

# Atlantic States Marine Fisheries Commission

## NEAMAP Board Meeting

*February 21, 2013*

*1:00 – 4:00 p.m.*

*Alexandria, VA*

### Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome and Introductions (*R. O'Reilly*) 1:00 p.m.
2. Approval of Agenda
3. Approval of Meeting Minutes from February 17, 2012 - **ACTION**
4. Public Comment
5. NEAMAP Survey Reports
  - a. NEAMAP Southern New England/Mid-Atlantic Nearshore Trawl Survey (*C. Bonzek/J. Gartland*) 1:05 p.m.
  - b. Maine-New Hampshire Inshore Trawl Survey (*L. Mercer*) 1:15 p.m.
  - c. Massachusetts DMF Bottom Trawl Survey (*D. Pierce*) 1:25 p.m.
6. Discuss Incorporation of Other Trawl Surveys as part of NEAMAP 1:35 p.m.
7. Reports and Recommendations from NEAMAP Committees 1:55 p.m.
  - a. Data Management (*C. Bonzek*)
  - b. Analytical (*M. Paine*)
  - c. Operations (*J. Gartland*)
8. Review and Approve NEAMAP 2013 Operations Plan 3:10 p.m.
9. Discuss Promotion of NEAMAP Data Use 3:40 p.m.
10. Discuss Potential Funding for NEAMAP 3:50 p.m.
11. Other Business 3:55 p.m.
12. Adjourn 4:00 p.m.

The meeting will be held at the Crowne Plaza Old Town Alexandria  
901 N. Fairfax Street, Alexandria, Virginia, 703.683.6000

**NEAMAP Board Conference Call**  
**Draft Meeting Minutes**  
February 17, 2012  
10:00 a.m. – 12:00 p.m.

Participants:

Rob O'Reilly (Chair)  
Russell Brown  
Mark Gibson  
Katy West  
Stew Michels  
Steve Heins

Staff: Melissa Paine, Pat Campfield

**1. Welcome and Introductions**

R. O'Reilly welcomed everyone to the call, and made a special welcome to R. Brown who is the Deputy Director at the NEFSC and now formally a member of the Board. M. Paine read a roll call of those on the phone.

**2. Approval of Agenda**

The agenda was approved.

**3. Approval of Meeting Minutes from November 9, 2011**

There were no edits suggested and the minutes were approved.

**4. Discuss purpose and structure of NEAMAP Committees**

M. Paine reviewed the revised section of the five-year plan which described the role of the committees as well as how often they were expected to meet. She displayed a current membership list of the various committees and said she will send that around so that Board members can suggest personnel to populate the committees and improve representation from partners.

R. O'Reilly had raised the question at the last Board meeting as to the purpose of the Analytical Committee. This group should provide guidance on data that is most useful for stock assessments and understanding management issues. It was proposed that this group be comprised of chairs of ASMFC technical committees of species in the NEAMAP region. One member asked whether the ASMFC Assessment Science Committee could provide this input instead. The group felt that having species-specific representation by TC chairs would be better for the immediacy of getting dedicated input and greatest utility of data into stock assessments.

R. O'Reilly pointed out that the language for each committee to reach decisions by consensus was redundant and could be stated once to cover all committees.

**5. Discuss 2012-2016 NEAMAP Management Plan**

- a. Edits (track changes in red and yellow highlights)

M. Paine reviewed a couple of other edits in the plan, including language to describe how links and query functions will be available on the NEAMAP.net webpage. She will also follow up with D. Pierce on needed information for the MA DMF Survey to add to the plan.

The group agreed to remove the previous chronological overview of NEAMAP tasks for the first year of the five-year plan.

b. Prioritize activities by subheading for 2012-2016 Activities

The Board supported the new organization of the tasks by subheadings (Operations, Data Management, Coordination and Standardization). They also agreed that each task be given a priority then listed accordingly under each subheading. M. Paine walked the group through all the tasks taken from the previous five-year plan. The group agreed to keep the outreach task, but R. Brown noted that the objectives of the outreach were not clearly defined. He offered to revise the language and share that with the group.

For Task 1 under Data Management, 'Inventory data needs and specific questions data should answer', the group suggested clarifying the real intention of this task. The group added the phrase, 'for use in stock assessments'. One member thought there could be some centralized housing, but each agency would maintain its original data. M. Paine said this relates back to the discussion on the purpose of the Analytical Committee. NEAMAP serves to coordinate the accessibility of data, which could be ultimately housed in one database, but will still be housed independently in each institution. The NEAMAP website can offer at the minimum links to each database. The Analytical Committee should help identify data that should be collected for use in stock assessments.

The group discussed at length two tasks on uploading data into the NEAMAP data management system as well as investigating new technology at sea. They decided to combine these by adopting the task in the 2012 Operations Plan 'Research and evaluate new technologies for incorporation into the field, laboratory, and analysis components of NEAMAP Trawl Surveys'.

K. West suggested changing 'develop' under task 3 under Data Management to 'enhance' since it is already developed.

For the task, 'development of a GIS-compatible database', the group decided to add the language 'Build on work by NEAMAP SNE/M-A Nearshore Survey' as they have already begun this effort.

The group spent some time discussing the tasks under Coordination and Standardization that dealt with comparison tows and coordination of surveys. M. Gibson noted that comparisons are just tools to understand catchability. R. Brown said that NEFSC will be conducting a workshop for survey catchability shortly. M. Gibson said that evaluating catchability, whether there is a change in vessel or other change in the survey, is more important than how one survey compares to another. R. Brown again volunteered to provide some revised text for the task and that revised version is now Task 2 in that subsection.

There was confusion as to the intention of coordinating surveys. M. Gibson said the old intention may have been to have one survey for the whole coast, but that is not the intention and with stock assessments being able to account for differences in surveys, there is no longer the need to coordinate the surveys. The coordination can be done via NEAMAP and members staying apprised of ongoing survey activities. The group decided to remove the tasks dealing with these

recommendations to coordinate surveys in the five-year plan as well as the Operations Plan. They also moved the language on survey personnel to task 1 in the Operations Plan.

They did keep the task dealing with filling gaps in sampling and P. Campfield will provide revised text on communicating with other fishery programs to fill gaps. S. Michels suggested adding specific types of gaps in sampling, e.g., trap, longline surveys, temporal.

There was confusion on the task ‘Review ~~standard sampling protocols for~~ data from alternative surveys for potential use in the NEAMAP process (beach seine surveys, trap surveys, HSC survey, acoustic surveys, arial surveys, plankton surveys, including comparison of survey techniques by region, standard data elements, standard formats and codes, reporting forms)’. This task would be sent out to the Board for clarification, but if the intent is still not understood, the task will be removed.

For the task on conducting special symposia, M. Gibson suggested adding R. Brown’s comments he will provide for catchability. M. Paine will incorporate that once they are written.

c. Discuss moving any activities from the 5-year plan to the 2012 Operations Plan  
The group was comfortable with the changes made to the five year plan and accordingly the Operations Plan. Revisit this via the follow-up tasks for any additions.

- i. Appoint Committee to make recommendations to coordinate existing trawl surveys (from current 2012 Operations Plan)

The group had decided to remove this task as mentioned above.

- d. Keep or remove Appendix I, II

The group wished to keep the appendices, and M. Paine will update these with the revised tasks once the Board finalizes all edits.

## **6. Develop personnel pool for survey help**

- a. Contact information
- b. Timing of surveys

R. O’Reilly suggested that everyone email personnel and survey timing information to M. Paine so that she could populate the list. She asked that this be sent by Feb. 24, or the end of the month so that planning can be done for the upcoming survey season. R. O’Reilly noted this is a trial effort to help with personnel workload.

R. O’Reilly noted that Evan McOmber at VIMS will take part in the NEFSC Spring Survey and R. Brown said the NEFSC will likely send someone on the NEAMAP SNE/M-A Fall Survey. R. Brown added that NEFSC has consistently been sending someone on the MA DMF Survey.

## **7. NEAMAP presentation to Policy Board at the ASMFC Spring Meeting May 2**

M. Paine noted that the last time there was a NEAMAP presentation to the Policy Board, it was given over a year ago by Frank Almeida, who stressed the region wide nature of the program. Previous to that, the Policy Board had heard longer presentations by Chris Bonzek and Jim Gartland on the NEAMAP SNE/M-A Survey results. R. O’Reilly asked Board members to think about what should be presented to the Policy Board at their next meeting to update them on NEAMAP’s progress. R. O’Reilly thought they should discuss overall funding and some line items from the five-year plan. It should not just be a presentation on the distribution and composition of the survey.

## 8. Other Business

There was no other business.

## 9. Adjourn

The group adjourned at noon.

