

# Proactive approaches and reactive regulations: Accounting for bycatch in the US sea scallop fishery

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Fisheries Bycatch: Global Issues and Creative Solutions

15 May 2014

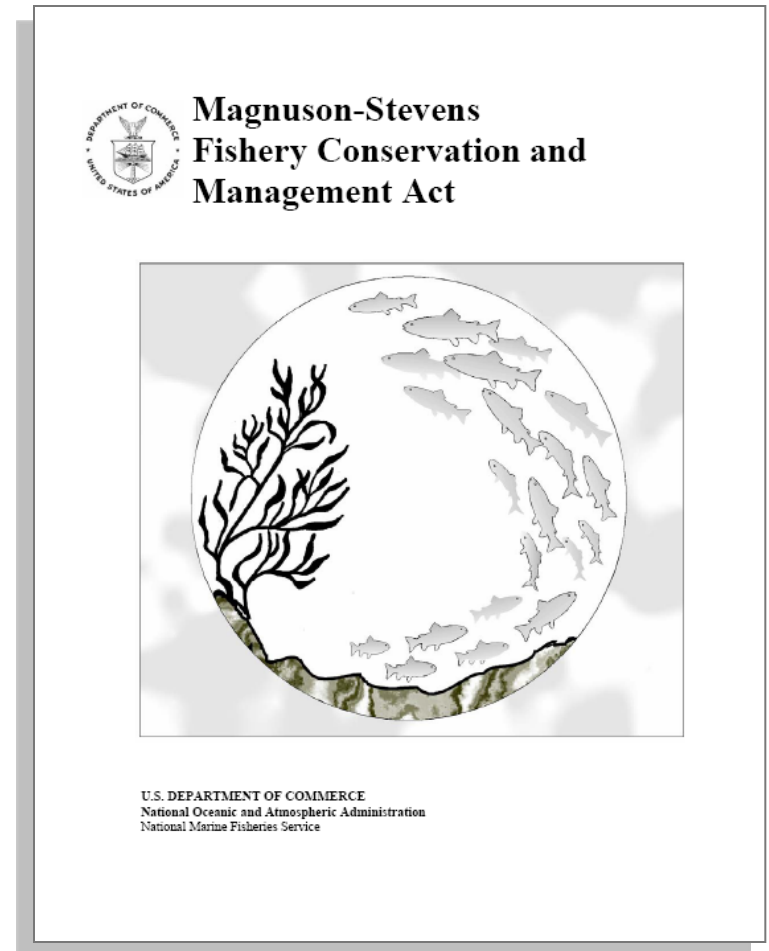


# Overview

- Description of Accountability Measures
- Scientific information needed to support accountability in management strategies
- Implementation of accountability in the US sea scallop fishery
- Combining proactive and reactive measures

# Magnuson-Stevens Act Requirements

- Accountability Measures: *management controls to prevent Annual Catch Limits (ACL) from being exceeded and to correct or mitigate overages of the ACL if they occur*
- National Marine Fisheries identified two categories:
  - In-season measures (*preventative*)
  - Measures after ACL has been exceeded (*reactive*)





