

Early Opening Experimental Fishery for Silver Hake in Two Exemption Areas



Dr Mike Pol

with David Chosid, Brad Schondelmeier, and Melanie Griffin

Massachusetts Division of Marine Fisheries

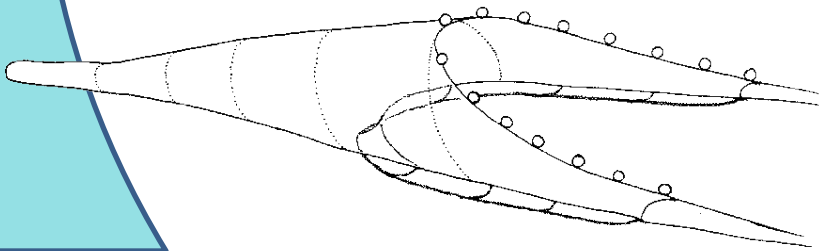
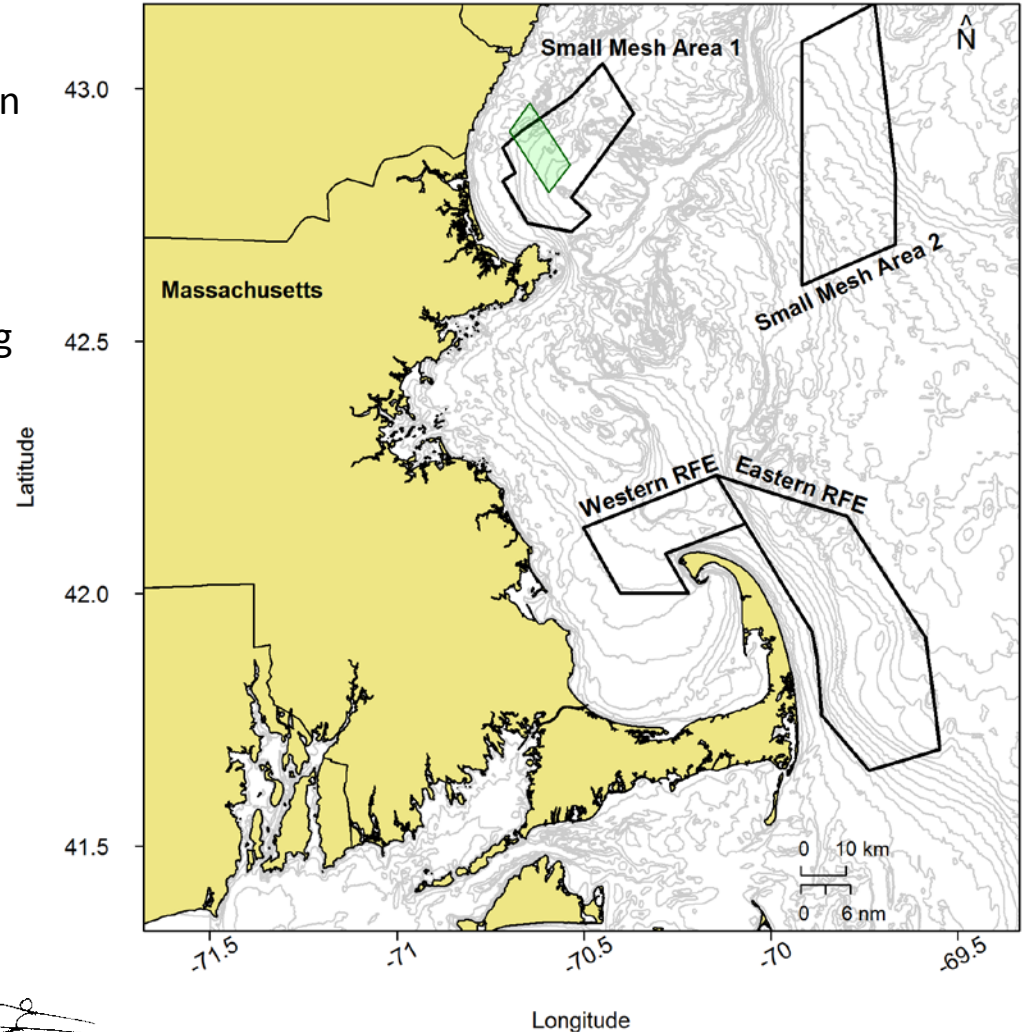