### Follow-up tasks:

#### Planning documents revisions

- Help revise language of task 1 under Data Management in the five year plan ‘Inventory data utility and specific questions data should answer for use in stock assessments’.
  - Should Analytical Committee work on this in 2012? If so, need to add it to the 2012 Operations Plan.
- Assign Operations Committee to start work on the outreach goals? Task 3 under Operations subheading in five-year plan
- Board to review the task: ‘Review ~~standard sampling protocols for~~ data from alternative surveys for potential use in the NEAMAP process (beach seine surveys, trap surveys, HSC survey, acoustic surveys, arial surveys, plankton surveys, including comparison of survey techniques by region, standard data elements, standard formats and codes, reporting forms)’. Please provide revision if you understand the intent here. Otherwise, we will remove this task.
- Pat Campfield to provide language for Task 1 under *Coordination and Standardization* Identify and recommend how to fill gaps in sampling (expand existing surveys).  
Communicate with other fishery research programs to fill survey gaps, e.g., trap, longline surveys, temporal.
- Massachusetts
  - activity summary of the MA DMF Survey, including survey area, accomplishments
  - has the MA DMF Survey been reviewed? If so, add it to task 5 under Operations in the five-year plan
- Suggestions on what to present to the Policy Board May 2 on NEAMAP
- Nominate personnel to serve on NEAMAP committees where needed
- Add personnel to the survey participants pool (**by Feb. 29**)

# NEAMAP Data Management Action Plan - 2013

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## *Introduction*

This document is a preliminary statement of data management goals to be implemented by NEAMAP partners. The document assumes familiarity with the NEAMAP program as defined in the NEAMAP Memorandum of Understanding signed by all member entities of the Atlantic States Marine Fisheries Commission and various other documents which describe the program. These documents can be found at [www.neamap.net](http://www.neamap.net) (maintained by ASMFC).

The purpose of this document is to provide a roadmap for 2013 NEAMAP Data Management Committee activities (as reflected in the NEAMAP Operations Plans and 2012-2016 Management Plan) and to set data management policies and procedures which NEAMAP partners will adopt.

In the context of fishery independent surveys, the umbrella term “Data Management” consists of three separate categories of activities and this plan covers each. These categories are:

- Data Collection
- Data Warehousing and Retrieval
- Data Dissemination

## *Scope*

The following policies and plans are proposed to extend to the four extant large scale fishery independent trawl surveys currently conducted by NEAMAP partners. These are:

- Maine / New Hampshire (ME/NH) survey conducted by the Maine Department of Marine Resources (DMR).
- Massachusetts (MA) Fishery Resource Assessment Trawl Survey conducted by the Massachusetts Division of Marine Fisheries (DMF).
- North East Fisheries Science Center (NEFSC) Bottom Trawl Survey conducted by the National Marine Fisheries Service (NMFS).
- Southern New England / Mid Atlantic (SNE / MA) Near Shore Bottom Trawl Survey conducted by the Virginia Institute of Marine Science (VIMS).

The NEAMAP founding documents envision a program which serves a coordination role for many fishery independent monitoring surveys (estuarine trawl surveys, beach seine surveys, gill net surveys, etc.) in New England and the Mid Atlantic. Significant revisions to this document would be necessary should the scope of NEAMAP coordination broaden to such an extent.

## *Data Collection*

### **Goals**

- It is strongly encouraged that during survey cruises, each survey should collect data electronically. This recommendation includes as much data and as many different data types as possible and practical.
- While levels of staffing, electronics expertise, space, and types/amounts of data collected vary markedly among these surveys, many common data practices and types exist. Sharing of expertise and experiences among survey personnel is also strongly encouraged.

## **Implementation**

The initial step must be for project personnel to share current practices. This could best be accomplished at a workshop during which survey leaders and staff could demonstrate actual hardware and software currently in use. At best, this workshop will include not just the four current NEAMAP surveys but other fishery independent survey personnel as well, perhaps including some from outside the NEAMAP coverage area.

Obstacles to implementing onboard electronic data collection are the cost of hardware and software as well as lack of technical support. Ruggedized/marine-grade (e.g., [IP67](#) / [NEMA 6](#)) hardware can be expensive. Costly customized software products may be required. However, many commercial products are readily available and some surveys already have customized products which they may be able to share. Each survey will necessarily have its own requirements but each survey will be well served with a sharing of practices. On-board data collection systems can be implemented in a stepwise fashion as funds become available. The long term benefits of electronic data capture readily justify the expense. These benefits include, but are not limited to:

- Vastly improved timeliness of availability of cruise data.
- Increased personnel efficiency (e.g., rather than dedicating at least three people to data entry of biological data – one counting/measuring, one recording, and at least one later performing manual data entry – all data entry operations are performed by one biologist in the field).
- Faster processing of collected specimens and therefore the ability to collect more data.
- On-site error-checking.

## *Data Warehousing and Retrieval*

### **Goals**

- For the duration of the current NEAMAP Operations Plan, the Data Management Committee recommends that there should *not* be a single data warehouse for raw data from all surveys which fall under the NEAMAP umbrella. As a long term goal such a strategy may be desirable but is currently impractical due to the large scale of the project and lack of dedicated funds.
- For each NEAMAP trawl survey, data will be independently managed using relational data management software. Preferably Enterprise-level (e.g., Oracle, MS SQL Server) data management system software should be used, though desktop software (e.g., MS Access) may be appropriate in some circumstances.

- Responsible personnel from each NEAMAP partner survey will prepare documentation of current data quality assurance and quality control (QA/QC) and data management procedures (if such documentation does not already exist). These documents will be submitted to the NEAMAP Data Management Committee which will serve as a discussion and information-exchange panel. Such discussions will offer opportunities for each NEAMAP partner to implement new QA/QC procedures adapted from other survey teams.

## **Implementation**

Each survey has implemented strategies and procedures for storage and retrieval of historical and current survey data using modern computerized data management systems. These systems are customized according to the needs of each survey's personnel and to policies set forth by each survey's parent agency. These agencies and surveys are heavily invested in such systems and are likely to continue with present practices for the foreseeable future.

However, each survey would likely benefit greatly from a detailed exchange of information among all the relevant surveys. Therefore the Data Management Committee will serve as an information exchange body for current data warehousing systems. Data Management personnel from each survey will prepare detailed descriptions of their data warehousing systems to include such items as:

- A description of the hardware and software currently in use and how the system is maintained.
- Backup procedures
- Update procedures (new data and data corrections)
- Relational data 'maps' / table relationship diagrams
- Data dictionaries for all data elements
- Data retrieval procedures
- Metadata descriptions

See Appendix I for a *partial* (and outdated!) model of this documentation.

Once Committee members are familiar with one another's data procedures, information exchanges can begin, likely with a conference call as the first step, perhaps followed by an on-site workshop.

As previously stated, it is unlikely that any surveys will make wholesale changes to existing data management systems. However, such information exchanges as described here could well lead to an increased degree of coordination among surveys. For example, it is likely that data structures and data elements among surveys are quite similar so some measure of standardization of table names and relationships and of data field names and coding systems could well be achieved; or at least the structure of a shared database for future implementation could begin to take shape.

## *Data Dissemination*

### **Goals**

- An online open-access data portal for NEAMAP data will be developed. Initial data products to populate the site will be abundance indices as currently calculated by each survey team, presented in shared tabular and graphical formats. Later products will include length-frequency data, age-frequency data, and other common survey-generated data summaries. This portal will be housed at the [www.neamap.net](http://www.neamap.net) website and maintained by the ASMFC NEAMAP Coordinator.



- It is currently recommended to *not* develop an online portal to complete raw data records. The reasons for this recommendation are:
  - The Data Management Committee believes that the probabilities of data misinterpretation and intellectual property infringement, as well as the cost of development, have not been adequately addressed (current efforts by SEAMAP to provide such data should provide a test case).
  - Each survey staff currently deals with requests for such data on a case-by-case basis and such requests are seldom denied.
  - The frequency and magnitude of requests for such data is not so great as to present a burden which could only be handled by online open-access.

This policy should not be interpreted as a disincentive for survey managers to provide online open-access to portions of data, controlled in such a way as to minimize the dangers mentioned above. For example, surveys may wish to provide station-by-station abundance data via a GIS-based interface, but not provide access to enough data for users to download and re-interpret survey abundance indices (e.g., see <http://fluke.vims.edu/fishgis/faovims/index.htm>).

- The data portal at [www.neamap.net](http://www.neamap.net) will include an online data request form for such data for each survey. This gives potential users an easy path to submit such requests and gives survey managers the opportunity to assure proper use and citation (see Appendix II).
- Other information to be made available on the [www.neamap.net](http://www.neamap.net) website should include:
  - Background, descriptions and documents for the NEAMAP program, committee structure, and activities.
  - Links to each survey's home web site, survey contacts, and to data download sites housed and maintained by each survey directly.
  - Downloadable copies of project reports for each survey.
  - Copies of meeting minutes for all NEAMAP committees.
  - Generalized data request form and disclaimer.
  - Suggested Citation language.
  - Example assessment reports where NEAMAP data was used, documents/reports that demonstrate usability.

## Implementation

Development of an online portal to survey indices should be relatively straightforward and can be accomplished in a timely fashion (CY 2013). A possible model to begin development is that which is in use by NEAMAP SNE/M.A. at [http://www.vims.edu/research/departments/fisheries/programs/multispecies\\_fisheries\\_research/abundance\\_indices/NEAMAP/index.php](http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/abundance_indices/NEAMAP/index.php) (abundance index pages presented here are developed in MS Excel and then simply "Saved As" web pages in ".htm" format directly onto a web server). The Excel files themselves are also made available for direct download. Users will have to 'sign' an acknowledgement that they understand the proper use and intellectual property rules governing the data that they download from the site. See Appendix III for a model (borrowed from SEAMAP) acknowledgement document.

