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# Northeast Cooperative Research Industry Contributions to Assessments

NEFSC Stock Assessment Data  
Program Peer Review  
August 5-11, 2013  
NEFSC Woods Hole Laboratory

*Presented by*

John J. Hoey, Ph.D.

Director, Cooperative Research Program  
NMFS - Northeast Fisheries Science Center

Woods Hole, Mass. & Narragansett, RI

John.Hoey@NOAA.GOV

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# Outline

1. Coop Res Goals and Objectives
2. Brief review of fishery independent surveys – data inputs provided for stock assessments
3. Fishery Dependent data inputs to assessments
4. Differences in Temporal and Spatial scale of fishery dependent data – VTRs – Observer data – study fleet
5. Capturing local ecological knowledge and a path towards enhancing assessments by explicitly incorporating environmental data and operational fishery practices

# Cooperative Research Goals



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- Improve the data upon which fishery management decisions are made,
- Foster coordination, cooperation, communication, and mutual respect among scientists, managers, and industry.

“Working together/ solving fishery challenges”

## Scientific Objectives:

- Improve precision of analytical stock assessments and address concerns about bias in sampling.
- Fill Data Gaps.
- Improve the temporal and spatial resolution of multi-species catch (haul based), gear performance, and life history data to support more timely analysis of a greater diversity of management options.



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## 2010-2014 Priority Research Themes

- 1 - Support development and implementation of innovative monitoring tools and pilot programs to address critical data gaps as the industry moves to new management regimes – electronic logbooks and study fleets (fishery dependent).
- 2 – Surveys and data Gaps – support industry based survey programs- pilot surveys to address critical data gaps – species specific biological samples (fishery independent & fishery dependent).
- 3 - Conservation Engineering Networks - Develop a comprehensive conservation engineering program within NEFSC/NCRP to achieve regional coordination and technology transfer with industry.

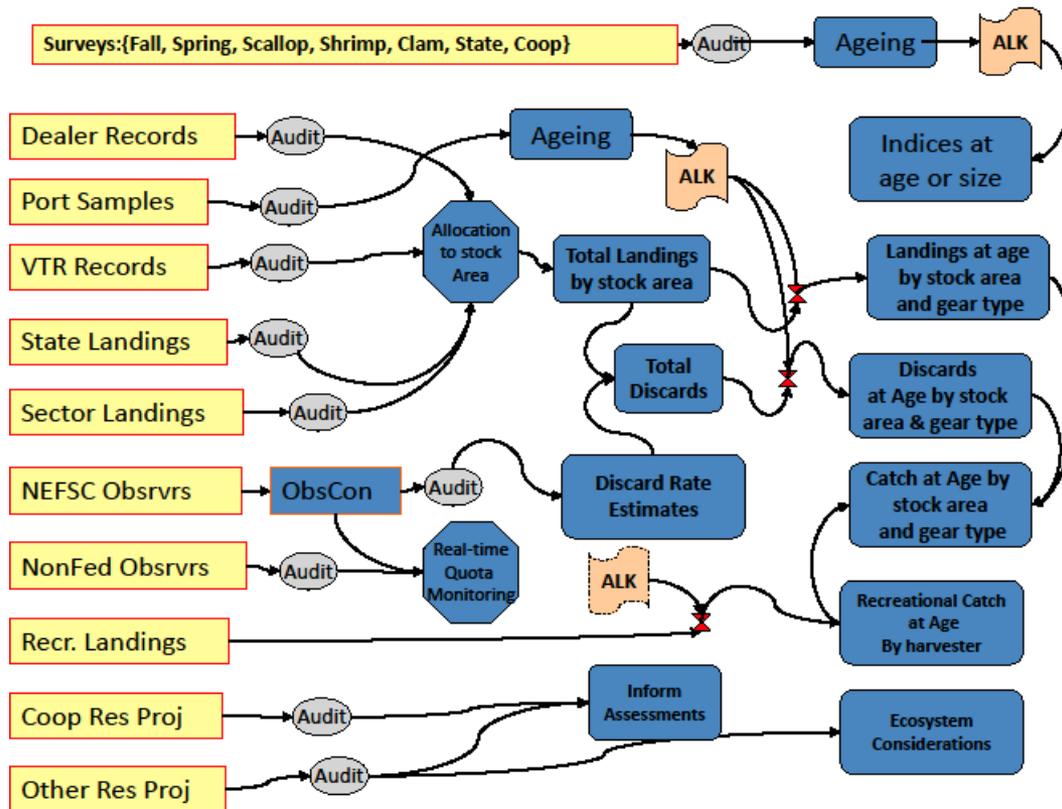
# Cooperative Research – Assessment Data Inputs

