Bycatch Avoidance Networks in the New England and Mid-Atlantic Fisheries

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4 September 2014

Fisheries Leadership & Sustainability Forum

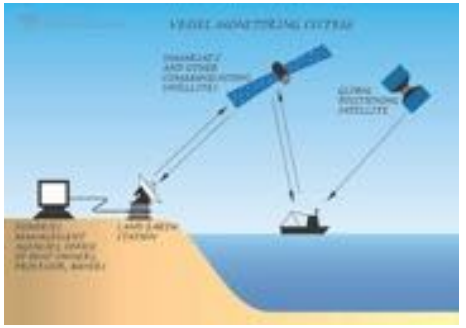
UMASS

Massachusetts Marine Fisheries Institute

SMAST

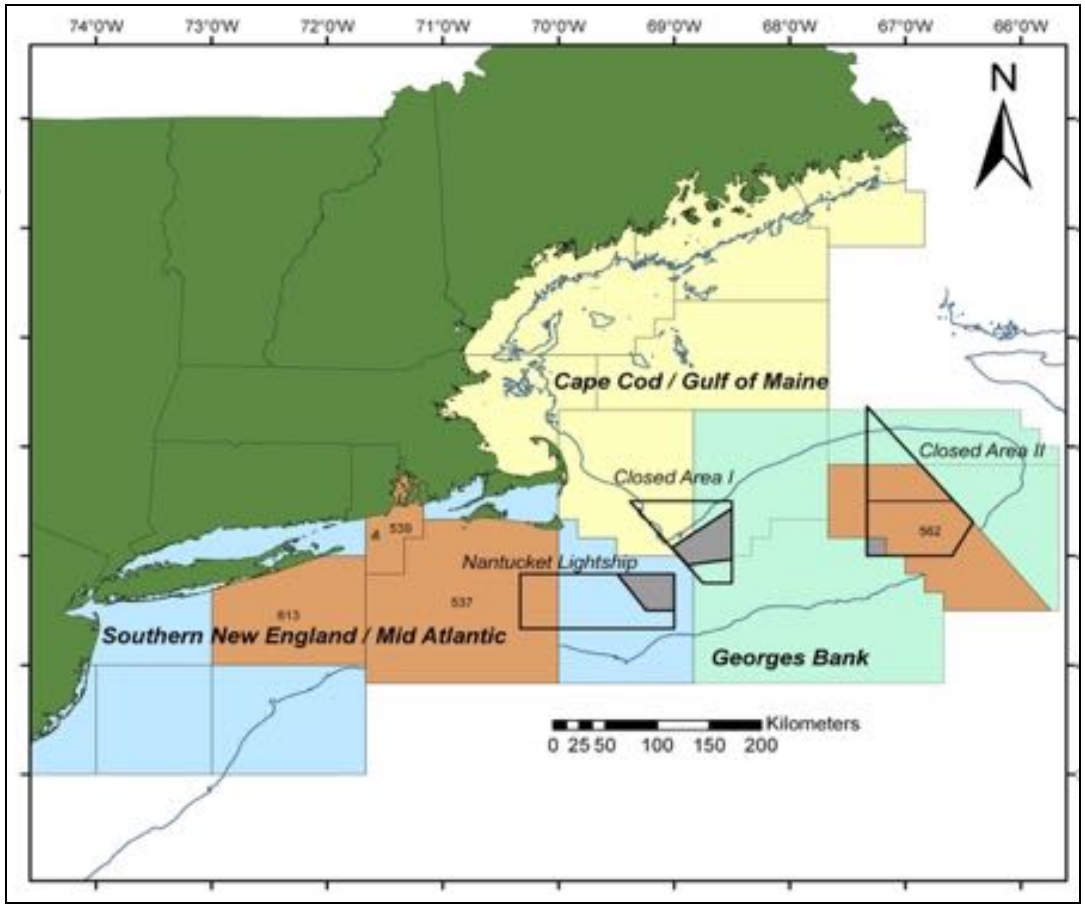
Private-Private Partnerships: Bycatch Avoidance with Communications

- Communication of data in real or near-real time to facilitate changes in fishing behavior
  - Compulsory and voluntary approaches
  - Proactive and reactive approaches
  - Incorporation with management
  - Data sharing and confidentiality
  - Forming partnerships
  - Incentive structures
  - Funding



Yellowtail Flounder Bycatch in the Scallop Fishery

- Bycatch managed with catch limits since 1999
- Observer coverage for ~10% of trips
- 1999-2011: Specific areas closed when limit was reached
- 2012-current: Portions of stock areas close in subsequent year
- Fishing effort shifts to compensate for area closures