ASMFC staff time has already been committed to this task. Initial development will be an iterative

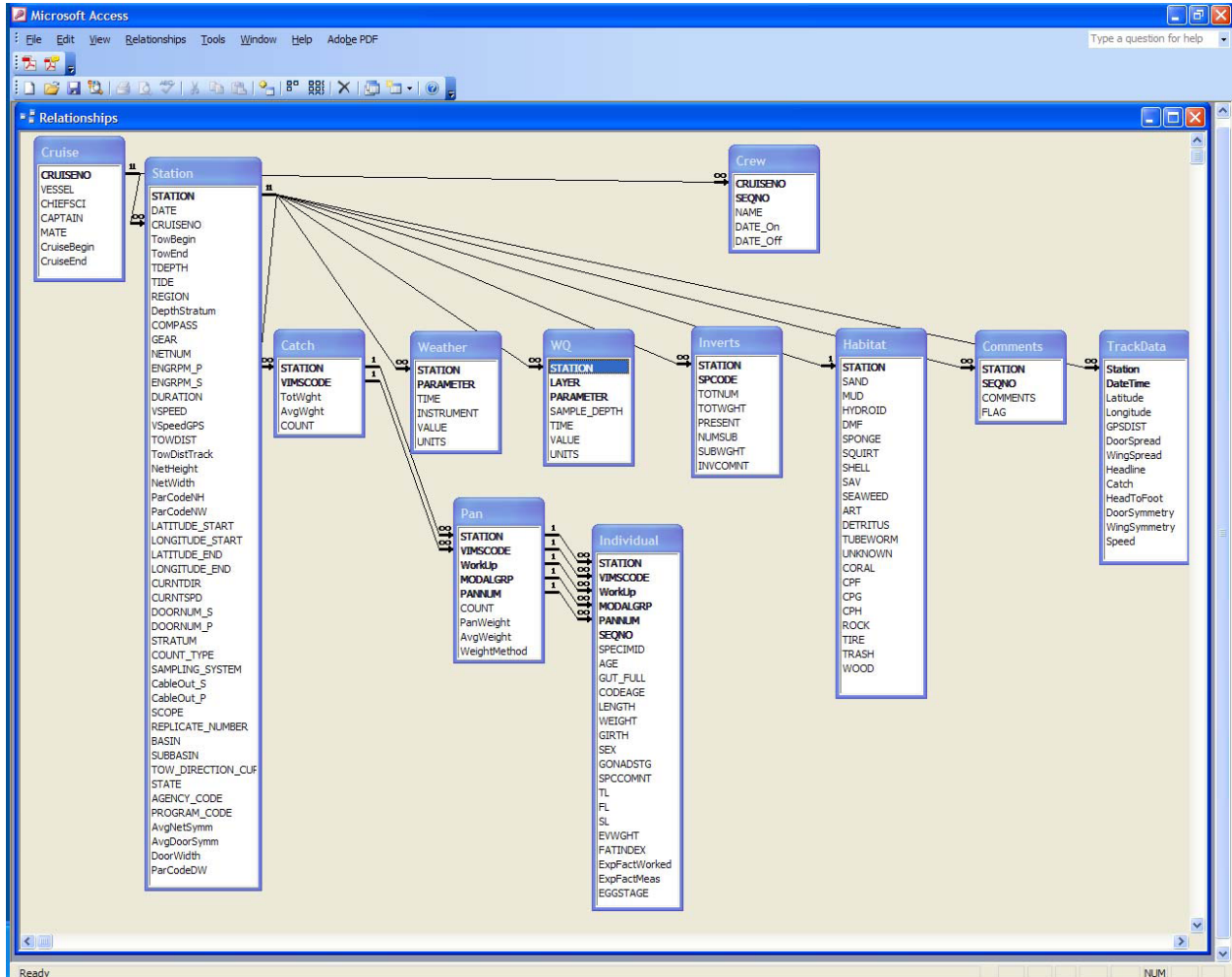
process among staff and Committee members. Once active, this data portal must be well advertised in Commission publications and at Commission hearings and meetings.

All data presented must be well documented with survey metadata to include descriptions of survey procedures, unusual events (e.g., uncommon weather, unusual survey timing) during particular research cruises, as well as detailed descriptions of how the abundance indices are calculated. These must be in language appropriate both for sophisticated analysts and the general public (Appendix IV presents language describing calculation of abundance indices and other data summaries appropriate for analysts, but not for the general public).

# Appendix I

## Data Scheme

Table contents and relationships defined in the MS Access data base housing data from the NEAMAP Near Shore Trawl Survey.



## Metadata

Users should be supplied with sufficient metadata to interpret particular data sets. Metadata should include all significant deviations to sampling protocols, including:

- Gear changes
- Major weather events
- Vessel changes or major repairs to vessels
- Personnel issues that may have affected sampling
- All protocol changes (# stations, expansion/contraction of sampling range, etc.)
- Any problems that may have caused corrections to data

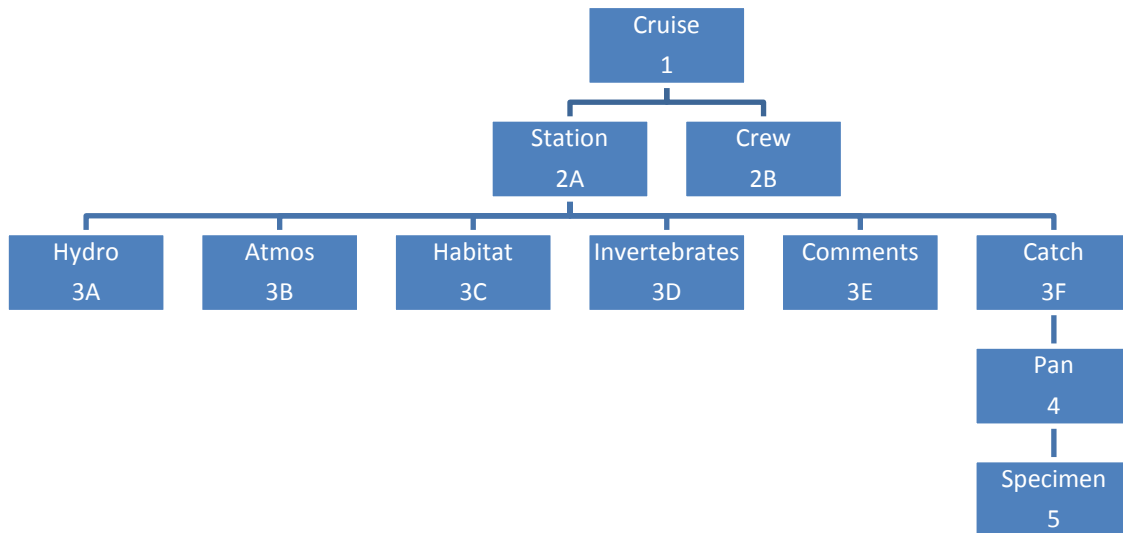
- A brief history of each project (one pager) should be made available to users. This would guard against loss of corporate knowledge due to loss of key personnel

Metadata should be available on-demand on the main query screen, by state/data set. Metadata also should be available for printing, downloading, and/or emailing to users.

To help insure that users have access to metadata, users should be required to “sign-in” to the system with name, affiliation, and email address, and a check box to denote that users have access to metadata associated to data requested before data is retrieved. The system also should maintain a list of users that have “signed” and not show metadata for subsequent requests.

## Data Elements Dictionary

Figure X. Hierarchical order of the LDCE data base used by the NEAMAP Nearshore Trawl Survey, with data level name and numerical identifier.



Data elements included in each LDCE data type. Elements needed to understand the data format

Data Level	Level Name	Number of Records	Key Field	Field Name	Type - Size	Format
1	Cruise	One per Cruise				
			*	Cruise	Char - 8	NMYYYMM01
				Date Begin	Char - 8	YYYYMMDD
				Time Begin	Char - 4	HHMM
				Date End	Char - 8	YYYYMMDD
				Time End	Char - 4	HHMM
				Vessel	Char - 2	xx
				Chief Scientist	Char - 12	xxxxxxxxxxxx
				Captain	Char - 12	xxxxxxxxxxxx
				Mate	Char - 12	xxxxxxxxxxxx
				Database Name	Char - 8	NMYYYM
2A	Station	One per Station (150 per cruise)	*	Cruise	auto	
			*	Station	Num - 6	1-150
				Water Body	Char - 2	AT (Atlantic)
				Station Date	Char - 8	YYYYMMDD
				Latitude Begin	Num - 7	DDMM.MM