New England
Fishery Management
Council

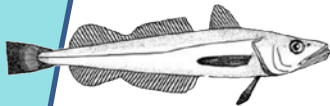
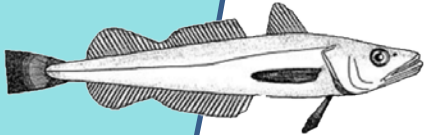
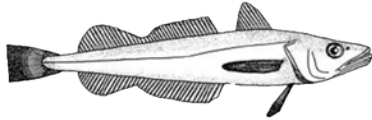
Research Steering Committee | 8 August 2018 | Portsmouth NH

Silver Hake Exemption Areas

- Established by Council action
 - SMA 1, 2: 1994 based on fishermen's knowledge
 - Western and Eastern RFE: 2000 based on extensive DMF sampling
- Small mesh exemptions (use of 2.5" & 3" codends) to Groundfish FMP
- Limited timing and areas
- Targets: silver and red hake, herring
- Raised-footrope trawl required in these areas



Northern Silver and Red Hake Stock Status

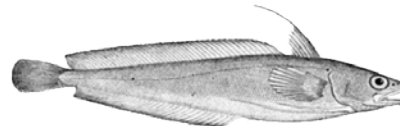
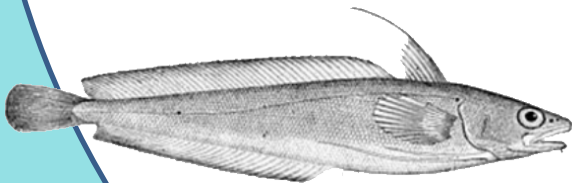


FY 2016 Small-Mesh Multispecies Landings and Discards by Stock Area

Stock	Total catch (lbs)	Percent discards	Percent of ACL
Northern silver hake	7.5 million	9%	15%
Northern red hake	892 thousand	60%	86%

2016 Whiting PDT Stock Assessment Fishery Evaluation Report

- Fishermen observe that the timing of silver hake availability has changed
- Data gap for support or opposition
- No apparent precedent or mechanism for adjustments

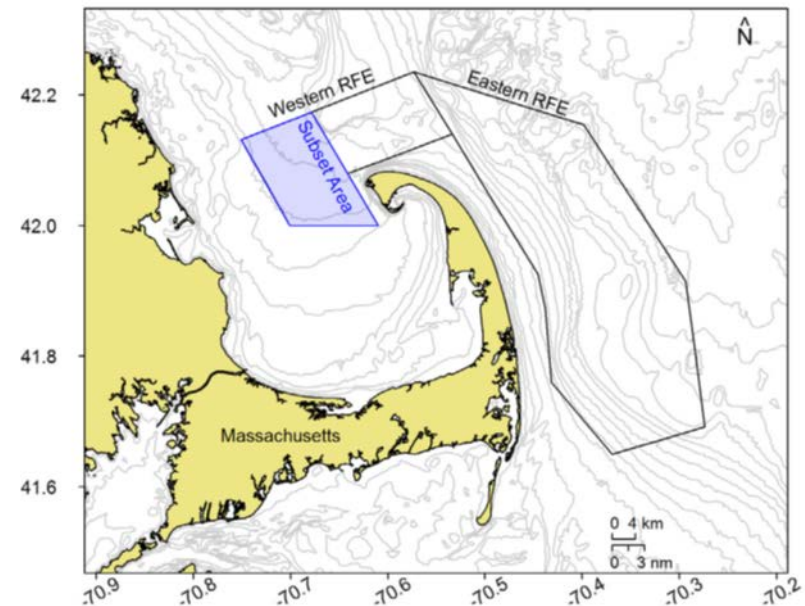
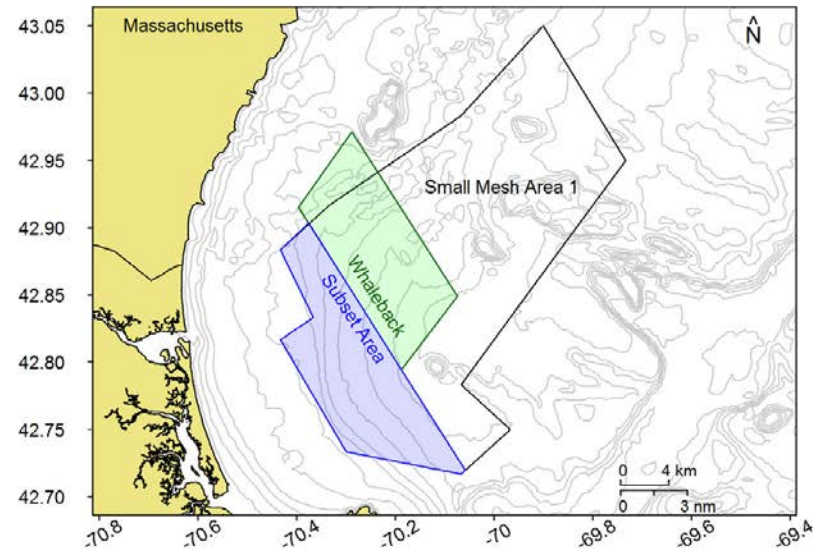


