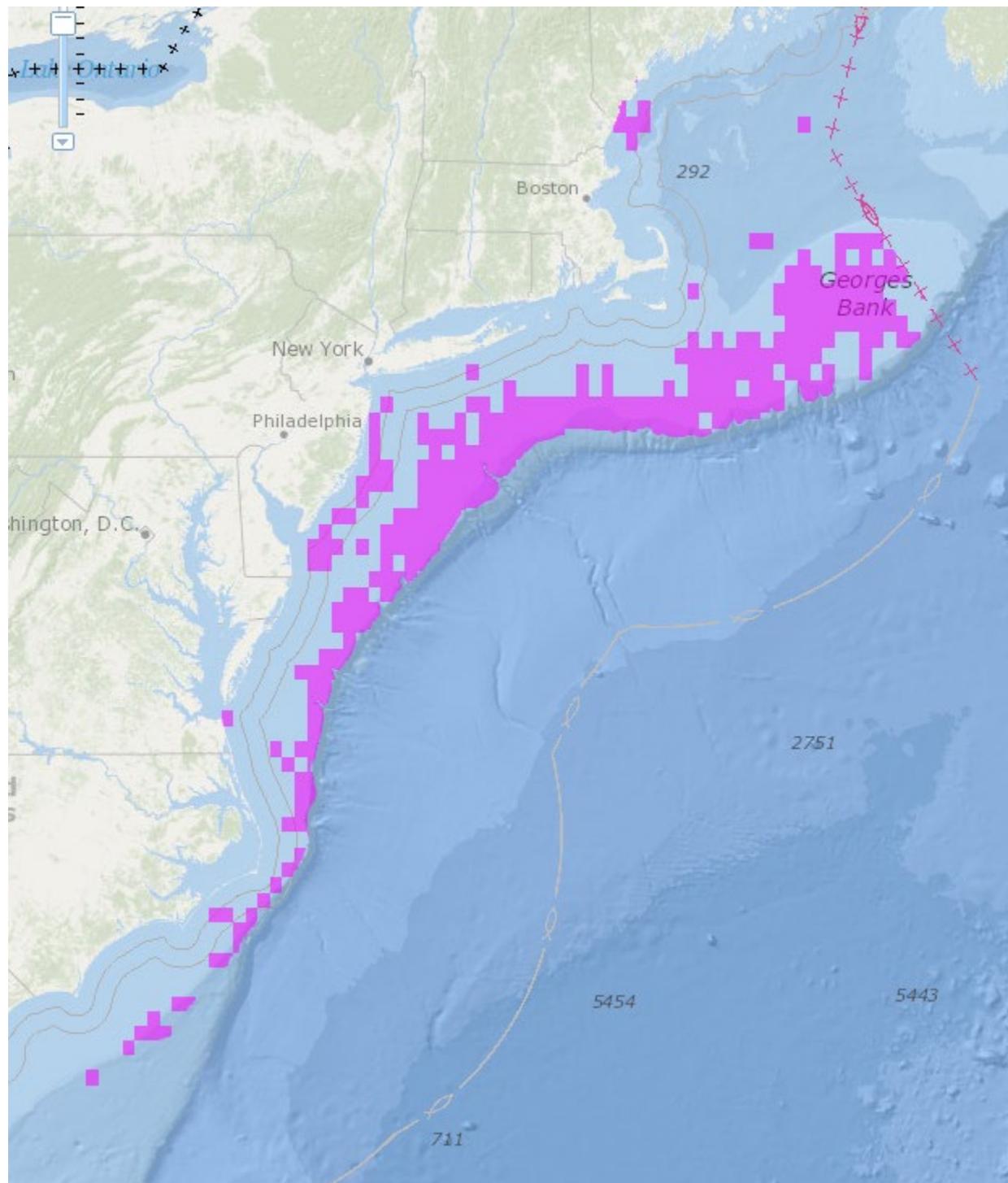
Recruits: EFH is pelagic habitats on the continental shelf and slope from Georges Bank to South Carolina, and in inshore and offshore waters of the Gulf of Maine, as depicted in Figure 23 [section 4]. EFH for recruit Northern shortfin squid is generally found on the shelf over bottom depths between 41 and 400 meters where bottom temperatures are 4.5-14.5°C and salinities are 34.5- 36.5 ppt. They have also been caught in bottom trawls as deep as 2,500 m in waters beyond the edge of the shelf and on Bear Seamount. Recruits make daily vertical migrations, moving up in the water column at night and down in the daytime. They feed primarily on fish and euphausiids and are also cannibalistic (larger females consume smaller males).

