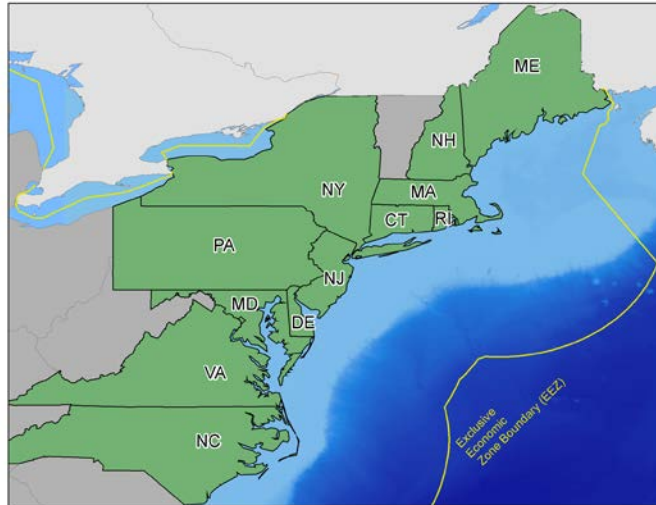


# NORTHEAST REGION COORDINATING COUNCIL

FALL 2018 MEETING

November 14-15, 2018

Portland Regency Hotel – Portland, Maine



Meeting Briefing Book Table of Contents  
(hyperlinked)

	<u>Page(s)</u>
NRCC Fall 2018 Meeting Agenda	1-2
Draft NRCC Charter	3-8
DMIS Presentation	9-20
DMIS Background Documentation	21-54
NEFSC Priorities Memo	55-65
NEFMC Priorities: Council Tasks	69-73
MAFMC 2019 Deliverables Draft	74-77
Changing Climate and Science on the East Coast – Workshop Outline	78-81

**2018 FALL NRCC MEETING AGENDA**  
Portland Regency – 20 Milk Street, Portland, ME

*All times are approximate*

**Wednesday, November 14**

*0900-0910*

1. Welcome, Introductions, Announcements  
(Pentony, Hare, Gilbert)

*0910-1000*

2. NRCC Charter  
Discussion leaders: Pentony, Gilbert
  - Review the draft charter and provide feedback.

*1000-1200*

3. Long-term Stock Assessment Schedule Discussion  
Discussion leader: Simpkins
  - Review and discuss the updated stock assessment scheduling process document.

*1200-1300 Lunch*

*1300-1500*

4. Long-term Stock Assessment Schedule Discussion (continued)  
Discussion leader: Simpkins
  - Review and discuss updated strawman schedules for the management and research track stock assessments.

*1500-1515 Break*

*1515-1545*

5. Update on Operational Stock Assessments for Scup, Black Sea Bass, and Bluefish  
Discussion leader: Brown

*1545-1700*

6. Coordination of Atlantic Herring Management in the EEZ  
Discussion leader: Nies
  - Discuss the ASMFC's recent decision to consider development of herring spawning protection in the offshore area of Georges Bank.

*1700 Adjourn Day 1*

*1830 Dinner at Ribollita, 41 Middle Street (ribollitamaine.com)*

**Thursday, November 15**

*0900-0930*

7. Update on NEFSC-GARFO Coordination to Reconcile and Explain Differences in Discard and Landing Estimates

Discussion leader: GARFO (Linden/Lanning)

- Discuss progress to-date and review initial documentation for the data matching and identification system (DMIS).

*0930-1030*

8. Priorities Discussions

NEFMC, MAFMC, ASMFC, GARFO, and NEFSC outline priorities

- Discuss prioritization and coordination of resources, as needed.

*1030-1045 Break*

*1045-1115*

9. Update on Northeast Trawl Advisory Panel (NTAP)

Discussion leader: Stockwell

- Discuss membership and general updates.

*1115-1145*

10. Workshop on Changing Climate Conditions and Science on the East Coast (NEFSC-SEFSC)

Discussion leader: Hare

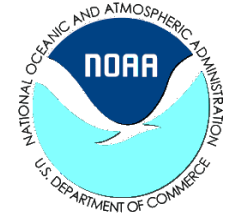
- Review the workshop agenda, discuss participation by NRCC members, and discuss next steps.

*1145-1215*

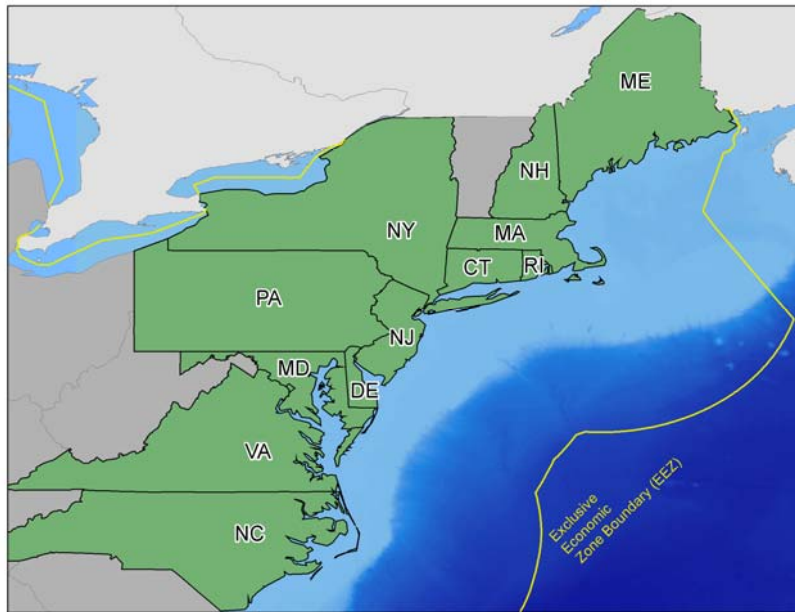
11. Meeting wrap up

- Complete any unfinished discussions or unresolved new business
- Review action items and assignments
- Identify Spring 2019 (ASMFC host) meeting date
- Adjourn meeting

*1215 Meeting adjourns*



# NORTHEAST REGION COORDINATING COUNCIL CHARTER



New England  
Fishery Management  
Council



MID-ATLANTIC | FISHERY  
MANAGEMENT  
COUNCIL

# The Northeast Region Coordinating Council Charter

## Background

Formed in 2001, the Northeast Region Coordinating Council (NRCC) consists of members from the Atlantic States Marine Fisheries Commission (ASMFC), Greater Atlantic Regional Fisheries Office (GARFO), Mid-Atlantic Fishery Management Council (MAFMC), New England Fishery Management Council (NEFMC), and Northeast Fisheries Science Center (NEFSC).

## Mission

To prioritize, communicate, and coordinate fisheries scientific and management resources through in-person meetings that include Federal, state, Council, and Commission managers and scientists of the Greater Atlantic region of the United States.

## Roles and Responsibilities

### *Formal Members*

The following are the decision-making, voting members of the NRCC representing the five partner organizations:

- ASMFC Chair
- ASMFC Executive Director
- MAFMC Chair
- MAFMC Executive Director
- NEFMC Chair
- NEFMC Executive Director
- NMFS Greater Atlantic Regional Administrator
- NMFS Northeast Fisheries Science and Research Director

### *NRCC Deputies*

NRCC Deputies are non-voting, standing members from each member organization with the following titles:

- Assistant Regional Administrator (ARA) for Sustainable Fisheries, GARFO
- Interstate Fishery Management Program Director, ASMFC
- Deputy Director (or designee), NEFMC
- Deputy Director (or designee), MAFMC
- Chief, Resource Evaluation and Assessment Division, NEFSC

These designated deputies form an oversight panel that reviews and approves the membership of research track stock assessment working groups, as well as confirm the selection of external experts nominated to serve on management track or research track peer review panels.

*Ex-Officio Members*

Ex-officio members may attend and participate in NRCC meetings to provide organizational support and expertise. Ex-officio members include:

- MAFMC Vice-Chair
- NEFMC Vice-Chair
- MAFMC Scientific and Statistical Committee (SSC) Chair
- NEFMC SSC Chair
- Fisheries Science Program Director, ASMFC
- ARA for Analysis and Program Support, GARFO
- Stock Assessment Workshop Chair, NEFSC
- NOAA General Counsel, Northeast Section

*Support Staff*

Two support staff, appointed by the GARFO Regional Administrator, attend every NRCC meeting to assist with meeting logistics. Support staff solicit members for agenda items in advance of the meetings, take notes and record action items during meetings, and are responsible for drafting and distributing meeting summaries following NRCC meetings. Support staff are also responsible for organizing and providing support for any intercessional meetings or conference calls deemed necessary by the NRCC.

*Invited Participants*

Other technical staff from the five organizations may attend, as necessary, based on specific meeting agenda topics.