Impacts of Yellowtail Flounder Bycatch

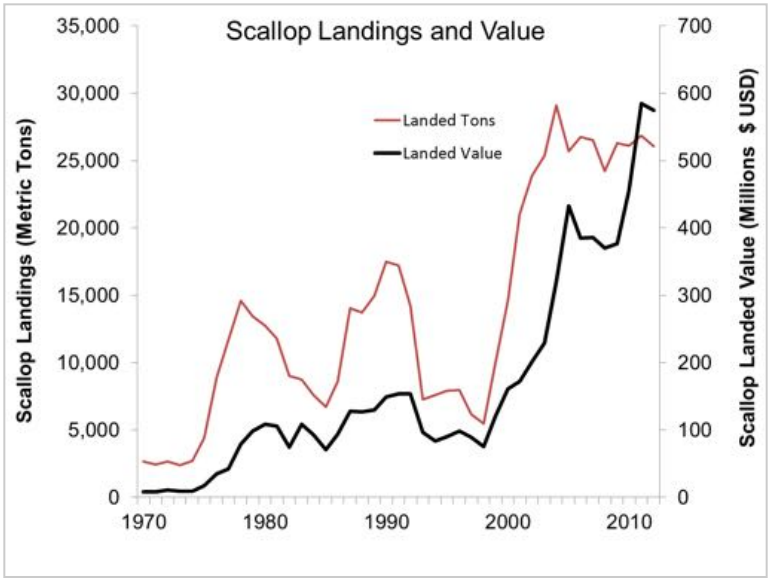
	2006	2006	2008	2009
Area	Nantucket	Closed Area II	Nantucket	Closed Area II
Days Open	36	84	57	15
% Yellowtail TAC Caught	178 %	103 %	98 %	81 %
Scallop target	78 %	82 %	75 %	61 %
Foregone yield	$16,500,000	$19,000,000	$11,000,000	$14,000,000

- Economic losses over $60 million
- Potential for increased natural mortality of unharvested scallops
- Impacts from shifting fishing effort to other areas
- Time lag in availability of accurate, useful data

Percent Overage of YTF Sub-ACL	Length of Closure
2 or less	2 months
2.1 - 3	3 months
3.1 - 7	4 months
7.1 - 9	5 months
9.1 - 12	6 months
12.1 - 15	7 months
15.1 - 16	8 months
16.1 - 18	9 months
18.1 - 19	11 months
19.1 or more	All Year

Forming a Partnership to Avoid Bycatch

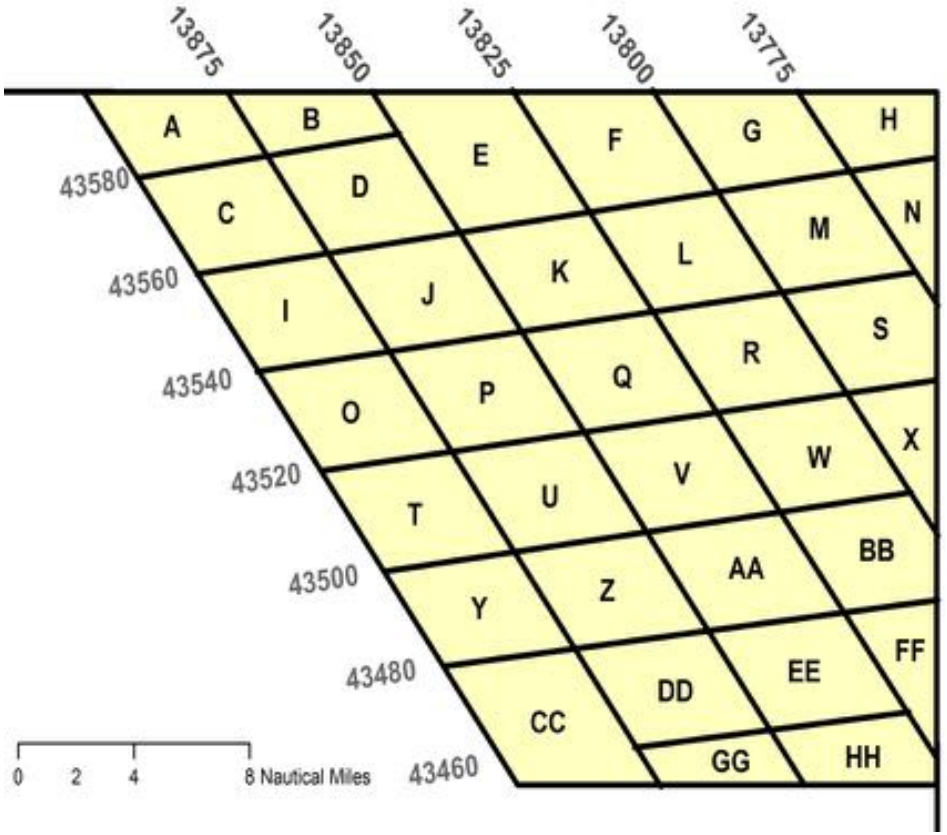
- Value of the scallop fishery has increased significantly in recent years
- Scallop fleet has strong incentives to maintain access to fishing grounds
- Industry-SMAST partnership to explore solutions to bycatch constraint: Real-time communication of yellowtail catch data for fleet avoidance of hotspots