Experimental Setup

- Fishermen surveyed for preferences in changes to be investigated (timing, area)
- Two areas chosen: SMA1 and WRFE, both opening earlier by two weeks
- EFP requested and received to conduct experimental fisheries
- 100% sampling coverage using NOAA Groundfish Disaster Aid
- Nets inspected prior to fishing

SMA 1
Experimental fishery: July 1 - 14
Exempted fishery: July 15 - Nov. 15
5 vessels

WRFE
Experimental fishery: August 18-31
Exempted fishery: Sept. 1 – Nov. 20
4 vessels



Evaluation

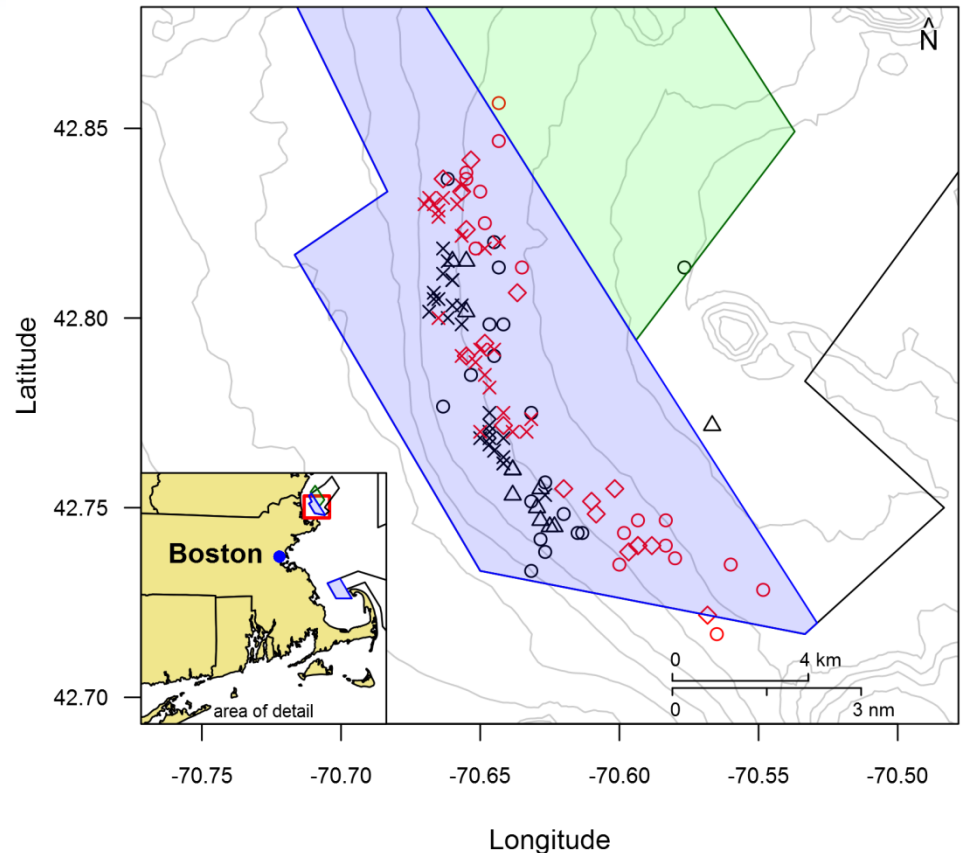
- Main goal was data collection for management analysis
- Catch rate comparison between years and with in-season observer data
- Overall bycatch assessment
- Bycatch ratio for groundfish*
 - Adapted from Wigley et al. SBRM formula
 - Standard: <5% (by tow, trip, or fishery) of kept catch
 - WRFE evaluated using slightly different ratio in 1990s
 - Approval of exempted fishery with >5% is possible