**Operations**

*Rotational Chairs*

The Executive Directors of the Councils and Commission, the GARFO Regional Administrator, and the NEFSC Science and Research Director will each rotate into the acting NRCC chair position on an annual basis. The rotational chair schedule is provided below:

Regional Administrator, GARFO		S2023, F2023	S2028, F2028
Executive Director, MAFMC	S2019, F2019	S2024, F2024	S2029, F2029
Science and Research Director, NEFSC	S2020, F2020	S2025, F2025	S2030, F2030
Executive Director, NEFMC	S2021, F2021	S2026, F2026	S2031, F2031
Executive Director, ASMFC	S2022, F2022	S2027, F2027	S2032, F2032

F= Fall; typically October S=Spring; typically May

As further described below, the chair is responsible for finalizing meeting agendas, including the selection of special agenda topics, and for leading the meeting discussions with the help of the lead NRCC GARFO support staffer.

*Scheduling*

The NRCC meets twice annually, in the spring and fall, to discuss assessment scheduling and crosscutting fisheries issues. Meetings are generally two days in length, but can extend to three days at the discretion of the NRCC chair to handle larger coordination issues, as appropriate. Intercessional calls may also be scheduled between in-person meetings.

*Agenda Setting*

Agenda topics for NRCC meetings that extend beyond assessment scheduling and prioritization should be relevant to at least three of the NRCC member organizations. Formal NRCC members are the points of contact for consolidating and submitting agenda items to GARFO NRCC support staff.

In preparation for each NRCC meeting, the NRCC chair will coordinate with support staff to finalize the agenda prior to the start of the NRCC meeting.

*Logistics/Hosting Rotation*

Each member organization takes turns hosting the NRCC meetings, which requires setting up the hotel reservations, making dinner reservations, and providing the necessary meeting space and equipment. The hosting rotation schedule is below.

GARFO		F2019	S2022	F2024	S2027
MAFMC		S2020	F2022	S2025	F2027
NEFSC		F2020	S2023	F2025	S2028
NEFMC	F2018	S2021	F2023	S2026	F2028
ASMFC	S2019	F2021	S2024	F2026	S2029

F= Fall; typically October S=Spring; typically May

Logistical questions for hosts should be sent to the current NRCC GARFO support staff.

*Decision Making*

The formal NRCC members are decision makers for setting stock assessment priorities and schedules (See Assessment Scheduling below). Voting in these cases is accomplished by show of hands of formal members only and decisions are recorded in the meeting summaries.

In other instances, the NRCC’s role is to be a coordinating body that makes consensus recommendations to be considered by the Councils, Commission, NEFSC, and GARFO.

### *Assessment Scheduling*

With respect to assessment priorities, the NRCC (a) sets/recommends long-term (five-plus year) schedules for both the management and research track, (b) reviews and adjusts those schedules as needed, and (c) recommends priorities among complex management track assessments (i.e., assessments requiring expedited or enhanced peer reviews) in situations where more complex assessments are proposed than can be accommodated.

The specifics of the assessment scheduling process is outlined in Appendix 1: Description of New England and Mid-Atlantic Stock Assessment Process

### *NRCC Committees*

NRCC members will occasionally form (and appoint membership to) ad-hoc sub-committees as needed. These sub-committees will be focused on particular subjects that arise from NRCC discussions and will convene only as long as necessary to complete a particular task.

### *Public Engagement*

The primary purpose of the NRCC is to coordinate actions and resource allocations for the member groups. Although meetings are open to the public, webinars are not available due to resource and staffing limitations. Occasionally, a conference call will be available when a requested presenter or NRCC attendee cannot attend a specific meeting.

The NRCC meeting agendas, briefing material, and meeting summaries are made publically available on the NEFMC's website (<https://www.nefmc.org/committees/northeast-regional-coordinating-council-nrcc>).



## Signatures and Approval

We, the formal membership of the NRCC, hereby agree to the terms of this NRCC charter, as initially finalized on \_\_\_\_\_.

DATE

\_\_\_\_\_  
Regional Administrator, GARFO

\_\_\_\_\_  
Science and Research Director, NEFSC

\_\_\_\_\_  
Executive Director, ASMFC

\_\_\_\_\_  
Chair, ASMFC

\_\_\_\_\_  
Executive Director, MAFMC

\_\_\_\_\_  
Chair, MAFMC

\_\_\_\_\_  
Executive Director, NEFMC

\_\_\_\_\_  
Chair, NEFMC



**NOAA**  
**FISHERIES**

# Update on Data Matching & Identification System (DMIS) documentation and ongoing comparison w/ Area Allocation (AA) tables

Daniel W. Linden, Ph.D.

*Analysis and Program Support Division*

*Greater Atlantic Regional Fisheries Office*

15 Nov 2018

- Area Allocation (AA) tables
  - Used in stock assessment
  - Wigley et al. (2008) CRD
  
- Data Matching & Identification System (DMIS)\*
  - Used for quota monitoring (sectors)
  - Lanning et al. (2018) draft

Process used to integrate all fishery dependent data from a single commercial fishing trip:

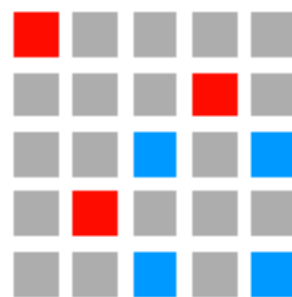
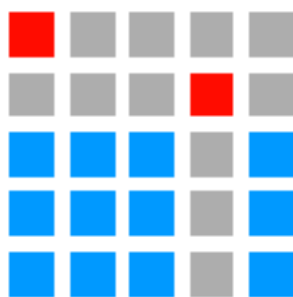
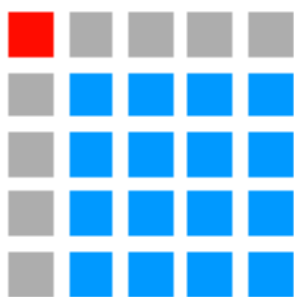
- Pre-Trip Notification System (PTNS) declaration
- Vessel Monitoring System (VMS) declaration, etc.
- Vessel Trip Report (VTR)
- Commercial Dealer report
- At-sea observer report
- ...

DMIS builds a map of matched data sets based on an optimized trip matching methodology:

1. Hard match
  - Vessel permit number
  - VTR serial number
2. Date match
  - Kuhn-Munkres algorithm

Kuhn-Munkres algorithm is a combinatorial optimization procedure that solves the best 1:1 combination of records

- Efficient, well-studied method
- Repeatable/reproducible results
- Handles messy data



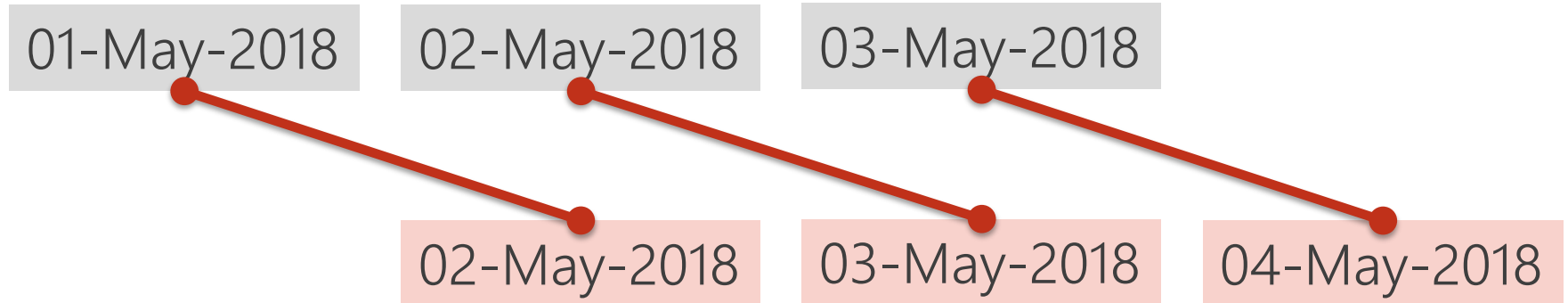
Example:

- 3 trips
- 2 data sources (VTR, dealer)



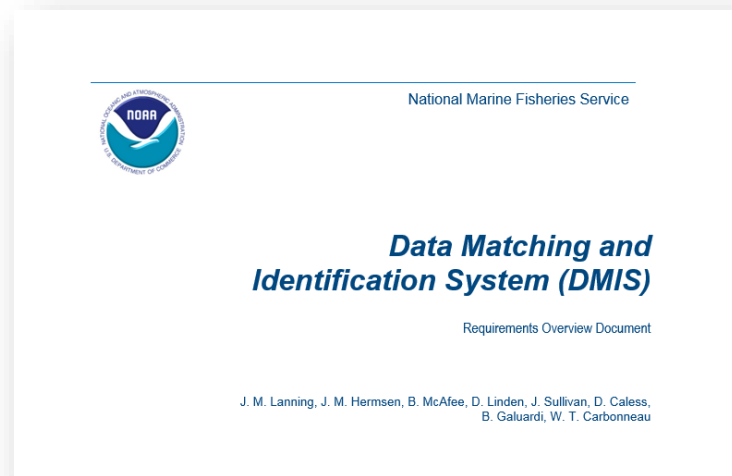
## Example:

- 3 trips
- 2 data sources (VTR, dealer)





- Scope = primary functions, matching, record identification
- General process, not FMP specific
- Not to be confused with **old DMIS**
  - Flat file, imputation
  - Same matching process
  - Groundfish focus



- Draft completed in July 2018
- Feedback solicited/received from NEFSC
- NRCC comments welcome (preferably by Jan/Feb 2019)

[j.michael.lanning@noaa.gov](mailto:j.michael.lanning@noaa.gov)

- Collection of NEFSC & GARFO staff
  - Joint effort with strong commitment from APSD & PopDy
  - Technical processes internal to NOAA
- Review/address feedback on documentation
  - Staff and NRCC comments
- Build team/consensus for future FDDI development
- Schedule TBD...