Real-Time Communication

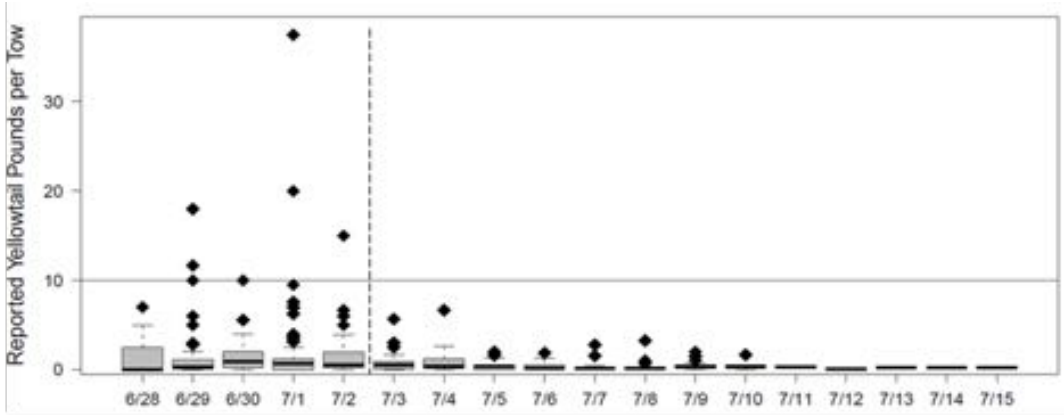
- Areas divided into cells on Loran C lines
- Fishermen report target catch and bycatch once every 24 hours
- Reporting macro on Vessel Monitoring System (VMS; Boatracs)

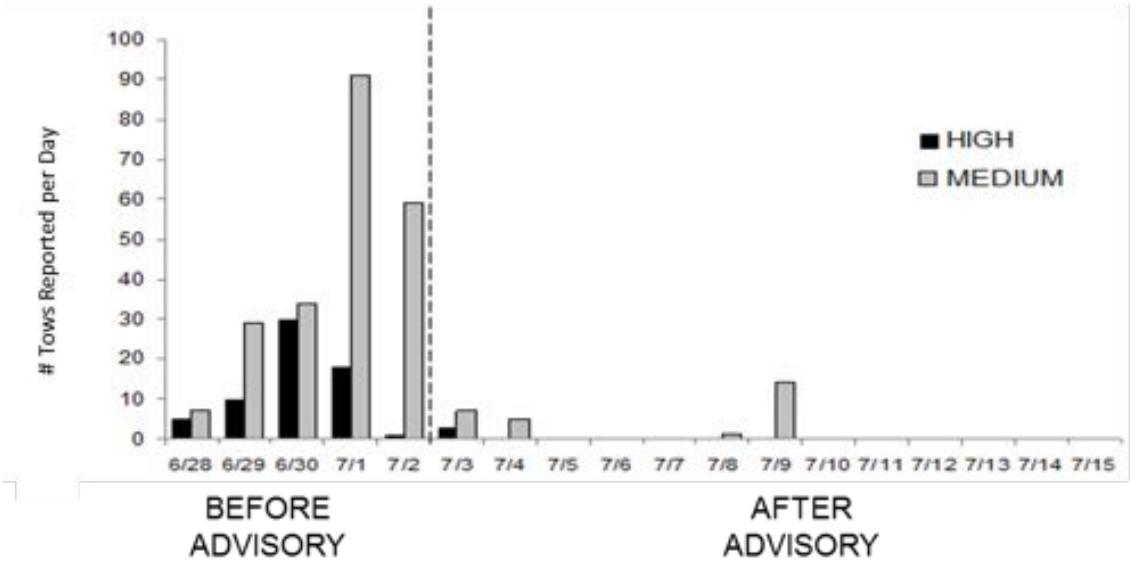
1. Data compiled
2. Cells classified
3. Advisory sent back to fishing fleet