				Longitude Begin	Num - 7	DDMM.MM
				Depth	Num - 6	(ft)
				Tow Dir. Rel. to Current	Num - 1	(with, ag., oblique)
				Time Begin	Char - 4	HHMM
				Region ID	Char - 2	01-15, BI, RI
				Depth Stratum	Char - 2	01 - 04
				Compass Course	Num - 3	1-360
				Gear Code	Num - 3	453
				Net Number	Char - 3	Gxx
				Latitude End	Num - 7	DDMM.MM
				Longitude End	Num - 7	DDMM.MM
				Port RPMs	Num - 4	xxxx
				Starboard RPMs	Num - 4	xxxx
				Tow Duration	Num - 5	0-20
				Remarks	Num - 4	Workup Code
				Station Type	Char - 1	R (random)
				Port Warp	Num - 4	(fathoms)
				Starboard Warp	Num - 4	(fathoms)
				Vessel Speed	Num - 6	(knots)
				Port Door Number	Char - 4	(serial num.)
				Starboard Door Number	Char - 4	(serial num.)
2B	Crew	One per person per leg (up to ~20 per cruise)	*	Cruise	auto	
			*	Sequence Number	auto	
				Crew Member Name	Char - 12	xxxxxxxxxxxx
				Date Embarked	Char - 8	YYYYMMDD
				Date Disembarked	Char - 8	YYYYMMDD
3A	Hydro	Two per Station (S & B)	*	Cruise	auto	
			*	Station	auto	
			*	Sequence Number	auto	
				Level	Char - 1	Surface or Bottom
				Sample Depth	Num - 5	xxxx.x
				Param. Code Temp	Char - 2	Device Code
				Temperature	Num - 5	xx.xx
				Param. Code Salinity	Char - 2	Device Code
				Salinity	Num - 5	xx.xx
				Param. Code D.O.	Char - 2	Device Code
				Dissolved Oxygen	Num - 5	xx.xx
				Diss. Oxygen Pct. Sat.	Num - 6	xxx.xx
				Param. Code pH	Char - 2	Device Code
				pH	Num - 5	xx.xx
				Time	Char - 4	HHMM
3B	Atmos	One per Station	*	Cruise	auto	
			*	Station	auto	
			*	Sequence Number	auto	
				Param. Code Wind	Char - 2	Device Code
				Wind Speed	Num - 4	xx.x (knots)
				Wind Direction	Num - 3	xxx (compass deg.)
				Param. Code Air Temp	Char - 2	Device Code
				Air Temp	Num - 5	xx.xx (Deg. C)
				Param. Code Humidity	Char - 2	Device Code
				Relative Humidity	Num - 6	xxx.xx (percent)
				Param. Code Baro. Pressure	Char - 2	Device Code
				Barometric Pressure	Num - 7	xxxx.xx (millibars)
				Weather Code	Num - 1	x
				Param. Code Seastate	Char - 2	Device Code
				Seastate Code	Num - 1	x
				Time	Char - 4	HHMM
3C	Habitat	Zero or one per Station	*	Cruise	auto	
			*	Station	auto	
			*	Sequence Number	auto	

				Artificial	Num - 4	0.1 - xxxx
				Coral	Num - 4	0.1 - xxxx
				Pot (Fishing)	Num - 4	0.1 - xxxx
				Pot (Ghost)	Num - 4	0.1 - xxxx
				Pot (Habitat)	Num - 4	0.1 - xxxx
				Dead Mans Fingers	Num - 4	0.1 - xxxx
				Detritus	Num - 4	0.1 - xxxx
				Hydroids	Num - 4	0.1 - xxxx
				Mud	Num - 4	0.1 - xxxx
				Rocks	Num - 4	0.1 - xxxx
				Sand	Num - 4	0.1 - xxxx
				Sea Squirts	Num - 4	0.1 - xxxx
				Seaweed	Num - 4	0.1 - xxxx
				Shell	Num - 4	0.1 - xxxx
				Sponge	Num - 4	0.1 - xxxx
				S.A.V.	Num - 4	0.1 - xxxx
				Tire	Num - 4	0.1 - xxxx
				Trash	Num - 4	0.1 - xxxx
				Tube Worms	Num - 4	0.1 - xxxx
				Unknown	Num - 4	0.1 - xxxx
				Wood	Num - 4	0.1 - xxxx
				Other 1	Char - 7	Code+0.1-xxxx
				Other 2	Char - 7	Code+0.1-xxxx
				Other 3	Char - 7	Code+0.1-xxxx
				Other 4	Char - 7	Code+0.1-xxxx
				Comment	Char - 46	xxxxx...
3D	Invertebrates	Zero to several per Station	*	Cruise	auto	
			*	Station	auto	
			*	Species Code	Char - 4	xxxx
				Present	Num - 1	0
				Total Number	Num - 6	xxxxxx
				Total Weight (or Volume)	Num - 8	xxxxxx.x
				Comment	Char - 45	
3E	Comments	Zero to several per Station	*	Cruise	auto	
			*	Station	auto	
			*	Sequence Number	auto	
				Comment	Char - 70	xxxx...
3F	Catch	Zero to many per Station (one per Species)	*	Cruise	auto	
			*	Station	auto	
			*	Species Code	Char - 4	0001-9999
				Total Number	not entered	calculated later
				Total Weight	not entered	calculated later
				Num Subsampled	not entered	calculated later
				Weight Subsampled	not entered	calculated later
				Number Measured	not entered	calculated later
				Weight of Measured Fish	not entered	calculated later
4	Pan	1 to several per Catch record	*	Cruise	auto	
			*	Station	auto	
			*	Species Code	auto	
			*	Pan Number	Num - 6	see Note 1
				Total Number	Num - 7	see Note 2
				Total Weight	Num - 7	see Note 2
			Note 1:	This field contains up to 3 different data elements. It separates full workup' fish from those subjected only to gross weights and individual measurements; it separates fish into station-specific modal size groups; it identifies the individual entering data for this group of fish.		
			Note 2:	Typically these fields are calculated during post-cruise processing. For groups of fish that are processed using one		

				of the sub-sampling procedures, data are entered here using a specially designated Pan Number.		
5	Specimen	1 to many per Pan record	*	Cruise	auto	
			*	Station	auto	
			*	Species Code	auto	
			*	Pan Number	auto	
			*	Sequence Number	auto	
				Specimen Lab ID Number	Num - 8	xxxxxxxx
				Length	Num - 4	xxxx (mm)
				Weight	Num - 7	xxx.xxx (kg)
				Sex	Char - 2	x (F, M, U)
				Gonad Stage	Char - 2	x (A, B, C, D)
				Gut Status	Char - 1	x (F, E)
				Eviscerated Weight	Num - 7	xxx.xxx (kg)
				Comments	Char - 30	xxxx...
				(the following fields are not typically used)		
				Girth	Num - 5	xxx.x (mm)
				Total Length	Num - 4	xxxx (mm)
				Fork Length	Num - 4	xxxx (mm)
				Standard Length	Num - 4	xxxx (mm)
				Gonad Weight	Num - 7	xxx.xxx (kg)

## Appendix II

### Data Access Request Form

---

First Name

Last Name

**Submission Date**

**Affiliation**

Address

**Suite**

City

State

Zip Code

**Phone #**

**Fax #**

Email Address

Interest

Check box: I have obtained a copy of the Intellectual Property Protocol and agree to its terms



## Appendix III

### INTELLECTUAL PROPERTY PROTOCOL

#### Northeast Area Monitoring and Assessment Program (NEAMAP)

##### I. PURPOSE

The purposes of developing an Intellectual Property Protocol are to:

1. Promote professional courtesy when using NEAMAP data.
2. Enable NEAMAP to have priority use of its own data.
3. Enable NEAMAP to recover costs of processing requests for its data.
4. Ensure acknowledgment of NEAMAP when using its data.
5. Provide a procedure through which requests for NEAMAP data are processed.

##### II. INTRODUCTION

The Northeast Area Monitoring and Assessment Program (NEAMAP) is a cooperative state/federal fisheries independent research and data collection program implemented between the Gulf of Maine and Cape Hatteras, NC. The program is intended to maximize the effective capability of fishery independent survey activities and maximize the usefulness of data collected by such surveys, through cooperative planning, innovative uses of statistical theory and design, and consolidation of appropriate data into a useful data management system. The overall approach of NEAMAP emphasizes the collection of fishery independent data to fill specific short-term and long-term management needs. The guidelines for the release of data for non-NEAMAP use are described within this policy.

##### III. GUIDELINES

Data will be available for non-NEAMAP use under the following guidelines:

1. The requester must attest that they have read this policy and agree to its guidelines.
2. Each published use of the data must acknowledge NEAMAP as the source of the data and that any analyses and conclusions resulting from the non-NEAMAP use of this data are not necessarily those of NEAMAP.
3. Data are to be used only by the requester and are not to be distributed to other users.
4. All requesters will reimburse NEAMAP (through the Atlantic States Marine Fisheries Commission (ASMFC)) for the cost of processing their request. These costs may include, but are not limited to, personnel time, computer and media charges. These fees may be waived at the discretion of the Science Director at ASMFC.
5. Priority for use of data is given to NEAMAP-affiliated institutions.
6. All requests for data should be directed to the applicable program lead, or the NEAMAP coordinator at ASMFC.
7. Violation of these guidelines constitutes justification for denial of future requests.

##### IV. IMPLEMENTATION

1. The person contacted for information (applicable program lead or the NEAMAP coordinator at ASMFC) will explain the data release policy and help the requester define the request.
2. The NEAMAP coordinator at ASMFC will assist the data requester in obtaining a copy of the intellectual property protocol and a statement to be signed by the requester acknowledging the conditions of the release.

3. The program lead will review the data request. The requester will be notified in writing if the request is denied.
4. Detailed data will only be available upon completion of all internal quality control measures (data verified as correct and complete).
5. The output will be forwarded to the program lead or the biologist who collected the data to verify the correctness of the output. If the output is correct, the processor will forward the output to the requester with an explanatory letter. If the output is incorrect, the biologist will contact the processor who will make the needed corrections. The NEAMAP coordinator will be copied on the correspondence for the final data transmittal to the requester.