$$\text{Discard ratio} = \frac{\text{Weight of groundfish specie(s)}}{\text{Weight of kept fish}}$$

**Groundfish includes Atlantic cod, haddock, pollock, redfish, ocean pout, windowpane fl., yellowtail fl., winter fl., witch fl., American plaice, Atlantic halibut, wolffish, and white hake.*

Results

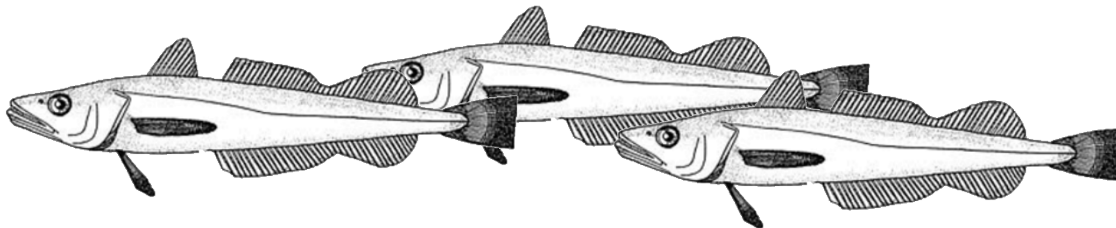
- WRFE: 1 vessel, 6 tows, 2016 only: lobster gear and dogfish
- SMA 1: 5 vessels/year (symbols), 169 observed tows (55 trips), 2 years (2016 & 2017)
- Primary kept species (lb):
 - Silver (262K) and red hake (88K)
 - Herring (41K)
 - Butterfish (8K)
- Primary discards
 - Red hake (13 K)
 - Haddock (40K), herring (9K), lobster (5K), Am. plaice (6.3K), yellowtail fl. (4.6K)