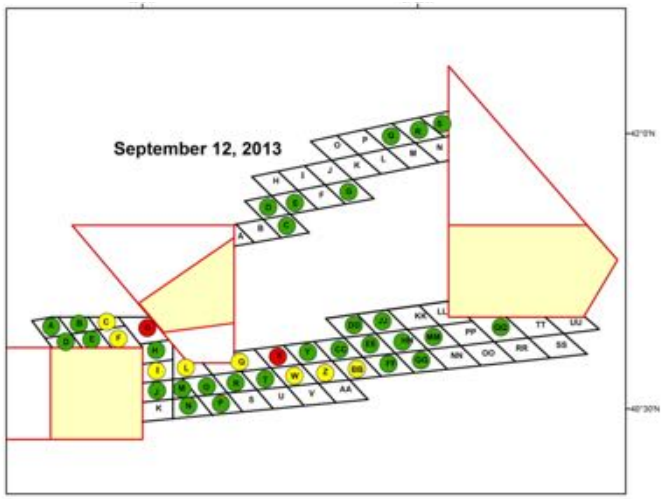
Cell:	**Q**
# Tows:	**6**
Yellowtail lbs:	**55**
Scallop lbs:	**1900**

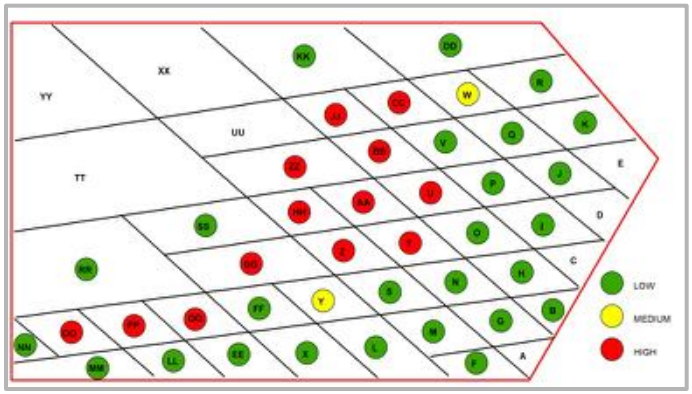
Individual and Fleet Accountability





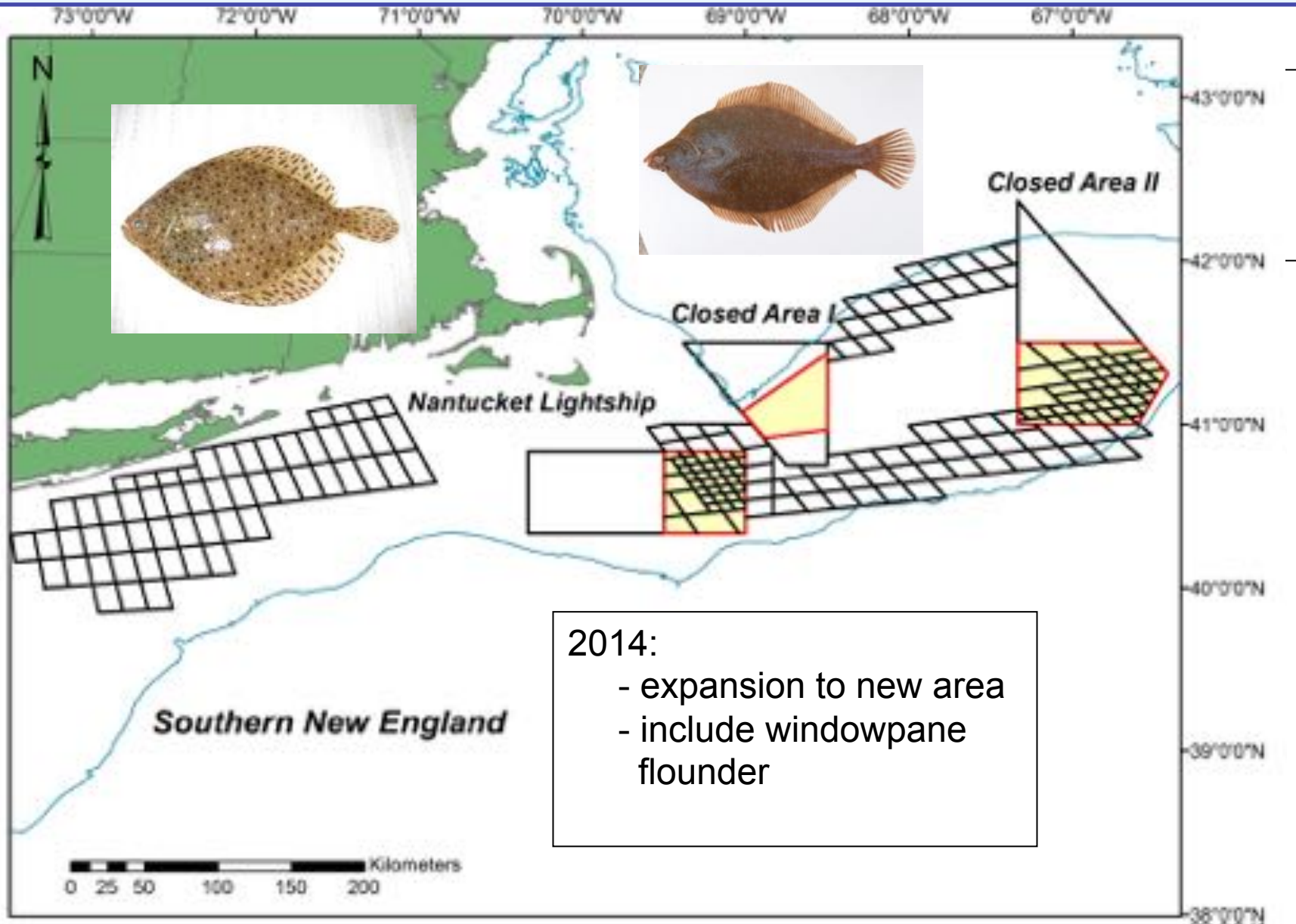
(O'Keefe and DeCelles, 2013)





