Northeast Area Monitoring and Assessment Program (NEAMAP)

Management Plan 2012-2016

Introduction

The Northeast Area Monitoring and Assessment Program (NEAMAP) is a cooperative state/federal fishery-independent research and data collection program conducted from the Gulf of Maine to Cape Hatteras, NC. The program is intended to maximize the effective capability of fishery-independent survey activities and the usefulness of collected data, through cooperative planning, innovative uses of statistical theory and design, and consolidation of functional data into a useful data management system. The overall approach of NEAMAP emphasizes the collection of fishery-independent data to accommodate specific short-term and long-term management needs.

Mission

The mission of NEAMAP is to provide an integrated and cooperative state-federal program to facilitate collection and dissemination of fishery-independent information, for use by government agencies, the fishing industry (commercial and recreational), researchers, and others requesting such information. To meet the needs of fishery management and fish stock assessment, NEAMAP provides the framework for collection and use of fishery-independent data. This includes coordination of existing programs, development and implementation of new programs where necessary, and dissemination of the collected data. NEAMAP will serve to coordinate fishery-independent data collection and data management among states in the northeast region, as well as between NEAMAP and other existing regional programs (*e.g.*, SEAMAP, ACCSP). The intent of the program is not to change existing programs, but to coordinate and standardize procedures and improve data accessibility.

Goals

The four goals of NEAMAP are:

Goal 1: Cooperatively plan, evaluate, and administer fishery-independent data collection programs, including a state/federal near shore trawl survey and other NEAMAP-sponsored activities.

Goal 2: Establish a coordinated, long-term, fishery-independent data collection program of Atlantic coast living marine resources from Cape Hatteras to Maine for the purpose of resource and habitat assessment and management.

Goal 3: Operate the NEAMAP data management system, for efficient management and timely dissemination of fishery-independent data and information

Goal 4: Establish a comprehensive outreach program, to secure funding and educate constituents on the actions, results, and benefits of the NEAMAP.

Operations

A. NEAMAP Administration

In October 1997, the Atlantic States Marine Fisheries Commission (ASMFC) passed a resolution to develop a cooperative fishery-independent data collection program, in cooperation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). In June 1998, a workshop was held to begin the design and development of such a program. Details were added to the program during workgroup meetings in late 1998 and early 1999. The NEAMAP MOU was approved on March 28, 2003 and provides the framework for implementation of NEAMAP.

Membership: Board membership consists of one representative of each signatory Partner (Maine to North Carolina). Operations Committee members are appointed by their respective agencies and its membership consists of one representative of each signatory Partner. NEAMAP Partner agencies appoint members to NEAMAP Technical Committees (e.g., Trawl Technical Committee). Each committee elects their own Chair and Vice Chairs; Chairs serve two-year terms. At all levels, the NEAMAP is consensus driven.

The ***Board*** serves as the executive-level committee for the program and oversees the design and implementation of NEAMAP, establishes policy to guide program and Partner participation therein, and serves as the final decision-making authority for the program. The Board directs tasks for the various NEAMAP committees via the Operations Committee. The Board meets in person once per year, generally during the ASMFC Annual Meeting or near the end of the year.

The ***Operations Committee*** serves as the vehicle for coordination of Technical Committee input into the NEAMAP and provides recommendations from the Technical Committees and the Operations Committee to the Board. The Operations Committee holds at least one conference call per year to make recommendations for the coming year's Operations Plan, in addition to any other tasks given by the Board.