# Accountability in the Sea Scallop Fishery

- Target Species

## Scallops:

- In-season catch targets
- Subsequent year reduced allocation

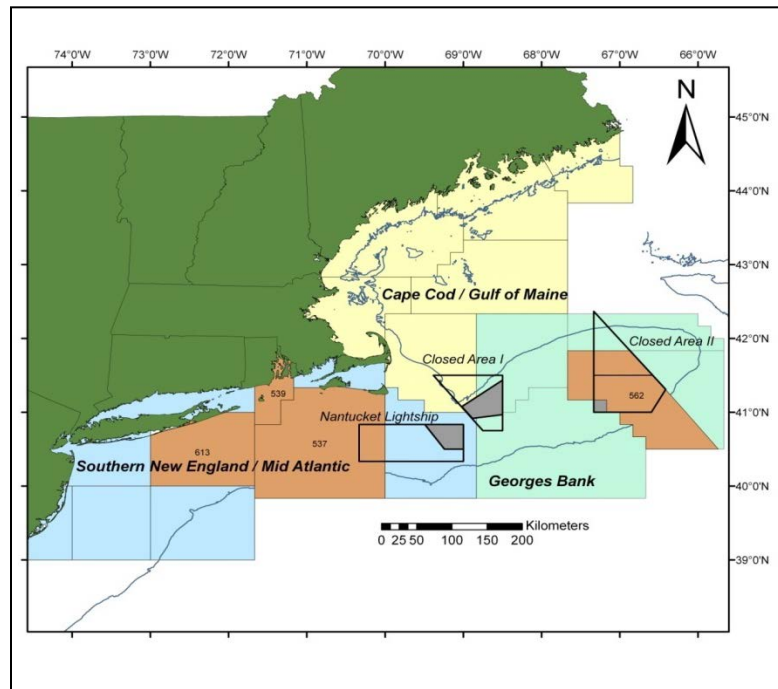
Allocation	(mt)
Overfishing Limit	32,387
Acceptable Biological Catch	27,269
Annual Catch Limit	24,954
Annual Catch Target	21,431



- Bycatch Species

## Yellowtail Flounder:

- In-season closures
- Subsequent year time/area closures



# Impacts of Reactive Bycatch Measures

- In-season closures are costly and difficult to predict

Year	2006	2006	2008	2009
Area	Nantucket	Closed Area II	Nantucket	Closed Area II
Days Open	32	82	49	15
% Yellowtail TAC Caught	176%	103%	98%	81%
% Scallop Target Caught	78%	82%	75%	61%
Forgeone yield (\$)	\$17,850,000	\$21,000,000	\$11,100,000	\$16,000,000

(O'Keefe and DeCelles, 2013)

- Subsequent year closures can impact economic yield and fishing behavior based on insufficient data

Date of Estimate	Catch Estimate	Resulting Closure
May	139%	Entire year
July	101.4%	2 months
September	97.7%	None

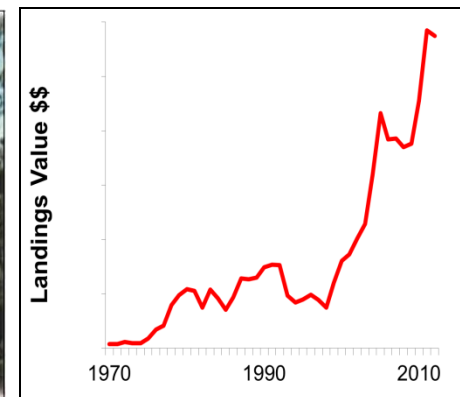
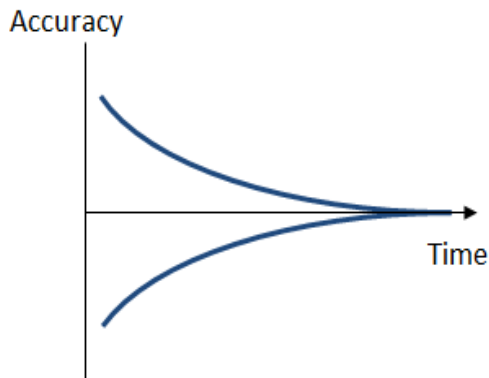


# Impacts of Accountability



# PROACTIVE Measures

- Emphasize scientific strengths, rather than rely on uncertain predictions
- Engage fishing industry to ensure buy-in, utilize unique skills, and identify common sense solutions
- Incorporate social and economic incentives