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

Program Expansion

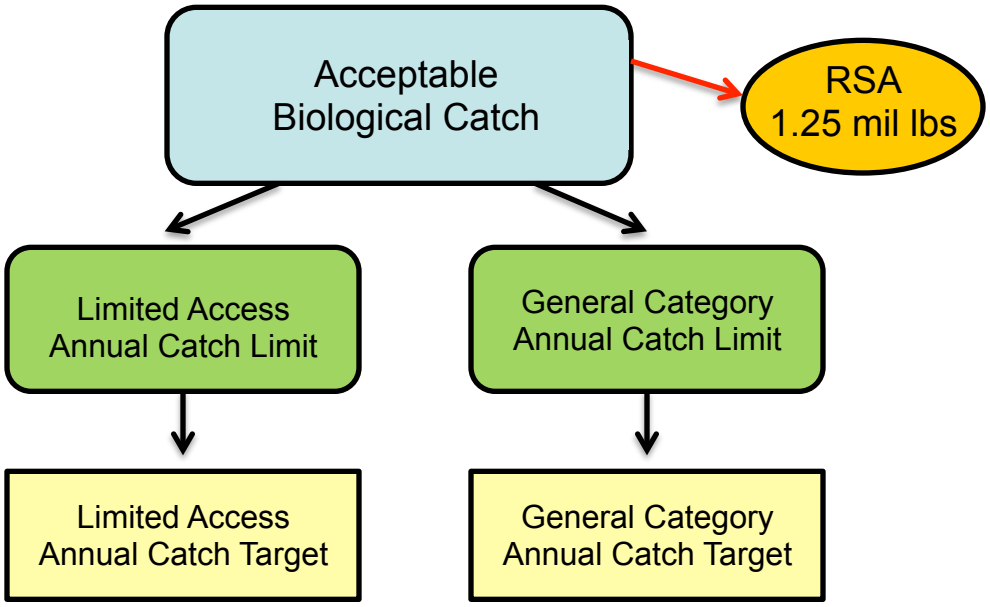


2014:

- expansion to new area
- include windowpane flounder

Flounder Bycatch Avoidance Program Funding

- Total budget ~ $200,000/year
- Scallop Research Set-Aside funds (75%)
- Industry donations (25%)
- Changes over time
  - Organization donations 2011-2013
  - Individual donations 2014