4. Current Map Designations

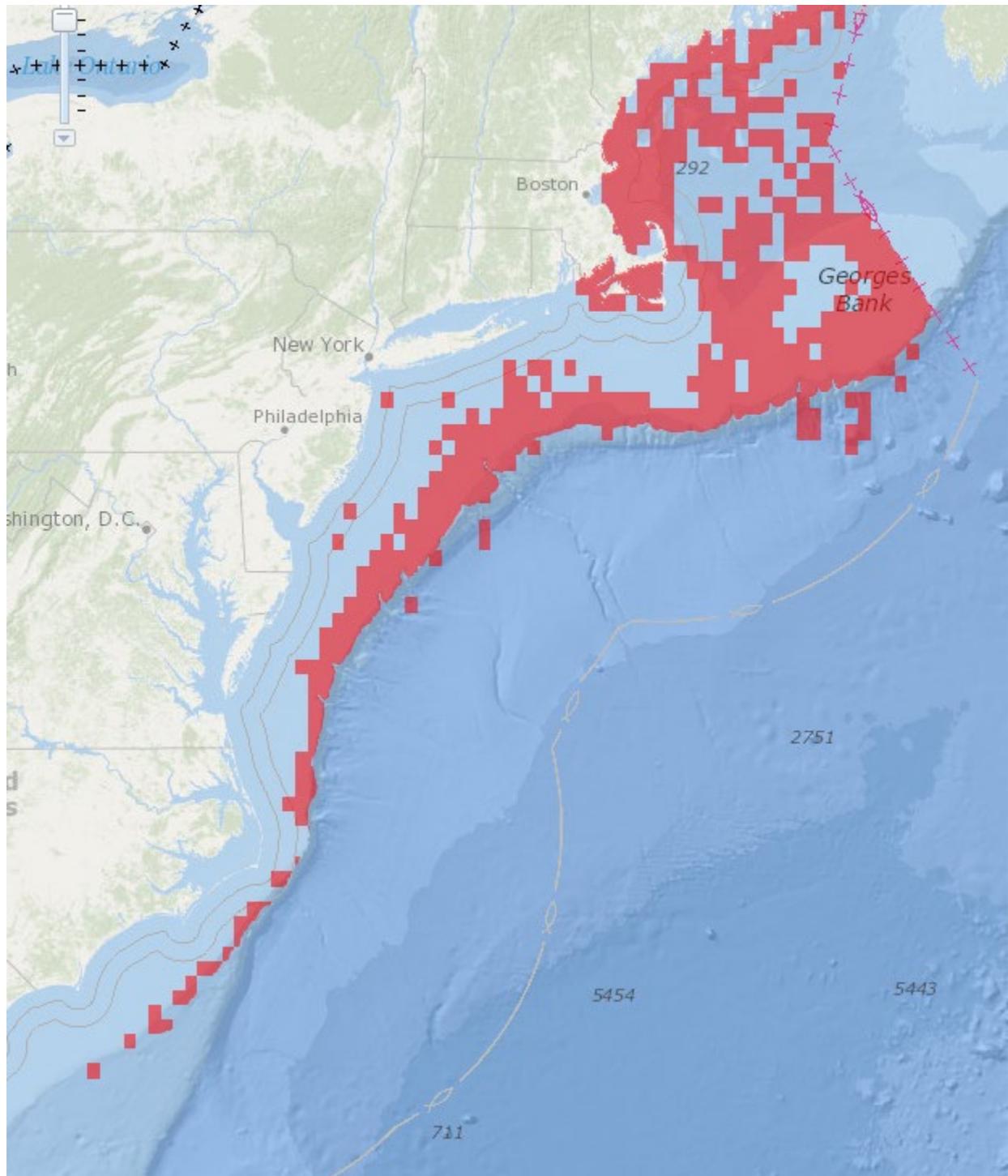
Eggs: NEFSC bottom trawl survey strata where at least one mated female *Illex* squid was caught during an *Illex* survey (May 2000).