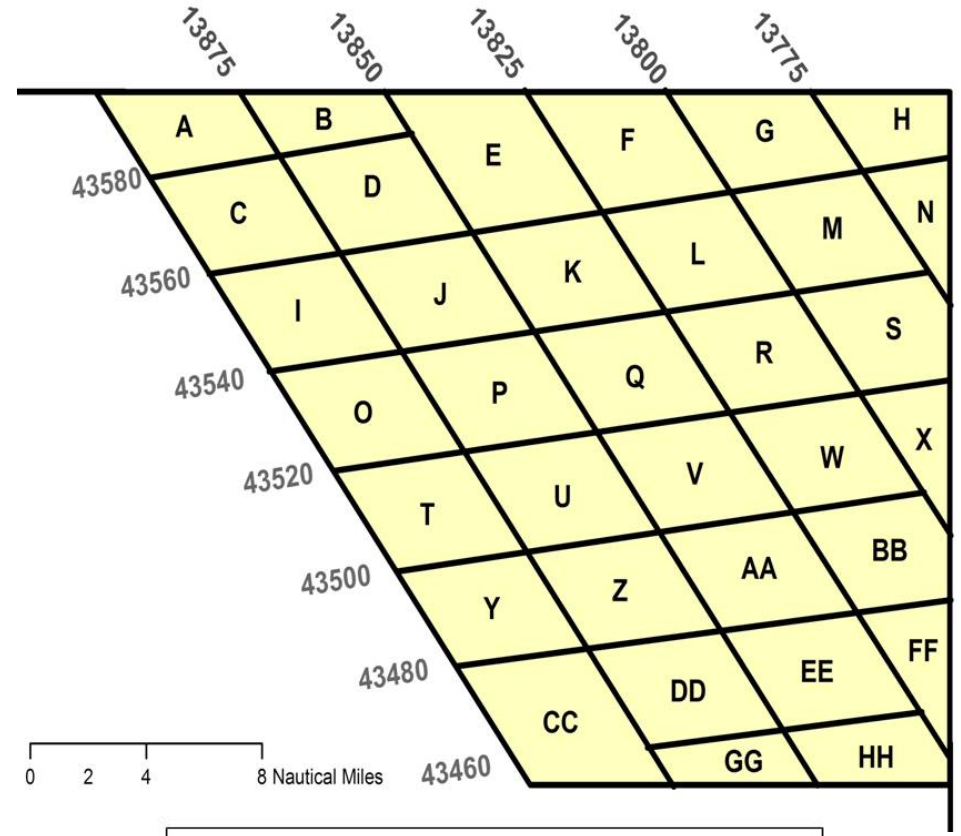




# SMAST Bycatch Avoidance Program

Implemented in 2010 to prevent early closure of lucrative fishing grounds

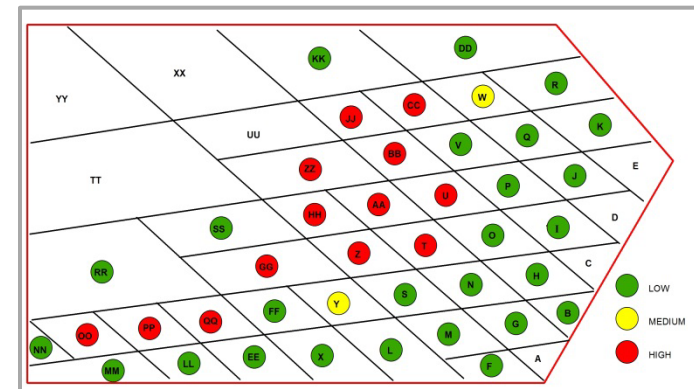
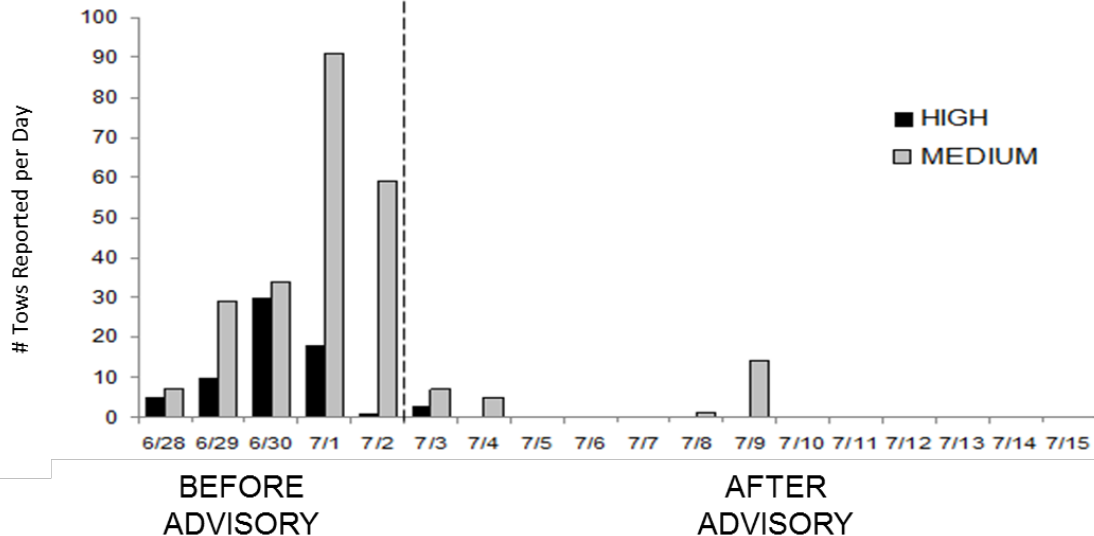