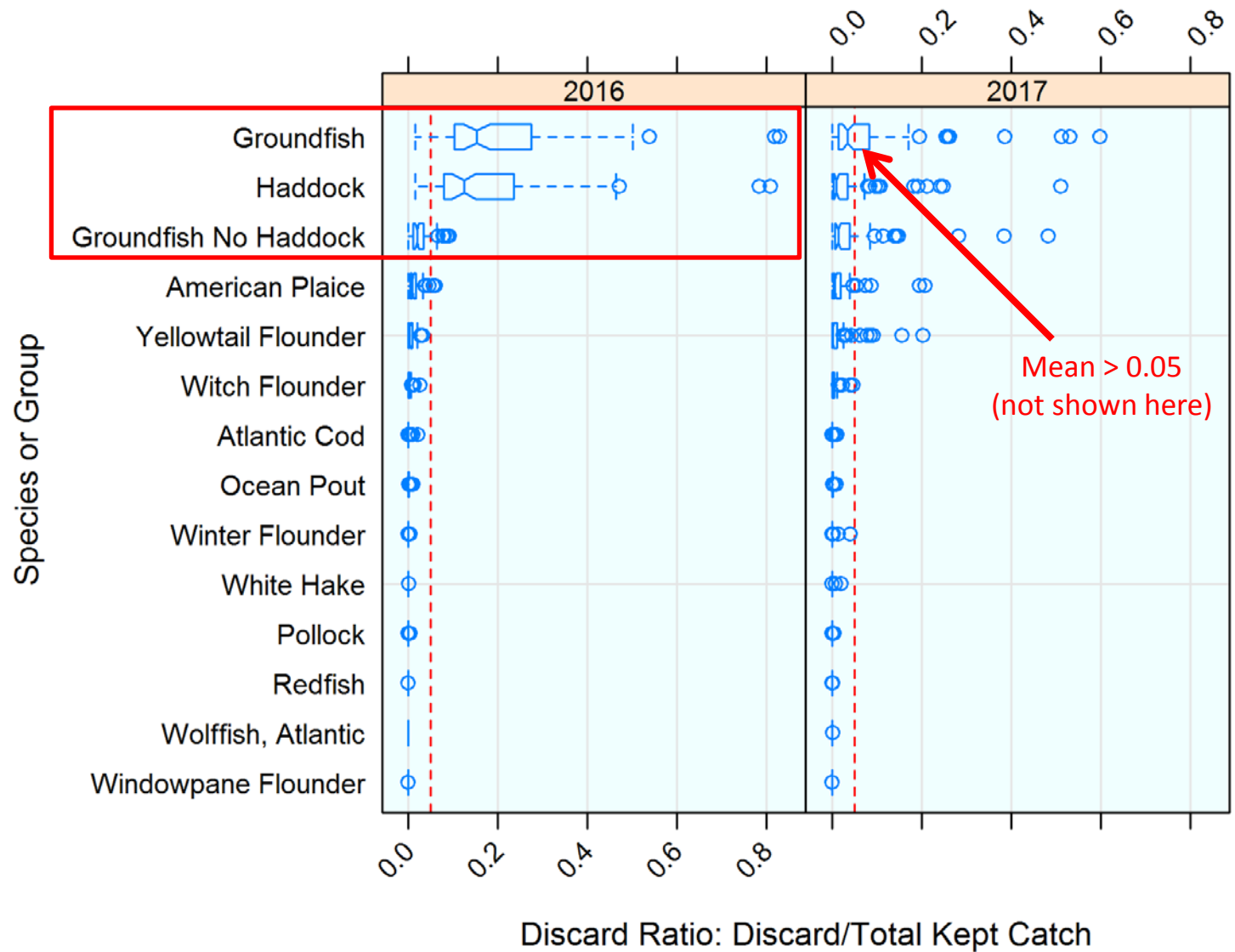
Catch Rates (lb/trip)

		Experimental	Exempted (2 wks)	Exempted
Silver hake	2016	5,314.4	5754.2	4365.7
	2017	4,126.1	5448.7	3,295.5

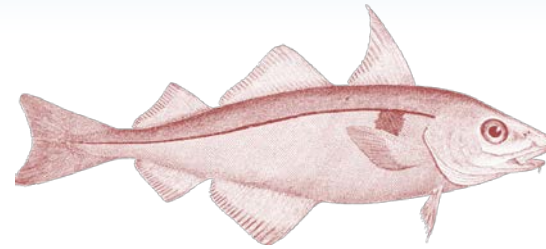
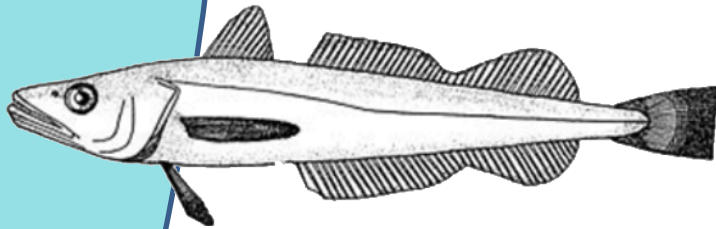
- Whiting were present in exploitable numbers
- Catch rates were similar within the fishery between years
- More similar in the first two weeks of exempted fishery
- Increase in butterfish and herring due to regulatory change
- Randomness of observer coverage unknown
- Continued interest from fleet in extending the fishery



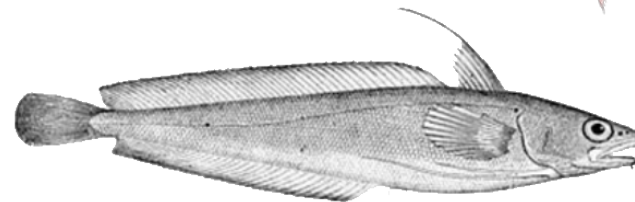
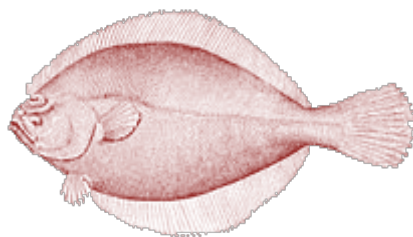
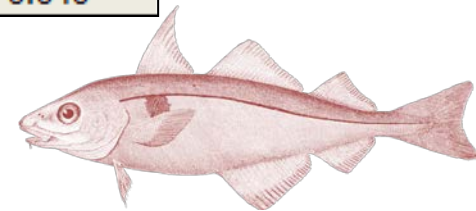
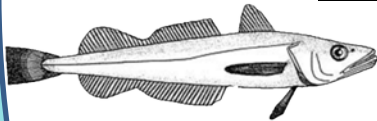
SMA 1 Groundfish Discard Ratios (Tow Level)



