Atlantic Herring

Management Area 1A Review 2019

2019 1A TAC

- Total Season TAC 3,850 MT
  - Takes into account
    - 39 MT fixed gear fishery
    - 8% bycatch
    - 131 MT RSA
- Bimonthly Periods
  - Period 1 May-June
  - Period 2 July-August
  - Period 3 September-October
  - Period 4 November-December

Month	TAC
June*	631 MT
July- August	1544 MT
September-October	1309 MT
November-December	366 MT

*0 MT allocated to May

1A Management Tools

- Period 1 - First half Period 3 (June 1 - September 30)
  - Category A Vessels
    - Landing Days
    - Weekly Landing Limits
    - Use of Carriers
  - Category C and D Vessels
    - Landing Days
- Second half Period 3 - Period 4 (October 1 - December 31)
  - Landing Days

Period 1 and 2

- Period 1 was rolled into Period 2
- TAC June 1 - August 31: 2175 MT
- Opened July 15
- Zero landing days August 19
- Category A
  - 4 Landing/Possession Days
  - 160,000 lbs per vessel per week
  - Harvester to harvester transfer only (Carriers prohibited)
  - 11 Vessels
- Category C and D
  - 5 Landing Days
  - 6 Vessels

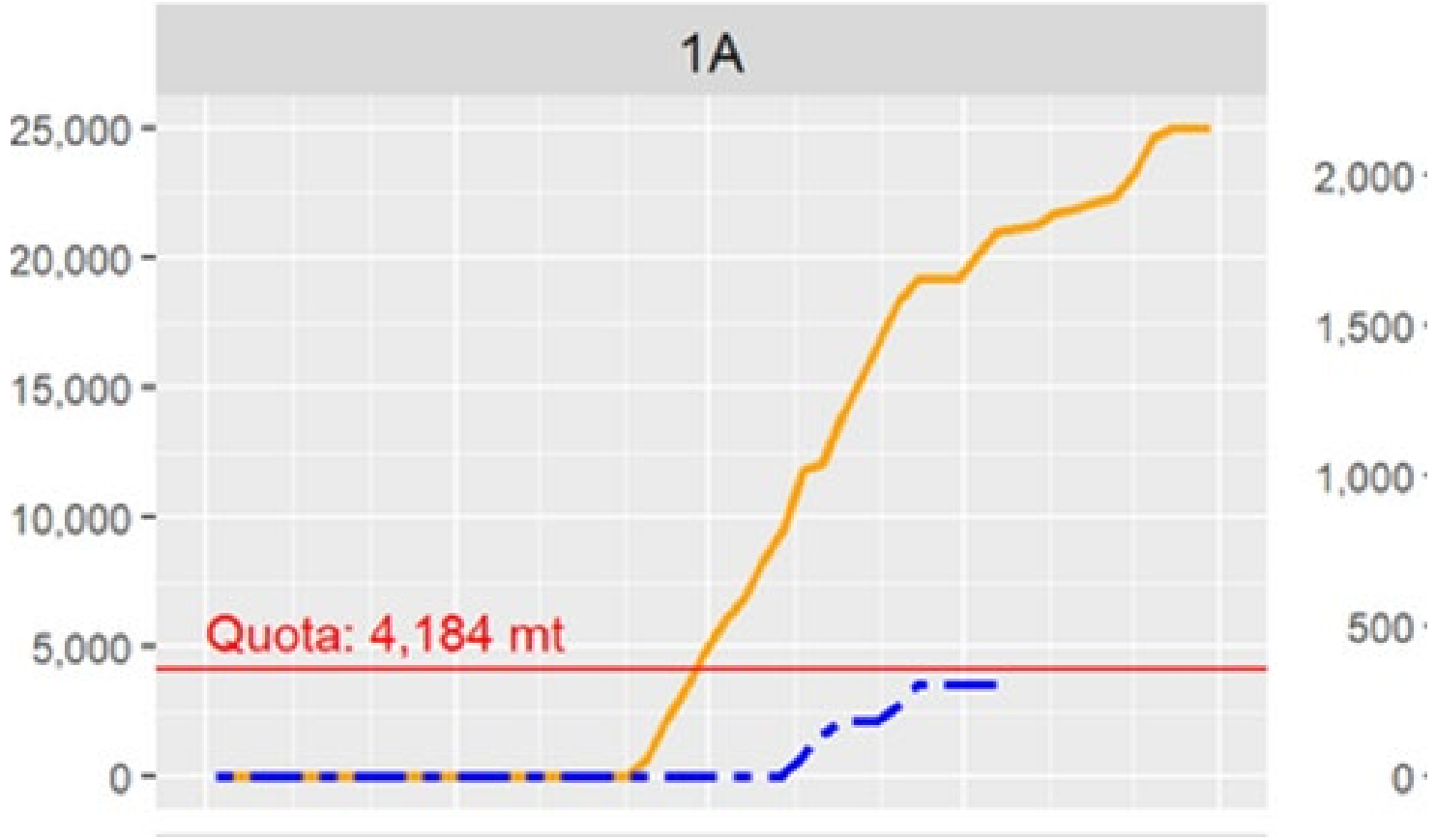
Period 3

- TAC September 1 - October 31: 1309 MT
- Opened September 2
- Zero landing days September 15
- Category A
  - 4 Landing/Possession Days
  - 160,000 lbs per vessel per week
  - Harvester to harvester transfer only (Carriers prohibited)
  - 11 Vessels
- Category C and D
  - 5 Landing Days
  - 6 Vessels

Period 4

- TAC November 1 - December 31: 366 MT
  - Slight overage in Period 3
  - 295 MT remaining currently
- All Vessels
  - Opens November 3 (ME)/November 4 (MA/NH)
  - 1 Landing Day
  - Opening contingent on performance of New Brunswick Weir Fishery and quota transfer by NOAA Fisheries