The ***Technical Committees*** develop recommendations on technical details of individual surveys and other relevant tasks as assigned by the Operations Committee. The Technical Committees (TCs) report directly to the Operations Committee. The NEAMAP TCs do not meet on a regular schedule but only to discuss tasks when they are assigned. Meetings take place via conference call or in person as needed. The current technical committees:

- Data Management Committee: members are appointed by their respective agencies and its membership consists of signatory Partner representatives which have data management experience. Committee deals with coordination of NEAMAP data.
- Trawl Technical Committee: members are appointed by their respective agencies and its membership consists of representatives from signatory Partners which have trawl experience. Committee deals with issues in conducting and coordinating NEAMAP surveys.
- Analytical Committee: comprised of chairs from ASMFC TCs of species which occur in the NEAMAP region. Committee addresses how NEAMAP data can be most useful in stock assessments and to improve understanding of management issues. Committee assists Data Management Committee in specifications of the data management system.

All committees shall reach decisions by consensus, if possible. If consensus is not possible at the committee level, that committee shall identify options and present the benefits and drawbacks of each option. These options and associated recommendations will be forwarded to the NEAMAP Board for review via the Operations Committee and the NEAMAP Board will reach a final decision by vote, with each partner agency casting one vote.

The ASMFC will provide staff support and other administrative functions. Staff will also maintain the website www.neamap.net

B. Data Collection and Data Management

Data collection and data management procedures for individual surveys will be coordinated among participating agencies, in order to enhance the usefulness of the data, minimize costs, and increase the accessibility of information to fishery managers, administrators, and researchers. NEAMAP Technical Committees will review these surveys and programs and make recommendations for their possible integration into the NEAMAP.

NEAMAP will coordinate with current activities such as SEAMAP, and individual data collection programs, to develop optimum resource sampling and assessment capabilities. The NEAMAP Data Management Committee has developed a NEAMAP Data Management Guidance Plan which they will continue to update as the data management system is implemented. Links and query functions will be available on www.neamap.net to access summary data of NEAMAP projects.

C. Activities

NEAMAP projects in the nearshore area are defined as waters bounded by the 6.1m and 18.3m depth contours between Montauk, NY and Cape Hatteras, NC and the 18.3m and 36.6m depth contours in Rhode Island Sound and Block Island Sound; waters of the Gulf of Maine bounded by the New Hampshire/Massachusetts border and the US/Canadian border from the 6m contour to the 12 mile territorial limit, excluding Cobscook Bay; and Massachusetts territorial waters including all of Cape Cod Bay and Nantucket Sound.

NEAMAP Mid-Atlantic/Southern New England Nearshore Trawl Survey

One of the first major efforts of the NEAMAP was to design a bottom trawl survey that would operate in the coastal zone (i.e., between the 6.1 m and 27.4 m depth contours) of the Mid-Atlantic Bight (MAB - i.e., Montauk, New York to Cape Hatteras, North Carolina). The NMFS Northeast Fisheries Science Center's (NEFSC) Bottom Trawl Survey has been sampling from Cape Hatteras to the U.S./Canadian border in waters less than 366 m since 1963 (NEFSC 1998, R. Brown, NMFS, pers. comm.), however areas inshore of the 27.4 m contour have been sampled at lower densities than desired to assess coastal species managed by the ASMFC. In addition, of the six coastal states in the MAB, only New Jersey conducts a fishery-independent trawl survey in its coastal zone (Byrne 2004). The NEAMAP Mid-Atlantic/Southern New England (M-A/SNE) Nearshore Trawl Survey was therefore developed to address this gap in fishery-independent survey coverage, which is consistent with the program goals. In addition to the MAB, the survey also samples the waters between the 18.4 m and 36.6-m depth contours in

Rhode Island Sound and Block Island Sound, per the request of NEFSC to accommodate the potential changes in survey coverage by the Science Center's new survey vessel, FSV *Henry B. Bigelow*. The main objectives of this survey are the estimation of abundance, biomass, length frequency distribution, age-structure, diet composition, and various other assessment-related parameters for fishes and select invertebrates inhabiting the survey area. The survey is a collaborative program conducted on the *F/V Darana R* (commercial vessel owned and operated by Captain James Ruhle of Wanchese, NC) and conducted by the Virginia Institute of Marine Science (VIMS).