# ***Data Matching and Identification System (DMIS)***

---

Requirements Overview Document

J. M. Lanning, J. M. Hermsen, B. McAfee, D. Linden, J. Sullivan, D. Caless,  
B. Galuardi, W. T. Carbonneau

*Greater Atlantic Regional Fisheries Office (GARFO)*

*Analysis and Program Support Division (APSD)*

*Gloucester, MA*

*11/7/2018*

# Table of Contents

1	Executive Summary.....	5
2	DMIS Overview.....	6
2.1	Purpose .....	6
2.2	Scope.....	6
2.3	User Roles and Responsibilities .....	6
2.3.1	APSD Program Specialist (DMIS Administrator).....	6
2.3.2	Consumers of DMIS Output .....	7
3	DMIS System Requirements .....	7
3.1	DMIS Primary Data Sources .....	8
3.1.1	Vessel Trip Reports (VTRs) .....	8
3.1.1.1	VTR Collection .....	8
3.1.1.2	VTR Usage .....	9
3.1.2	Allocation Monitoring System Activity Code Declarations and Electronic Reports.....	10
3.1.2.1	Activity Code Declaration.....	10
3.1.3	Allocation Management System (AMS) Data.....	11
3.1.3.1	AMS Data Collection .....	11
3.1.3.2	AMS Data Usage.....	11
3.1.4	VMS Electronic Forms Data.....	11
3.1.4.1	VMS Data Collection .....	11
3.1.4.2	VMS Data Usage.....	12
3.1.5	GARFO Vessel Permit and Moratorium Qualification Review System (MQRS) Data.....	12
3.1.5.1	Permit and MQRS Data Collection .....	12
3.1.5.2	Permit and MQRS Data Usage .....	12
3.1.6	Northeast Fisheries Observer (NEFOP) and At-Sea Monitor (ASM) Data .....	13
3.1.6.1	NEFOP and ASM Data Collection .....	13
3.1.6.2	NEFOP and ASM Data Usage.....	13
3.1.7	Commercial Fisheries Dealer Reports.....	13
3.1.7.1	Dealer Report Collection.....	13
3.1.7.2	Dealer Report Usage .....	14

3.1.8	Northeast Multispecies Sector Roster Data.....	14
3.1.8.1	Sector Roster Data Collection .....	14
3.1.8.2	Sector Roster Data Usage .....	14
4	DMIS Task Flow .....	15
4.1	Preparing the Data for Processing .....	15
4.1.1	Sub-Step 1: Deleting Previous Schema Iterations.....	15
4.1.2	Sub-Step 2: Setting Boundaries on Incoming Data .....	15
4.1.3	Sub-Step 3: Creating Incoming Data as Staging and Support Tables .....	15
4.2	Building a Map of Matched Data Sets.....	16
4.2.1	General Order of Data Matching for the Map .....	16
4.2.2	Matching Map.....	17
4.3	Running the Matching Module .....	18
4.3.1	Matching Processing .....	18
4.3.1.1	Building Affinity Matrix on Date Matching .....	18
4.3.1.2	Removing Trip Orphans .....	18
4.3.1.3	Maximizing Affinity Scores.....	19
5	Apportionment .....	19
5.1	Identify the Strata from the Trip.....	19
5.2	VTR Data for the Example .....	20
5.2.1	Allocated Groundfish Discard Species .....	20
5.3	Calculate the Stratum Portions.....	21
5.4	Apply the Stratum Portions to the Dealer Data.....	22
5.5	Calculate the $K_{all}$ for Each Stratum .....	23
6	DMIS Administration.....	23
7	Appendix: DMIS Data Dictionary .....	24
7.1	Matching Overview (Abbreviated).....	24
7.1.1	VTR Serial Number .....	24
7.1.2	DATE.....	24
7.2	Tables .....	25
7.2.1	Main Tables.....	25
7.2.1.1	Description .....	25
7.2.1.2	Notes.....	25
7.2.1.3	Fields .....	25

7.2.2	Matching Map Tables.....	26
7.2.2.1	APSD.MV_DMIS_MATCH_AMS_VTR .....	26
7.2.2.2	APSD.MV_DMIS_MATCH_MUL_CATCH.....	27
7.2.2.3	APSD.MV_DMIS_MATCH_MUL_START_HAIL.....	27
7.2.2.4	APSD.MV_DMIS_MATCH_HER_CATCH.....	28
7.2.2.5	APSD.MV_DMIS_MATCH_SES_PRELAND .....	28
7.2.2.6	APSD.MV_DMIS_MATCH_MUL_PTNS .....	29
7.2.2.7	APSD.MV_DMIS_MATCH_OBS_LINK .....	29
7.2.2.8	APSD.MV_DMIS_MATCH_DEALER, APSD.MV_DMIS_MATCH_DEALER_PZERO .....	30

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## Doc Revision History

Revision Number	Date	Description	Authors	Notes
0.1	June-July, 2018	Initial Draft	J. M. Lanning, J. M. Hermsen, B. McAfee, D. Linden, J. Sullivan B. Galuardi, D. Caless, W. T. Carbonneau	
0.2	17 July 2018	Clarified language in first Note in Section 4.2	J. M. Lanning	
0.3	19 July 2018	Expanded table notes	J. M. Lanning	

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# 1 Executive Summary

One major area of responsibility for Analysis and Programming Support Division (APSD) of the Greater Atlantic Regional Fisheries Office (GARFO) is to produce reports for internal and external consumption that accurately reflect fishing trip activity. Fisheries management requires knowledge of the quantity, location, time and method of harvest by species for accurate accounting.

A single fishing trip generates many types of data, captured by a number of different systems. Each data source reflects particular aspects of a fishing trip. These data sources include, but are not limited to:

- A vessel owner/operator calls in to the Pre-Trip Notification System to notify the NOAA Fisheries Observer Program of an upcoming trip.
- A vessel owner/operator submits a Vessel Monitoring System (VMS) trip declaration at the beginning of the trip. Trip start hails, daily catch reports, pre-landing reports and trip end hails are also sent via the VMS.
- A vessel owner/operator submits a Vessel Trip Report (VTR) after the trip is completed.
- A seafood dealer submits a Commercial Dealer report upon the sale or transfer of landings from the fishing trip.
- An at-sea Observer submits an Observer report after the trip is complete.

Due to the volume and frequency of the data that fishing activity produces, there are several major tasks that the Monitoring and Analysis Section in APSD performs:

1. **Collect, process, and match the data** from all required sources in order to associate and align the different data for each fishing trip, i.e. *trip matching*.
2. **Impute fishing vessel activity** if the data to verify a particular aspect of a fishing trip have not yet arrived at GARFO. We may infer aspects of a trip such as gear type, area fished, catch, value., etc. that should be reported and use those attributes as placeholders until missing trip data are complete.
3. **Facilitate the monitoring of catch limits** for several fisheries and determine when a fishery is to be closed because the quota has been or is about to be reached. APSD performs statistical analyses to forecast when a quota or landings or catch target will be reached, generates monitoring reports, supports monitoring activities for Multispecies Sectors, records and disseminates quota and closure data.

The Data Matching and Identification System (DMIS) application can perform each of these tasks. DMIS matches data records from different sources to provide information about fishing trips associated with several different fisheries. This data matching helps GARFO analysts to support, improve, and evaluate the region's fishery management decisions and programs.

DMIS is a collection of software written in the PL/SQL and R languages.

## 2 DMIS Overview

The Data Matching and Identification System, or DMIS, helps in completing each of the major tasks cited in the [Executive Summary](#).

Among the topics covered in this section are:

- [Purpose](#)
- [Scope](#)
- [User Roles and Responsibilities](#)

### 2.1 Purpose

The purpose of this document is to describe the DMIS data sources and procedures to assist end users of DMIS and fishery managers in understanding the data matching and assumptions behind a series of procedures in DMIS to facilitate monitoring of multispecies sectors as well as other fisheries managed and monitored by GARFO.

- What is the objective of DMIS?  
The principal objective of DMIS is to improve near real-time monitoring of the Greater Atlantic Regional Fisheries (e.g. Multispecies, Atlantic herring, LAGC-IFQ scallops, etc.).
- Who will benefit from DMIS?  
Beneficiaries of this project include but are not limited to the following groups:
  - GARFO APSD – Data Processing and Quality Section
  - GARFO APSD – Monitoring and Analysis Section
  - NEFSC Resource Evaluation and Assessment Division (READ) — Population Dynamics Branch (PDB) and Social Sciences Branch (SSB)
  - GARFO Information Resource Management (IRM)

### 2.2 Scope

Included in the scope of this document are the following:

- Catalog the data sources used to populate DMIS
- Characterize the procedure for matching several sources of fishery-dependent data in DMIS

### 2.3 User Roles and Responsibilities

This section outlines the roles and responsibilities of the various users of the DMIS system.