## Appendix IV

**Abundance Indices:** Catch data from fishery-independent trawl surveys tend not to be normally distributed. Preliminary analyses of NEAMAP data showed that, at least for some species, these data followed a log-normal distribution. As a result, VIMS proposed and the NEAMAP peer review panel approved the **stratified geometric mean of catch per standard area swept** as an appropriate form for the abundance indices generated by this survey. These indices are presented for each species **by survey cruise**.

For a given species, its abundance index for a particular survey cruise is given by:

$$\hat{N} = \exp\left(\sum_{s=1}^{n_s} \hat{A}_s \hat{N}_s\right) \quad (1),$$

where  $n_s$  is the total number of strata in which the species was captured,  $\hat{A}_s$  is an estimate of the proportion of the total survey area in stratum  $s$ , and  $\hat{N}_s$  is an estimate of the  $\log_e$  transformed mean catch (number or biomass) of the species per standard area swept in stratum  $s$  during that cruise. The latter term is calculated using:

$$\hat{N}_s = \frac{\sum_{t=1}^{n_{t,s}} \log_e\left(\frac{c_{t,s}}{\hat{a}_{t,s}/25000}\right)}{n_{t,s}} \quad (2),$$

where  $\hat{a}_{t,s}$  is an estimate of the area swept by the trawl (generated from wing spread and tow track data) during tow  $t$  in stratum  $s$ , 25,000 m<sup>2</sup> is the approximate area swept on a typical tow (making the quantity  $[\hat{a}_{t,s}/25000]$  approximately 1),  $n_{t,s}$  is the number of tows  $t$  in stratum  $s$  that produced the species of interest, and  $c_{t,s}$  is the catch of the species from tow  $t$  in stratum  $s$ .

Further analyses to determine the distribution of catch data on a species-by-species basis will be completed as more data are accumulated. While abundance indices on this website are presented overall by survey cruise, it is possible to generate these indices for particular sub-areas, by sex, etc. We are also currently evaluating several methods for the computation of age-specific indices, and the results of these investigations will be included in future reports.

**Length-Frequency:** Length-frequency histograms were constructed for each species **by survey cruise** using 1 cm length bins. These were identified using bin midpoints (e.g., a 25 cm bin represented individuals ranging from 24.5 cm to 25.4 cm in length). Although these histograms are presented by survey cruise, the generation of length-frequency distributions by year, sex, sub-area, overall, and a number of other variables, is possible.

For this and several other stock parameters, data from specimens taken as a subsample (either for full processing or in the event of a large catch) were expanded to the entire sample (i.e., catch-level) for parameter estimation. Because of the potential for differential rates of subsampling among size groups of a given species, failure to account for such factors would bias resulting parameter estimates. In the NEAMAP database, each specimen was assigned a calculated expansion factor, which indicated the number of fish that the individual represented in the total sample for the station in which the animal was collected.

**Sex Ratios:** Sex ratios were generated **by length group** for each of the Priority ‘A’, ‘B’, and ‘C’ species presented in this report, as well as for the Priority ‘E’ invertebrates. Either 2.5 cm or 5 cm length bins were used, depending on the size range of the species. These ratios were calculated by expanding the data from specimens taken for full processing (or individual measurement in the case of the invertebrates) to the catch-level and summing the result by sex for each length group, across all sites sampled. These sex ratios were constructed using data collected during each of the four full-scale surveys, under the assumption that the same population(s) was(were) being sampled across cruises for a given species. While sex ratios in this report are presented by length, it would be possible to produce these ratios overall, by sub-area, by year, by cruise, etc.

**Age-Structure:** Age-frequency histograms were generated **by cruise** for each of the Priority ‘A’, ‘B’, and ‘C’ species for which age data are currently available (i.e., processing, reading, and age assignment has been completed). These distributions were constructed by scaling the age data from specimens taken for full processing to the catch level, using the expansion factors described above. Again, while the age data are presented by survey cruise, the generation of these age-structures by year, sex, sub-area, overall, and a number of other variables (or a combination of these variables), is possible.

**Diet Composition:** It is well known that fishes distribute in temporally and spatially varying aggregations. The biological and ecological characteristics of a particular fish species collected by fishery-independent or -dependent activities inevitably reflect this underlying spatio-temporal structure. Intuitively, it follows then that the diets (and other biological parameters) of individuals captured by a single gear deployment (e.g., NEAMAP tow) will be more similar to one another than to the diets of individuals captured at a different time or location (Bogstad *et al.* 1995).

Under this assumption, the diet index percent by weight for a given species can be represented as a cluster sampling estimator since, as implied above, trawl collections essentially yield a cluster (or clusters if multiple size groups are sampled) of the species at each sampling site. The equation is given by (Bogstad *et al.* 1995, Buckel *et al.* 1999):

$$\%W_k = \frac{\sum_{i=1}^n M_i q_{ik}}{\sum_{i=1}^n M_i} * 100 \quad (3),$$

where

$$q_{ik} = \frac{w_{ik}}{w_i}, \quad (4),$$

and where  $n$  is the total number of clusters collected of the fish species of interest,  $M_i$  is the number of that species collected in cluster  $i$ ,  $w_i$  is the total weight of all prey items encountered in the stomachs of the fish collected and processed from cluster  $i$ , and  $w_{ik}$  is the total weight of prey type  $k$  in these stomachs.

This estimator was used to calculate the diet compositions of the NEAMAP Priority ‘A’, ‘B’, and ‘C’ species (for those where diet data are currently available). Again, while these **diets reflect a combination of data collected from the four full-scale survey cruises**, presentations of diet by sub-area, year, cruise, size, age, etc., are possible. Furthermore, the **percent weight index** is presented here since it is normally the index of greatest interest in ecosystem modeling efforts, but the estimation of diet using percent number, percent frequency of occurrence, and percent index of relative importance is also possible using NEAMAP data.

# NEAMAP Operations Committee

## *Summary of Recommendations & Actions Resulting From Conference Call – January 2013*

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### *Recommendations to NEAMAP Board*

- **Explore opportunities for the acquisition of funds to support: re-establishment of survey personnel exchanges, efforts to characterize changes in relative catchability for the NEAMAP surveys (as needed), acquisition of equipment that can be used among the program surveys and partner agencies.**
  - While the securing of long-term funding for the trawl surveys remains top priority, the Operations Committee felt that these items may be more attainable in the near-term.
- Charge the Trawl Technical Committee with the **exploration and evaluation of technologies that would either increase or streamline data collection efforts (e.g., underwater cameras, current meters, bottom mapping equipment, etc.).**
  - This committee would need to draw upon its own expertise, as well as data recommendations from the Analytical Committee, for this endeavor. Further, because technologies are always evolving and new ones emerging, this would be an ongoing effort for this group. While it is recognized that the Data Management Committee has made progress in this area with respect to automated catch data collection equipment, many other fields remain unexplored, creating opportunities for the Trawl Technical Committee.
- Establish policy for NEAMAP surveys, both current and future additions, to **strive to collect data beyond weight and length, such as sex, maturity, diet, age, etc., for species of management interest.**
  - It is recognized that resource limitations can hamper efforts to collect these data, and as such should not be grounds for exclusion of a survey from the NEAMAP. Given the importance of these data in management efforts, however, the program stands to benefit by establishing the collection of these data as an explicit goal, and striving to acquire these data when possible.
- **Task the Trawl Technical committee with developing standards for maturity stage determination for use by the NEAMAP surveys.**
  - Maturity determination tends to be one of the more subjective variables collected by the surveys, and the program would benefit by some sort of standardization. These efforts could occur in conjunction with the NEFSC Bottom Trawl Survey, which

has conducted extensive work on this topic, and could culminate in a workshop designed to standardize maturity classification.

- Direct the Analytical & Trawl Technical Committees **to begin to explore gaps in survey coverage (spatial, temporal, species-specific, etc.) and identify new or existing surveys that could be used to fill these gaps.**
  - Perhaps request a list of candidate surveys by late 2013/early 2014 for evaluation by the Board. Upon identifying a suitable candidate(s), direct the Trawl Technical Committee to begin design work for these efforts. Although funding is likely to be unattainable in the near future, having these surveys designed and “on-the-shelf” would be beneficial for the program, particularly in the event that funding opportunities arise. Such was the process by which the Mid-Atlantic/Southern New England Nearshore Trawl Survey was established.
- Initiate steps to develop policy and guiding documents for NEAMAP with regard to **quantifying within-survey changes in relative catchability.**
  - This could include encouraging/directing participation, either of Trawl Technical committee members and/or survey staff, in any upcoming catchability workshops hosted by the NEFSC, as well as directing Trawl Technical (perhaps in conjunction with Operations) to explore and document current accepted approaches and methods for quantifying changes in relative catchability.
- Direct the Analytical Committee to **conduct periodic reviews of stock assessment needs and NEAMAP data availability relative to these needs.**
  - Stock assessment approaches are not static, and as such the data requirements to support these assessments change from time-to-time. By periodically conducting a review of assessment needs versus data availability, the Analytical Committee can position the NEAMAP to maximize its contributions to the process.
- Endorse ideas put forth by the NEAMAP Analytical and Operations Committees regarding the **attendance of those familiar with the NEAMAP datasets at assessment data workshops**, including those conducted by the ASMFC and NMFS.
  - Such an approach will allow questions regarding the data to be answered immediately, and will give NEAMAP surveys a better understanding of the ways in which their data are incorporated, reasons data were not used when those instances arise, and the potential to uncover future data needs.