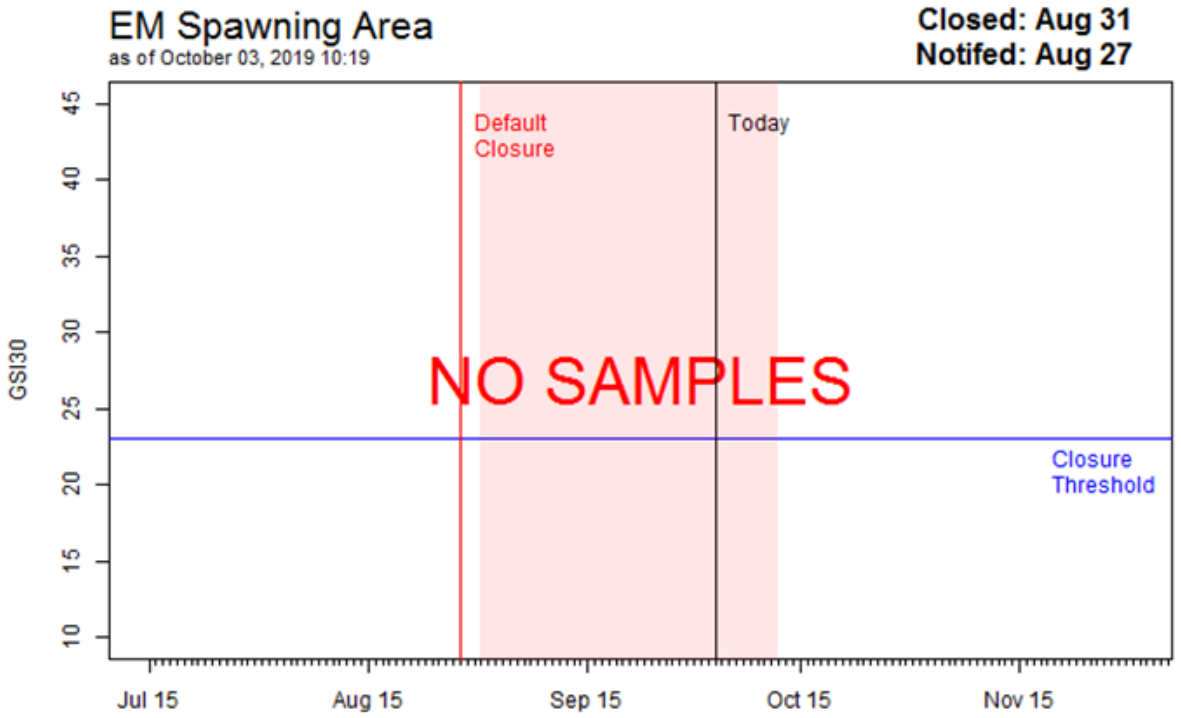
2019 Area 1A Fishery



Source: GARFO as of 10/21/19

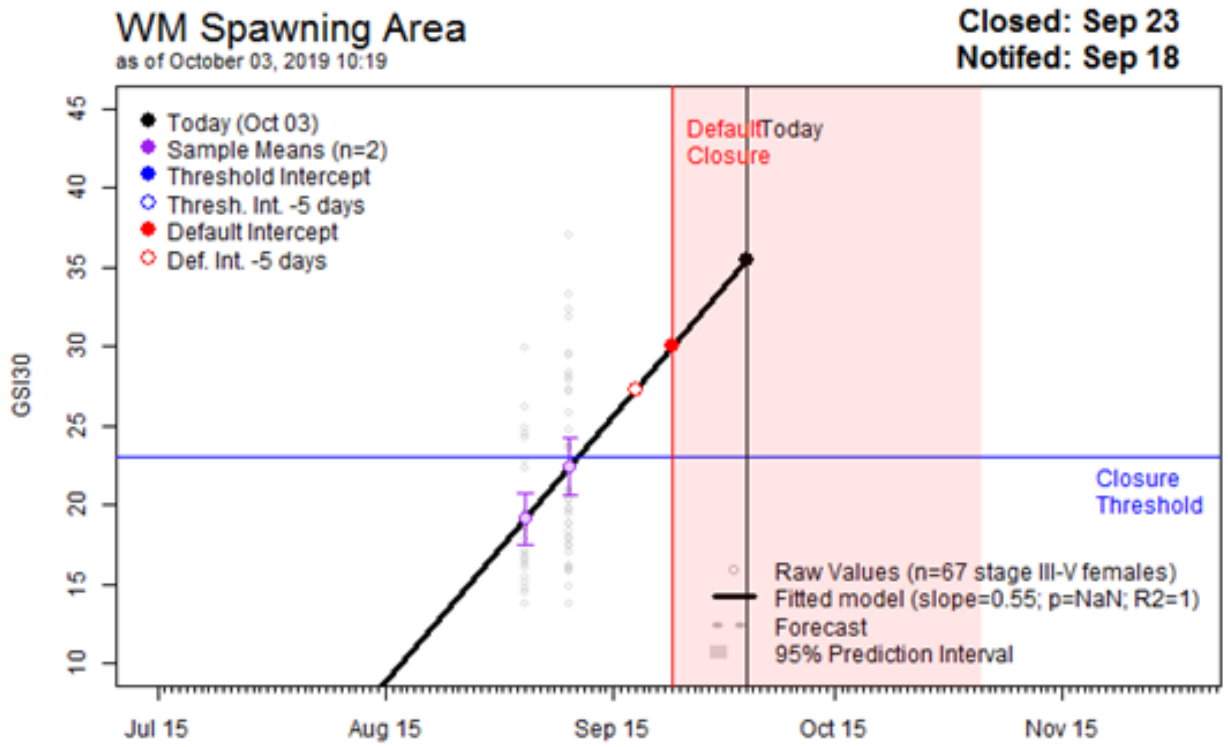
Eastern Maine Spawning Closure

- Eastern Maine
  - No samples
  - Closed August 31 on default date
  - Opened September 13



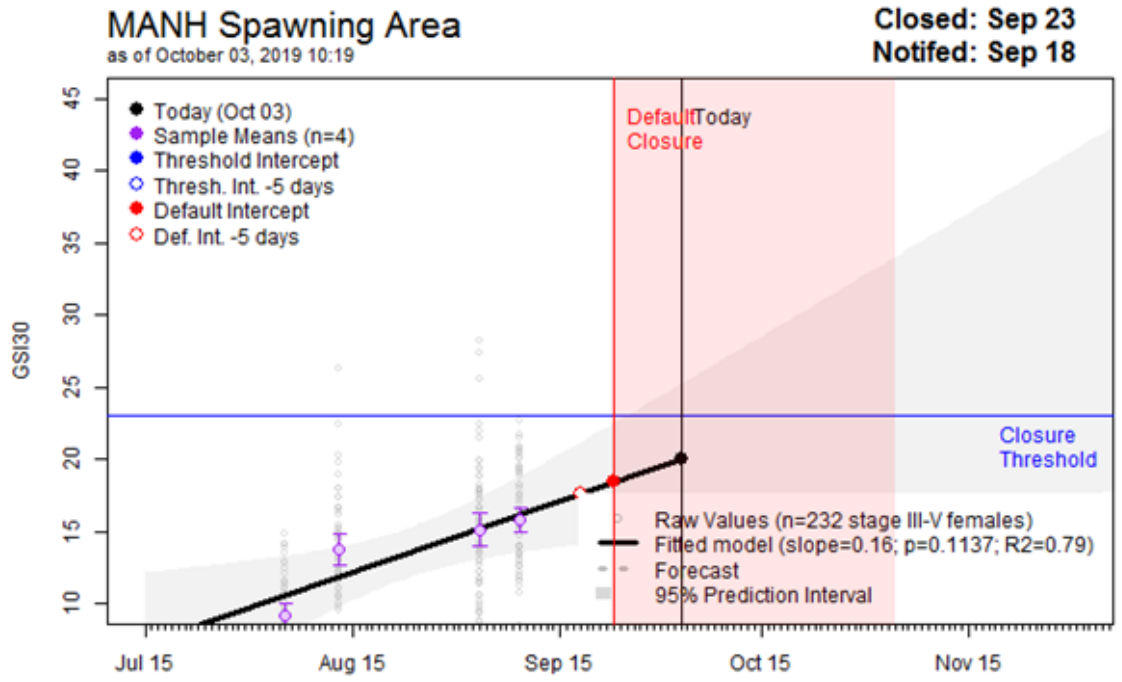
Western Maine Spawning Closure

- Western Maine
  - 2 samples
  - Closed September 23 on default date
  - Opens November 4



MA/NH Spawning Closure

- MA/NH
  - 4 samples (p > 0.05)
  - Closed September 23 on default date
  - Opens November 4



Questions?

New England Fishery Management Council DRAFT Discussion Document:

Review and analysis of Atlantic herring spawning on Georges Bank

Deirdre Boelke, NEFMC Herring PDT Chair

ASMFC Annual Meeting
October 28, 2019

2019 Work Priority (NEFMC)

- Solicited a contract to help fast track.
- May 2019 GMRI awarded contract - 6 month timeline.
- Dr. Graham Sherwood, Ashley Weston, Aaron Whitman.

- ***Scope: Review historical and current scientific research and other relevant info about offshore spawning of At. Herring.***

- Aug. 5 – Draft analyses presented to NEFMC Herring PDT.
- Sept. 10 – NEFMC Herring Advisory Panel and Committee.
- Sept. 23 – NEFMC draft report.
- Dec. 3-5 – NEFMC final report.