#### 2.3.1 APSD Program Specialist (DMIS Administrator)

What does the DMIS Administrator do?

- Maintains DMIS code
- Ensures that DMIS runs weekly
- Verifies output integrity

### 2.3.2 Consumers of DMIS Output

What do the people dependent on DMIS do with its output?

- Raw Trip Level (RTL) Administrator (IRM)  
As of this writing, RTL uses a portion of DMIS output to supply its input to the Sector Comparison Report. RTL is a data auditing procedure, run once per week, that uses data in NMFS databases to attempt to match VTRs and Dealer reports by applying a set of matching rules. RTL organizes any errors found into a series of tables and views organized by error type.
- Quota monitoring programs  
Use DMIS output to fully describe specific fisheries
  - verifying fishing quotas.
  - imputing catch, area, and/or gear information (if unavailable)
  - binning fishery groups for fisheries not identified by VMS activity declaration
  - generating discard rate strata for the near real-time estimation of discards
- Social Sciences Branch (NEFSC)  
Use a portion of DMIS output as part of the weekly and annual social science reports.
- Dealers and Vessel Owner/Operators  
Used by NMFS Quality Assurance staff to compare dealer and vessel-reported fishing trip level information and to engage both dealers and vessels to obtain missing data from fishing trips.
- Data Processing and Quality Section (APSD)
  - Query DMIS output tables directly
  - Use DMIS-derived data in Sector Comparison Report

## 3 DMIS System Requirements

This section documents the system requirements for the DMIS application.

---

**Note:** Oracle 12 supports integrated R-language capability so that analytic functions can be performed directly within the Oracle environment. Be aware that the DMIS R-language requirements listed below may change as a result of this integration.

---

- R programming language
- R-language packages:
  - RODB  
(ODBC Connection)
  - ROracle
  - R- Libraries
    - ORE (Oracle R Enterprise), reshape, clue, plyr, reshape, foreach, doParallel
- Oracle ODBC driver (**not** MS Oracle driver)
- Access to DMIS schema @ NERO
- Access to APSD schema @ NERO

---

**Note:** Contact APSD Monitoring and Analysis Section for assistance with DMIS installation.

---

## 3.1 DMIS Primary Data Sources

In order to perform trip matching and imputation, DMIS uses the following data from its database resources:

- Vessel Trip Reports (VTRs)
- Trip notifications/declarations (delivered through AMS)
- Species catch reports (delivered through VMS)
- Permits
- Moratorium Qualification Review System (MQRS)
- Observer reports
- Dealer reports
- Northeast Multispecies Sector Roster Data

### 3.1.1 Vessel Trip Reports (VTRs)

This section documents the DMIS requirements regarding VTRs.

#### 3.1.1.1 VTR Collection

Operators of NOAA Fisheries Greater Atlantic Region permitted vessels are required to submit a Vessel Trip Report (VTR) for every fishing trip, regardless of where the fishing occurs or what species are targeted or caught, with the exception of those vessels that possess a GARFO-issued Federal lobster permit only.

VTRs are required in order to provide information on how, when, and where the catch occurred. Operators of all Federally-permitted vessels must complete a VTR prior to landing. (Fields such as Date Sold, which may not be known prior to landing, are to be filled out as soon as the information becomes available).

[Table 1](#) shows that the frequency of VTR submission to NOAA Fisheries is determined by the permit type of the vessel (the shortest required submission frequency applies)

**Table 1: Reporting Frequency Requirements by Vessel Permit Type<sup>1</sup>**

Vessel Permit Type Issued	Reporting Frequency	Reporting Deadline
<ul style="list-style-type: none"> <li>Atlantic herring</li> <li>Atlantic mackerel</li> <li><i>Illex</i> squid</li> <li>Longfin squid</li> <li>Butterfish</li> <li>Northeast multispecies</li> <li>Ocean quahog</li> <li>Surfclam</li> </ul>	Weekly	Reports must be postmarked or received by midnight of the first Tuesday following the reporting week (Sunday through Saturday).
<ul style="list-style-type: none"> <li>Atlantic bluefish</li> <li>Atlantic deep-sea red crab</li> <li>Atlantic sea scallop</li> <li>Black sea bass</li> <li>Monkfish</li> <li>Northeast skate</li> <li>Scup</li> <li>Spiny dogfish</li> <li>Summer flounder</li> <li>Golden and Blueline Tilefish</li> </ul>	Monthly	Reports must be postmarked or received within 15 days of the end of the reporting month.
American lobster	The owner/operator is not required to submit trip reports (check with your state, which may require reporting).	N/A

VTR data are currently collected, audited and maintained at GARFO. Data are stored in three tables:

- *NOAA.images*
- *NOAA.document*
- *NOAA.catch*

### 3.1.1.2 VTR Usage

VTR data elements used for *matching* to other data sources include:

- VTR Serial Number
- Vessel Permit Number
- Sail date
- Landing date
- Date of sale

<sup>1</sup> Note that if a vessel holds multiple permit types, the most frequent reporting requirement applies to all trips (for example, a vessel that holds lobster and surfclam/ocean quahog permits must submit VTRs weekly, even if they are only landing lobsters). The date when fish are offloaded will establish the reporting week or month in which the VTR must be submitted, as appropriate.

Data elements from VTRs include the following:

- VTR serial number
- Permit number
- Trip type
- Species and pounds kept and discarded
- Gear fished
- Mesh/ring size
- Quantity of gear
- Size of gear
- Chart area(s)
- Latitude and longitude
- Number of hauls
- Average tow/soak time
- For each dealer purchasing landings:
  - Dealer name
  - Permit number
  - Species
  - Amount sold
- Port and state of landing
- Operator's name

Vessel Permit Number and Landing Date are the primary data matching elements for VTRs and VMS/AMS data.

### *3.1.2 Allocation Monitoring System Activity Code Declarations and Electronic Reports*

This section documents the DMIS requirements regarding AMS activity codes and electronic reports.

#### *3.1.2.1 Activity Code Declaration*

Several GARFO fishery management plans (Northeast Multispecies, Atlantic Sea Scallop, Monkfish, Surfclam, Ocean quahog, Maine mahogany quahog, Atlantic herring, Atlantic mackerel, Longfin squid, Butterfish, *Illex* squid) mandate or provide for the use of a Vessel Monitoring System (VMS) and/or the Interactive Voice Response System (IVR).

A vessel subject to a VMS requirement that has crossed the VMS Demarcation Line must notify NMFS by transmitting the appropriate VMS code through their VMS unit. A VMS declaration code contains several pieces of information including:

- Fishery Management Plan (FMP) and program for the declared code
- Area identifier
- Codes for Days-At-Sea, gear, trip modifiers (for declaring a monkfish option with a Multispecies declaration or for research trips)
- Broad Stock Area (BSA)

For vessels that are not crossing over the demarcation line or do not have a VMS unit, declaration of trips can take place via telephone into the Interactive Voice Response (IVR) system.

### 3.1.3 Allocation Management System (AMS) Data

VMS data are processed at GARFO and are used to populate the AMS database.

#### 3.1.3.1 AMS Data Collection

AMS tracks the allocation and usage of a variety of fishery input controls (for example, Days-At-Sea) and output controls (pounds of catch or landings) in the Greater Atlantic Region in several fisheries, including: the Northeast Multispecies, Atlantic Sea Scallop, Monkfish, and Golden Tilefish fisheries. IVR-generated trip declarations in the Monkfish fishery are also pulled into AMS for monitoring of allocated Days-At-Sea usage.

DMIS sources declaration data primarily from the AMS table *AMS.trip\_and\_charge*.

#### 3.1.3.2 AMS Data Usage

For landing allocation usage (and credits associated with carrying an Observer in the Sea Scallop fishery) in the Limited Access Atlantic Sea Scallop and Golden Tilefish fisheries, DMIS landings data are pulled into AMS.

For Days-At-Sea allocation usage (and credits associated with carrying an Observer in the Sea Scallop fishery) in the Limited Access Atlantic Sea Scallop, Northeast Multispecies and Monkfish fisheries, VMS declaration and timestamp data are processed to integrate fisheries-specific charging and crediting rules in AMS.

### 3.1.4 VMS Electronic Forms Data

In addition to a declaration of activity, some trips and permit types mandate additional reports to be submitted via VMS. Several fishery management plans (Atlantic sea scallop, Northeast multispecies, Atlantic herring, Atlantic mackerel, Longfin squid, *Illex* squid, Research Set-Aside (RSA), and Exempted Fishing Permit (EFP) activity require other reports that are used in DMIS to be submitted by means of VMS.

#### 3.1.4.1 VMS Data Collection

VMS collects data from the following reports:

- Groundfish (GF) Catch Reports:  
Required information: Vessel operator number, VTR serial number (as reported to dealer), if the small-mesh exemption was declared and small-mesh will be used after a catch report is submitted, date and kept pounds for each groundfish species kept by statistical area. Landings reported on daily GF catch reports are used when dealer/VTR data are unavailable.
- Groundfish Trip Start Hail (TSH) Report:  
Required information: Vessel operator number, Vessel Trip Report Serial Number (as reported to dealer), Observer or At-Sea Monitor onboard, Sector exemptions and/or provisions to be fished on the trip, landing port and state, and estimated times of arrival and offload. This form is the sole source of information for identifying groundfish exemption trips. These reports are essential for coverage rate calculations, discard rate stratification and PTNS deployments.