## Fishery Independent – Fishery Dependent

Fishery Independent Surveys  
 Relative Indices of abundance  
 Biological sampling opportunities

Survey Gear Catchability Research  
 Depletion and calibration studies  
 Sweep catchability differences ( $q$ )

Fishery Dependent Data  
 Total Catch (landings and discards)  
 Stock specific removals (location)  
 Biological (size-age-maturity-fecundity)  
 Temporal – Spatial – Gear discard characteristics in the context of ecosystem approach to fisheries (local ecological knowledge)  
 Environmental Observations



# Industry Based Surveys



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Annual - ongoing

- ME-NH Inshore Survey (NCRP supplementary funding).
- NEAMAP – Mid Atl RSA funded
- Black Sea Bass Scup ventless trap – Mid Atl RSA w/ NCRP supplement.
- Scallop rotational area surveys supported by RSA programs

New Pilots

- Penobscot East bottom longline w/ shallow inshore jig stations.
- NEFSC Central GOM hard bottom longline survey for species of concern (Fall 13).
- High density stratified sampling for GEB YTF (Aug 2013)
- Survey gear catchability study GEB (Oct 2013)
- Butterfish Q – acoustic 3evaluation of Bigelow net (Cornell – squid network)

Proposals Submitted

- IBS survey for short-lived pelagic stocks stratified by thermal habitat.
- Headboat based hook and line hard bottom survey (REC program)



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# Previous Surveys & Survey Gear Research

Monkfish (2001, 2004, 2009)