Draft Outline

- Review of herring biology, spawning and management *(coming)*
- Building a consensus (A model for inferring spawning areas based on '*consensus*' from diverse sources)
- Consideration of existing maps and datasets:
  1. DMR/MDMF portside data
  2. NEFSC trawl surveys
  3. Larval distribution
  4. Diet Database
  5. Egg EFH
  6. Historical spawning areas
- Industry interviews
- PDT research recommendations

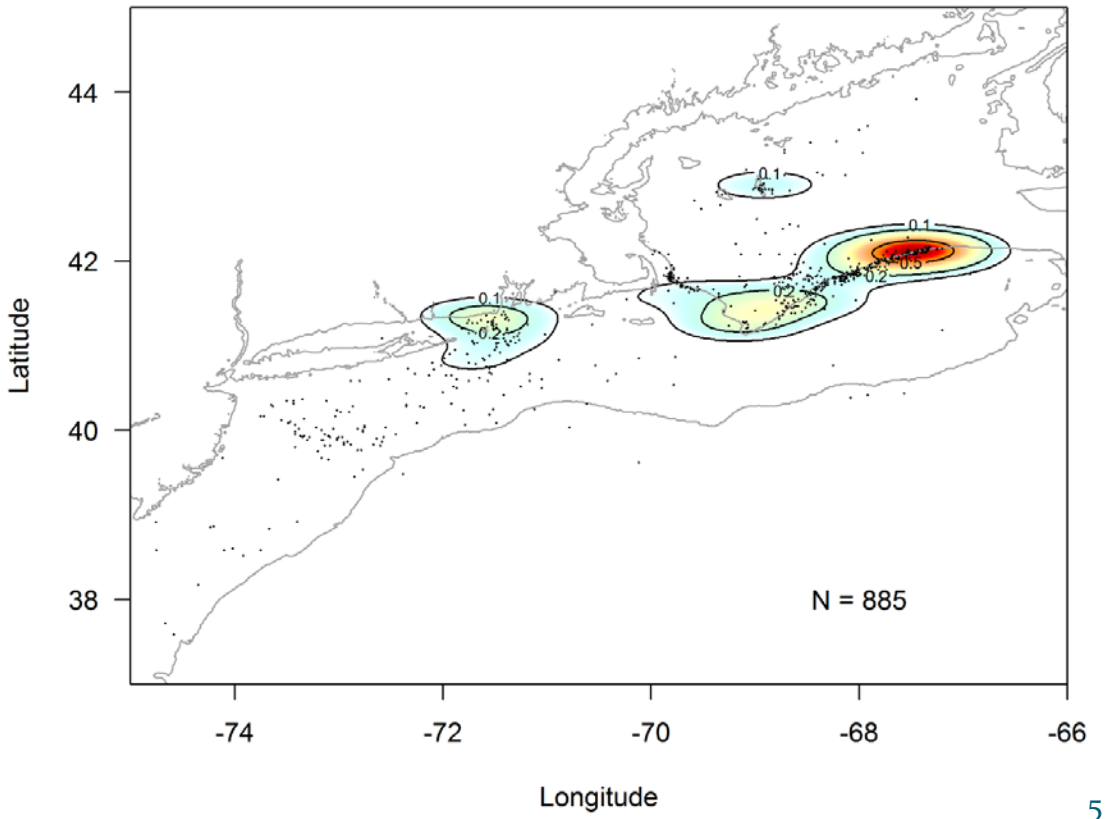
Sources of data for consensus analysis

	1970s									1980s										1990s										2000s										2010s								
Data Source	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
ME DMR Portside	**17,529 fish (from 583 trips)**- location, date, maturity stage, GSI (Areas 1B, 2 and 3 only)																																														
Mass DMF Portside																														**2,725 fish** - location, date, maturity stage, GSI																	
Trawl surveys																				**46,242 tows** - location, date, maturity stage (focus on fall survey)																																			
Larval surveys	**6,446 tows** with herring larvae - location, date, size (2,371 tows with larvae < 9mm)																																														
Food Habits Database		**>650,000** stomachs - location, date, presence of herring eggs (113 positive for herring eggs)																																													

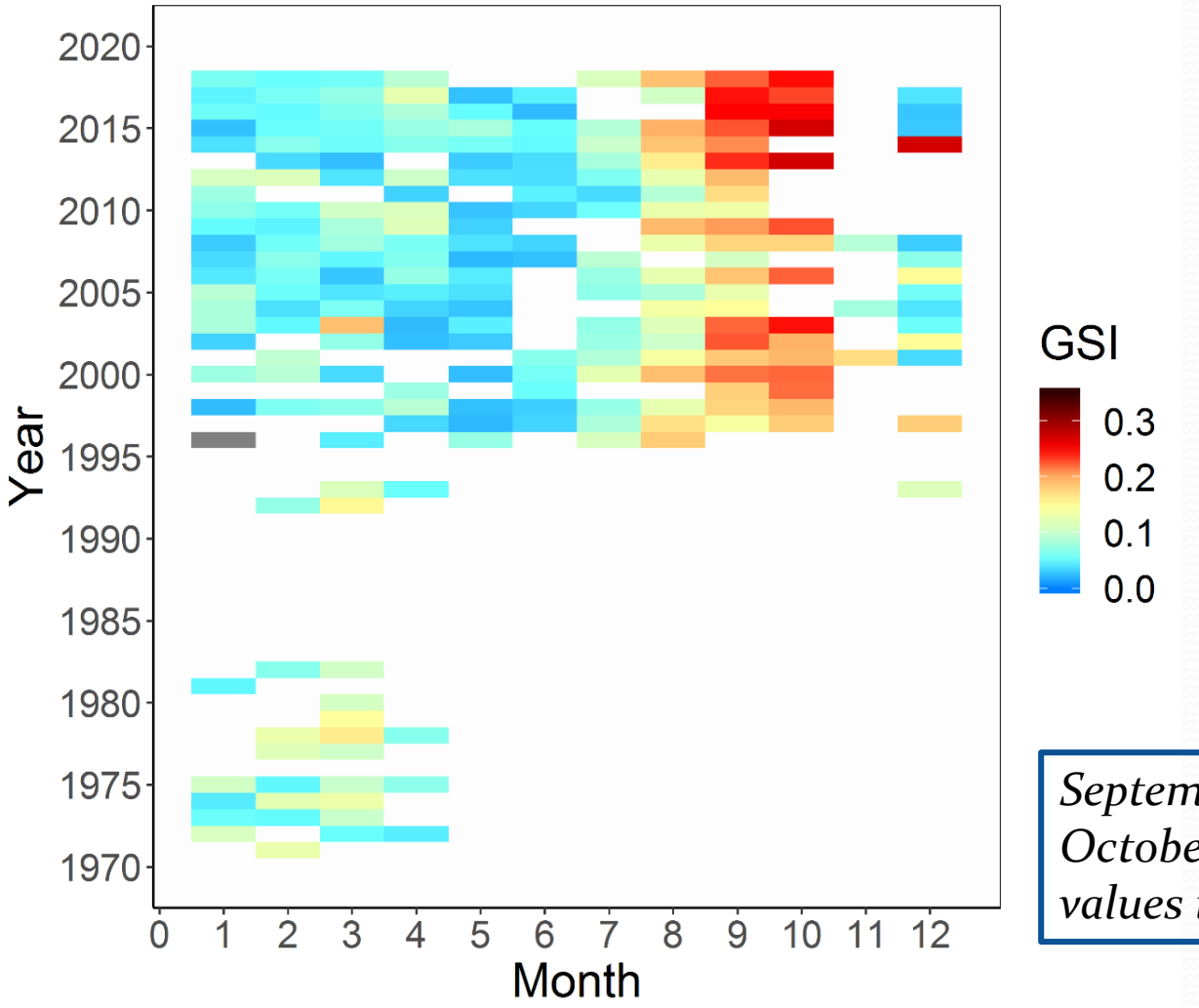
1. Maine DMR Portside Data

- 1971 – 2018 (17,529 records of individual herring from Areas 1B, 2 and 3 only – from 583 unique trips)
  - GSI
  - Maturity stage
  - Location
  - Date