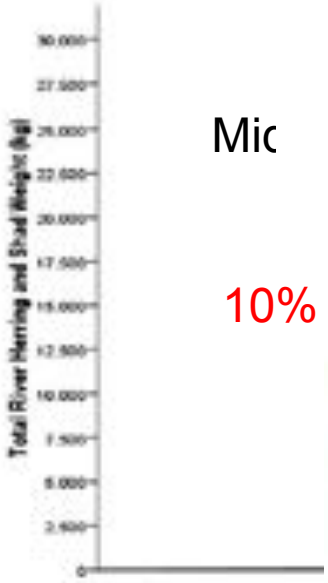


Fisheries Survival Fund

American Scallop Association

River Herring Bycatch in the Mid-Water Trawl Fishery

- Difficult to quantify and classify – highly variable
- Depleted populations of alewife, blueback, shad
- Potential bycatch reduction closures and/or catch caps
- Economic impacts associated with measures
- Unclear benefits to river herring populations
- Fishing effort shifts to compensate for area closures



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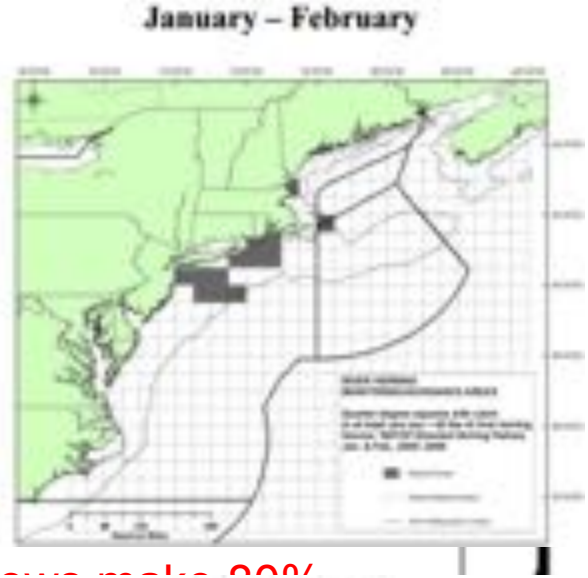
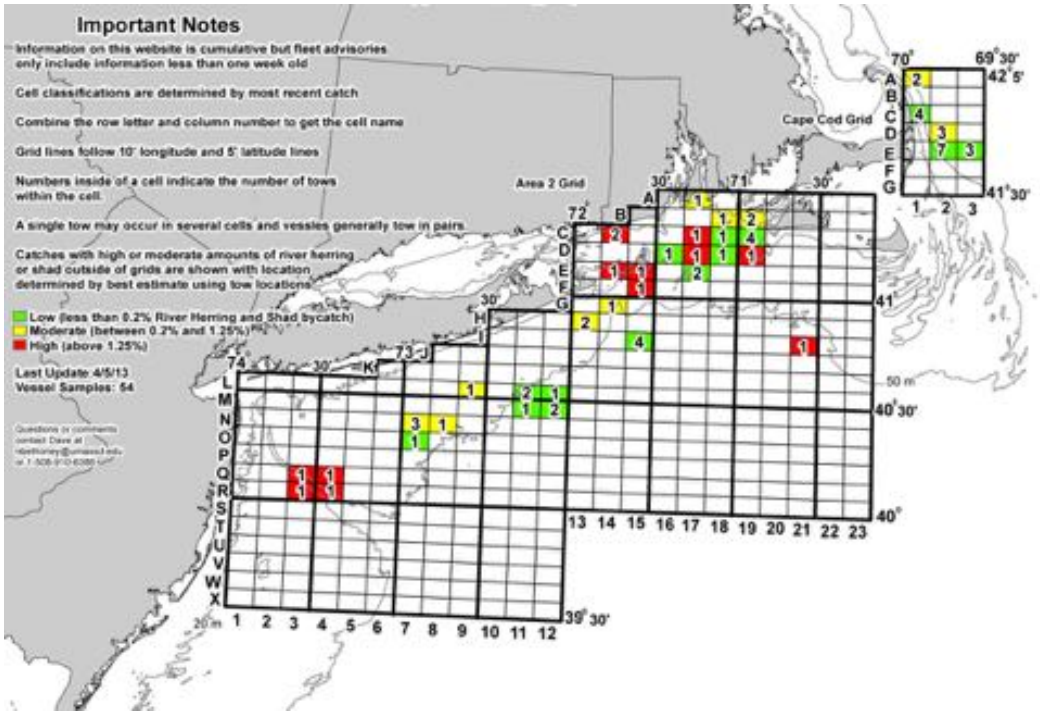
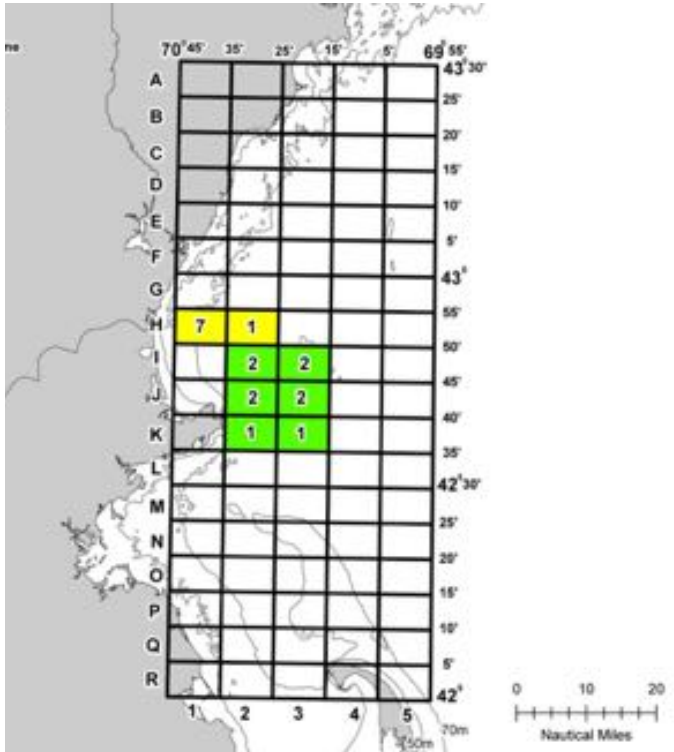