Pre-recruits: Areas which encompass the top 95% of the areas where *Illex* squid pre-recruits were collected in the NEFSC trawl survey (1976-2007), and assorted state survey data.



Recruits: Areas which encompass the top 95% of the areas where *Illex* squid recruits were collected in the NEFSC trawl survey (1976-2007), and assorted state survey data.



5. Designation and Mapping Methods

The Council has generally identified EFH using level 1 and/or level 2 data (see EFH regulations; section 7) primarily from distribution and relative abundance data from the Northeast Fisheries Science Center (NEFSC) bottom trawl surveys (spring and fall, 1963+). The designations were comprised of a detailed text description and a series of maps by ten-minute square areas (TMSQ). The Mid-Atlantic EFH Technical Team, Northeast Fisheries Science Center (NEFSC) scientists, and other experts developed alternatives for the Council to consider. Four alternatives were proposed and, for mapping purposes, the Council selected the alternative that used a distributional percentage (50%, 75%, 90%, or 100% of observations) of the catches by area based on which level of information was available and stock status. EFH maps were developed for each life stage and displayed the distribution and abundance data by TMSQ.

Illex squid EFH was first identified through Amendment 8 (1999). *Illex* squid were not overfished; therefore, the Council selected the TMSQ where the highest 75% of the total catch was collected. Amendment 11 (2011) reviewed and updated EFH descriptions and maps. At that time, the overfished status of *Illex* squid was unknown. The EFH review was completed using data from fishery-independent surveys, new scientific literature, and revised EFH source documents. For the first time, maps included TMSQ where 10% or more of the bottom trawl tows from coastal state surveys in the region caught the life stages/species. In federal waters, the Council selected the TMSQ where the highest 95% of the total catch was collected. EFH for pelagic eggs and larvae were mapped using trawl survey data and the inshore ELMR areas were retained in all maps.

6. EFH Source Documents

Information on *Illex* squid habitat requirements can be found in:

Cargnelli L.M., Griesbach S.J., Zetlin C.A. 1999. Essential Fish Habitat Source Document: Northern shortfin squid, *Illex illecebrosus*, Life History and Habitat Characteristics. NOAA Technical Memorandum, NMFS-NE-147. Available at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

Hendrickson L.C. and E.M. Holmes. 2004. Essential Fish Habitat Source Document: Northern shortfin squid, *Illex illecebrosus*, Life History and Habitat Characteristics. Second edition. NOAA Technical Memorandum, NMFS-NE-191. Available at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

7. Other Information

EFH Legal Authorities

EFH from Magnuson Stevens Act:

<http://www.fisheriesforum.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=014976d6-5bc1-f0c4-be6b-ade7c99fc932&forceDialog=0>

EFH Contents of Fishery Management Plans under CFR §600.815:

<https://www.gpo.gov/fdsys/pkg/CFR-2013-title50-vol12/pdf/CFR-2013-title50-vol12-sec600-815.pdf>

Federal agency consultation with the Secretary under CFR §600.920:

<https://www.gpo.gov/fdsys/pkg/CFR-2014-title50-vol12/pdf/CFR-2014-title50-vol12-sec600-920.pdf>

NMFS 2006 EFH Guidance:

<http://www.nmfs.noaa.gov/op/pds/documents/03/201/03-201-15.pdf>

Management and Stock Assessments

MAFMC: <http://www.mafmc.org>, ASMFC: <http://www.asmfc.org>, NEFSC Stock Assessments:

<http://www.nefsc.noaa.gov/saw/>