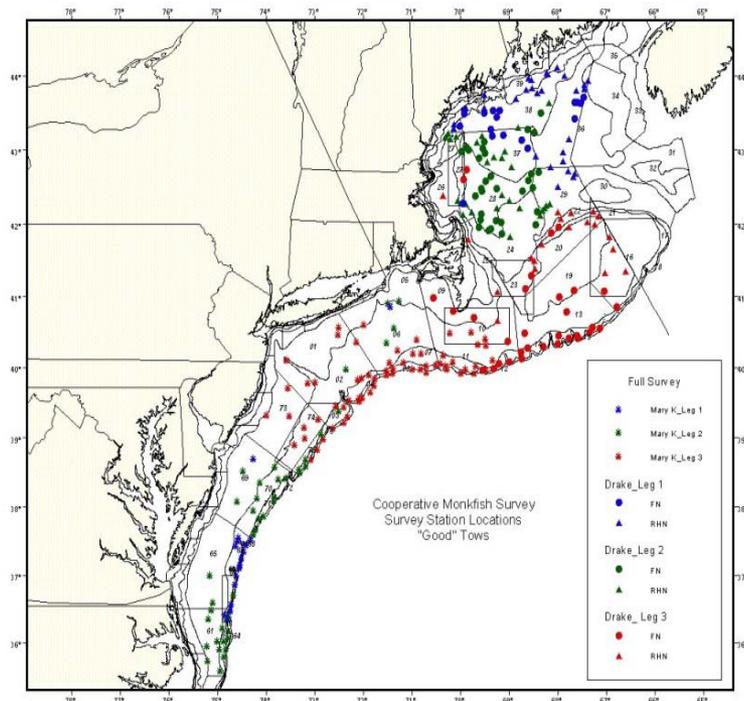
GOM Cod

SNE YTF

Trawl Survey Sweep Comparison

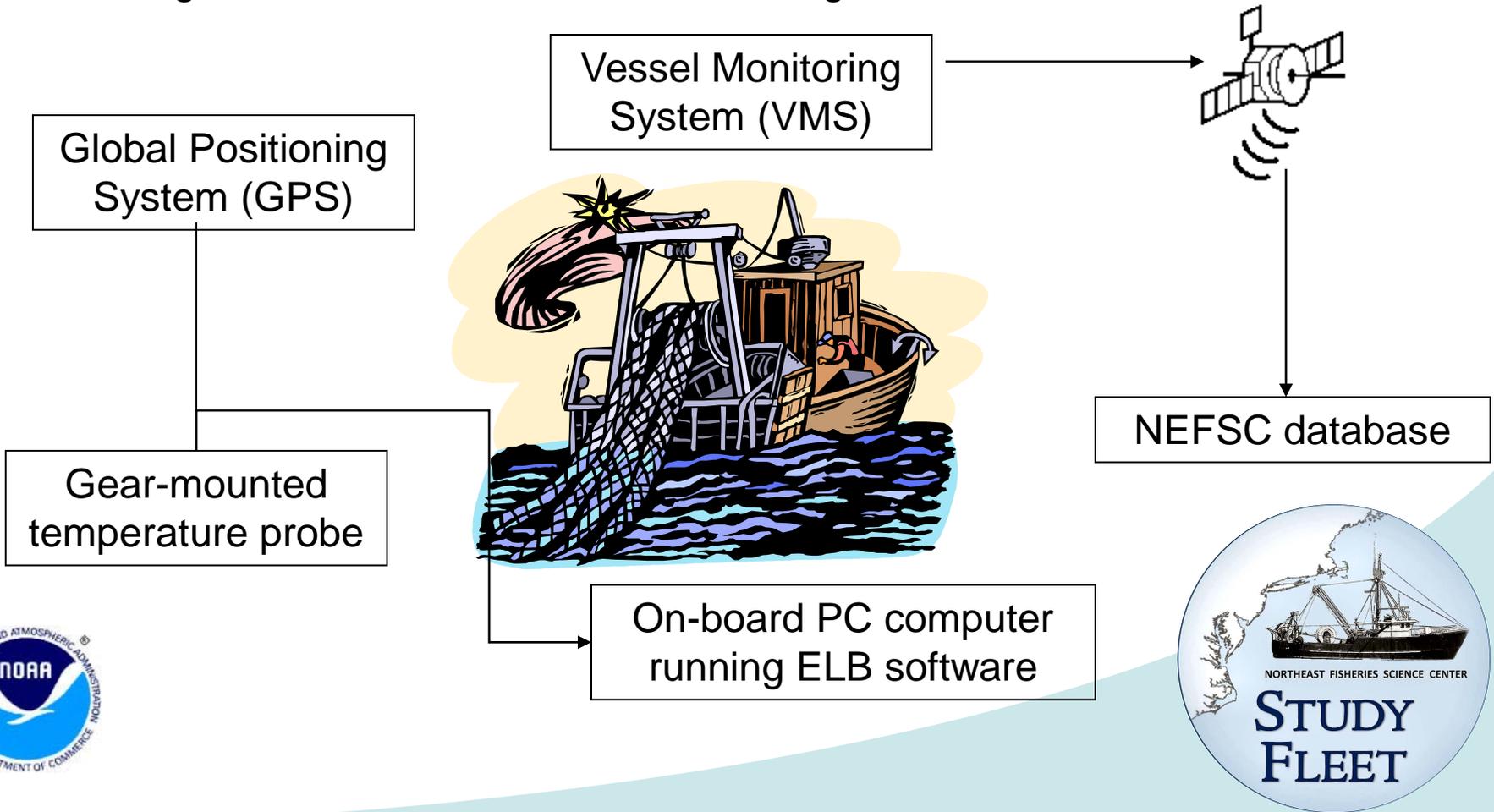
SMAST WTF and SNE YTF (CFRF)

Scallop RSA Supported Surveys



## Study Fleet Electronic Logbook System

Originally identified as one of three priority long term projects for NE cooperative research by industry during multiple public planning meetings 1999 – 2000. Fishermen supported tow-by-tow reporting so their data could be compared directly to observer data, thereby enhancing the information available for management and assessments.



# Study Fleet Data Collection

- Improve Data Accuracy – Effort-level data entry so that within trip practices can be tracked (gear & environmental)
  - More accurate estimates of individual efforts – improve stock area area assignment of catch.

