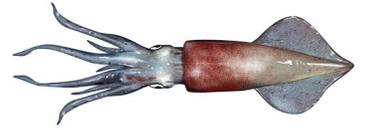


# LONGFIN (INSHORE) SQUID DORYTHEUTHIS (AMERIGO) PEALEII



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

### 1. Management Unit

The management unit is all longfin squid (*Doryteuthis (Amerigo) pealeii*; formerly *Loligo pealeii*) under U.S. jurisdiction.

### 2. Stock Status

The most recent longfin squid stock assessment indicated that the stock was not overfished. Overfishing status could not be determined. 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](http://www.mafmc.org).

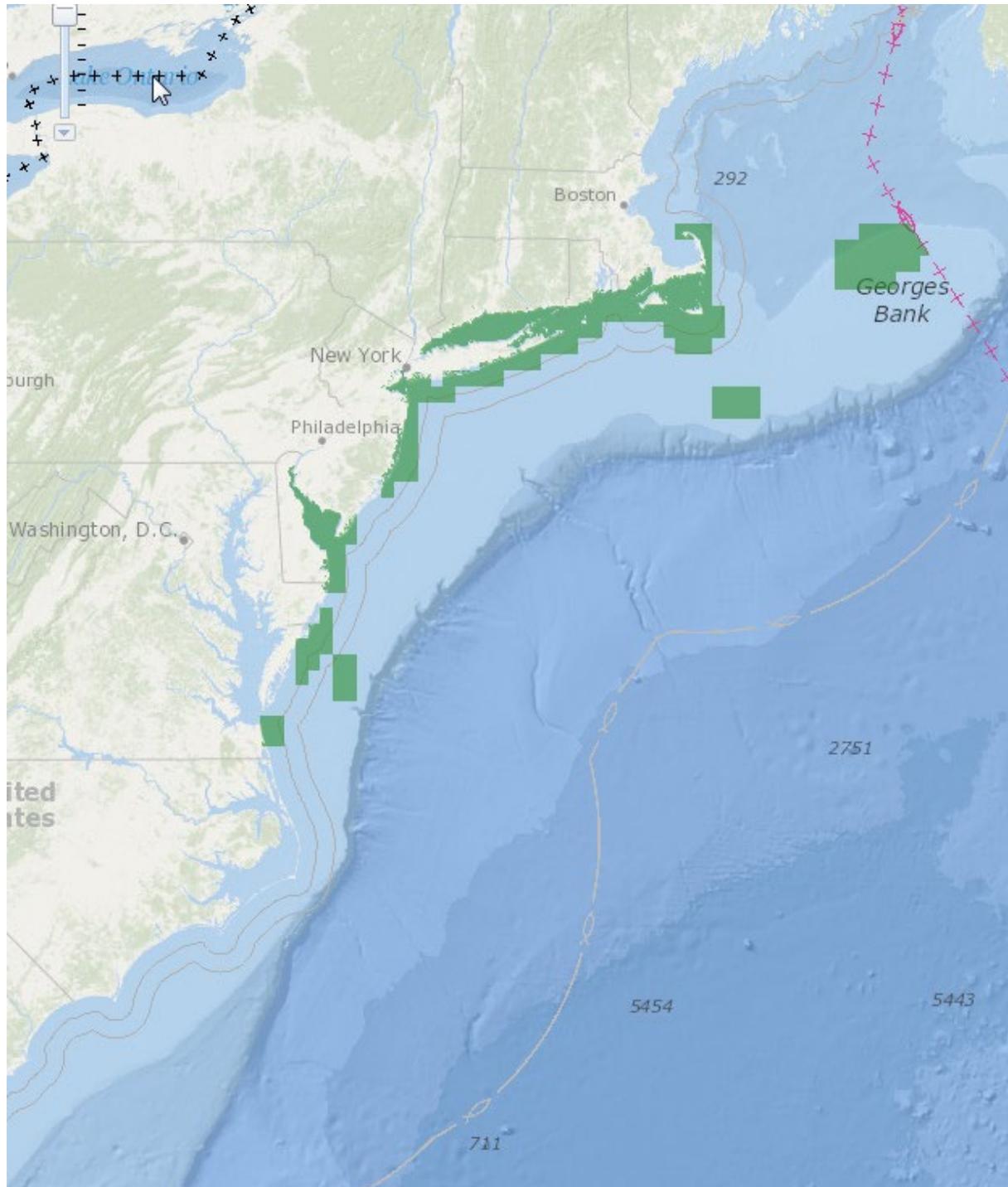
Eggs: EFH for *Loligo* eggs occurs in inshore and offshore bottom habitats from Georges Bank southward to Cape Hatteras, as depicted in Figure 12 [section 4]. EFH for *Loligo* eggs is generally found where bottom water temperatures are between 10°C and 23°C, salinities are between 30 and 32 ppt and depth is less than 50 meters. *Loligo* eggs have also been collected in bottom trawls in deeper water at various places on the continental shelf (Figure 24 [section 4]). Like most loliginids, *L. pealeii* egg masses or “mops” are demersal and anchored to the substrates on which they are laid, which include a variety of hard bottom types (e.g., shells, lobster pots, piers, fish traps, boulders, and rocks), submerged aquatic vegetation (e.g., *Fucus sp.*), sand, and mud.

