

Executive Summary

Vision - The Northeast Cooperative Research Program (NCRP) strives to work collaboratively with the fishing industry and other stakeholders to improve the perception and increase the acceptance of NEFSC science programs. The NCRP fulfills Magnuson-Stevens Fishery Management and Conservation Act requirements to conduct regionally-based collaborative research, and responds to priorities set by the New England and Mid-Atlantic Fishery Management Councils. By engaging the industry's knowledge, ideas, and practical experience, the NCRP works to develop projects that address data gaps and industry concerns relative to NEFSC survey and biological programs. The NCRP envisions becoming fully integrated with other essential fishery dependent, fishery independent, oceanographic, and ecosystem monitoring programs within the NEFSC, and fosters a dynamic capacity that supports the inclusion of data on oceanography, habitat, and fishing behavior that can be used to address emerging challenges along the path to more comprehensive assessments.

Where we are now

The current program structure reflects an FY09 strategic planning process, NRCC review and recommendations, an FY11 mid-course review, and current Council and NEFSC priorities. The strategic plan recommended focusing on a clear set of cross-cutting themes: **the development of innovative monitoring tools and pilot programs to address data gaps and ease industry adaptation to new management regimes, industry assistance provided through a comprehensive regional conservation engineering program (including strategies for both avoidance and separation of species),** specific fishery – species priorities including **fishery dependent and independent efforts, and improved administrative processes.** The innovative monitoring theme focuses on ways to make reporting from fishing operations more timely and accurate, improving estimates of the amount and type of fish discarded during commercial operations, and conducting resource surveys for areas or species not well-covered by other existing surveys. Current program activities are listed below.

Itemized activity list by research theme

Fishery Independent – Industry-Based Surveys

- **Past:** SNE YTF, GOM Cod, Monkfish, NEFSC sweep study, CFRF/SMASST YTF and WTF.
- **Ongoing:** ME/NH, NEAMAP, Mid-Atl. RSA scup & sea bass, & scallop RSA rotational area surveys.
- **Pilot:** Penobscot East Sentinel Survey, FY13 funded GOM Hard Bottom Longline Survey.
- **Proposed:** 1) survey gear catchability for GEB-SNE flatfish; 2) high density focused sampling on Georges for yellowtail flounder; 3) acoustic study of Bigelow net performance for butterfish (Fall 13); 4) proposed shelf break, temp-stratified survey squid, butterfish, etc.; 4) proposed recreational headboat survey; 5) GOM enhanced groundfish survey (placeholder).
- **Recommendations and Needs:**
 - Finalize analysis of sweep comparison data to inform industry discussions about survey design, gear and the need for additional flatfish/skate surveys. Include prior NEFSC survey analyses.
 - Need NEFSC analytical support for fixed gear data analysis and IBS designs.
 - Need coordinated regional IBS system w/stakeholder input and long-term funding.
 - Address utility of side-by-side surveys and other options for enhanced GOM survey.

Fishery Independent – Tagging

- Traditionally provides information to establish stock boundaries and/or management units – initial cod tagging program designed to address differences in trip limits between GOM and GEB.
- Carefully designed projects can be used to estimate mixing rates and total mortality - Other studies can address discard survival.
- Dogfish tagging cruises completed December 2012 - 5 seasons, 2.5 yrs, 3 areas – 34,588 tags.
- **Recommendations and Needs:**
 - FY13 - continue support for dogfish recapture rewards, data and vertebrae analysis.
 - Continue support for apex predator tagging program.
 - Periodic tagging activities may be required to monitor species distribution shifts due to climate change. Priorities informed by stock assessment priorities and scheduling.
 - Leverage opportunities with PRD and recreational fisheries to address topics such as species of concern (i.e. cusk and wolffish), and survival of recreational species relative to barotrauma.
 - Investigate new technologies – gliders with acoustic receivers to detect acoustic tagged animals outside of fixed arrays. Can inform environmental drivers for migrations and potential evaluation of catchability for data poor stocks (sturgeon, sharks, monkfish).
 - Recommend review of monkfish tagging work.