### *Actions for Operations Committee*

- **Update the pool of survey staff and add this listing to the neamap.net website.**
  - This effort will serve as a useful tool for survey managers who find themselves “in a pinch”, and will likely increase in value as the NEAMAP grows to include additional surveys.
- **Initiate efforts to generate coordinated outreach through presentations of the accomplishments of the NEAMAP surveys.**
  - This will begin with more detailed reports of survey results and notable findings to the ISMFP Policy Board during the annual NEAMAP update. Depending on the response and level of interest of the NEAMAP committees, this effort has the potential to expand into other venues.
- **Update inventory of fishery-independent survey efforts occurring from Maine to North Carolina (i.e., NEAMAP area).**
  - This will provide a clearer picture of current monitoring efforts, a means by which to identify additional existing surveys that could be included in the NEAMAP, and the opportunity to uncover gaps in survey coverage.
- **Create a location on the neamap.net website that will provide schedules & timelines for upcoming stock assessments, both at the ASMFC & NMFS.**
  - Such a site will enable survey staff to prioritize sample processing and explore potential new venues for inclusion of their data.
- **Identify, through the use of the ASMFC Research Priorities document and Stock Assessment reports, areas where a modest expansion of collection effort on the current surveys would serve to address these data needs.**
  - The committee agreed that this should be an ongoing effort so as to maximize the usefulness and relevance of the NEAMAP surveys.
- **Establish liaison with SEAMAP for the Operations Committee.**
  - This would facilitate the flow of information and ideas between the two programs. While the advantage of such an arrangement is obvious when evaluating issues related to species that migrate past Cape Hatteras, NC, both programs would also stand to benefit from shared experience with broader issues, such as funding, coordination, data collection and access, etc. Perhaps the liaisons could be the chairs of the respective committees, so as to have a single point of contact and a periodic rotation of the duty. This was not recommended for the Trawl Technical, Data Management, Analytical Committees or NEAMAP Board since each have members that participate in both NEAMAP & SEAMAP groups.

# Draft 2013 Operations Plan

## Northeast Area Monitoring and Assessment Program (NEAMAP)

- **Highlights in green are new additions as recommended by the Operations and Data Management Committees**
- **Highlights in yellow are new additions as recommended by the Operations Committee, modeled from tasks in the 2012-2016 NEAMAP Management Plan.**



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**2013 Operations Plan for the  
Northeast Area Monitoring and Assessment Program  
(NEAMAP)**

**January 1, 2013 to December 31, 2013**

## **I. INTRODUCTION**

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

This Operations Plan outlines the tasks to be conducted during 2013 to further develop and implement the NEAMAP.

## **II. 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 data collected. NEAMAP will serve to coordinate fishery-independent data collection and data management activities among the states and federal Partners in the Northeast and mid-Atlantic regions, as well as between NEAMAP and other existing regional initiatives (e.g., SEAMAP, FIN). The intent of the program is not to change existing programs, but to coordinate and standardize procedures and improve data accessibility.

The NEAMAP Goals and Objectives are included in Appendix A.

## **III. OPERATIONS**

### **A. *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 build on, and coordinate with, current activities such as SEAMAP and individual data collection programs, to develop optimum resource sampling and assessment capabilities.

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.

**B. NEAMAP Administration**

At all levels, the NEAMAP is consensus driven. The NEAMAP Board will serve as the executive level committee for the program. The Board will oversee the design and implementation of the NEAMAP, establish policy to guide program and partner participation, and serve as the final decision making authority for the program.

Technical Committees will be assigned to develop technical details of individual surveys and perform relevant tasks assigned by the NEAMAP Board. The Technical Committees will report directly to the Board. Existing Atlantic States Marine Fisheries Commission (ASMFC) Species Advisory Panels and the Commission Advisory Board (or a combination of both, depending on the issue) will be utilized to obtain industry input into the development and implementation of the NEAMAP.

The NEAMAP Board will be comprised of one representative from each partner agency. Technical Committee members will be assigned by their respective Board members. Each committee will elect a chair and vice-chair to oversee the committee actions. The chair will serve a two-year term. At the conclusion of the chair's two-year term, the vice-chair will become chair and the committee will elect a new vice-chair.

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

The ASMFC will provide staff support and other administrative functions.

**IV. NEAMAP GOALS**

The following tasks are required to develop and implement the NEAMAP during 2013.

**Administrative Goals**

**Task 1:** *Support Continuation of the NEAMAP Nearshore Trawl Surveys*  
(Goal 1)

**Objective:** Support continuation of the NEAMAP Nearshore Trawl Surveys through coordination with Principal Investigators and all NEAMAP Committees as needed. Develop options and strategies using planning documents as guidance. Discuss coordination ~~amongst current NEAMAP partners and other with~~ existing programs. ~~Continue to D~~document budget needs of each NEAMAP project. ~~Develop-Maintain~~ pool of staff to assist in surveys as needed between surveys and ~~post this list on the NEAMAP website.~~

**Team Members:** NEAMAP Board and Committees

**Resources:** Administrative planning budget needed; Implementation costs.

**Schedule:** *Ongoing 2013*

**Task 2: Identify and Secure Additional Program Funding**

(Goal 1, Objective 2)

Objective: To identify and evaluate potential funding sources to implement the NEAMAP Program Design. Continue to secure funding for the NEAMAP program. Identify sources for equipment funds to be shared amongst NEAMAP partners. Identify funds to assist surveys in gear characterization work, as well as efforts to characterize gear performance and quantify changes in relative catchability. Explore opportunities for acquiring funds to re-establish survey personnel exchanges.

Team Members: NEAMAP Board and ISFMP Policy Board

Resources: Conference call funds may be required to develop these issues.

Schedule: *Compile and Discuss Additional Funding Sources (Ongoing in 2013)*

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

(Goal 4)

Objective: Review ongoing outreach efforts by the NEAMAP Nearshore Surveys and continue to develop objectives and approaches for a coordinated message and effort. Expand presentation of NEAMAP activities to the Policy Board.

Team Members: NEAMAP Researchers and Staff

Resources: Funds may be required for travel.

Schedule: *Ongoing 2013*

**Task 4: Develop 2014 Operations Plan**

(Goal 1, Objective 1)

Objective: Develop 2014 NEAMAP Operations Plan, utilizing the NEAMAP 2012-2016 Management Plan, Technical Committee recommendations, and other directions from the Operations Committee and the NEAMAP Board.

Team Members: NEAMAP Board, Operations Committee, and Staff

Resources: No additional funds required.

Schedule: *Draft Operations Plan (Fall 2013/Winter 2014)  
NEAMAP Board Approval (Winter 2013/2014)*

**Task 5: Maintain Website**

(Goal 3, Objective 1)

Objective: Maintain website to provide background information on NEAMAP. Include summary data (e.g., abundance indices, length frequencies, age-length matrices) on the NEAMAP website. Add information regarding the survey staff pool and

**assessment scheduling.**

Team Members: NEAMAP Data Management Committee and Staff

Resources: No additional funds required.

Schedule: *Ongoing 2013*

**Data Collection Goals**

**Task 6:** *Research and evaluate new technologies for incorporation into the field, laboratory, & analysis components of NEAMAP Trawl Surveys.*  
(Goal 2)

**Objective:** Explore and evaluate technologies that would either increase or streamline data collection efforts (e.g., underwater cameras, current meters, bottom mapping equipment, etc.). Look to other similar surveys to identify equipment and software that could potentially streamline the collection of existing data types, augment the types & 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.

Team Members: NEAMAP Trawl Technical & Data Management Committees

Resources: Funds are required for equipment purchase.

Schedule: *Ongoing 2013*

**Task 7:** *Work to coordinate, and in some cases standardize, data collection approaches for those parameters which are of interest to multiple surveys (e.g., type of length measurements taken for a given species, type of ageing structures collected, etc.), and/or are somewhat subjective in their classification (e.g., maturity stage determination).*

**Objective:** Task the Trawl Technical committee with developing standards for maturity stage determination for use by the NEAMAP surveys. Work in collaboration with the NEFSC and other appropriate agencies. Hold workshops as needed to disseminate coordination efforts.

**Team Members:** NEAMAP Trawl Technical Committee

**Resources:** No additional funds required.

**Schedule:** *Ongoing 2013*

**Task 8:** *Identify and recommend how to fill gaps in sampling, either through the*

*expansion of existing surveys or the development of new surveys. Gaps could be spatial, temporal, species-specific, etc.*

**Objective:** Begin to explore gaps in survey coverage and identify new or existing surveys that could be used to fill these gaps. Communicate with other regional fisheries research programs that are also addressing survey gaps, and perhaps send NEAMAP representatives to their workshops. NEAMAP committees are to collaborate to identify the most pressing data needs, and from there Trawl Technical and Operations should identify new surveys needed to address these needs and prioritize their value. These options are to be presented to the Board, who in turn will direct the Trawl Technical Committee to begin design work for those identified by the Board as top candidate(s). Implementation will occur as funding permits.