10% [illegible]

Real-Time River Herring Bycatch Avoidance

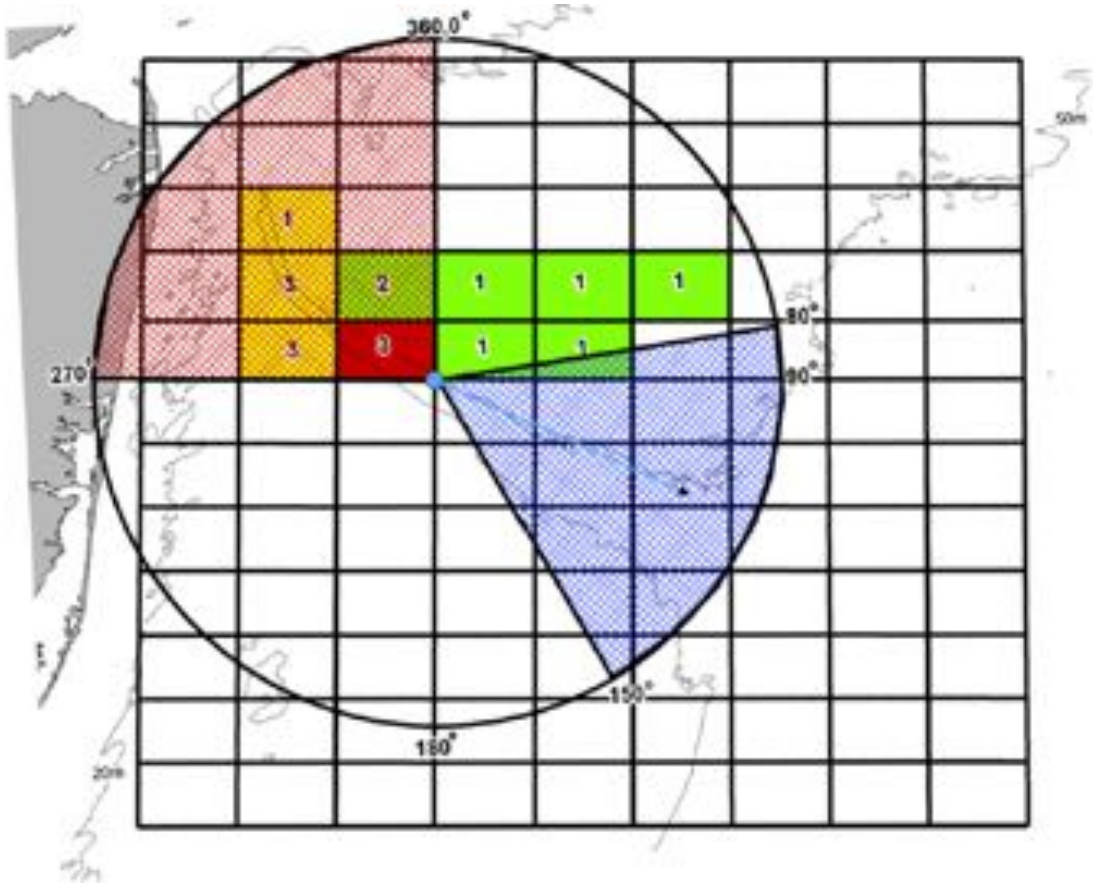
- Catch composition by location
  - Tow location from vessel – Capts. and NMFS observers
  - Port side sampling – Massachusetts Marine Fisheries
- Bycatch avoidance grids - SMAST