Effects of Effort Level and Haddock



Experimental Fishery				
Level	2016		2017	
	Mean Groundfish	Mean Groundfish without haddock	Mean Groundfish	Mean Groundfish without haddock
Fishery	0.190	0.030	0.074	0.042
Trip	0.192	0.023	0.069	0.039
Tow	0.200	0.025	0.077	0.040



Experimental vs. Exempted Fishery Comparison

(earlier) (existing)

Comparison of Experimental and Exempted Fisheries				
	Groundfish Discard Ratio		Groundfish Without Haddock Discard Ratio	
	2016	2017	2016	2017
Fishery	Both >0.05	Experimental >0.05	Neither >0.05	Neither >0.05
Trip	Both >0.05	Experimental >0.05	Neither >0.05	Neither >0.05
Tow	Both >0.05	Both >0.05	Neither >0.05	Neither >0.05

Values in red = discard ratio > 0.05 for both fisheries. Values in orange = discard ratio > 0.05 for one fishery. Comparisons apply to 2-weeks of the exempted fishery and the entire exempted fishery.

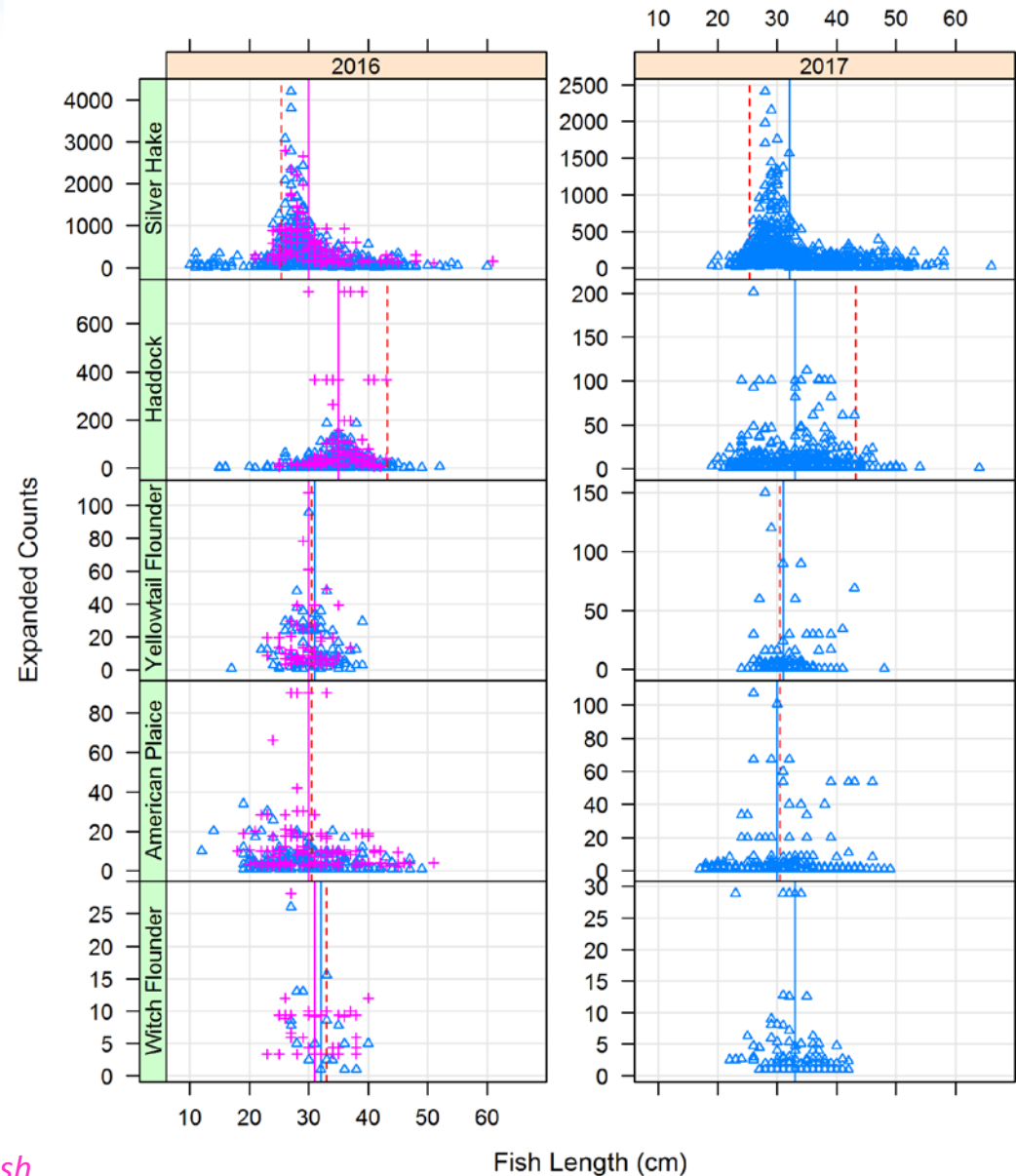
2016 - Discard ratios results the same for each fishery. Levels don't matter.