2-D kernel density estimate of male and female R + U herring (1971 – 2018)



DMR - Heatmap of mean GSI values by month and year (both sexes)

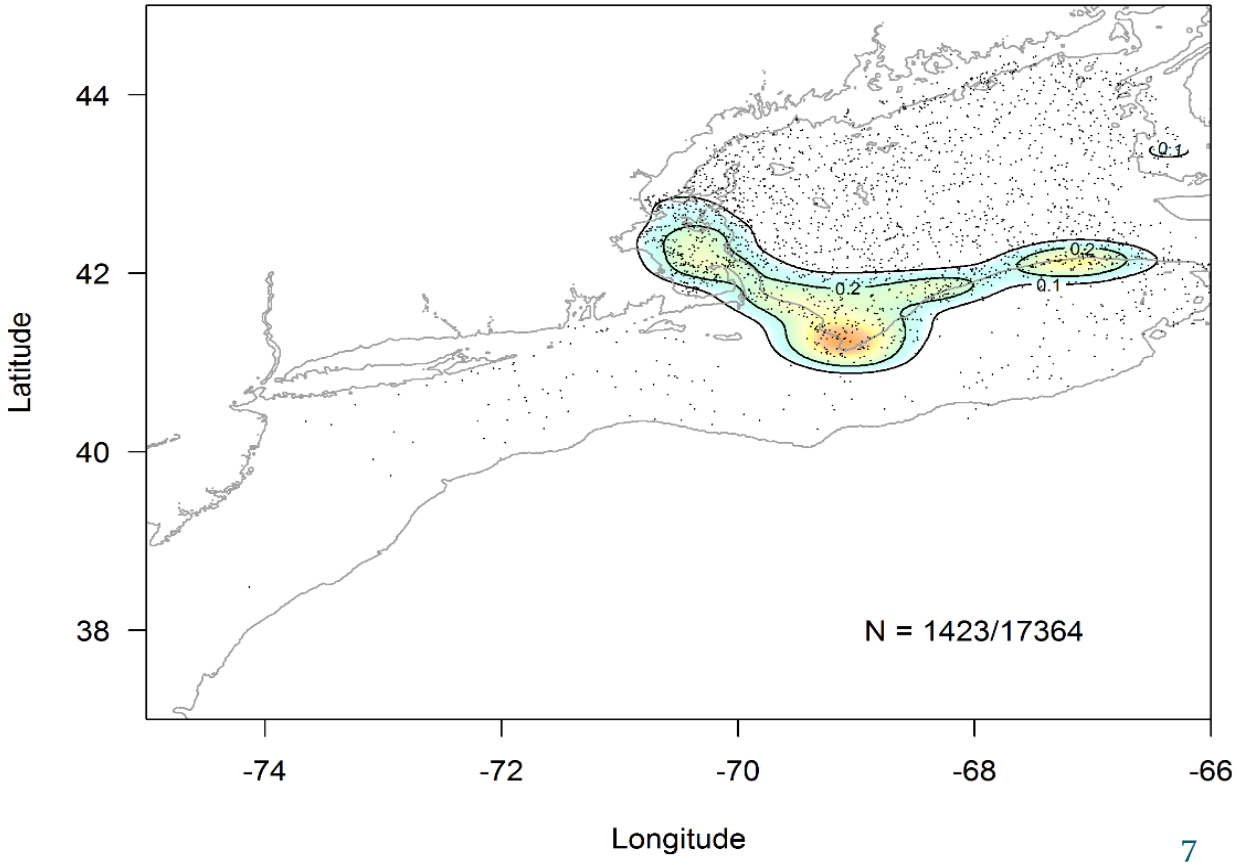


September and October highest values in most years

2. NEFSC Trawl Survey Data

- 1987 – 2018 (46,242 records of individual herring; 17,364 fall, 28,878 spring)
  - Maturity stage
  - Location
  - Date

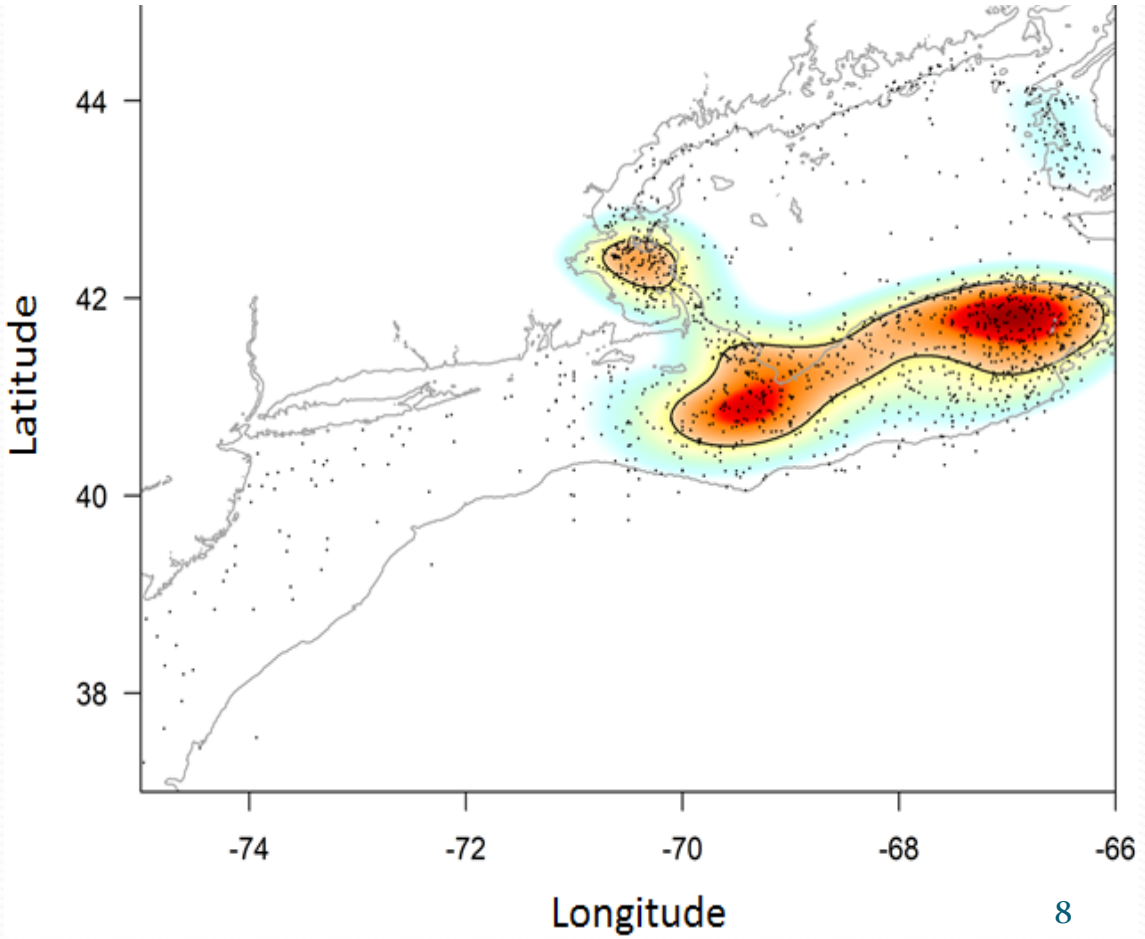
2-D kernel density estimate of male and female Ripe + Ripe and Running stage herring (Fall:1987 – 2018)



3. Herring Larval Distribution (<9mm)

- **1971 – 2017**
  Sampling programs have changed over time (EcoMon 1992-present).
- 13,000+ tows; over 6,000 with herring larvae; and 2,371 with larvae <9mm.
- Herring larval samples observed in all 12 months, highest freq. of <9mm larvae in Oct/Nov.