Accomplishments:

- In addition to the pilot survey conducted in Fall 2006, full surveys have been successfully completed in fall and spring since Fall 2007.
- During each of these surveys, 150 sites are selected and sampled using a stratified random design (coverage rate of 1:30 nm).
- Survey was successfully peer-reviewed in December 2008. An external peer review protocol was developed for NEAMAP surveys.
- VIMS personnel conduct public demonstrations of survey operations and sample processing during the Spring and Fall surveys.
- NEAMAP personnel participated in an ongoing summer flounder age sample exchange with NEFSC. Expanded to include scup, winter flounder, and black sea bass.
- NEAMAP M-A/SNE Trawl Survey data have been used in weakfish and river herring stock assessments. This survey has also supplied data for assessments of: American lobster, Atlantic croaker, Atlantic sea scallop, Atlantic sturgeon, black sea bass, bluefish, butterfish, river herring, scup, skates (clearnose, little, and winter), spiny dogfish, spot, summer flounder, weakfish, and winter flounder. Additional data requests and uses included supplying data to various groups involved with the Rhode Island Ocean SAMP (Special Area Management Plan) process, and collaborating with approximately eight other scientists/organizations to collect specimens for several projects.

NEAMAP Maine-New Hampshire Inshore Trawl Survey

The NEAMAP Maine-New Hampshire (ME/NH) Inshore Trawl Survey is a resource assessment survey performed along the coastal waters of Maine and New Hampshire. Bi-annual surveys (spring and fall) have been conducted since the fall of 2000. This survey is a collaborative research project using a commercial fishing vessel as the platform. The boat owner, captain, and crew have been actively involved in the design and implementation of this survey.

Accomplishments:

Provided data to ME DMR for Northern shrimp assessment and management, Atlantic herring management, rainbow smelt research, scallop research, wolffish research, and Atlantic halibut. Data was provided to New Hampshire Fish and Game on that portion of the survey.

ME/NH Trawl data were provided to NEFMC technical committees and NMFS personnel for assessments of *Loligo* squid, pollock, red hake, silver hake, goosefish, winter flounder, and river herring. Winter flounder otoliths were digitized for 2009 and 2010 and the age data were provided to NMFS for the Gulf of Maine winter flounder assessment.

Data were provided to the Census of Marine Life's Ocean Biogeographic Information System (OBIS) to update the current data to 2009 and metadata were added. Additional data requests were filled from College of the Atlantic, University of Maine, University of Southern Maine, Penobscot East Resource Center, Gulf of Maine Research Institute, University of New England, Marine Research Institute in Iceland, and other independent researchers.

Massachusetts Division of Marine Fisheries Bottom Trawl Survey

The Massachusetts trawl survey has been conducted every spring and fall since 1978 to monitor distribution, abundance and size composition of fish populations in Massachusetts territorial waters. All species of finfish and select invertebrates are weighed and measured. A subset of species are sampled for sex, maturity and age structures. The survey follows a random stratified (by depth) design with a station density of of approximately 1 station/19 nmi^2. All surveys since 1981 have been conducted aboard the *R/V Gloria Michelle* operated by NOAA Corps officers.

Accomplishments:

6,500 stations accomplished over 34 years.

Survey indices utilized in monitoring stock status on numerous ASMFC and NEFMC managed species.

Survey data important component in Massachusetts' Ocean Management Plan.

Activities for 2012-2016

The NEAMAP Board and Operations Committee have identified certain tasks that must be accomplished to reach the goals of NEAMAP. The following document outlines the identified tasks that should be accomplished over the next five years. Tasks are prioritized within each category in order of importance for completion.

Operations

Task 1: Support continuation of the NEAMAP Nearshore Trawl Surveys.

LEAD COMMITTEE: Board and Operations Committee
APPROACH: Develop options and strategies; discuss coordination with existing programs
TIMING: Ongoing
COST: Administrative budget; Implementation costs
PRIORITY: High

Task 2: Identify and secure long-term stable funding sources.