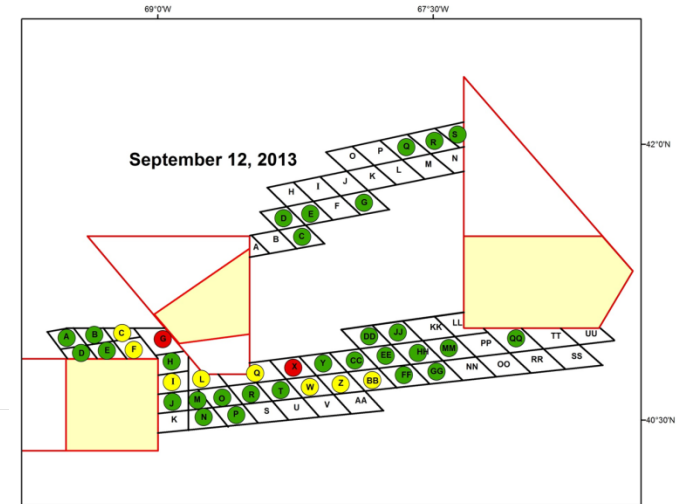
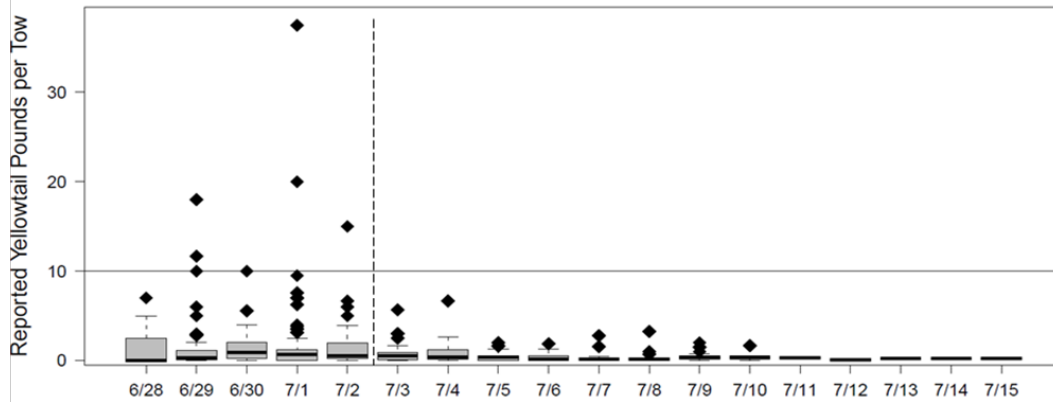
- Access areas divided into cells
  - Fishermen report once every 24 hours on bycatch
1. Data compiled
  2. Cells classified
  3. Advisory sent back to fishing fleet