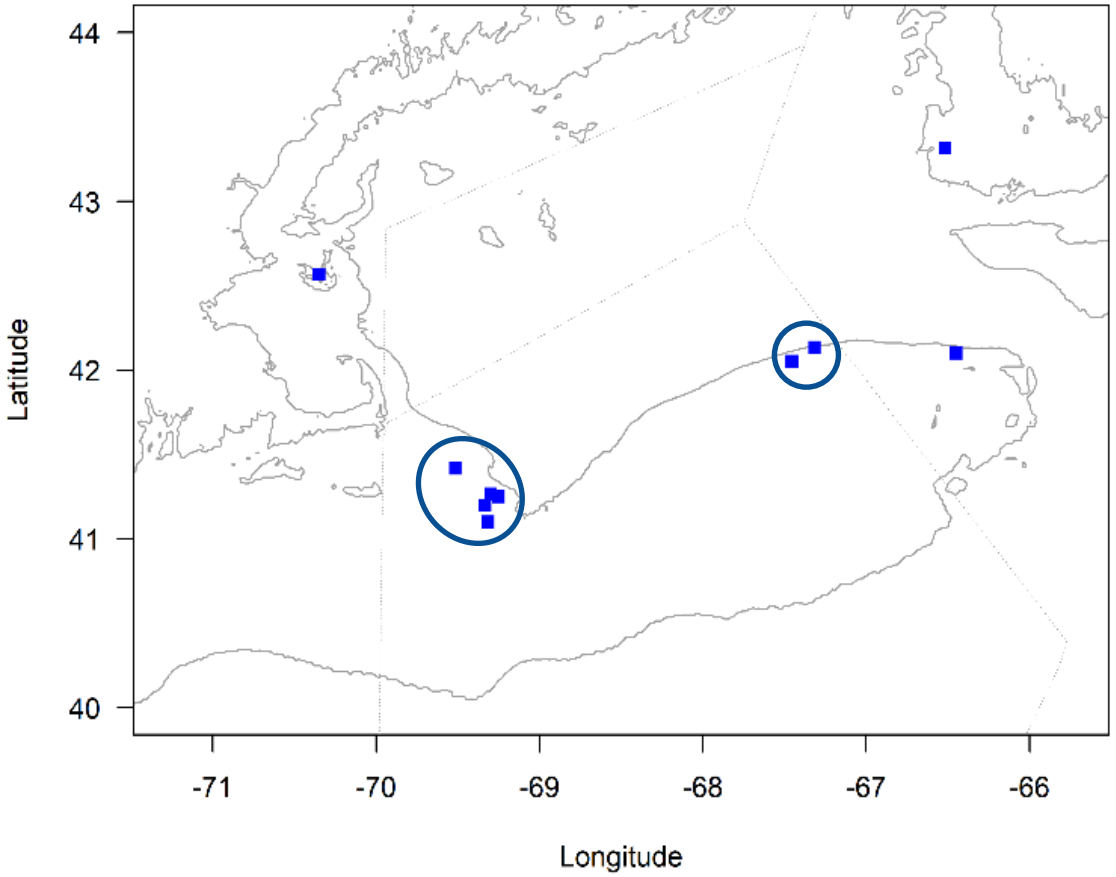
2-D kernel density estimate of larval herring (<9mm) abundance by sample (1971 – 2017)



4. NMFS Food Habits Database

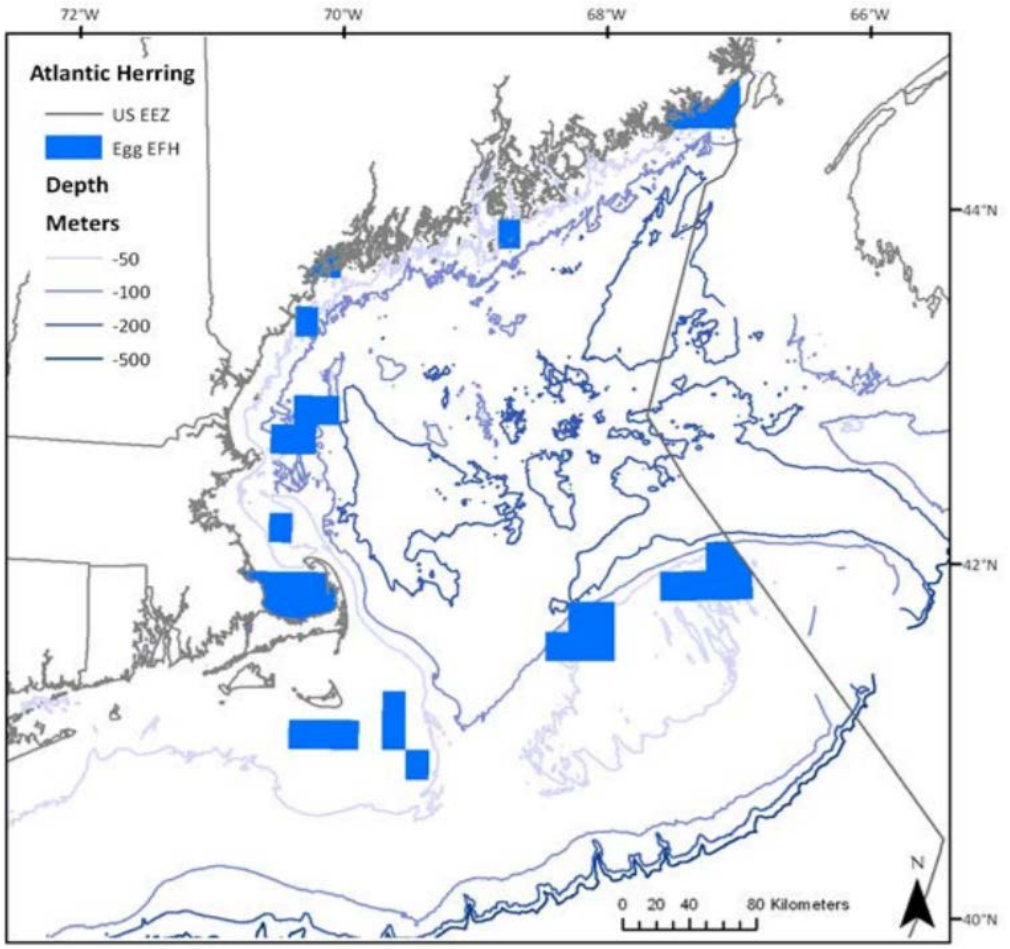
- 1973-2017, about 650,000 samples.
- Only 113 stomachs had positive ID for herring eggs (10 hauls).
- Mostly haddock and cod, few from pollock, YT, WF, and sculpin.