Fishery Dependent - Study Fleets

- Electronic reporting, tow-by-tow catch and effort, GPS polling and Temperature/Depth data.
- FLDRS system supports improved assessments by collecting more timely and spatially precise data used for assigning catch to specific species stock areas.
- Self-reported discard data can be used with NEFOP records to improve the precision of discard estimates – a critical need for stocks where discards are a significant portion of total mortality.
- Self-reported catch data with more precise information on fishing effort and gear can be used to evaluate commercial CPUE patterns relative to fishery independent indices.
- Analysis of fine scale data for temperature-depth preferences and hot spot mapping.
- MARACOOS and NEFSC oceanography programs can use SF-TD data to evaluate regional models and hindcast temps for NEFOP data to re-visit species density distributions relative to annual variability in bottom temp.
- Bottom temperature forecasts at high resolution (3nm) are an industry priority.
- **Ancillary Study Fleet Research Projects:**
 - Enhanced biological sampling – flatfish age, growth, maturation and fecundity.
 - Updating groundfish whole/gutted conversion factors.
 - River herring bycatch quantification.
 - Gear characteristic/modification tracking.
 - Limited winter flounder length frequencies, dogfish sex ratio pilot, stomach contents.
 - Wireless TD field testing and operational deployment.
- **Recommendations and Needs:**
 - Provide maps of historical NEFOP and Study Fleet density distributions linked with recorded and hindcast temperature data to industry for decision-making.
 - Need to develop predictive 3-5 day forecast bottom temp maps and deploy wireless TD probes to provide near real-time feedback to assist with low-ACL species avoidance strategies.

- Provide increased tow-by-tow reporting with TD data to support NEFSC oceanographic and ecosystem research.
- FY13 fishery priorities—GEB and SNE flatfish, SNE/MAB squid fisheries, herring fishery, and gillnet/Protected Resources interactions.
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- Cooperation with Social Sciences staff to evaluate Study Fleet GPS polling data and NEFOP records with VMS-based tracking to investigate fishing patterns and fleet behavior relative to management alternatives.
- Require input from Pop Dyn on what level of coverage is needed in a fishery to be considered representative for use in stock assessments.

Research Set-Aside Programs

- All RSA programs coordinated through the NEFMC, MAFMC, and ASMFC.
- RSA research priorities are established by the Councils and the Commission.
- Three annual RSA competitions include substantial administrative costs with no appropriated funding—currently supported by National cooperative research funds.
- **Monkfish RSA**
 - Has primarily supported tagging, age and growth, and climate effect research.
 - FY14 review of program proposed.
- **Scallop RSA**
 - Has primarily supported biomass surveys for rotational area management and bycatch reduction.
 - Has resulted in the development of innovative survey technology HABCAM which is now under operational use by the NEFSC.
- **Mid-Atlantic RSA**
 - Has primarily supported NEAMAP survey with majority of RSA resource.
- **Recommendations and Needs:**
 - RSA-funded surveys beyond “pilot” phase should be removed from annual competitions and if continued, funded through a more secure and timely funding stream.
 - RSA-funded surveys should be more integrated into the NEFSC survey system including full data archiving, integration into the SAW/SARC process, and survey planning within the READ (including dedicated staffing).
 - Councils should coordinate closely with NCRP and NEFSC when considering new RSA programs to ensure that lessons learned are incorporated.

Closing Statement

This document has identified a number of recommendations and needs necessary to advance the NCRP. Many of these require ongoing and expanded analytical support from other divisions within the NEFSC. Follow up on workshop and review recommendations; provide planning and analytical support for projects that can enhance stock assessments. Recent enhanced coordination and collaboration with oceanography, ecosystem, and fish biology are developing more robust understanding of these effects on fish populations, building on long standing collaboration with survey and population dynamics. A commitment to increased engagement with the fishing industry is a cross cutting challenge. The NEFSC Director’s guidance memo supports expanded interdisciplinary studies across all NEFSC divisions and branches. This support reflects the NEFSC leadership’s desire to develop a science and management approach that recognizes the vital nature of cooperative research in developing stewardship and partnership within the industry and the opportunities it creates for interdisciplinary and cross-cutting science.

Background Review Documents

General Program Review:

- NCRP Summary 070511 – info for strategic planning 2008-2010.
- NE Coop Res – Strategic Direction 2010-2014
- NE Coop Res – Strategic Plan mid-term Review

Industry Based Surveys – peer review reports for specific industry based surveys:

- Cod IBS Survey (initial long term project when NCRP was initiated in 2000).
- Yellowtail Flounder IBS Survey (Initial long term project when NCRP was initiated in 2000).
- Monkfish and Mid-Atlantic Transect Survey.
- ME-NH Inshore trawl survey.
- NEAMAP trawl survey.
- Scup ventless trap survey.