<b>Cell:</b>	<b>Q</b>
<b># Tows:</b>	<b>6</b>
<b>Yellowtail lbs:</b>	<b>55</b>



# Individual and Fleet Accountability

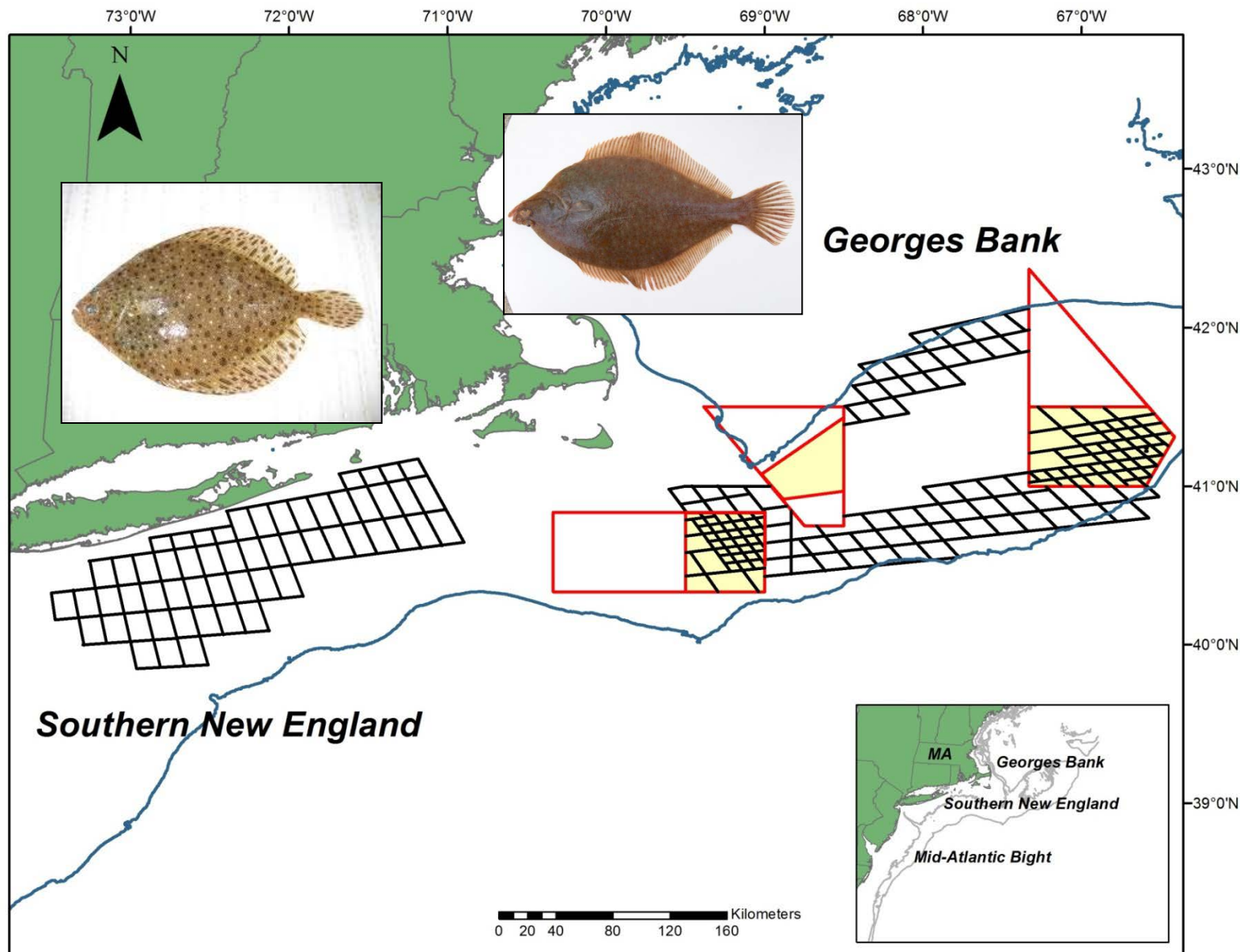


(O'Keefe and DeCelles, 2013)

Continuous reporting and updating of bycatch locations allows individual vessels to change fishing behavior