Location of herring eggs observed in diet



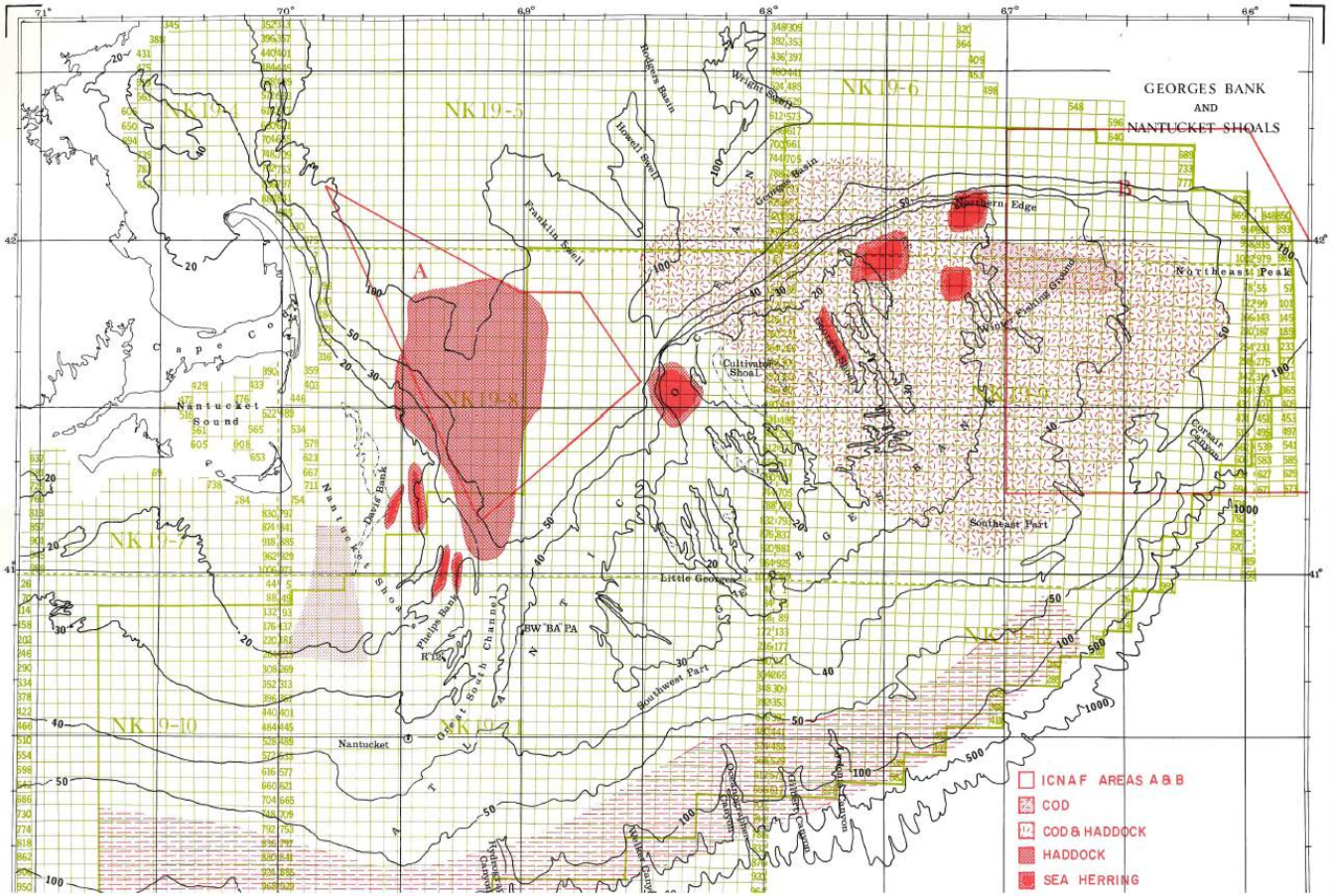
5. EFH for Herring Eggs

- EFH Omnibus II (2018) updated definition and map – more expanded.
- This analysis used original EFH map because more focused on location of egg beds (Omnibus I).



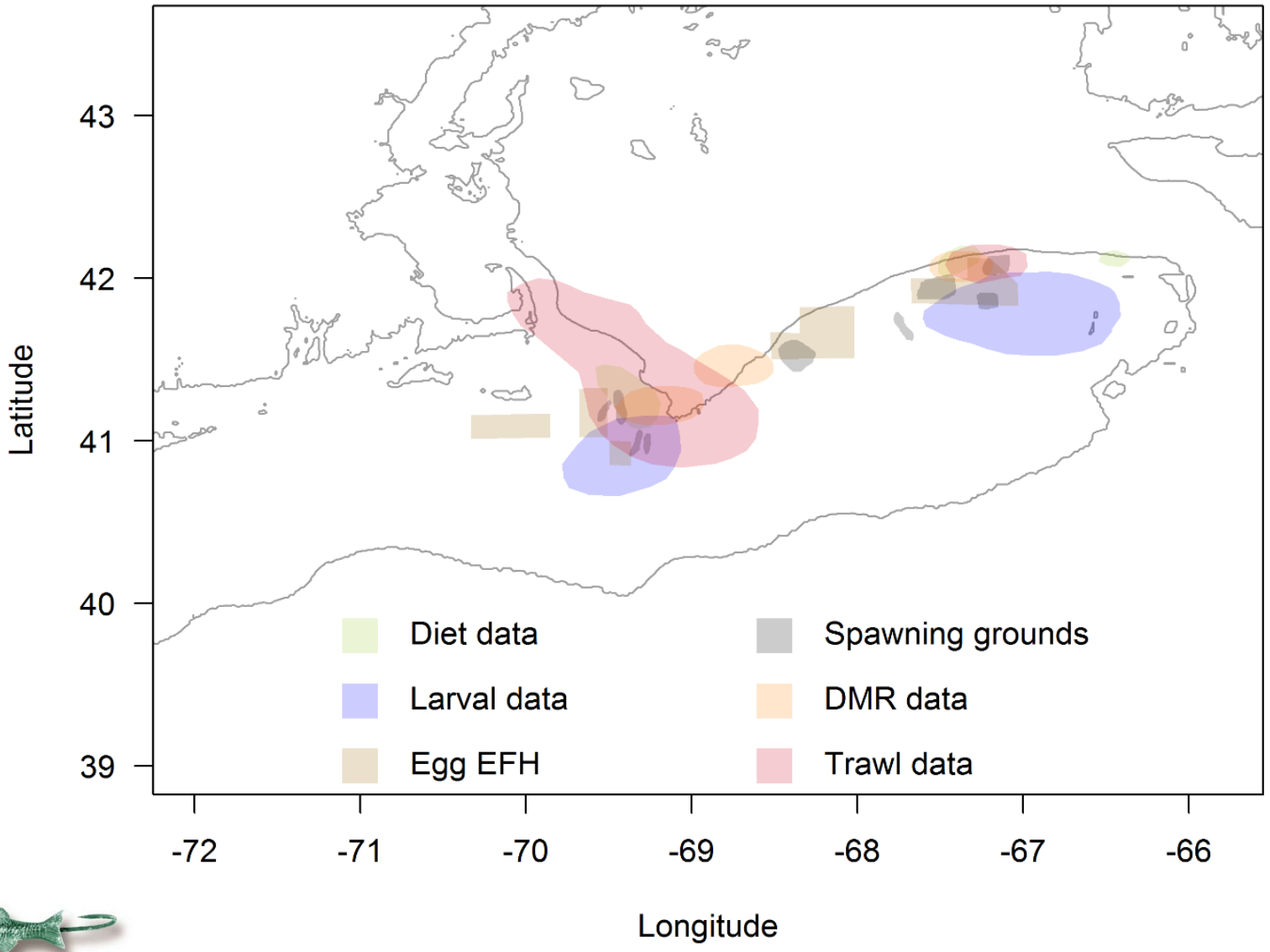
Omnibus I: Amendment 5 to the FMP for Atlantic herring (NEFMC 2013)