Pre-recruits: EFH is pelagic habitats in inshore and offshore continental shelf waters from Georges Bank to South Carolina, in the southwestern Gulf of Maine, and in embayments such as Narragansett Bay, Long Island Sound, and Raritan Bay, as depicted in Figure 25 [section 4]. EFH for recruit longfin inshore squid is generally found over bottom depths between 6 and 160 meters where bottom water temperatures are 8.5-24.5°C and salinities are 28.5-36.5 ppt. Pre-recruits migrate offshore in the fall where they overwinter in deeper waters along the edge of the shelf. They make daily vertical migrations, moving up in the water column at night and down in the daytime. Small immature individuals feed on planktonic organisms while larger individuals feed on crustaceans and small fish.

Recruits: EFH is pelagic habitats in inshore and offshore continental shelf waters from Georges Bank to South Carolina, in inshore waters of the Gulf of Maine, and in embayments such as Narragansett Bay, Long Island Sound, Raritan Bay, and Delaware Bay, as depicted in Figure 26 [section 4]. EFH for recruit longfin inshore squid is generally found over bottom depths between 6 and 200 meters where bottom water temperatures are 8.5-14°C and salinities are 24-36.5 ppt. Recruits inhabit the continental shelf and upper continental slope to depths of 400 meters. They migrate offshore in the fall and overwinter in warmer waters along the edge of the shelf. Like the prerecruits, they make daily vertical migrations. Individuals larger than 12 cm feed on fish and those larger than 16 cm feed on fish and squid. Females deposit eggs in gelatinous capsules which are attached in clusters to rocks, boulders, and aquatic vegetation and on sand or mud bottom, generally in depths less than 50 meters.