LEAD COMMITTEE: Board and ISFMP Policy Board
APPROACH: Develop options and strategies; discuss coordination with existing programs
TIMING: Ongoing
COST: Administrative budget
PRIORITY: High

Task 3: Develop coordinated objectives and approaches for outreach and education regarding the NEAMAP program to convey coordination among NEAMAP survey activities.

LEAD COMMITTEE: Operations Committee
APPROACH: Review ongoing outreach efforts by the NEAMAP Nearshore Surveys and develop objectives and approaches for a coordinated message and effort.
TIMING: 2012
COST: Administrative budget
PRIORITY: Medium

Task 4: Develop five-year management plans.
Subtask: Develop annual operations plans and associated budgets.

LEAD COMMITTEE: Operations Committee and Board
APPROACH: Review and approval at Board meeting
TIMING: $4^{th}/1^{st}$ quarter of the transition year; $3^{rd}/4^{th}$ quarter for the annual plans
COST: Administrative budget
PRIORITY: Low

Task 5: Develop protocols and procedures for internal and external program reviews.

LEAD COMMITTEE: Operations Committee
APPROACH: Utilize protocols developed for reviews of NEAMAP M-A/SNE Nearshore Trawl Survey, ME/NH Inshore Trawl Survey and the MA DMF Survey.
TIMING: Ongoing
COST: Administrative budget
PRIORITY: Low

Data Management

Task 1: Inventory data utility and specific questions data should answer for use in stock assessments.

LEAD COMMITTEE: Analytical Committee, Operations Committee
APPROACH: Identify management and assessment questions and associated data required to answer those questions. Analytical Committee to identify data that should be collected for use in stock assessments. Operations Committee to evaluate how well NEAMAP surveys respond to these data needs.
TIMING: 2012
COST: Administrative budget
PRIORITY: High

Task 2: Research and evaluate new technologies for incorporation into the field, laboratory, and analysis components of NEAMAP Trawl Surveys.

LEAD COMMITTEE: NEAMAP Trawl Technical & Data Management Committees
APPROACH: Look to other similar surveys to identify equipment and software that could potentially streamline the collection of existing data types, augment the types and amounts of useful data collected, and/or facilitate the handling and analysis of these data for the NEAMAP Trawl Surveys. Use other sources (e.g., internet, trade shows, etc.) to identify these technologies as well. Evaluate the equipment/software with respect to feasibility of implementation and benefit to the surveys in terms of additional data collected and efficiencies gained. Use documentation developed by other programs as well as contacts within these programs to guide the evaluation process. Acquire and implement the desirable technologies as resources permit.
TIMING: Ongoing
COST: Funds are required for equipment purchase
PRIORITY: High

Task 3: Enhance NEAMAP data management system, including metadata. Provide data in support of research and fisheries management.

LEAD COMMITTEE: Consultant working with Data Management Committee and Analytical Committee
APPROACH: Data Management and Analytical committees develop specifications; system developed through contract. Coordinate with new SEAMAP data management system.
TIMING: 2012 and Ongoing
COST: Contract data programmer
PRIORITY: High

Task 4: Development of a GIS-compatible Trawl Station Database: Use state survey data to make GIS-compatible distribution and abundance maps of several species from existing surveys.

LEAD COMMITTEE: Data Management
APPROACH: Create once trawl data uploaded to database. Build on work by NEAMAP M-A/SNE Nearshore Survey. Follow progress of SEAMAP-related databases.
TIMING:
COST: May need to be developed through contract
PRIORITY: Medium

Task 5: Establish data collection, handling and processing protocols (data entry, editing,

auditing, qa/qc) to ensure quality of data.

LEAD COMMITTEE: Data Management
APPROACH: Compile existing protocols from partners
TIMING: To be developed at same time data is ready to be uploaded to database
COST: Only cost is time expenditure from committee members
PRIORITY: Medium

Coordination and Standardization

Task 1: Identify and recommend how to fill gaps in sampling (expand existing surveys); including temporal gaps in surveys occurring in only spring and fall.