NOAA Form No. 88-30 OMB No. 0649-0072 Expires 7/31/05

FISHING VESSEL TRIP REPORT

DID NOT FISH DURING MONTH/YEAR

1. VESSEL NAME	2. USCG, DOC, or STATE REG. NO.	3. VESSEL PERMIT NUMBER	
4. DATE/TIME SAILED DATE (mm/dd/yy) TIME (24 hrs.)	5. TRIP TYPE (CHECK ONE) <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> PARTY <input type="checkbox"/> CHARTER	6. NO. OF CREW 2	7. NO. OF ANGLERS 0

FILL OUT A NEW PAGE FOR EACH CHART AREA OR GEAR OR MESH/RING SIZE FISHED

8. GEAR FISHED OTF	9. MESH/RING SIZE 5 1/2	10. QUANTITY OF GEAR 1	11. SIZE OF GEAR 50'
12. CHART AREA 515	14. LATITUDE/LONGITUDE or LORAN LATITUDE LONGITUDE		15. NO. OF HAULS 15
13. AVG. DEPTH 30 fms	STATION-BEARING #1	STATION-BEARING #2	16. AVERAGE TOW/SOAK TIME hrs mins 3 00

17. SPECIES CODE NAME	18. KEPT POUNDS (Comm)	COUNT (Rec)	19. DISCARDED POUNDS (Comm)	COUNT (Rec)	20. DEALER PERMIT NO.	21. DEALER NAME	22. DATE SOLD (mm/dd/yy)
Not an actual FVTR							

23. PORT AND STATE LANDED	24. DATE LANDED (mm/dd/yy)	TIME LANDED

I certify that the information provided on this form is true, complete and correct to the best of my knowledge, and made in good faith. Making a false statement on this form is punishable by law (18 U.S.C. 1001).

25. OPERATOR'S NAME (printed) and PERMIT NUMBER (if required)	26. OPERATOR'S SIGNATURE	DATE

YOUR COPY

Fig. 9. Example of a single page FVTR trip. FVTR resembles actual observed FVTR submitted by Study Fleet participants.