2017 - Levels matter. Might be due to regulation change in 2017 (more herring).

Removal of haddock always reduces groundfish discard ratio < 0.05.
Experimental fishery not substantially worse than exempted fishery.

Fish Lengths

- Some use of 3.0 inch mesh in 2016
- Most fish average about their MLS
- Most haddock far below MLS
- Arbitrary 10 inch line in silver hake

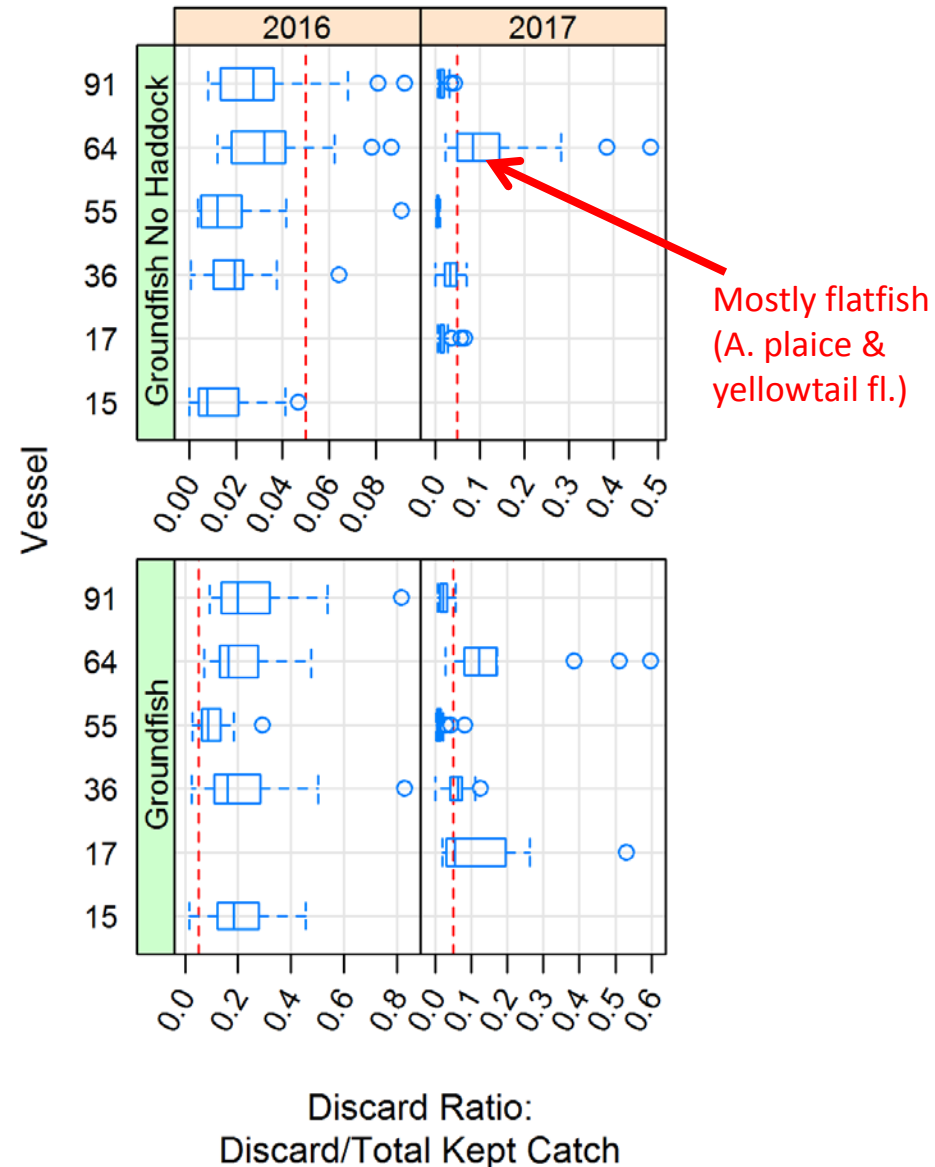
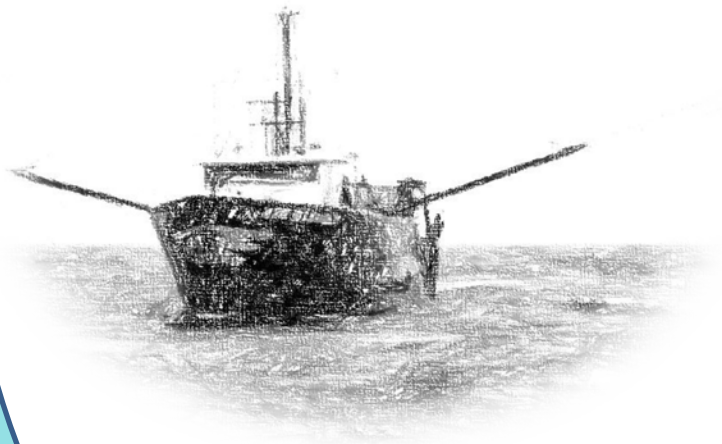