- Herring Catch Reports:  
Required information:
  - Vessel operator number
  - VTR serial number (as reported to dealer)
  - Date and Kept and Discarded pounds of herring by herring management area
  - Whether slippage occurred,
  - Gear fished
  - Total fish kept by statistical area (including herring).

- Scallop Daily Catch Report:  
Required information:
  - Vessel operator number
  - VTR serial number (as reported to dealer)
  - Date and Kept pounds for scallop pounds and the sum of all other species

Landings reported on daily GF catch reports are used for monitoring when dealer/VTR data are unavailable. These reports are also used for monitoring scallop landings in the Northern Gulf of Maine.

#### 3.1.4.2 VMS Data Usage

Vessel Monitoring System Activity Code Declarations are matched to Dealer and VTR data with Vessel Permit Number and trip date. VMS eForms data can be matched to trips with the VTR serial number, which must be submitted on every eForm. DMIS uses VMS Activity Codes, including Fishery, Area, Gear, and several other fishery-specific criteria.

#### 3.1.5 GARFO Vessel Permit and Moratorium Qualification Review System (MQRS) Data

The Greater Atlantic Regional Fisheries Office (GARFO) issues permits to fishing vessels, fishing vessel operators, and commercial fish dealers for a large number of FMPs managed or jointly managed by the Greater Atlantic Region of NOAA Fisheries.

##### 3.1.5.1 Permit and MQRS Data Collection

The Permit database contains information from the vessel permit application on hull number, principal and home ports, all limited and open-access permits and categories as well as vessel horsepower, length, and tonnage. The GARFO Vessel Permit Number is integral to the VTR, AMS, and commercial fisheries dealer databases.

GARFO also processes and records vessel replacements, vessel upgrades and transfers of permit histories, as well as moratorium, limited access, and allocation-based rights that are utilized in a variety of ways through a number of fishery management plans (e.g. gillnet, lobster trap, and surfclam and ocean quahog cage tags and individual fishing quota (IFQ) allocations). Records of these transactions are maintained in the Moratorium Qualification Review System (MQRS).

##### 3.1.5.2 Permit and MQRS Data Usage

- All permit numbers from VTR, AMS, and commercial fisheries dealer databases are pulled into DMIS to form the basis of data matching procedure.
- Moratorium rights data are also pulled into DMIS for use in monitoring (e.g. LAGC-IFQ scallop monitoring).

### 3.1.6 Northeast Fisheries Observer (NEFOP) and At-Sea Monitor (ASM) Data

Fisheries observers and at-sea monitors collect a tremendous amount of data that are crucial to the effective monitoring and sustainable management of exploitable and protected marine resources.

#### 3.1.6.1 NEFOP and ASM Data Collection

Fishing vessels with a permit for Atlantic sea scallops, Northeast multispecies, monkfish, skates, Atlantic mackerel, squid, butterfish, scup, black sea bass, bluefish, spiny dogfish, Atlantic herring, tilefish, Atlantic surfclam, ocean quahog, or Atlantic deep-sea red crab; or a moratorium permit for summer flounder; may be required to carry a NMFS-certified fisheries observer or At-Sea Monitor (if on a Sector trip).

#### 3.1.6.2 NEFOP and ASM Data Usage

Observer-recorded data elements most relevant to DMIS are the

- Quantity and species harvested and discarded
- Location,
- Gear fished
- Amount of effort (quantity/time) of gear deployed

For matching, the VTR serial number and the vessel permit number and date of landing/purchase are the most important Observer data elements.

### 3.1.7 Commercial Fisheries Dealer Reports

Any dealer issued a Federal permit for one or more of the species listed in [Table 2](#) must submit detailed trip-level reports of all fish purchased or received for a commercial purpose on a weekly (at minimum) basis to NOAA Fisheries Service via computer, using approved electronic means.

#### 3.1.7.1 Dealer Report Collection

Detailed reports must be received by midnight of the first Tuesday following the end of the reporting week (the prior Saturday). Electronically-reported Federal fisheries dealer data are submitted to NOAA Fisheries via the Atlantic Coastal Cooperative Statistics (ACCSP) Program. Dealer-reported commercial fisheries data include a set of data elements necessary for both *matching* to other fisheries-dependent data sources and for *monitoring and analyzing* of Federally-managed marine resources.

The vessel provides to the dealer for the Dealer report:

- Vessel name
- Federal vessel permit number or hull number
- VTR serial number for each trip

The dealer must provide in the Dealer report for each species purchased or received:

- Date of purchase,
- Date of landing,
- Landed weight,
- Grade,
- Disposition,
- Market category by species

Dealer data are drawn into the Commercial Fisheries Dealer Electronic Reports tables of the Commercial Fisheries Database System (*cfdfs.cfdersYYYY*) database at the Northeast Fisheries Science Center (NEFSC) of NOAA Fisheries nightly. The data are then available for matching to other fisheries-dependent resources.

**Table 2: Species Requiring a Detailed Commercial Transaction Report Submission to NOAA Fisheries**

Species Identification List	
Atlantic Bluefish	Golden and Blueline Tilefish
Atlantic Deep-Sea Red Crab	Monkfish
Atlantic Hagfish	Northeast Multispecies
Atlantic Herring (including Processors)	Ocean Quahog (including Processors)
American Lobster	Scup
Atlantic Mackerel	Skate
Atlantic Sea Scallop	Spiny Dogfish
Atlantic Tunas	Squid ( <i>Illex</i> or Longfin squid)
Black Sea Bass	Summer Flounder
Butterfish	Surfclam (including Processors)

### 3.1.7.2 Dealer Report Usage

Commercial fisheries dealer data reports are used for species, grade, disposition, market category, and value as well as port and state of landing.

In DMIS, the elements used to match dealer-reported data to VTR and Observer data are the Vessel Trip Report Serial number, vessel permit number, date of purchase, and date of landing.

### 3.1.8 Northeast Multispecies Sector Roster Data

GARFO maintains a database of Northeast Multispecies sector roster information.

#### 3.1.8.1 Sector Roster Data Collection

Sector roster data includes the following:

- Sector identification number (Sector ID)
- Vessel permit Moratorium Right Identification (MRI) number
- Beginning and ending dates of vessel participation in a particular sector

#### 3.1.8.2 Sector Roster Data Usage

Sector roster information is pulled into DMIS and used for NE Multispecies sector monitoring.

## 4 DMIS Task Flow

This section documents the flow of tasks that DMIS must perform. The intent of this section is to provide the following:

- Basic information about each task.
- Reason or reasons why each task is performed.

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**NOTE:** This section does not document how the program code performs these tasks, as that information falls outside the scope of this document.

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DMIS performs the following major task modules in order:

1. [Preparing the Data for Processing](#)
2. [Building a Map of Matched Data Sets](#)
3. [Running the Matching Module](#)

Each task module is delineated in the following sections.

### 4.1 Preparing the Data for Processing

Before DMIS can process data, it must prepare those data in order to avoid data format errors that would interfere with the program run.

#### 4.1.1 *Sub-Step 1: Deleting Previous Schema Iterations*

DMIS refreshes any previous iterations of both the DMIS schema (where DMIS administrative data resides) and the APSD schema (where DMIS public-facing data resides). Refreshing these two schemas ensures that DMIS does not process data that has been processed in previous DMIS runs.

#### 4.1.2 *Sub-Step 2: Setting Boundaries on Incoming Data*

DMIS sets a boundary on incoming data sets by applying a date range constraint on all incoming data.

#### 4.1.3 *Sub-Step 3: Creating Incoming Data as Staging and Support Tables*

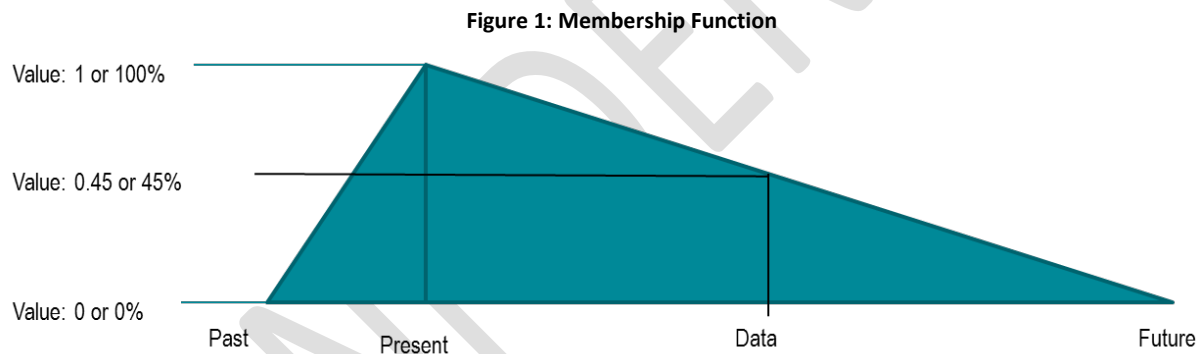
DMIS creates and manages tables that provide staging and support for data flowing from the data sources to the DMIS processing engine. DMIS specifically uses staging and support tables for:

- Transformation  
Data are transformed before processing so that DMIS is ensured of using consistent input structures.
- Troubleshooting  
Ensure stationary, non-transitory source for debugging/troubleshooting issues.
- Failure Recovery  
Ensure stationary, non-transitory source closed to users during the entire span of processing.