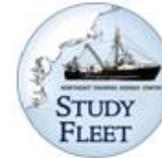
Fishery Dependent – Study Fleet Program (initial long term project when NCRP was initiated in 2000).

- 2005 NEFSC Study Fleet review Doc
- Study Fleet phase 1&2 final analysis – Feb 2007
- Study Fleet Peer Review report May 2007



Northeast Fisheries Science Center Cooperative Research Study Fleet Program

<http://www.nefsc.noaa.gov/read/popdy/studyfleet/>



WHAT IS A STUDY FLEET?

- A sample of commercial vessels which provide detailed self-reported fisheries data for the purpose of addressing specific scientific needs (Palmer *et al* 2006).
- 30 vessels currently participating
- Current vessels range from Barnegat Light, New Jersey to Hampton Beach, New Hampshire

FISHERIES PARTICIPATING IN STUDY FLEET

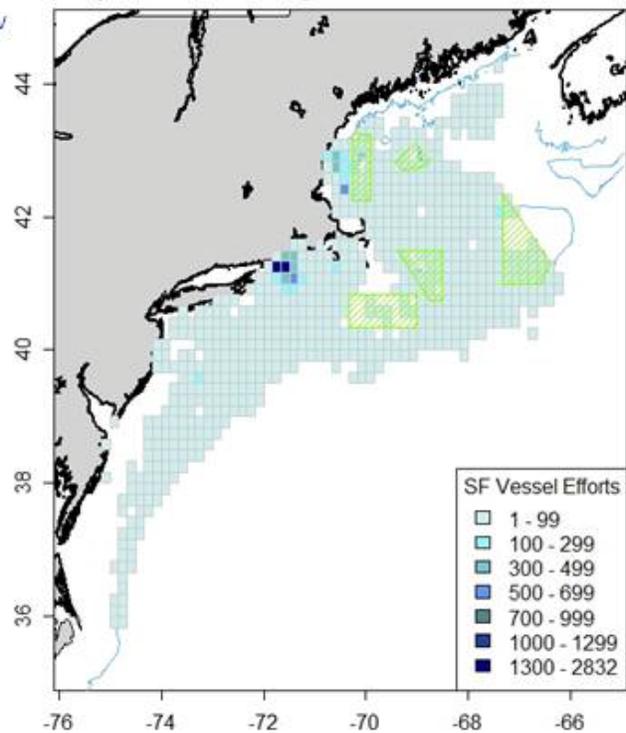
- Groundfish (Trawl, longline, Gillnet)
- Squid, fluke small mesh (Trawl)
- Scallop (Dredge)

STUDY FLEET EQUIPMENT

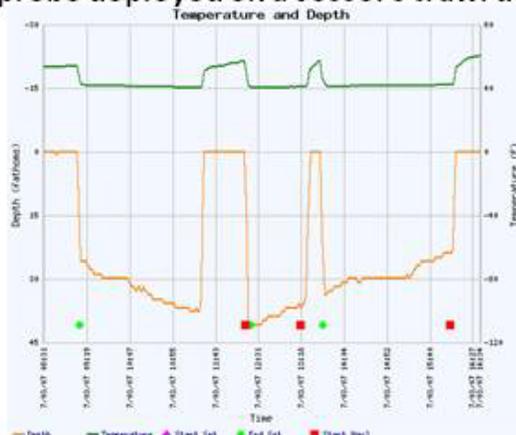
- Electronic Logbook (ELB) with FLDRS software program
- Temperature depth (TD) probe