$\Delta = 2.5''$ mesh; $+$ = $3''$ mesh

Dotted line = min legal size; straight lines = average/mesh

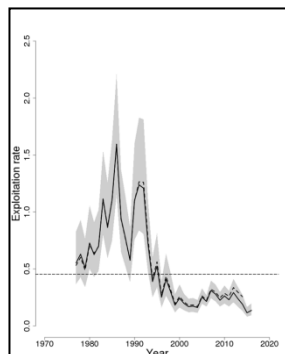
Other Possible Effects

- Limited exploration primarily for haddock avoidance
- No effects due to:
 - Date
 - Time of day
 - Tow order
- Apparent vessel effect

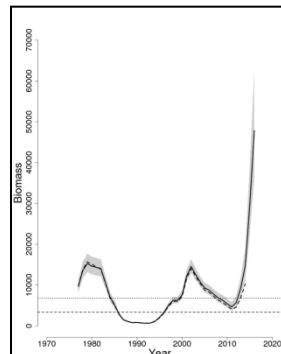


Summary

- Target catches were abundant in the earlier SMA1 opening and similar to exempted fishery. WRFE opening was unsuccessful.
- Fishermen would use an earlier opening fishery.
- Groundfish bycatch ratio was consistently over the threshold in the early fishery, and in the exempted fishery.
- Groundfish bycatch ratio falls below the threshold if haddock are removed.
- Some evidence of suboptimal gear handling – education and outreach might mitigate. Broad variation in experience in the fishery.
- No quick gear modification solution to haddock.
- 100% exploitation could jeopardize other species rebuilding.



GOM
Haddock
biomass →
and
exploitation
rate
←



Thanks to:

- GARFO – Project design and advice
 - Northeast Fisheries Observer Program – Sampling advice, data audit protocols.
 - Sustainable Fisheries – Exempted Fishing Permits
- NEFMC – Project design and advice
- NOAA's Unallied Management Program and the Interjurisdictional Fisheries – Funding
- Whiting fishermen and netmakers



New England
Fishery Management
Council