## 4.2 Building a Map of Matched Data Sets

After the data are staged properly, DMIS builds a map of matched data sets based on an optimized trip matching methodology. DMIS matches trips from multiple data sources by comparing data fields that are common to several data source streams, including VTRs, AMS, and Dealer reports. There are three primary matching criteria for a trip; they collectively comprise the **Vessel Trip ID**:

- **Vessel Permit Number (VPN)**  
VPN constitutes a **hard match** for DMIS; that is, a one-for-one match. The same Federal vessel permit number is required on records from all data sources for hard-matching of trips.
- **VTR Serial Number**  
VTR serial number constitutes a **hard match** when it exists; this hard match is limited to the past 30 days. After 30 days of elapsed time, a chance exists that a VTR serial number might be re-used.
- **Date Matching**  
When available and applicable, DMIS uses *date information* to associate a record to a particular trip. DMIS evaluates the strength of the associated date match through a membership function. A **membership function** is a curve or shape that *defines* how each point in the input space is mapped to a membership value, or degree of membership, between 0 and 1. (In this case, how well the *dates align between records*: 0 = not at all, 1 = perfect.) Refer to [Figure 1](#).



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**NOTE:** Currently, membership functions are based on date-times. It is possible to use other provided information: for example, Species Landed and Area Type Reported On VTR to match to specific AMS declarations. The final score can also be a function of multiple membership functions.

---

### 4.2.1 General Order of Data Matching for the Map

DMIS matches multiple sets of data. The methodology to build the map is:

- **Order dependent** — A matching operation on a particular set of data is completed before matching can be attempted on the next particular set of data.
- **Cumulative** — The results of each previous match are kept to be used to attempt to match the next set of data; at the end of the process, DMIS has built the matching map.

This methodology is explained more thoroughly in the enumerated list directly after this discussion.

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**NOTE:** A unique DMIS Trip ID along with an official record Sail and Land date is assigned to each trip. Orphans are allowed in all matches.

---

DMIS builds the matching map as follows:

- 1 **AMS Declaration information is matched to VTR:** This matching is always performed first. Matches are performed using Sail and Land dates from both records. Based on the membership function's score, many-to-one matches (trip stitching) are allowed in either direction based on compatible AMS declarations. For example, one specific AMS declaration can be associated with one or more VTRs. In the previous case, each VTR is given a unique ID with the AMS declaration associated with each of the IDs.

The default is to allow trip stitching in DMIS, but the option can be turned off. VTR dates are selected over AMS dates as the official trip record Sail and Land dates.

- 2 **Multispecies Catch Report:** Records are first matched based upon VTR serial number. If the sources cannot be matched on VTR serial number, an attempt is made to match the records based upon the trip record Land dates and the range of reported Multispecies catch report dates (VMS Multispecies are transmitted daily during a trip).
- 3 **Multispecies Trip Start Hail Report:** Records are first matched by based upon VTR serial number. If the sources cannot be matched on VTR serial number, an attempt is made to match the records based upon VTR Land date and the Multispecies Trip Start Hail report date.
- 4 **Herring Catch Report:** Records are first matched by based upon VTR serial number. If the sources cannot be matched on VTR serial number, an attempt is made to match the records based upon VTR Land date and the range of reported Herring Catch Report dates (VMS herring catch reports are transmitted daily during a trip).
- 5 **Limited Access General Category (LAGC) Individual Fishing Quota (IFQ) Scallop Pre-Land report:** Records are first matched by based upon VTR serial number. If the sources cannot be matched on VTR serial number, an attempt is made to match the records based upon VTR Land date and the LAGC IFQ Scallop Pre-Land report date.
- 6 **Multispecies Pre-Trip Notification System (PTNS) Report:** Matching is based upon reported Sail date from both sources.
- 7 **Northeast Fisheries Observer Program (NEFOP) Report:** The Observer reports are always matched second to last. Records are first matched by based upon VTR serial number. If the sources cannot be matched on VTR serial number, an attempt is made to match the records based upon VTR Land date and the Sail and Land date range of the NEFOP Observer report.
- 8 **Commercial Fisheries Dealer Report:** Dealer reports are always matched last. Records are first matched by based upon VTR serial number. If the sources cannot be matched on VTR serial number, an attempt is made to match the records based upon VTR Land date and the dealer-reported date of landing. Dealer-reported dates of landing do not include time information, assumed to be 11 PM.

#### 4.2.2 Matching Map

The resulting output of DMIS is a set of relational database tables that map the trip level relationships, including the affinity scoring of the match, between the dataset records. The matching tables themselves are described in the section [Tables](#) later in this document.

## 4.3 Running the Matching Module

The DMIS matching module examines the trip-level activity from the various data input streams and attempts to establish that the data submitted for those trips align, or match.

When available, DMIS first attempts to match records by the use of VTR serial numbers. Unless specified otherwise, the VTR serial number match is required to be within plus or minus 10 days of the record landing date of the trip. Each trip with associated VTR serial numbers is also constrained to one unique DMIS Trip ID.

If a record cannot be matched using the VTR's serial numbers, then DMIS uses date matching by means of the Kuhn-Munkres algorithm (often called the Hungarian method) and membership functions, which are explained in the following sections.

### 4.3.1 Matching Processing

The matching process attempts to align records using information that indicates the records belong to the same trip. For some records, a **hard match** can be made (for example, the VTR serial numbers in both the VTR and Dealer report). Where a hard match is not possible, **date matching** is necessary in order to align records that were generated or reported during similar time periods. This process involves building a matrix containing similarity, or **affinity**, scores that are then used to pair the most likely matches.

#### 4.3.1.1 Building Affinity Matrix on Date Matching

An affinity matrix is used to portray a **score** (either a probability or cost) assigned to each potential pairing of data records that might belong to the same trip. The matrix is built after hard matches have been removed off the top. Each matrix contains all remaining data records belonging to a given permit during some period of time for the two data types being matched (for example, VTR and Dealer report), with scores calculated between all potential pairings.

The score is calculated according to the distance in time between relevant time records – larger distances result in lower probabilities or higher costs. Some data records will have a start and end date for the trip (for example, VTRs), while others will have a single date of transaction (for example, Dealer report).

Note that the calculation is **conditional** on the nature of the data types being proposed for matching. For example, start and end dates for a trip are used to calculate a midpoint date, and all three dates are then used to compare times for VTR and AMS records. Given that the scores are relative, the details of their calculation are amenable to modification and may require adjustment to optimize matches.

#### 4.3.1.2 Removing Trip Orphans

To facilitate identification of trip orphans, DMIS defines the affinity scores, which have been assigned through membership functions, as **relative probabilities**. Therefore, any record that does not have a corresponding affinity score of **>0** to at least one other match is an orphan. The trip orphans are easily identified by those rows or columns in the affinity matrix that sum to zero.

#### 4.3.1.3 Maximizing Affinity Scores

The Hungarian (Kuhn-Munkres) algorithm is a combinatorial optimization algorithm that solves the best one-to-one combination of records in the affinity matrix by maximizing the total sum of probabilities (or minimizing the costs). The resulting output is a list of the matching records (for example, 1 → 2, 2 → 3, 3 → 1). In this application, unambiguous trip orphans are removed prior to applying the algorithm.

---

**NOTE:** Ambiguous trip orphans are still possible when the number of data records in each set is unequal (for example, 5 AMS records being matched to 4 VTRs), or when records that are deemed “combined” by the algorithm have a low affinity score. In each case, decisions to combine or separate records are based on whether the affinity score meets a minimum threshold (typically 0.50).

---

For example, if two AMS records had high affinity scores with a single VTR record, the algorithm would only match the AMS record with the highest score. The matching process would proceed to “stitch” the additional AMS record if – based on the affinity score and other attributes – it was also deemed to belong to the same VTR record. Conversely, records matched by the algorithm may be separated if the affinity score does not meet the threshold.

## 5 Apportionment

In addition to performing trip-level record matching from different data sources based on hard matching and date matching, DMIS must also produce quota monitoring information at the trip level. DMIS does this by analyzing dealer landings and **apportioning** catch based on VTR-supplied information. (Apportionment is the determining of the proportion of kept catch and discards per species per stock or stat area under a specific fishing effort.)

When a fishing trip has employed more than one type of fishing gear, or mesh size category, or fished in more than one statistical area, it may be necessary to identify, or apportion, how much of the landings came from each gear type/mesh category/ and/or statistical/stock area. To do this, Vessel Trip Report data are used to calculate the proportion of a species landed by a particular gear/mesh/area combination; that proportion is then applied to the dealer-reported data, in the example following.