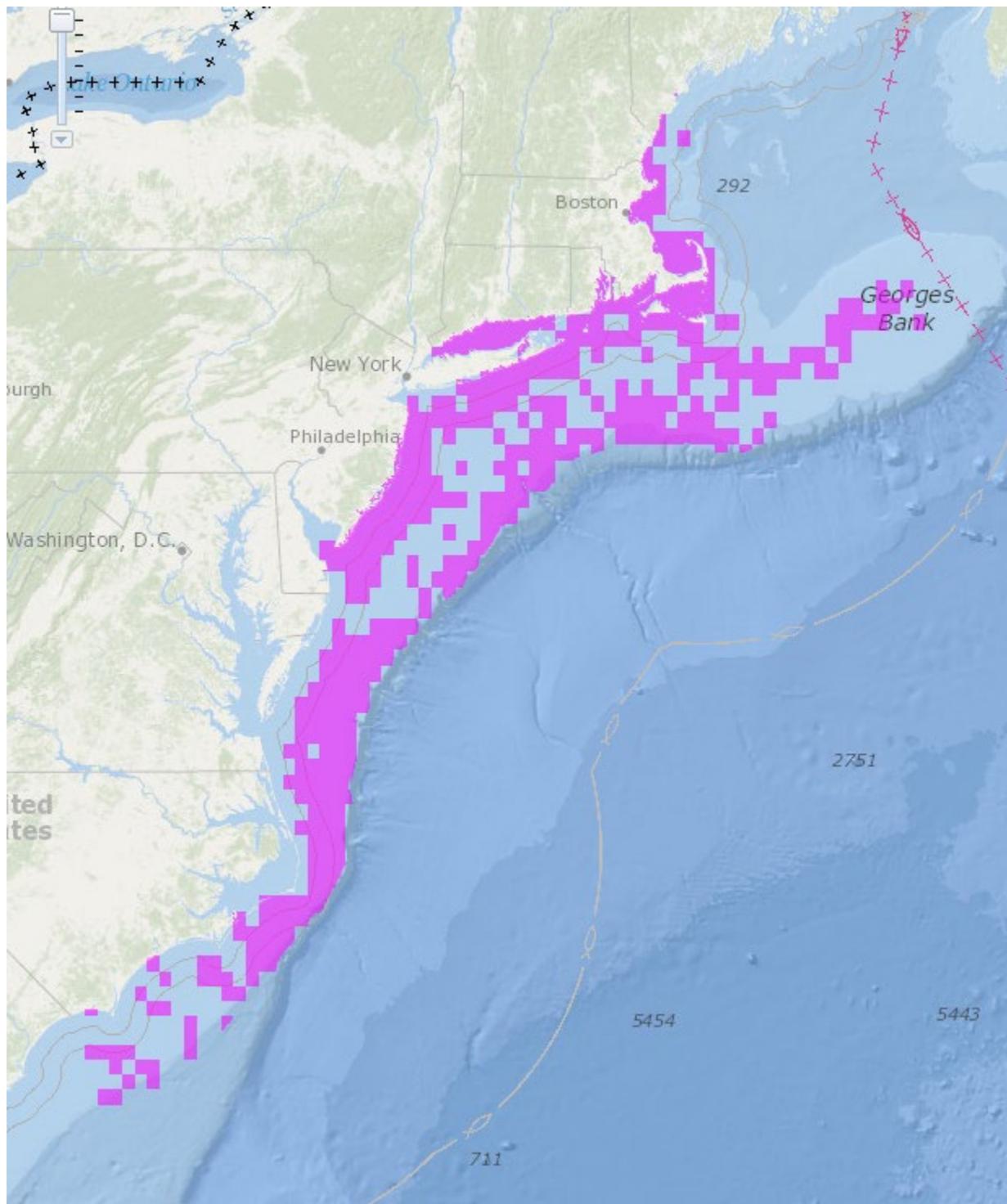
#### 4. Current Map Designations

Eggs: Location of reported catches of eggs by trawlers as reported in Hatfield and Cadrin (2002)<sup>1</sup>.