For expansion of existing surveys, work closely with project Principal Investigators immediately upon identification of a potential expansion to identify willingness and feasibility of implementation. If favorable, present to the Board prior to beginning any design work and implement as practicable following completion of design work and once funding becomes available.

**Team Members:** All NEAMAP Committees, Survey PIs

**Resources:** No additional funds at this time. Implementation funds may be necessary in the future.

**Schedule:** Ongoing 2013

**Task 9:** *Develop approaches for research to better understand catchability processes for the various NEAMAP surveys. Initiate steps to develop policy, approaches, and guiding documents for NEAMAP with regard to quantifying within-survey changes in relative catchability, particularly following intentional changes in survey operations.*

**Objective:** To begin, encourage/direct participation, either of Trawl Technical committee members and/or survey staff, in any upcoming catchability workshops hosted by the NEFSC, as well as directing Trawl Technical (perhaps in conjunction with Operations) to explore and document current accepted approaches and methods for quantifying changes in relative catchability.

**Team Members:** Trawl Technical and Operations

**Resources:** Funds are required to attend workshops and convene members.

**Schedule:** Ongoing 2013

## Data Management Goals

**Task 10:** ~~*Inventory data utility and specific questions data should answer for use in stock assessments.*~~ *Evaluate NEAMAP data to ensure data collected by surveys continues to be responsive to and addresses management needs.*  
(Goal 3)

Objective: Analytical Committee to conduct periodic reviews of stock assessment needs and NEAMAP data availability relative to these needs. Evaluate and add data elements as needs arise. Trawl Technical Committee to continue to evaluate opportunities to expand data collection on existing surveys. ~~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.

Team Members: Analytical ~~Committee~~, Operations ~~Committee~~, Trawl Technical Committees

Resources: Administrative budget.

Schedule: *Ongoing 2013*

**Task 11:** *Provide data in support of research and fisheries management.*  
(Goal 3)

Objective: Provide data and metadata for stock assessments and other analyses supporting fisheries management. ~~Develop an online open-access data portal for NEAMAP data survey indices. Have representatives familiar with the NEAMAP datasets attend stock assessment data workshops.~~

Team Members: NEAMAP Data Management Committee and staff

Resources: No additional funds required.

Schedule: *Ongoing 2013*

**Task 12:** ~~NEAMAP Survey Partners share current data management practices (depending on funding situation) or plan for 2014.~~

Objective: ~~Survey leaders demonstrate and share actual hardware and software currently in use. Data Management personnel from each survey will prepare detailed descriptions of their data warehousing systems.~~

Team Members: ~~NEAMAP Data Management Committee and staff~~

Resources: ~~Additional funds required for a workshop.~~

Schedule: ~~*Ongoing 2013*~~

**Task 13:** ~~Update~~Develop NEAMAP Data Management ~~Guidance~~Action Plan 2014  
(Goal 3)

Objective: Keep ~~guidance-action~~ plan for NEAMAP data management updated with latest plans. ~~Build off of recently developed data management guidance plan. Use the SEAMAP Data Management Guidance Plan and other data management plans from partners or agencies as available for reference.~~ Include content, data flow, metadata, standard operating procedures, data management roles and responsibilities, and timeline for development.

Team Members: NEAMAP Data Management Committee and staff

Resources: No additional funds required.

Schedule: 2013

### **Regional Program Coordination Goals**

**Task 14:** *Promote Consistency and Compatibility among Regional Programs*  
(Goal 2, Objective 2; Goal 3, Objective 5)

Objective: 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.

Team Members: NEAMAP Board and/or NEAMAP Staff

Resources: No additional funds required.

Schedule: *Ongoing 2013*

**Task 15:** *Investigate Potential for Regional Processing Centers for Biological Samples*  
(Goal 2, Objective 2)

Objective: Coordinate with ongoing activities of other organizations. Identify the location and scope of current processing activity. **Convene ageing workshops as necessary and with available funds.**

Team Members: Staff

Resources: No additional funds required.

Schedule: *Ongoing 2013*



## V. NEAMAP 2012 ACCOMPLISHMENTS

### ***NEAMAP Mid-Atlantic/Southern New England Nearshore Trawl Survey***

The Virginia Institute of Marine Science (VIMS) completed full-scale spring and fall cruises (150 tows – Martha's Vineyard, MA to Cape Hatteras, NC) for the NEAMAP Mid-Atlantic/Southern New England (M-A/SNE) Nearshore Trawl Survey in 2012.

With respect to operations in 2013, VIMS project PIs and staff were successful in securing funds necessary to support spring and fall sampling. As in previous years, funding has been provided by the Mid-Atlantic Fishery Management Council, Multispecies Research Set-Aside Program.

The survey added several new elements to its field sampling efforts in 2012. Specifically, field staff now record maturity stage for horseshoe crab, in addition to length, individual weight, and sex. The determination of egg stage for female American lobster containing berries was also added in 2012 – other measurements include carapace length, individual weight, sex, and presence/absence of shell disease. It is anticipated that these additional data will increase the utility of the M-A/SNE trawl survey in the assessment and management of these two species.

The survey engaged in a number of new sample collection / data acquisition efforts as a result of collaborations with other programs. Specifically, the number of species from which stomach samples are collected was increased and coordinated with the SEAMAP Trawl Survey in an effort to generate a broader, coast-wide picture of trophic interactions and ecosystem function. Other synergistic efforts mainly involved the collection of river and sea herrings and members of the skate complex for morphometric and genetic analyses.

Field operations in 2013 will see an increased usage of technologies to both increase and streamline the collection of information by this survey. It is anticipated that the program's current catch data collection system, FM-SAS, will be replaced by a new software package named FEED that was developed through a collaboration between the survey PI and Norwegian software engineers. Among its many features, this software should reduce the rates at which data collection errors are made in the field as well as the amount of time needed to audit the data following each trip. Other technologies include a new net monitoring system which will increase the number of gear performance parameters recorded from eight to thirteen, a current meter which will facilitate the calculation of trawl speed through the water (as opposed to over ground), and bottom mapping device that will enable habitat mapping throughout the survey area.

Due to a reorganization of staff structure in early 2012, the NEAMAP M-A/SNE Trawl Survey was able to realize a tremendous increase in operational efficiency, and as such was able to process much of its back-log of ageing samples. As of January 2013, age data has been generated for all fishes of management interest (approx. 11 species) through the 2011 sampling season, and for two species (i.e., summer flounder and striped bass) through 2012. While elasmobranch sample processing still remains to be completed, it is anticipated that undergraduate assistants will aid in these efforts throughout 2013.

Following the renovation and re-launch of its website for the M-A/SNE Trawl Survey ([www.vims.edu/fisheries/neamap](http://www.vims.edu/fisheries/neamap)) in 2011, a number of new links were added in 2012. These include:

- Fishery Analyst Online – A GIS-based way to retrieve raw-ish data.  
<http://fluke.vims.edu/fishgis/faovims/index.htm>
- Food Habits Data – Make customized queries to an online data base of pre-calculated diet indices based on selectable criteria.  
[http://www.vims.edu/research/departments/fisheries/programs/multispecies\\_fisheries\\_research/fish\\_food\\_habits/fishfoodhabitdata](http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/fish_food_habits/fishfoodhabitdata)
- Abundance Indices – Clickable and downloadable copies of overall and age-specific (where appropriate) relative abundance indices based on both counts and biomass. Although many are not quite ready for prime time, many are close enough that users can get an idea of where the project is going.  
[http://www.vims.edu/research/departments/fisheries/programs/multispecies\\_fisheries\\_research/abundance\\_indices/index.php](http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/abundance_indices/index.php)

NEAMAP M-A/SNE Trawl Survey data have been used in stock assessments for weakfish, long-finned squid, and river herring. This survey has also supplied data for assessments of: American lobster, Atlantic croaker, Atlantic sea scallop, Atlantic sturgeon, black drum, black sea bass, bluefish, butterfish, scup, skates (clearnose, little, and winter), spiny dogfish, spot, summer flounder, and winter flounder. Requests for smooth dogfish data, in anticipation of the 2014 assessment for this species, were also made. 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 multiple other scientists/organizations to collect specimens for several projects.

### ***NEAMAP Maine-New Hampshire Inshore Trawl Survey***

The Maine Department of Marine Resources completed a full spring and fall survey of the Maine-New Hampshire (MENH) Inshore Trawl Survey area (Massachusetts border to the Canadian border). During the spring survey 119 tows were completed over 24 sea days from 30 April to 1 June, 2012. The fall survey was conducted from 24 September through October 26 completing 99 tows on 25 sampling days. Roughly 1600 otoliths were collected from winter flounder, American plaice, witch flounder, Atlantic cod, haddock, American shad, and white hake. Sex and maturity determinations were collected for lumpfish, shad, yellowtail flounder, cod, haddock, plaice, winter flounder, witch flounder, and white hake.

Funds were secured for 2013 MENH Inshore Trawl Survey obtained through the NMFS Cooperative Research Partners Program.

In the spring of 2012, we upgraded our net mensuration equipment to eSonar's digital system. The new equipment had some minor problems on the spring survey and eSonar took the sensors back at no cost to us for upgrading. Some problems occurred on the fall survey as well and the sensors have been returned to the company for maintenance.