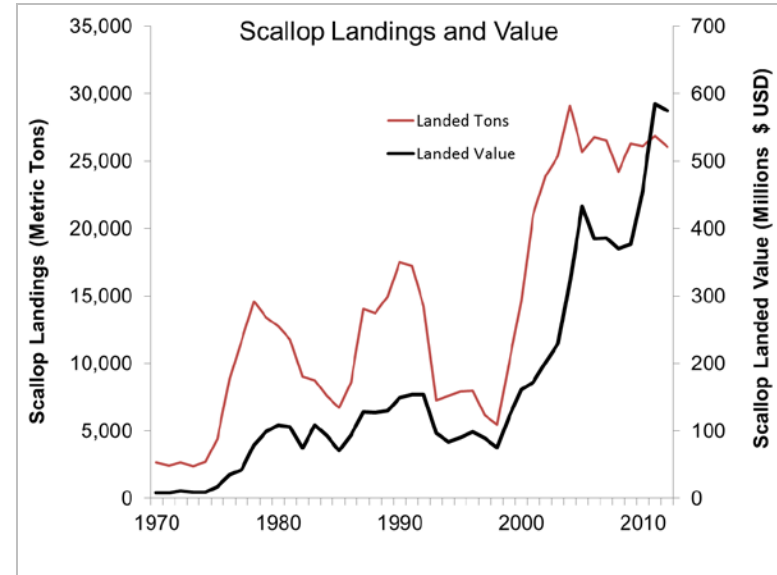


# 2014 SMAST Bycatch Avoidance Program

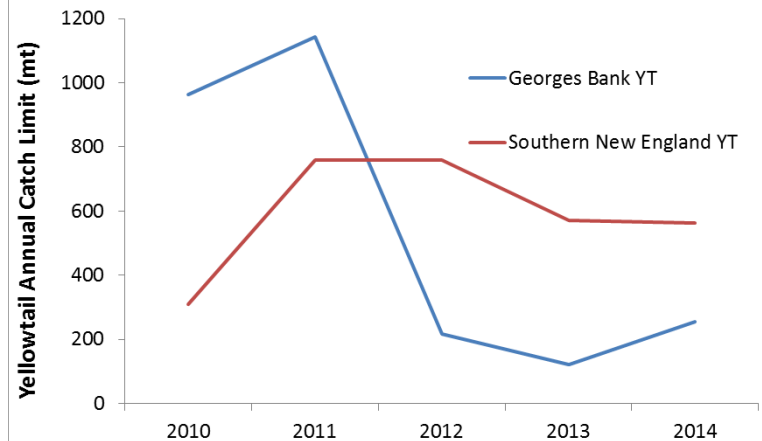


# Incorporating Economic and Conservation Goals

- Value of the scallop fishery has increased significantly in recent years
- Scallop fleet has strong incentives to maintain access to fishing grounds
- Allocation of yellowtail flounder has decreased in recent years, impacting the groundfish fleet
- Groundfish fleet can benefit from yellowtail bycatch reduction in the scallop fleet

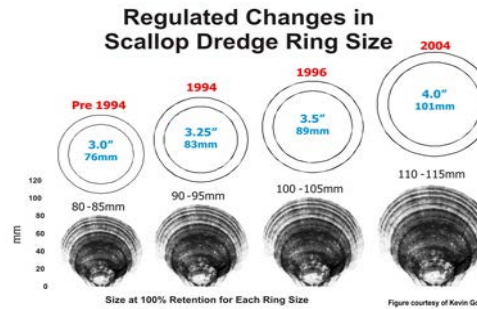


Stock	Fishery	Initial ACL (mt)	Revised ACL (mt)	% Change
Georges Bank YT	Groundfish	117	155	<b>+32%</b>
	Scallop	83	42	<b>-50%</b>
S. New England YT	Groundfish	570	586	<b>+3%</b>
	Scallop	61	44	<b>-29%</b>