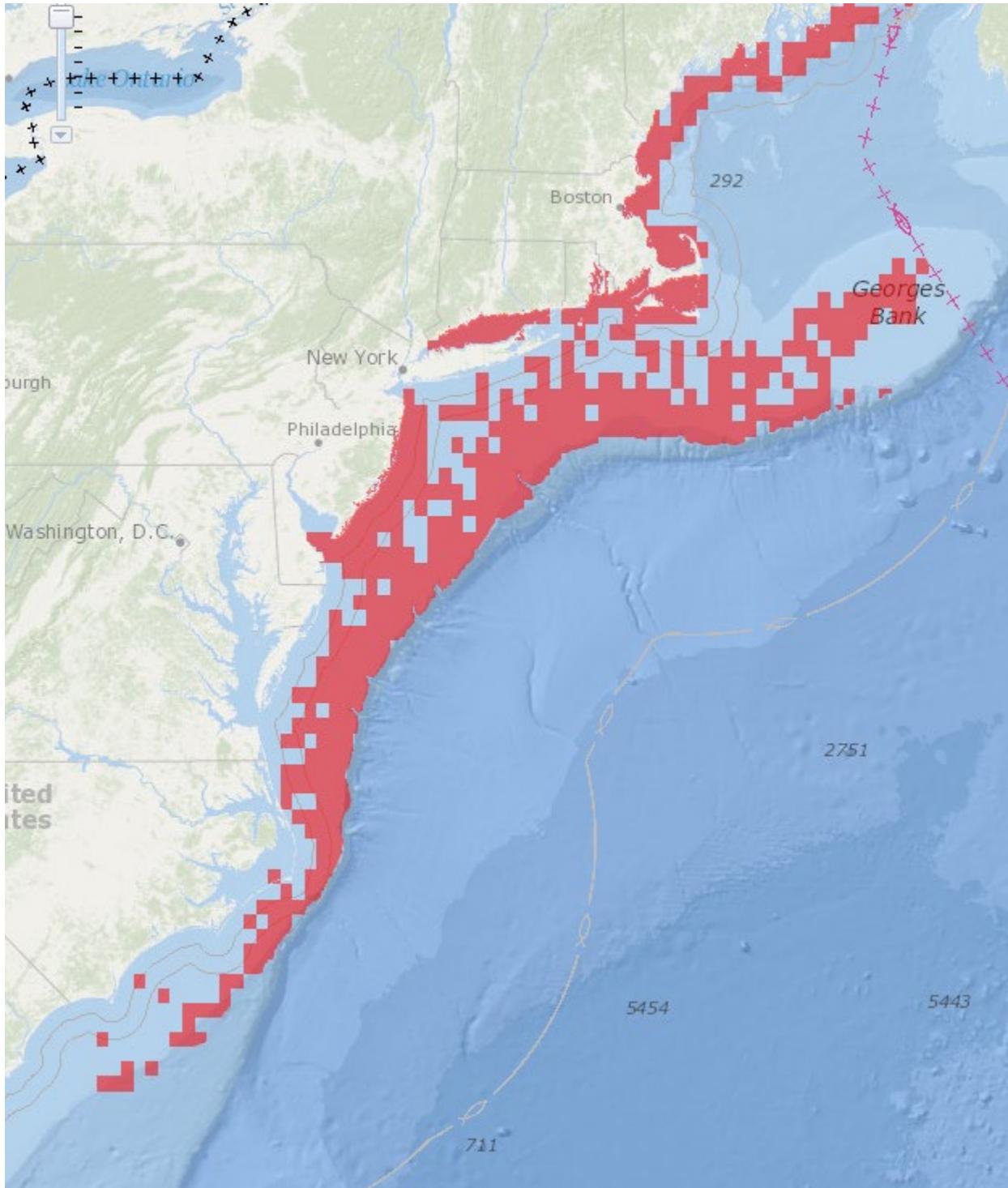


<sup>1</sup> Hatfield, E. M. C. and S. X. Cadrin. 2002. Geographic and temporal patterns in size and maturity of the longfin inshore squid (*Loligo pealeii*) off the northeastern United States. Fish. Bull. 100 (2): 200-213.

Pre-recruits: Areas which encompass the top 90% of the areas where longfin squid pre-recruits were collected in the NEFSC trawl survey (1976-2007), and assorted state survey data.



Recruits: Areas which encompass the top 90% of the areas where longfin squid pre-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). 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.

Longfin squid EFH was first identified through Amendment 8 (1999). Longfin squid were not overfished; therefore, the Council selected the TMSQ where the highest 75% of the total catch was collected. Amendment 9 (2008) identified EFH for longfin eggs, and Amendment 11 (2011) reviewed and updated EFH descriptions and maps for all other life stages. EFH for longfin eggs, which attach to the seafloor, was mapped based on reported catches of eggs by trawlers. 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 90% of the total catch was collected.

## 6. EFH Source Documents

Information on longfin squid habitat requirements can be found in:

Cargnelli L.M., Griesbach S.J., McBride C., Zetlin C.A., Morse W.W. 1999. Essential Fish Habitat Source Document: Longfin inshore squid, *Loligo pealeii*, Life History and Habitat Characteristics. NOAA Technical Memorandum, NMFS-NE-146. Available at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

Jacobson, L. D. 2005. Essential Fish Habitat Source Document: Longfin inshore squid, *Loligo pealeii*, Life History and Habitat Characteristics. Second edition. NOAA Technical Memorandum, NMFS-NE-193. 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.asafc.org>

NEFSC Stock Assessments: <http://www.nefsc.noaa.gov/saw/>