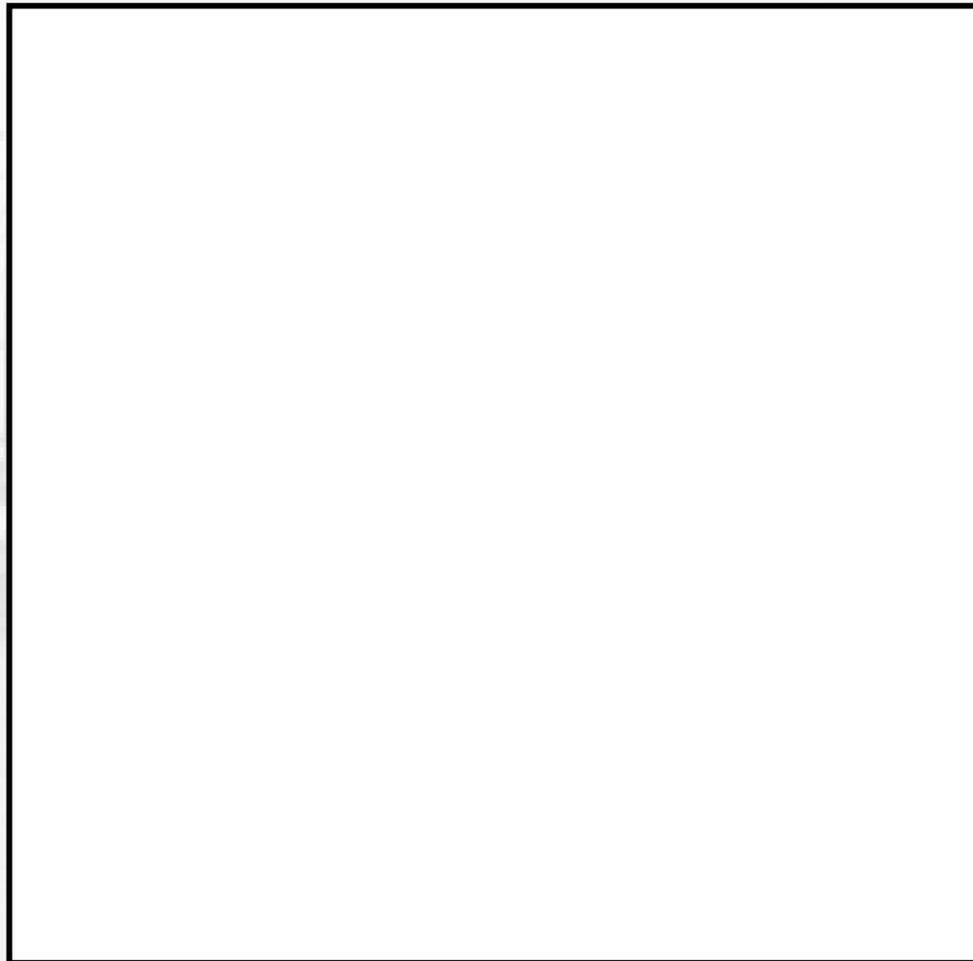
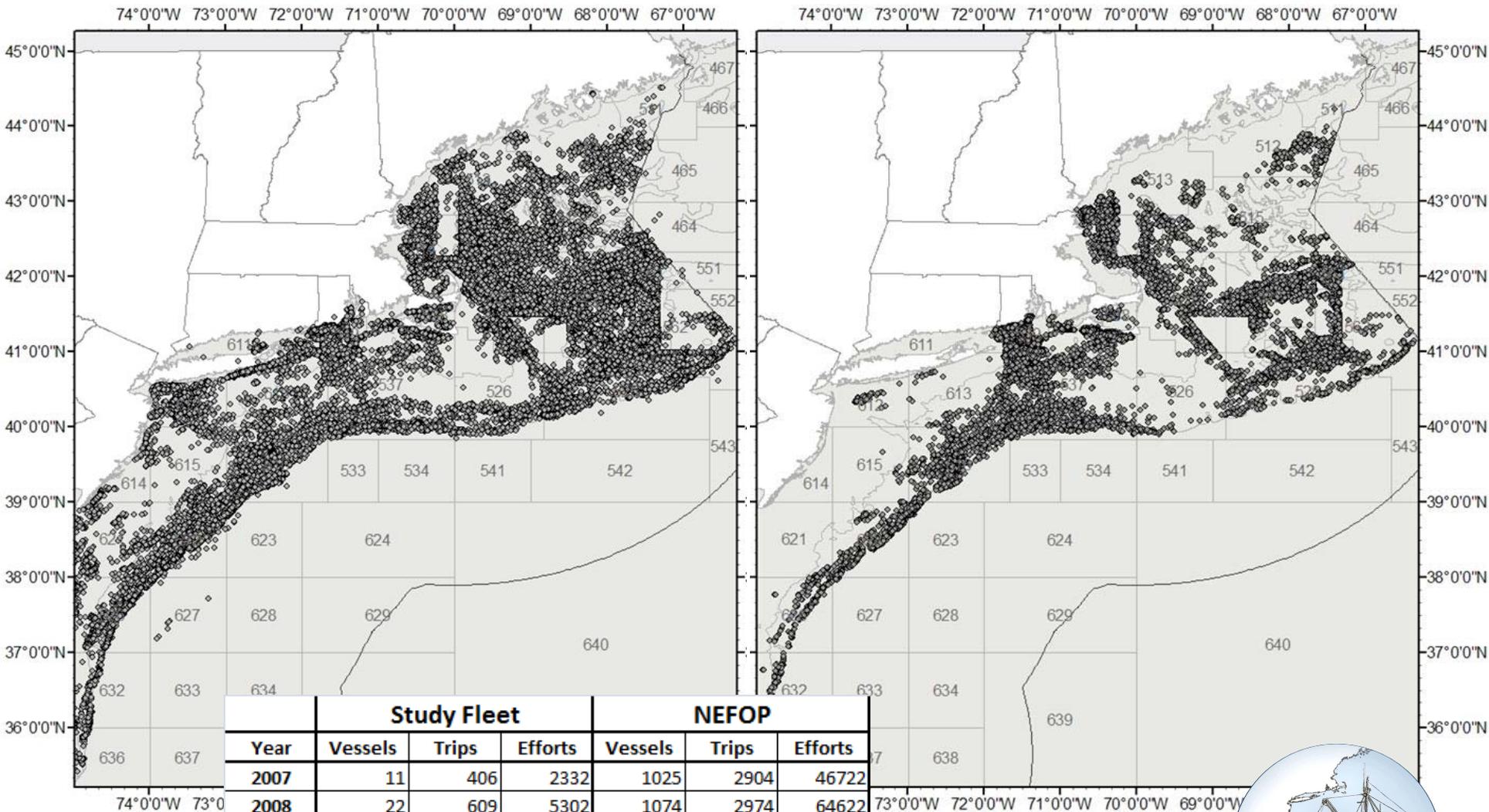