6. Historical spawning grounds



Olsen et al (1977) *Fishing and Petroleum Interactions on Georges Bank*

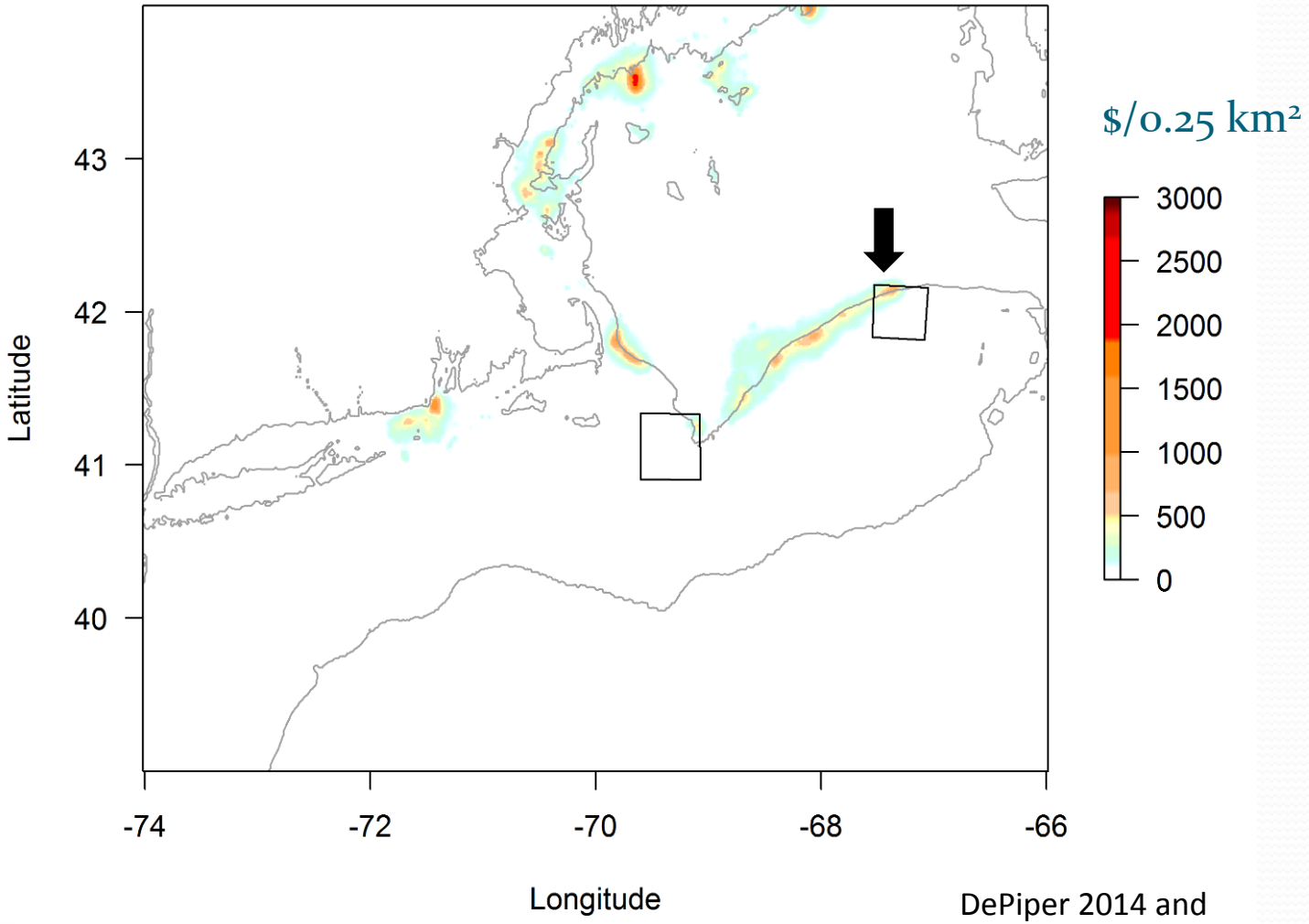
Building a consensus: Overlap of possible spawning areas from all six datasets



Overlap with Fishery

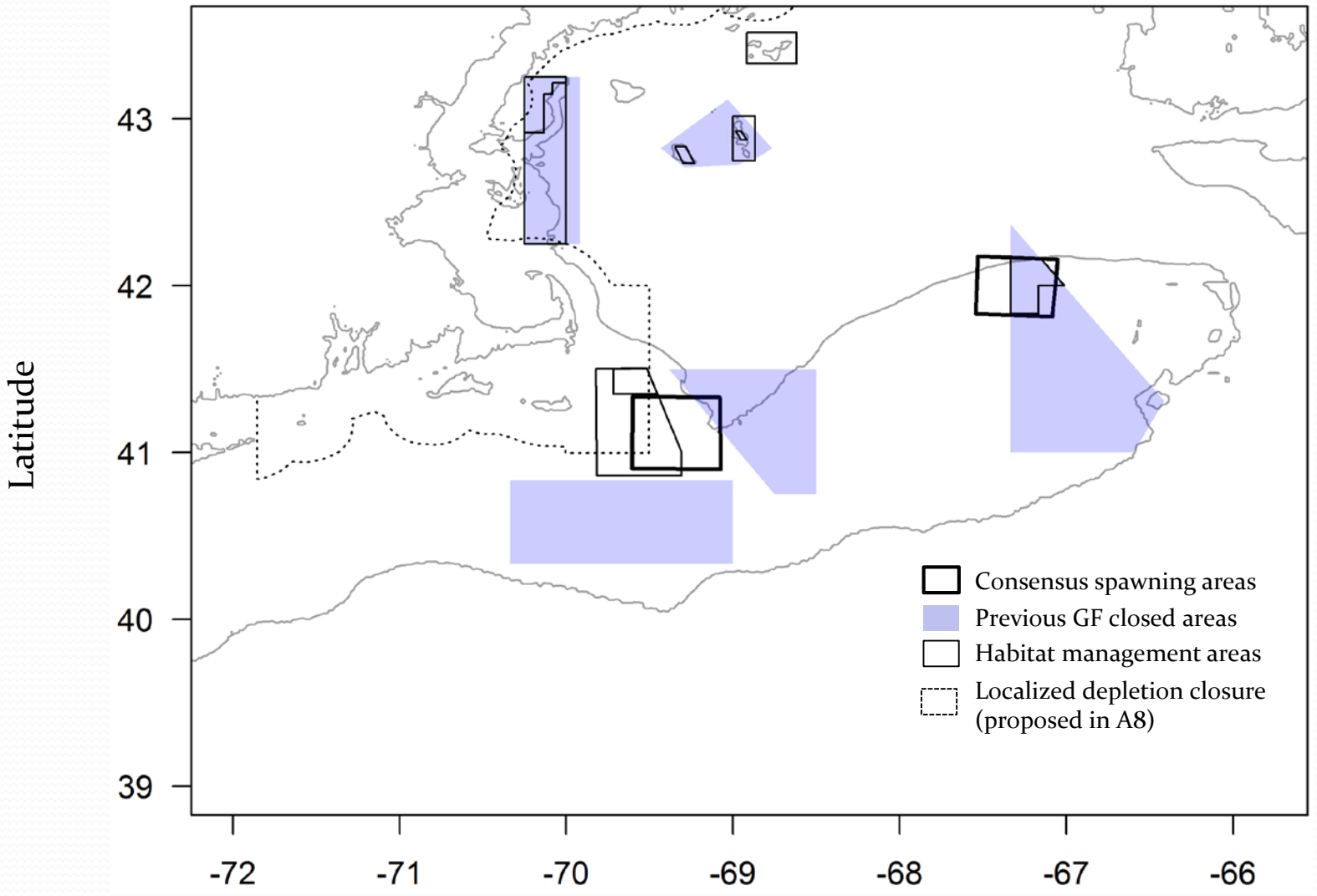
Herring revenue maps (2007-2017)

(Model based effort from VTR and observer data)



DePiper 2014 and Benjamin et al (2018)