### 5.1 Identify the Strata from the Trip

A stratum comprises several key items of information from the trip:

- Stat Area (obtained from the **Chart Area** from the VTR)
- Gear
- Mesh
- Exemption (if applicable)

If *any* of these items changes on a trip, that change creates a new stratum, which generates a new VTR. Different species may generate different sets of strata. The strata may change for each discard species, so the process must be repeated for each discard species. For example, a flounder species can differ in its stock identification, depending on the stock areas in which they are caught.



## 5.2 VTR Data for the Example

For this example, the VTR data for this trip is shown in [Table 3](#) and [Table 4](#). There are two strata, so there are two VTRs. (If there is more than one stratum, the Kept weight for each stratum must be recorded.) Pounds are in round numbers for easier reference. Assume for this example that Kept weight for the strata is 800 and 1300 pounds, respectively.

**Table 3: VTR Data (First Stratum)**

VTR Serial Number	Stat Area (Chart Area)	Gear	Mesh Category	Species	Kept Weight
11111111	522	OTF	LM	Cod	100
11111111	522	OTF	LM	Haddock	500
11111111	522	OTF	LM	Yellowtail	200

**Table 4: VTR Data (Second Stratum)**

VTR Serial Number	Stat Area (Chart Area)	Gear	Mesh Category	Species	Kept Weight
11111112	521	OTF	LM	Skate	400
11111112	521	OTF	LM	Haddock	800
11111112	521	OTF	LM	Yellowtail	100

### 5.2.1 Allocated Groundfish Discard Species

Refer to [Table 5](#) for the allocated groundfish discard species for the Stat Areas recorded for this trip. Note that the Stock IDs for yellowtail flounder and winter flounder differ per stat area.

**Table 5: Allocated Groundfish Discard Species**

Species	Stock ID for Stat Area 522	Stock ID for Stat Area 521
Cod	CODGBW (Georges Bank West)	CODGBW (Georges Bank West)
Haddock	HADGBW (Georges Bank West)	HADGBW (Georges Bank West)
Pollock	POKGMASS	POKGMASS
Witch Flounder	WITGMMA	WITGMMA
Yellowtail Flounder	<b>YELGB</b>	<b>YELCCGM</b>
Plaice	PLAGMMA	PLAGMMA
Halibut	HALGMMA	HALGMMA
Winter Flounder	<b>FLWGB</b>	<b>FLWSNEMA</b>
Redfish	REDGMGBSS	REDGMGBSS

### 5.3 Calculate the Stratum Portions

For each species that was caught on the trip, the percentage of that species that was caught in each stratum must be determined. This percentage is sometimes called the **portion**.

The stratum portion is calculated as follows:

The Kept weight from the VTR for this  $K_{all}$  species caught in this stratum

*Divided by*

The Kept weight from the VTR for this  $K_{all}$  species for the entire trip.

This results in the portions shown in [Table 6](#) and [Table 7](#) immediately following.

**Table 6: Aggregated Kall Species from the VTR**

Species	Pounds for Stat Area 522	Pounds for Stat Area 521	Total Pounds
Cod	100	0	100
Haddock	500	800	1300
Yellowtail	200	100	300
Skate	0	400	400

**Table 7: Calculating the Stratum Portions**

Species	Stat Area by VTR	Stock ID	Stratum Portion
Cod	522	CODGBW	$100/100=1.00$
Cod	521	CODGBW	$0/100=0.00$
Haddock	522	HADGBW	$500/1300=0.38$
Haddock	521	HADGBW	$800/1300=0.62$
Yellowtail	522	YELGB	$200/300=0.67$
Yellowtail	521	YELCCGM	$100/300=0.33$
Skate	522	NA	$0/400=0.00$
Skate	521	NA	$400/400=1.00$

**Note:** The apportionment values for cod and haddock are irrelevant because the stock is consistent across the two stat areas fished.

## 5.4 Apply the Stratum Portions to the Dealer Data

To get the apportioned live weight for each stratum, the **Stratum Portion** from [Table 7](#) must be multiplied by the **Total Live Weight**. The **Total Live Weight** value for each stratum equals the sum of the following two values:

- **Live Weight Dealer**  
The species weight sold to and recorded by the dealer.
- **Live Weight Non-Dealer**  
The species weight landed but not sold to the dealer and then converted to live weight (such as bait and home consumption). In this example, all fish landed have been sold to a dealer, so this value equals zero.

Refer to [Table 8](#) and [Table 9](#) to see how the live weights are apportioned.

**Note:** If the dealer Live Weight values are not present, Landed-to-Live Weight conversion factors are used.

**Table 8: Total Live Weight**

Species	Live Weight Dealer	Live Weight Non-Dealer	Total Live Weight
Cod	126	0	126
Haddock	1308	0	1308
Yellowtail	319	0	319
Skate	899	0	899
<b>Total K<sub>all</sub></b>	<b>2652</b>	<b>0</b>	<b>2652</b>

**Table 9: Applying Stratum Portions to Dealer Data**

Species	Stat Area (by VTR)	Stock ID	Stratum Portion (from Table 9)	Total Live Weight by Species	Apportioned Weight
Cod	522	CODGBW	1.00	126	126
Cod	521	CODGBW	0.00	126	0
Haddock	522	HADGBW	0.38	1308	497
Haddock	521	HADGBW	0.62	1308	811
Yellowtail	522	YELGB	0.67	319	214
Yellowtail	521	YELCCGM	0.33	319	105
Skate	522	NA	0.00	899	0
Skate	521	NA	1.00	899	899

## 5.5 Calculate the $K_{all}$ for Each Stratum

The apportioned live weights are summed within each stratum in order to get the  $K_{all}$  value for each stratum. Refer to [Table 10](#) and [Table 11](#) immediately following to see the  $K_{all}$  values for this example.

**Table 10: Calculating the  $K_{all}$  for Stratum 522**

Species	Stat Area (by VTR)	Stock ID	Stratum Portion (from Table 9)	Total Live Weight by Species	Apportioned Weight
Cod	522	CODGBW	1.00	126	126
Haddock	522	HADGBW	0.38	1308	497
Yellowtail	522	YELGB	0.67	319	214
Skate	522	NA	0.00	899	0
TOTAL $K_{all}$	NA	NA	NA	NA	837

**Table 11: Calculating the  $K_{all}$  for Stratum 521**

Species	Stat Area (by VTR)	Stock ID	Stratum Portion (from Table 9)	Total Live Weight by Species	Apportioned Weight
Cod	521	CODGBW	0.00	126	0
Haddock	521	HADGBW	0.62	1308	811
Yellowtail	521	YELCCGM	0.33	319	105
Skate	521	NA	1.00	899	899
TOTAL $K_{all}$	NA	NA	NA	NA	1815

## 6 DMIS Administration

The APSD Monitoring and Analysis section controls the modification and maintenance of DMIS through the Git version control system, which tracks changes to the DMIS software. A local server at GARFO stores a repository that allows contributors in APSD to edit the DMIS code base, which has the capability of expanding the number of data streams that get matched to trips.

## 7 Appendix: DMIS Data Dictionary

This appendix documents the DMIS Data Dictionary.

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**NOTE:** Data dictionary description is preliminary and subject to change.

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### 7.1 Matching Overview (Abbreviated)

Matching in DMIS is handled across all records for a given permit and consists of two main types:

1. Reported VTR serial number (VTRSERNO)
2. DATE

#### 7.1.1 VTR Serial Number

Where available, DMIS first attempts to match records by reported VTRSERNO. The Match score is automatically 1 (see [DATE](#) description, below).

There is a suggested requirement that any match DATE must be within 30 days in order to prevent some of the multiple reports in VTRSERNO. The 30 days appears to work sufficiently, but can be easily be updated to be more restrictive.

This is a hard requirement that a VTRSERNO can be only related to one trip. This is tracked during the matching of the different record sources.

#### 7.1.2 DATE

When it is not possible to match by VTRSERNO, remaining matches are performed through date matching. Following is a brief description.

1. Assigns a score between 0 to 1, with 1 being a perfect match through a membership function.

While currently based on available dates only, this membership function can be expanded based on individual record base information. As an example, a groundfish declaration may be limited or scored based on reported gear types in a VTR record. There is a danger, however, in overwriting and restricting the scoring function in the presence of reporting errors.

2. All records with a score of zero are removed as orphans.
3. The remaining records are matched in a 1-to-1 using an algorithm known as the Hungarian - Monkres (*circa* 1949). This algorithm selects the best combination that maximizes the sum of the matched record scores.
4. Date matching in AMS to VTR contains one more step that maybe turned off or on as a user option.

Stitching. When the 1-to-1 matching is complete, DMIS reviews all match scores in sequential order and determined if the records should be combined. The score limit can be set by the user with a 0.5 default. Currently stitching is limited to declarations of the same type or 'XXX-' or 'DOF-'

## 7.2 Tables

DMIS tables are relational based on DMIS\_TRIP\_ID and PERMIT. They represent the core matched records and their respective links that constitute a trip. Notes are provided as needed.