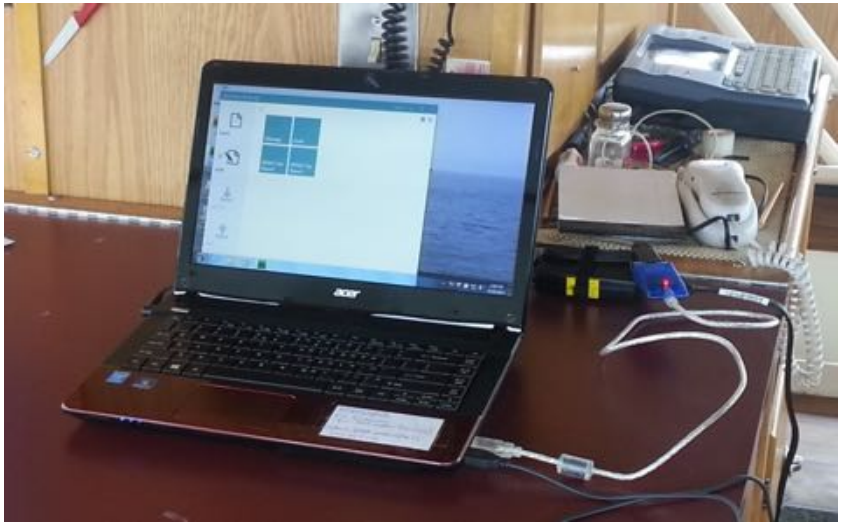
Mid-Water Trawl Fleet Response

- Winter 2011:
  - 1st advisory Feb.1
  - High and medium cells located by Feb. 17
  - Movement away from high bycatch region after Feb. 17 through early April



Program Improvements

- Data time lags
  - Access to preliminary observer data
- Data focused on total trip catch, not tow by tow catch
  - Captains email more detailed information
- Data submission not 100% reliable
  - Cost-effective, interactive transmission tool - BTConnect



BOATRACS

Herring Bycatch Avoidance Program Funding

- Total budget ~$150,000/ year
- Herring Research Set-Aside funds
- National Fish and Wildlife Foundation grant
- The Nature Conservancy funding for bottom trawl and communication expansion

National Fish and Wildlife Foundation

The Nature Conservancy
Protecting nature. Preserving life.™

Different Fisheries – Different Programs

- Sedentary species
  - Scallops and yellowtail
- Fishery value
  - Scallops very high
  - Yellowtail relatively low
- Fleet composition
  - 348 vessels
  - ME to NC
- Highly organized fleet
  - Management participation

- Highly migratory pelagics
  - Sea and river herring, mackerel
- Fishery value
  - Moderate value target
  - No value bycatch
- Fleet composition
  - 12 vessels
  - Concentrated MA
- Highly scrutinized fishery
  - Continually new issues

Private Partnerships

Benefits

- Ability to respond quickly with flexibility
- Incorporate incentives
- Forces a balance: meet objectives without burden
- Programs driven by industry
- Solution-based, proactive
- Can include public partnerships (state and federal)
- Can create private enforcement scenarios

Challenges

- Enforcement may not exist
- Participation levels can vary
- Management measures change
- Partnerships can dissolve
- New “crises” emerge
- Leadership changes
- Can be difficult to prove program merit to managers
- No panacea solution!

Examples: SeaState Inc., Captain’s Daily Catch, Fisheries Information Services, eCatch

Conclusions

- Effective in changing behavior to reduce bycatch
- Relatively small, well-defined areas and short duration of fisheries encouraged participation
- Low cost, real-time, industry collected data
- Repeatable process applied to additional areas in subsequent years
- Influenced by communication and trust
- Not a universal solution: iterative approach tailored to the specific problems

Acknowledgements

Flounder Avoidance

- Greg DeCelles
- Steve Cadrin
- Kevin Stokesbury
- Dan Georgianna
- Coonamessett Farm
- Virginia Institute of Marine Science
- 253 participants

Herring Avoidance

- Brad Schondelmeier
- Bill Hoffman
- Mike Armstrong
- Kevin Stokesbury
- Peter Moore
- Ray Jarvis
- Industry participants