# Proactive Bycatch Reduction: Gear Solutions

- Increased dredge ring size to reduce bycatch of juvenile flatfish



- Angled cutting bar on dredge to reduce sea turtle mortality

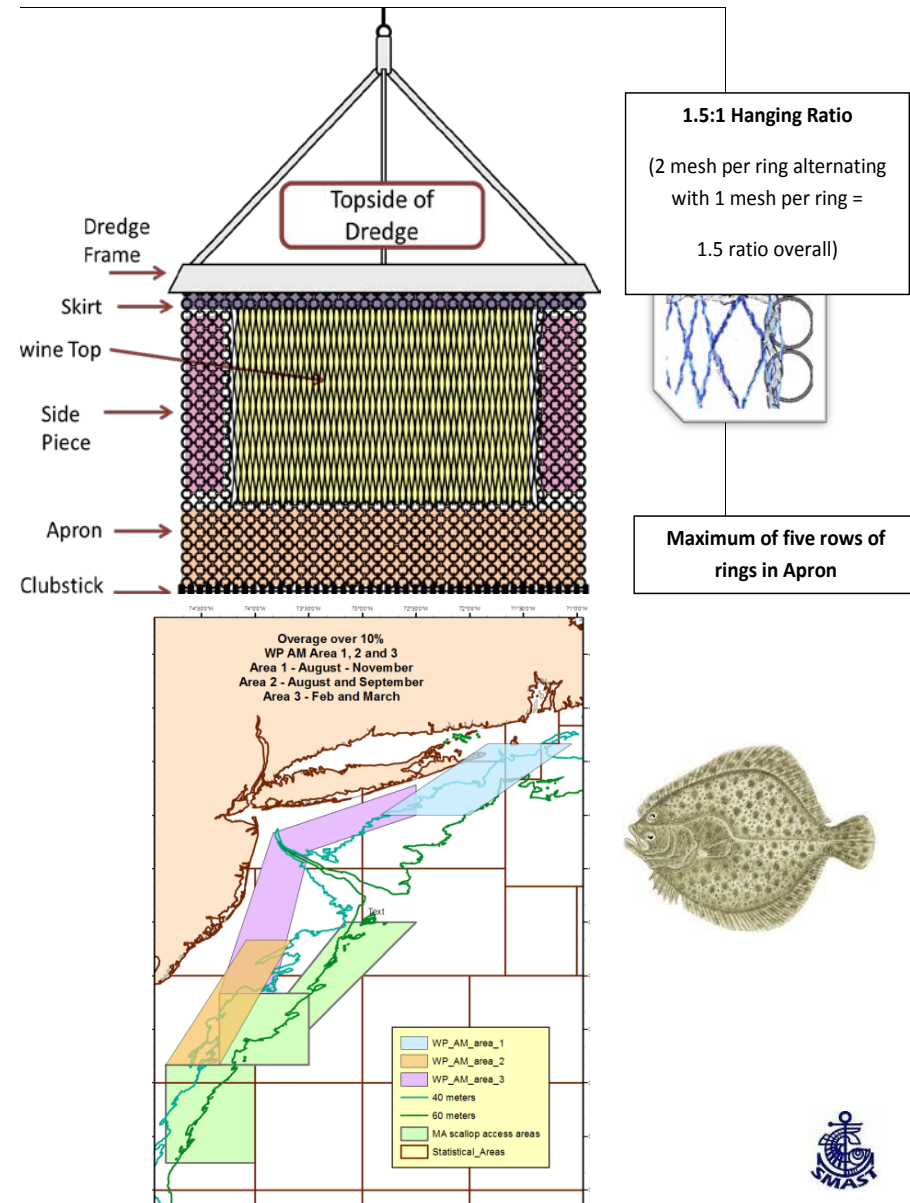


- Increased dredge hang time before dumping catch on deck allows flounder escapement



# Proactive Accountability Measure

- Modified dredge configuration to reduce windowpane flounder bycatch
- Required year round in specified area
- If ACL is exceeded, additional gear modifications required
- No closures!



# Proactive Management **AND** Reactive Regulations

- **Reactive regulations:**

- Can ensure conservation objectives are achieved, but rely on timely, accurate information to reduce uncertainty and can negatively impact economic performance

- **Proactive measures:**

- Can improve fishery performance while incorporating uncertainty, but rely on industry buy-in and trust

- **Combined Measures:**

- Pay-back or punitive measures can incentivize individual accountability and proactive behavior
- Ecological mandates and economic objectives can be met simultaneously
- Management strategy evaluation can be used to include accountability measures as a component of the overall management scheme

# Acknowledgements

- Sea Scallop Research Set-Aside Program
- Fisheries Survival Fund and American Scallop Association
- 253 scallop vessels participating in bycatch avoidance
- Greg DeCelles, Kevin Stokesbury, and Dan Georgianna
- SMAST Fishermen's Steering Committee

Thank you!