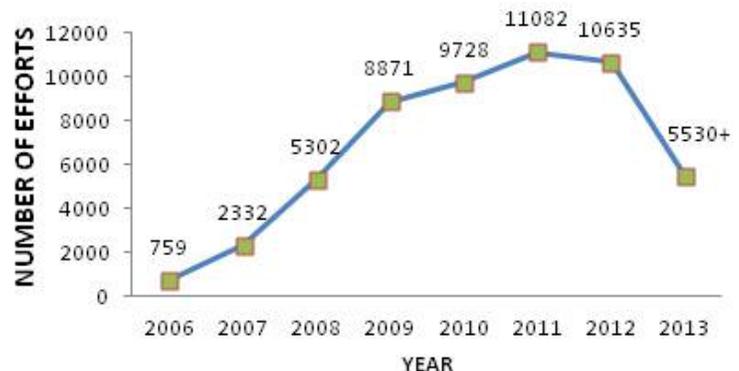
Study Fleet's average annual effort coverage



Temperature and depth data from a TD probe deployed on a vessel's trawl door



Total number of efforts conducted by Study Fleet participants for each year



REFERENCE

Palmer, M.C, Wigley, S.E., Hoey, J.J. 2006. An assessment of the Northeast Region's Study Fleet program and electronic logbook (ELB) system. Northeast Fisheries Science Center Reference Document [Draft].

Updated 7/23/2013

FLDRS TRIP LEVEL DATA	FLDRS EFFORT LEVEL DATA	FLDRS CATCH LEVEL DATA	FLDRS APPORTION LEVEL DATA
Column name	Column name	Column name	Column name
TRIP_ID	START_HAUL_LAT_DMS	TRIP_ID	TRIP_ID
OPERATOR_PERMIT_NUM	START_HAUL_LON_DMS	EFFORT_NUM	LANDING_NUM
SAL_PORT_STATE	TRIP_ID	CATCH_NUM	APPOR_NUM
SAL_PORT_PLACE	EFFORT_NUM	SPECIES_ITIS	SPECIES_ITIS
SAL_PORT_COUNTY	START_SET_DATE_GMT	MARKET_CODE	MARKET_CODE
SAL_DATE_GMT	START_SET_LAT	GRADE_CODE	GRADE_CODE
END_PORT_STATE	START_SET_LON	HAL_AMOUNT	APPOR_AMOUNT
END_PORT_PLACE	END_SET_DATE_GMT	HAL_AMOUNT_UOM	APPOR_AMOUNT_UOM
END_PORT_COUNTY	END_SET_LAT	DISPOSITION_CODE	DEALER_PERMIT
END_DATE_GMT	END_SET_LON	CATCH_ENTRY_DATE_GMT	ISSUING_AGENCY
TRIP_CATEGORY	START_HAUL_DATE_GMT	UPLOAD_DATE_GMT	SOLD_DATE
CREW_SIZE	START_HAUL_LAT		APPOR_ENTRY_DATE_GMT
NUM_ANGERS	START_HAUL_LON		UPLOAD_DATE_GMT
TRIP_NOTES	END_HAUL_DATE_GMT		CD_DISPOSITION_CODE
TRIP_ENTRY_DATE_GMT	END_HAUL_LAT		
FILE_NAME	END_HAUL_LON		
SOURCE_VERSION	DEPTH		
REPORT_SOURCE	DEPTH_UOM		
TRANSMISSION_DATE_GMT	TEMP		
ORIGINAL_TRANSMISSION_DATE_GMT	GC_GEAR_CODE		
UPLOAD_DATE_GMT	GEAR_QUANTITY		
CONFIRMED_FLAG	GEAR_SIZE		
CONFIRMED_DATE_GMT	MESH_SIZE		
CONFIRMED_BY	MESH_TYPE		
VESSEL_PERMIT_NUM	NUM_HAULS		
VESSEL_HULL_ID	SOAK_DURATION_DH		
VMS_SERIAL_NUM	FAILED_EFFORT		
FV_AP_NUM	EFFORT_ENTRY_DATE_GMT		
VP_PROGRAM_CODE	UPLOAD_DATE_GMT		
PROGRAM_CODE	FA_AREA_CODE		
PROGRAM_DESCR	FA_SUB_AREA_CODE		
PROGRAM_METADATA	LORAN_BEARING1		
BEGIN_DATE	LORAN_BEARING2		
END_DATE			
FRE_REPORT_SOURCE			
VPT_PROGRAM_TYPE			

variables not colored can be auto-populated or manually entered

Lookup table - drop down codes
manually entered field
System Generated Variable
default - set for Captain and vessel-however, can be manually selected
Support table data
Subtrip- manually entered
Data entered into database after trip upload-optional

} Top three require explicit action by vessel operator