LEAD COMMITTEE: Trawl Survey TC
APPROACH: Communicate with other regional fisheries research programs that are also addressing survey gaps - e.g., trap surveys for sea bass or scup, long line surveys; send NEAMAP representatives to their workshops to assist in planning or consider taking on as new NEAMAP surveys.
TIMING: Ongoing
COST: Travel for NEAMAP representatives to attend external research program workshops
PRIORITY: Medium

Task 2: Develop approaches for research to better understand catchability processes among the various NEAMAP surveys. Recommend approaches for intentional changes in survey operations (research vessels, gear, protocols) that have the potential to change catchability within surveys.

LEAD COMMITTEE: Analytical Technical Committee and Trawl Technical committee
APPROACH: Board to appoint committee; Develop comparison methods; Conduct tows when funding available
TIMING: Ongoing
COST: Administrative budget (Planning); Implementation costs
PRIORITY: Low

Task 3: Promote consistency and compatibility among regional programs
LEAD COMMITTEE: Board and Staff
APPROACH: Coordinate with existing regional fisheries statistics initiatives (SEAMAP, ASMFC Lobster Database, FIN, etc.) to promote consistency and compatibility between the programs. Provide liaison from the NEAMAP to these programs.
TIMING: Ongoing
COST: Administrative budget
PRIORITY: Low

Task 4: Conduct special symposia, including topics on understanding catchability processes (see task above), species identification, subsampling techniques, standardizing data (geometric or arithmetic mean, count zeros or not, effort/CPUE standardization, advances in sampling theory and design, training of survey staff).

LEAD COMMITTEE: Operations Committee
APPROACH: Develop priorities in coordination with Tech Committees
TIMING:

COST:
PRIORITY: Low

Task 5: Investigate potential for regional processing centers for biological samples.

LEAD COMMITTEE: Staff
APPROACH: Coordinate with ongoing activities by other organizations
TIMING: Ongoing
COST: Administrative budget
PRIORITY: Low

Task 6: Develop standards for processing of biological samples (ageing, stomachs, etc).

LEAD COMMITTEE: Operations Committee and Staff
APPROACH: Staff to compile information from other groups; Operations Committee to identify gaps and develop standards as necessary
TIMING: Ongoing
COST: Administrative budget
PRIORITY: Low

Appendix I
Summary of Committee Responsibilities

NEAMAP Board

Operations
Task 1: Support continuation of the NEAMAP Nearshore Trawl Surveys.
Task 2: Identify and secure long term stable funding sources.
Task 4: Develop five-year management plans.

Coordination and Standardization
Task 3: Promote consistency and compatibility among regional programs

Operations Committee

Operations
Task 1: Support continuation of the NEAMAP Nearshore Trawl Surveys.
Task 3: Develop coordinated objectives and approaches for outreach and education regarding the NEAMAP program to convey coordination among NEAMAP survey activities.
Task 4: Develop five-year management plans.
Task 5: Develop protocols and procedures for internal and external program reviews.

Data Management
Task 1: Inventory data utility and specific questions data should answer for use in stock assessments.

Coordination and Standardization
Task 4: Conduct special symposia, including topics on understanding catchability processes, species identification, subsampling techniques, standardizing data (geometric or arithmetic mean, count zeros or not, effort/CPUE standardization, advances in sampling theory and design, training of survey staff).
Task 6: Develop standards for processing of biological samples (ageing, stomachs, etc).

Data Management Technical Committee

Data Management
Task 2: Research and evaluate new technologies for incorporation into the field, laboratory, and analysis components of NEAMAP Trawl Surveys.
Task 3: Enhance NEAMAP data management system, including metadata. Provide data in support of research and fisheries management.
Task 4: Development of a GIS-compatible Trawl Station Database: Use state survey data to make GIS-compatible distribution and abundance maps of several species from existing surveys.
Task 5: Establish data collection, handling and processing protocols (data entry, editing, auditing, qa/qc) to ensure quality of data.