Fig. 13. Example of a fishing trip with catch occurring in multiple statistical areas. Data resemble those from actual observed Study Fleet trips.

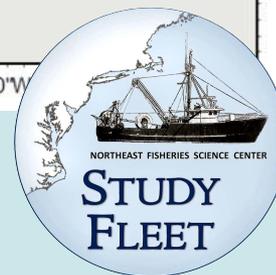


# OBSERVER EFFORTS 2007-2011

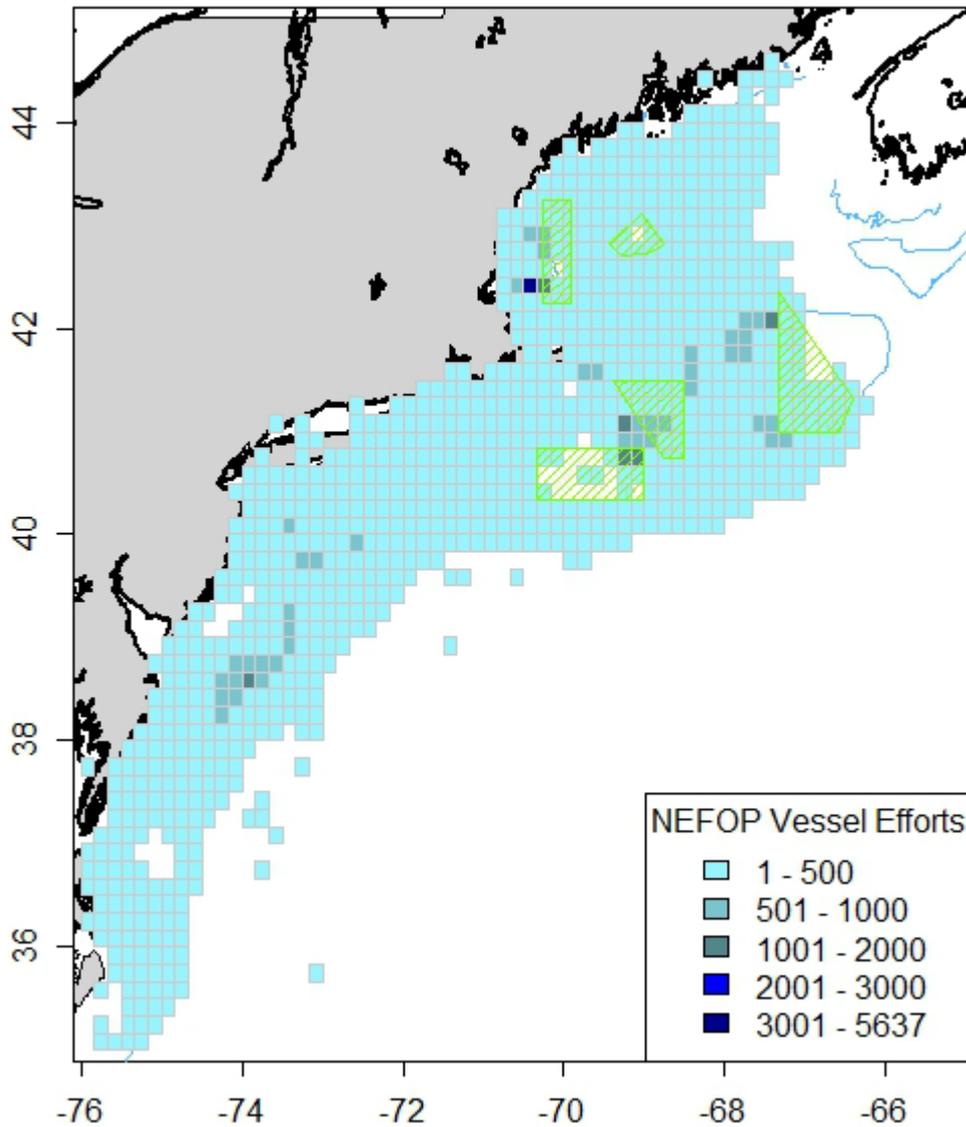
# SF EFFORTS 2007-2011



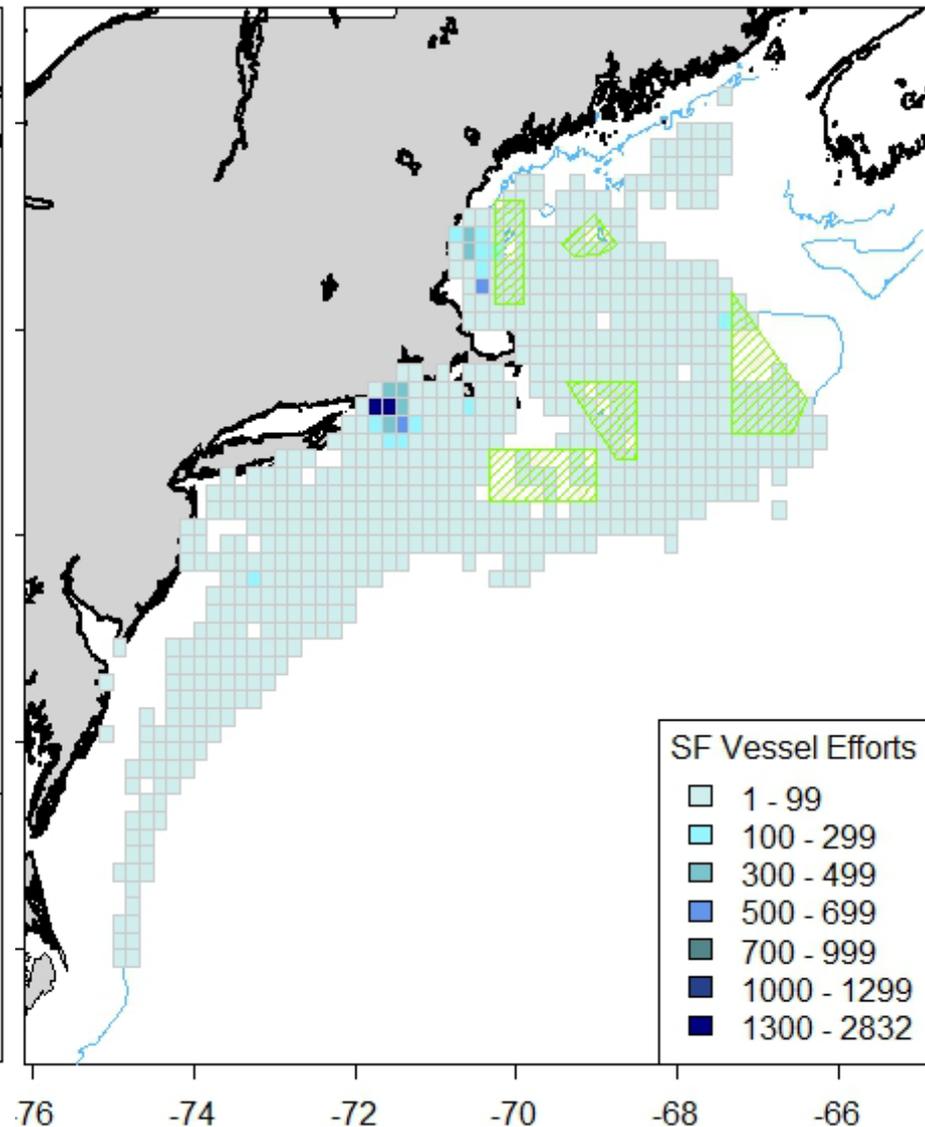
Year	Study Fleet			NEFOP		
	Vessels	Trips	Efforts	Vessels	Trips	Efforts
2007	11	406	2332	1025	2904	46722
2008	22	609	5302	1074	2974	64622
2009	23	1255	8871	996	3249	60487
2010	28	1418	9736	905	5063	59786
2011	27	1634	11082	833	5628	67378
2012	33	1585	10634	839	5082	75183
2013	25	405	2391	212	530	3466