On the spring survey, Megan Winton, a technician working with Richard McBride of NMFS joined the survey for 4 weeks to collect sections of gonads of female winter flounder to be used in a study of spatial heterogeneity of life history parameters within stock boundaries of the

species. Acadian redfish were collected on the spring survey for an UNH genetics study. Michael O'Malley from NOAA's office in Orono, ME, who works in the Penobscot River estuary, came along on the third week to re-establish a groundfish stomach sampling survey looking for alosines as prey. Michael O'Malley and Justin Stevens from NOAA's office in Orono, ME, came along for 2 weeks on the fall survey for the same purpose. Mike Kersula, a student at the University of Maine in Orono, participated on several days to collect tissue and stomach samples from spiny dogfish on the fall survey. Samples of alewife and blueback herring tissues were collected for Emily Argo, a student of Dr. Eric Palkovacs at University of California-Santa Cruz, for a National Fish and Wildlife Foundation funded grant to examine the population genetic structure of river herring. Lumpfish tissues were collected both spring and fall for a genetics study being conducted by Jacob Kasper at the Marine Research Institute in Iceland. American shad otoliths and scales were collected for MEDMR staff in our diadromous fish division for age comparisons. Winter flounder were tagged on the fall survey this fall in conjunction with a Northeast Consortium project lead by Keri Stepanek at MEDMR.

Trawl survey staff provided data to MEDMR co-workers for Northern shrimp assessment and management, Atlantic herring management, scallop research, wolffish research, American lobster, river herring research, and Atlantic halibut. Data was provided to New Hampshire Fish and Game on that portion of the survey.

MENH Trawl data were provided to NEFMC, MAFMC technical committees and NMFS personnel for assessments of GOM cod (SARC 55), white hake (SARC 56), butterfish, monkfish, Winter flounder otoliths were digitized for 2012. We are expanding our aging with Atlantic cod and white hake otoliths being processed. About 1.5 years of cod otoliths have been processed and digitized.

Additional data requests were filled from NMFS regional Office in Gloucester, Harvard University, University of Maine, University of New Hampshire, Bowdoin College, Marine Research Institute in Iceland, and other independent researchers.

<http://www.maine.gov/dmr/rm/trawl/index.htm>

#### ***NEAMAP Massachusetts Division of Marine Fisheries Inshore Bottom Trawl Survey***

The 35<sup>th</sup> spring and fall surveys were accomplished in 2012. 100 stations were completed during the May survey, all of which are considered acceptable for assessment purposes. 92 stations were completed on the fall survey to acceptable standards for all purposes. Five additional fall stations are considered representative for spiny dogfish only.

Nearly 3,000 scale/otolith samples, as well as sex and maturity observations, were taken from Atlantic cod, haddock, summer flounder, yellowtail flounder, winter flounder, windowpane flounder, black sea bass and scup. Winter flounder and black sea bass age samples were processed for the first time at the Division of Marine Fisheries age and growth lab in Gloucester, MA. Additional collections included over 600 river herring for a study on stock mixing, and over 100 smooth dogfish tissue samples for a study on stock identification and paternal contributions, live windowpane for an age validation study and juvenile black sea bass for a study on sex determination.

Both the shipboard and post-cruise auditing process was improved upon by application of dedicated DMF survey length/weight coefficients and DMF length intervals rather than utilizing more regional metrics provided by NEFSC surveys.

Numerous data requests were filled in support of habitat research, resource management initiatives, press and industry inquiries, and studies on select species.

*<http://www.mass.gov/dfwele/dmf/programsandprojects/resource.htm#resource>*

## **APPENDIX A – NEAMAP Goals and Objectives**

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

#### **Objectives:**

1. Develop an annual operations plan consistent with budget and operational constraints;
2. Develop an annual budget allocation plan, which considers program needs, annual operations plans, and participant capabilities;
3. Sponsor meetings to cooperatively plan and evaluate activities;
4. Sponsor special workshops and symposia to help evaluate or plan sampling strategies, designs, or methods;
5. Establish working groups, as needed, under the auspices of the NEAMAP committees with appropriate expertise, to assist in planning and evaluating NEAMAP activities;
6. Conduct annual internal reviews of program activities;
7. Conduct periodic coordinated external reviews of specific management, administrative, and technical elements of the program;
8. Coordinate and document NEAMAP activities, and disseminate programmatic information.

### **Goal 2 - Establish a coordinated, long-term, fisheries independent data collection program of Atlantic coast living marine resources from CapeHatteras to Maine for the purpose of resource and habitat assessment and management.**

#### **Objectives:**

1. Conduct routine surveys and special studies, as needed, of regional resources and their environments;
2. Coordinate data collection activities with ongoing surveys and data collection programs;
3. Collect data on species composition, biomass, relative abundance, distribution, and seasonality of living marine resources;

4. Record biological information to include size, age, sex, and reproductive condition for target species;
5. Identify and monitor essential fish habitat;
6. Collect environmental data coincident with living marine resource monitoring activities;
7. Provide biological specimens to cooperating agencies and other investigators upon request, subject to certain limitations (time, space, funding).

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

**Objectives:**

1. Design, implement, and maintain a NEAMAP data management support system that can be used to assess and monitor selected living marine resources and associated environmental and habitat factors;
2. Establish data handling and processing protocols for all NEAMAP data;
3. Compile and maintain a computerized directory of NEAMAP monitoring activities, including data summaries and inventories by gear, species, species group, and geographic area;
4. Identify and describe existing non-NEAMAP databases and activities that are of value to fishery independent assessments of regional living marine resources, and coordinate and integrate these, where possible, with the NEAMAP database;
5. Coordinate data management activities with and other existing programs, including common use of codes and formats;
6. Archive NEAMAP biological specimens and samples.

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

**Objectives:**

1. Develop an outreach package for Congress and other potential funding sources to secure long-term stable funding;
2. Develop methods to educate industry and the public about fishery independent sampling and data, including aspects such as the need for and benefits of fishery independent sampling, how the data are collected, and how the data are used;

3. Develop promotional materials that detail how NEAMAP data support fisheries management and natural resource stewardship, citing specific examples where appropriate;
4. Develop standardized, non-technical reports of survey results for distribution;
5. Encourage public and industry assistance and support in NEAMAP sampling activities.

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**UNITED STATES DEPARTMENT OF COMMERCE**  
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January 2, 2013

Patrick A. Campfield  
Director of Fisheries Science  
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Dear Dr. Campfield:

We apologize for our delayed response to your request for a summary of how the various NEAMAP surveys are used in stock assessments. We have reviewed the stock assessments conducted by the Population Dynamics Branch to determine incorporation and use of data produced by NEAMAP surveys. A summary of the uses of the NEAMAP surveys is provided below. Note that we have included the surveys conducted by VIMS, MADMF and ME-NH in the list of standardized surveys. While the NEAMAP surveys are not yet used extensively as tuning indices in stock assessments, this is primarily a function of the survey duration. As the period of observation increases, it is likely that the surveys will be used directly in various stock assessment models. A long duration of survey data does not ensure that the surveys are used directly in stock assessments. That decision, made on a case-by-case basis during the stock assessment, is a function of how well the survey track overall abundance and how well it comports with other sources of data. Even when the survey data are excluded from the stock assessment model, the NEAMAP surveys have provided valuable confirmatory information on the magnitude of incoming year classes and insights on the seasonal use of inshore habitat by a variety of species. It is also important to remember that use of NEAMAP data is likely to increase over time as alternative models are developed.

We hope this information is useful to the NEAMAP Board. Please let us know if we can be of further assistance or clarify any aspects of our use of the NEAMAP data.

Sincerely,

Russell W. Brown, Ph.D.  
Deputy Science & Research Director, NEFSC



<i>Stock(s)</i>	<i>Assessment Lead</i>	<i>Survey/ Season</i>	<i>How Used?</i>
Alewife, blueback herring and American shad	Kiersten Curti	VIMS fall and Spring	Included plots of indices in the MSB Amendment 14 analysis. Also used size composition data.
Summer Flounder	Mark Terceiro	VIMS Spring and Fall	Summary plots and tables included in assessment reports.
		MADMF Spring and Fall	Summary plots and tables included in assessment reports. Estimates used to calibrate model
Scup	Mark Terceiro	VIMS Spring and Fall	Summary plots and tables included in assessment reports.
		MADMF Spring and Fall	Summary plots and tables included in assessment reports. Estimates used to calibrate model
Loligo squid	Lisa Hendrickson	VIMS Spring and Fall	Summary plots and tables included in assessment reports. No formal model; assessment is based on swept area estimates.
Cape Cod-Gulf of Maine yellowtail flounder	Chris Legault	MADMF Spring and Fall	Summary plots and tables included in assessment reports. Estimates used to calibrate model
		ME/NH Spring and Fall	Summary plots and tables included in assessment reports. Estimates used to calibrate model
Pollock	Liz Brooks	ME/NH Spring and Fall	Summary plots and tables included in assessment reports.
Gulf of Maine Winter Flounder	Paul Nitschke	MADMF Spring and Fall	Used for computation of swept area biomass estimates.
		ME-NH Spring and Fall	Used for computation of swept area biomass estimates.
Butterfish	Tim Miller	VIMS Spring and Fall	Summary plots and tables included in assessment reports.
Northern shrimp	Anne Richards	ME/NH Spring	Summary plots and tables included in assessment reports. Estimates used to calibrate surplus production model (one of several models used for assessment).