Consensus spawning areas with reference areas

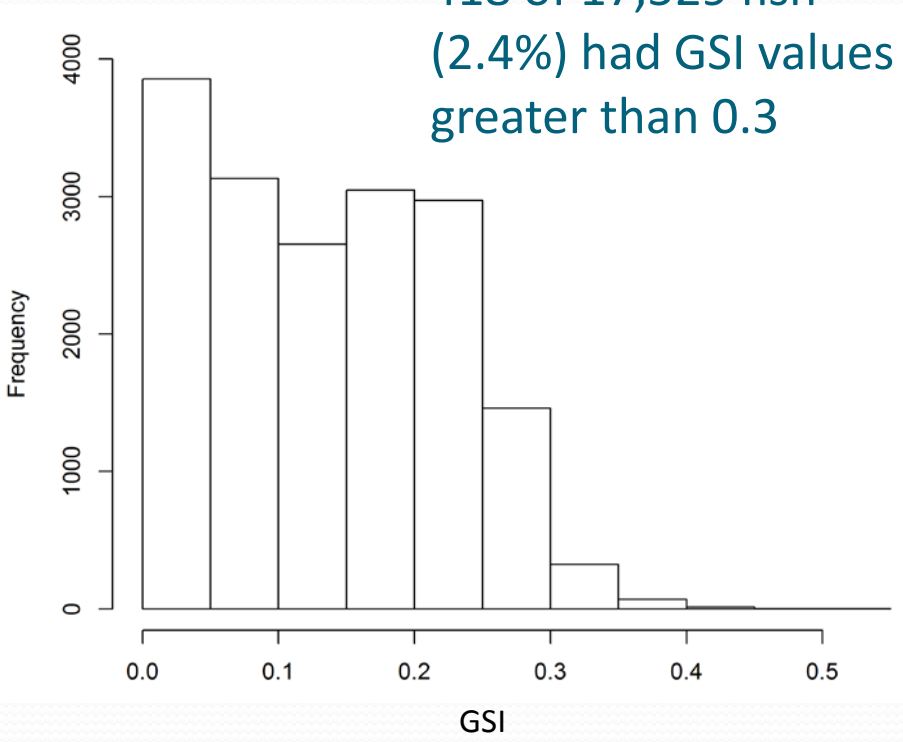


Industry interviews

Interviewed under 10 representatives from mid-water trawlers

- **Some key takeaways:**
- General view: spawning too variable to pinpoint exact location and time
- Spawning condition herring are relatively rare in catch. This agrees with data…

418 of 17,529 fish (2.4%) had GSI values greater than 0.3



DMR Portside data

Research Recommendations (PDT)

- Developed by the NEFMC Herring PDT (which includes all members of the ASMFC TC)

1. Enhancing portside sampling – most cost effective
2. At-sea collection of spawning data – need to evaluate feasibility first
3. Fishery independent survey – more expensive, 5 years or so, but data from entire area and season.

- Herring stock at low abundance, may not be representative of stock at larger size.

Initial Highlights (from authors):

- Multiple data sources were reviewed and analyzed and all pointed towards spawning in two locations along northern edge of Georges Bank; one in the west (Nantucket Shoals/Great South Channel) and one in the east (Northern Flank).
- Spawning takes place primarily between September and October (all years and all areas).
- Spring spawning is not important.
- Industry interacts minimally with spawning grounds (mostly in the east).

Herring PDT reviewed updated draft October 22;
Council will receive final report in early December.

NEFMC Meeting – Sept 23

- **Council Motion**

That the Council initiate a framework action to protect spawning herring in herring management areas 3, 2, and 1B. Motion carried unanimously (14/0/0).

- **2020 Priorities (final decision in December)**

1. *Herring Update Assessment (June 2020).*
2. *Herring Specifications 2021-2023 (June – Nov).*
3. *Consider measures to protect spawning on GB (above motion).*
4. *Adjust measures that potentially inhibit OY in mackerel fishery.*
5. *Coordinated action with MAFMC on RH/S catch caps.*

2020-2021 Atlantic Herring Specs

Atlantic Herring Management Board

October 28, 2019

2020-2021 Specs

- The Council Approved Framework 6 in June
  - Contains 2019-2021 specifications and new overfishing definition consistent with 2018 benchmark stock assessment
  - The Framework has been submitted to NMFS for review
  - Proposes a lower catch limit for Area 1A sub-ACL for 2020-2021 (**3,344 mt**) based on the ABC control rule proposed in Amendment 8
    - 23% decrease from 2019

2020-2021 Specs Cont'd

- Other key specifications:
  - Management Uncertainty Buffer set at 4,560 mt based on 10-yr avg of Canadian catches.
  - Set Border Transfer at 100 mt
  - Maintain sub-ACLs proportions (Area 1A = **28.9**%)
  - Maintain Seasonal sub-ACLs (for Area 1A 0% Jan- May; 100% June-December)
- The 2021 specifications will likely be revised following the 2020 stock assessment update
- The target implementation date is January 1, 2020

Questions?

2019 Area 1A Specifications

Atlantic Herring Management Board

October 28, 2019

What we would typically do…

- Motion to approve 2020-2021 Atlantic Herring Specifications as recommended by NEFMC

- Motion to allocate the 2020 Area 1A sub-ACL seasonally/trimesters/bi-monthly. The fishery will close with 92% of the seasonal period quota has been harvested and underages from June – September may be rolled into the October – December period.

What we would typically do…

Could address at future meeting when we have 2020 specs from NOAA

- Motion to approve 2020-2021 Atlantic Herring Specifications as recommended by NEFMC

- Motion to allocate the 2020 Area 1A sub-ACL seasonally/trimesters/bi-monthly. The fishery will close with 92% of the seasonal period quota has been harvested and underages from June – September may be rolled into the October – December period.

Area 1A Quota Periods

- Per Amendment 3, Board can consider distributing the Area 1A sub-ACL using bi-monthly, trimester, or seasonal quota periods to meet the needs of the fishery
- The Board can also decide whether quota from January 1 – May 31 will be allocated to later in the fishing season
- This year, Board allocated the Area 1A sub-ACL:
  - Period 1 (June) - 16.4%
  - Period 2 (July/August) - 40.1%
  - Period 3 (Sept/Oct) - 34.0%
  - Period 4 (Nov/Dec) - 9.5%

Area 1A Quota Periods

Bi-Monthly Quotas								
January – December			No Landings Prior to June 1 (with June as a one-month period)			No Landings Prior to June 1 (with December as a one-month period)		
Period	Months	%	Period	Months	%	Period	Months	%
1	Jan/Feb	1.5%	1	June	16.4%	1	June/July	36.8%
2	Mar/Apr	2.3%	2	July/Aug	40.1%	2	Aug/Sep	36.0%
3	May/June	24.0%	3	Sep/Oct	34.0%	3	Oct/Nov	27.1%
4	July/Aug	34.6%	4	Nov/Dec	9.5%	4	Dec	0.2%
5	Sep/Oct	29.4%						
6	Nov/Dec	8.2%						

Trimesters			Seasonal Quotas					
January – December			January - December			No Landings Prior to June 1		
Trimester	Months	%	Season	Months	%	Season	Season	%
1	Jan - May	13.7%	1	Jan - Sep	76.5%	1	Jun - Sep	72.8%
2	Jun - Sept	62.8%	2	Oct - Dec	23.5%	2	Oct - Dec	27.2%
3	Oct - Dec	23.5%						

*These allocation %'s are fixed and can only be changed through an addendum

Decision Points

- **Allocating the Area 1A sub-ACL throughout the fishing season**
  - These allocation %'s are fixed through Amendment 3 and can only be changed through an addendum
- **Adding new management tools to the 'toolbox'**
  - Current tools: Landings Days by Permit Category, and Weekly Landing Limits, Use of Carriers for Cat A permits during June-Sept; Landings Days only for Oct-Dec
  - Would also require an addendum

Questions?