### NEFOP Efforts 2007-2012



### Study Fleet Effort 2007-2012





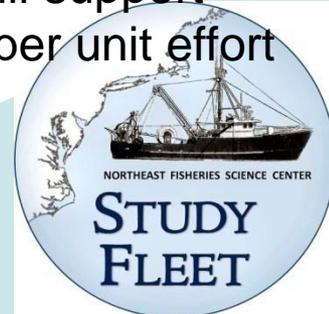
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# Study Fleet Data Uses and ancillary (leveraged) research opportunities

- Rapid acquisition of vessel trip reports (within hours of landing)
- More timely cross verification with dealer landings and observer data for landings assignment to stocks and quota monitoring
- Improved accuracy of effort location and duration
- system supports more complete reporting of all catch

Data Analyses in support of stock assessments

- direct comparisons of self reported and NEFOP estimates of kept and discarded catch at vessel specific trip and tow level, stat area – month comparisons across vessels – with a goal of collaborating with analysts to improve the precision of discard estimates used in assessments.
- increased acquisition of tow based data comparable to NEFOPs will support more detailed spatial autocorrelative modeling of commercial catch per unit effort relative to fishery independent indices.





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# Study Fleet Data Uses and ancillary (leveraged) research opportunities

Analyzing fine scale haul data for species temperature and depth preferences for hot spot mapping in support of efforts to avoid ACL limited stocks.

Provision of bottom temp data at 1 hour 1 minute gridding to NEFSC and IOOS oceanographers to evaluate regional models and improve both hindcast and forecasts of bottom temperature and ecosystem research.

## Other Study Fleet Supported Research

- Enhanced Biosampling – flatfish, haddock age, growth, maturation and fecundity
- Updating groundfish conversion factors and ancillary feeding data.
- Dogfish sex ratios by area – gestation period and seasonality
- discard length frequency sampling
- Improving discard estimation – river herring special study
- Improving capacity to track gear modifications and performance over time

# Industry Contributions to Assessments - Strengths

## Industry Based Surveys

- Flexible capacity with specialized knowledge
- Cost effective platforms of opportunity
- Constructive industry engagement

## Fishery Dependent Data – Study Fleets

- Enhanced timeliness, accuracy, and greater detail for vessel trip reports supporting quota monitoring as well as rapid allocation of catch to stock areas.
- Industry data access enhances participation in management process
- Industry interest in ancillary oceanographic data and rapid feedback creates incentives for greater collaboration
- Increased availability of fine scale data will support more timely analyses of a greater diversity of management options

# Industry Contributions to Assessments - Challenges

## Industry Based Surveys

- Stable funding for time series vs one-off studies
- Coordination and communication that will expand involvement
- Differing perceptions of what a region wide integrated survey program would include
- NMFS capacity to support field operations and post cruise data analyses

## Fishery Dependent Data – Study Fleets

- Increase participation- outreach and training
- Tailor tools to specific fishery reporting requirements and assessment needs
- Emphasize data ownership & responsibility for inclusive participation in analyses
- Provide feedback and data reports that will positively incentivize participation in electronic reporting – current bottom temp and species distribution mapping is encouraging participation.

# Industry Contributions to Assessments - Solutions

## Industry Based Surveys

- Engage industry and academic partners in full review of IBS data past and present, lessons learned, constraints in use for assessments, cost-benefit (assessment precision payoff), with a goal of developing a strategic plan for a region wide survey system.

## Fishery Dependent Data – Study Fleets

- Balance need to support timely monitoring in a dynamic regulatory environment while enabling the capacity to collect additional data to support ecosystem approaches to fisheries.
- Identify priority fisheries or fleets where existing tools can increase electronic reporting in the short term, account for a disproportionate amount of catch, and provide an immediate improvement in data accuracy that improves acceptance of assessments.