Analytical Technical Committee

Data Management
Task 1: Inventory data utility and specific questions data should answer for use in stock assessments.
Task 3: Enhance NEAMAP data management system, including metadata. Provide data in support of research and fisheries management.

Coordination and Standardization

Task 2: Develop approaches for research to better understand catchability processes among the various NEAMAP surveys. Recommend approaches for intentional changes in survey operations (research vessels, gear, protocols) that have the potential to change catchability within surveys.

Trawl Survey Technical Committee

Data Management

Task 2: Research and evaluate new technologies for incorporation into the field, laboratory, and analysis components of NEAMAP Trawl Surveys.

Coordination and Standardization

Task 1: Identify and recommend how to fill gaps in sampling (expand existing surveys); including temporal gaps in surveys occurring in only spring and fall.

Task 2: Develop approaches for research to better understand catchability processes among the various NEAMAP surveys. Recommend approaches for intentional changes in survey operations (research vessels, gear, protocols) that have the potential to change catchability within surveys.

Staff

Coordination and Standardization

Task 3: Promote consistency and compatibility among regional programs

Task 5: Investigate potential for regional processing centers for biological samples.

Task 6: Develop standards for processing of biological samples (ageing, stomachs, etc).

Appendix II
Goal Specific Tasks

Goal 1: Cooperatively plan, evaluate, and administer fishery-independent data collection programs, including a state/federal near shore trawl survey and other NEAMAP-sponsored activities.

Operations

Task 1: Support continuation of the NEAMAP Nearshore Trawl Surveys.
Task 2: Identify and secure long-term stable funding sources.
Task 4: Develop five-year management plans.
Subtask: Develop annual operations plans and associated budgets.
Task 5: Develop protocols and procedures for internal and external program reviews.

Goal 2: Establish a coordinated, long-term, fishery-independent data collection program of Atlantic coast living marine resources from Cape Hatteras to Maine for the purpose of resource and habitat assessment and management.

Coordination and Standardization

Task 1: Identify and recommend how to fill gaps in sampling (expand existing surveys); including temporal gaps in surveys occurring in only spring and fall.
Task 2: Develop approaches for research to better understand catchability processes among the various NEAMAP surveys. Recommend approaches for intentional changes in survey operations (research vessels, gear, protocols) that have the potential to change catchability within surveys.
Task 3: Promote consistency and compatibility among regional programs
Task 4: Conduct special symposia, including topics on understanding catchability processes (see task above), species identification, subsampling techniques, standardizing data (geometric or arithmetic mean, count zeros or not, effort/CPUE standardization, advances in sampling theory and design, training of survey staff).
Task 5: Investigate potential for regional processing centers for biological samples.
Task 6: Develop standards for processing of biological samples (ageing, stomachs, etc).

Goal 3: Operate the NEAMAP data management system for efficient management and timely dissemination of fishery independent data and information

Data Management

Task 1: Inventory data utility and specific questions data should answer for use in stock assessments.
Task 2: Research and evaluate new technologies for incorporation into the field, laboratory, and analysis components of NEAMAP Trawl Surveys.
Task 3: Enhance NEAMAP data management system, including metadata. Provide data in support of research and fisheries management.
Task 4: Development of a GIS-compatible Trawl Station Database: Use state survey data to make GIS-compatible distribution and abundance maps of several species from existing surveys.
Task 5: Establish data collection, handling and processing protocols (data entry, editing, auditing, qa/qc) to ensure quality of data.

Goal 4: Establish a comprehensive outreach program to secure funding and educate constituents on the actions, results, and benefits of the NEAMAP.

Operations

Task 3: Develop coordinated objectives and approaches for outreach and education regarding the NEAMAP program to convey coordination among NEAMAP survey activities.