### 7.2.1 Main Tables

Following are the top level tables that list all DMIS\_TRIP\_IDs:

- **APSD.MV\_DMIS\_MATCH\_TRIP\_ID**  
Contains trips for all permits that are not 000000 and may include permit numbers not 000000 that are invalid or that represent a state trip such as 888888 for NY.
- **APSD.MV\_DMIS\_MATCH\_TRIP\_ID\_PZERO**  
For CFDEERS dealer records with PERMIT ID 000000, since no matching is performed for these permits. Permit zeros are grouped into a trip for all landings reported for a dealer on a specific day.

#### 7.2.1.1 Description

RECORD\_LAND dates are hierarchical, as in the original DMIS, but RECORD\_LAND includes more source records (VTR > AMS > (Catch reports: Multispecies catch, Multispecies Start Hail, Herring Catch, Scallop Preland, Multispecies PTNS reports), Observer, > DLR).

#### 7.2.1.2 Notes

1. The previous list is also the current order of matching.
2. DMIS is modular in design - easy to expand to allow other source data sets.
3. vTrack information is a planned future enhancement.

#### 7.2.1.3 Fields

[Table 12](#) Lists the fields in the TRIP\_ID tables.

**Table 12: Fields in the TRIP\_ID Tables**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
DOCID	VARCHAR2	VTR Document table record identifier
RECORD_SAIL	TIMESTAMP	Official sail date of the trip
RECORD_LAND	TIMESTAMP	Official land date of the trip
RECORD_CREATED	TIMESTAMP	Trip creation date

## 7.2.2 Matching Map Tables

### 7.2.2.1 APSD.MV\_DMIS\_MATCH\_AMS\_VTR

APSD.MV\_DMIS\_MATCH\_AMS\_VTR is first derivative table created and represents the matching of VTR to AMS declarations. This is the only table currently allowing stitching. Stitching allows either multiple VTR records pre declaration or multiple declarations per VTR. The latter can be legitimate, as in the case in which a scallop trip declares a DOF on initial transit, then a SCP when fishing, and then another DOF upon final transit.

---

**NOTE:** All declarations are included. One will note declarations as 'XXX-XXX-XXXXX'. These declarations have been 'marked' as NULL within the AMS system for the purposes of trip charging.

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#### 7.2.2.1.1 Fields

[Table 13](#) lists the APSD.MV\_DMIS\_MATCH\_AMS\_VTR fields.

**Table 13: APSD.MV\_DMIS\_MATCH\_AMS\_VTR Fields**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
DAS_ID	VARCHAR2	AMS Day at Sea ID
TRIP_ID	VARCHAR2	AMS Trip ID
DOCID	VARCHAR2	VTR Document table record identifier
STITCH	NUMBER	Flag: 1 = trip is stitched to another record
ACTIVITY_CODE	VARCHAR2	VMS Declaration Code
AMS_MUL_CHARGE	VARCHAR2	AMS Multispecies charge type
AMS_PROGRAM	VARCHAR2	VMS Program Code: First Three characters of ACTIVITY_CODE
TRIPCATG	VARCHAR2	AMS Trip Type: 1=Commercial; 2=Party; 3=Charter, 4=Research Set Aside/Exempted
AMS_SAIL	TIMESTAMP	AMS Sail Date
AMS_LAND	TIMESTAMP	AMS Land Date
VTR_SAIL	TIMESTAMP	VTR Sail Date
VTR_LAND	TIMESTAMP	VTR Land Date
RECORD_SAIL	TIMESTAMP	DMIS Sail Date
RECORD_LAND	TIMESTAMP	DMIS Land Date
AMSVTR_SCOR	NUMBER	AMS to VTR Match score
AMSVTR_STITCH_TYPE	VARCHAR2	NONE = Orphan, DATE, VTR

### 7.2.2.2 APSD.MV\_DMIS\_MATCH\_MUL\_CATCH

[Table 14](#) lists the second derivative table created and represents the matching of Multispecies Catch reports to the cumulative set.

**Table 14: Multispecies**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
MUL_CATCH_ID	VARCHAR2	Multispecies Catch Report ID
VMS_MUL_DATE	TIMESTAMP	Multispecies Catch Report Date
MUL_CATCH_VTR	VARCHAR2	Multispecies Catch Report reported VTRSERNO
SET_TRIP	VARCHAR2	Historical gill set trip for sectors. Non PTNS related
MUL_CATCH_SCORE	NUMBER	Multispecies Catch Report matching score
MUL_CATCH_MATCH	VARCHAR2	Multispecies Catch Report match type

### 7.2.2.3 APSD.MV\_DMIS\_MATCH\_MUL\_START\_HAIL

[Table 15](#) lists the third derivative table created and represents the matching of the Multispecies Trip Start Hail reports to the cumulative set.

**Table 15: Trip Start Hail**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
VMS_SECTOR_HAILS_ID	VARCHAR2	Multispecies Trip Start Hail ID
DATE_RECORDED	TIMESTAMP	Multispecies Trip Start Hail date recorded
MUL_START_HAIL_VTR	VARCHAR2	Multispecies Trip Start Hail VTRSERNO
MUL_START_HAIL_SCORE	NUMBER	Multispecies Trip Start Hail matching score
MUL_START_HAIL_MATCH	VARCHAR2	Multispecies Trip Start Hail match type



#### 7.2.2.4 APD.MV\_DMIS\_MATCH\_HER\_CATCH

[Table 16](#) lists the fourth derivative table created and represents the matching of the Multispecies Trip Start Hail report to the cumulative set.

**Table 16: Herring**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
HERRING_CATCH_ID	VARCHAR2	Herring catch report ID
DATE_RECORDED	TIMESTAMP	Herring catch report date recorded
HER_CATCH_VTR	VARCHAR2	Herring catch report VTRSERNO
HER_CATCH_SCORE	NUMBER	Herring catch report matching score
HER_CATCH_MATCH	VARCHAR2	Herring catch report match type

#### 7.2.2.5 APD.MV\_DMIS\_MATCH\_SES\_PRELAND

[Table 17](#) lists the fifth derivative table created and represents the matching of the Scallop LAGC IFQ pre-land reports to the cumulative set.

**Table 17: Scallop**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
MESSAGE_ID	VARCHAR2	Scallop Pre-land message ID
SCALLOP_PRELAND_ID	VARCHAR2	Scallop Pre-land ID
TIME_SENT	TIMESTAMP	Scallop Pre-land time sent
SES_PRELAND_VTR	VARCHAR2	Scallop Pre-land reported VTRSERNO
SES_PRELAND_SCORE	NUMBER	Scallop Pre-land matching score
SES_PRELAND_MATCH	VARCHAR2	Scallop Pre-land match type

### 7.2.2.6 APSD.MV\_DMIS\_MATCH\_MUL\_PTNS

[Table 18](#) is the sixth derivative table created and represents the matching of the PTNS reports to the cumulative set.

**Table 18: PTNS**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
PTNS_ID	VARCHAR2	PTNS ID
SAIL_DATE	TIMESTAMP	PTNS sail date
PTNS_SCORE	NUMBER	PTNS matching score
PTNS_MATCH	VARCHAR2	PTNS match score

### 7.2.2.7 APSD.MV\_DMIS\_MATCH\_OBS\_LINK

[Table 19](#) lists the seventh derivative table created and represents the matching of the NEFOP Observer reports to the cumulative set.

**Table 19: Observer**

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
LINK1	VARCHAR2	Observer LINK1 ID
OBS_SAIL	TIMESTAMP	Observer sail date
OBS_LAND	TIMESTAMP	Observer land date
OBS_VTR	VARCHAR2	Observer reported VTRSERNO
OBS_LINK_SCORE	NUMBER	Observer matching score
OBS_LINK_MATCH	VARCHAR2	Observer match type

### 7.2.2.8 APSD.MV\_DMIS\_MATCH\_DEALER, APSD.MV\_DMIS\_MATCH\_DEALER\_PZERO

Table 20 lists the final derivative tables created and represent the matching of the cumulative set to the Dealer report.

Table 20: Dealer

ColumnName	DataType	Notes
DMIS_TRIP_ID	VARCHAR2	Official DMIS ID function of permit and record land
PERMIT	VARCHAR2	Vessel Permit Number
DLR_ID	VARCHAR2	Dealer ID: see section 7.2.2.8.1
DLR_DATE	TIMESTAMP	Dealer Date: assumes 11 pm closing time
DLR_VTR	VARCHAR2	Dealer reported VTRSERNO
DLR_SCORE	NUMBER	Dealer matching score
DLR_MATCH	VARCHAR2	Dealer match type

#### 7.2.2.8.1 Understanding Specific Fields in the Dealer Tables

- DLR\_ID

DLR\_ID is combination of the following fields:

- YEAR
- LINK
- PARTNER\_ID
- PERMIT
- HULLNUM
- VTRSERNO
- DDATE

SQL Code:

```
YEAR ||'_-'|| LINK ||'_-'|| NVL(PARTNER_ID,'000000') ||'_-'||
NVL(PERMIT,'000000') ||'_-'||
      NVL(HULLNUM,'000000') ||'_-'|| (CASE WHEN
REGEXP_LIKE(VTRSERNO, '^[:digit:]{7,14}$') THEN
VTRSERNO ELSE '00000000' END) ||'_-'||
      trunc(DDATE - to_Date('01-01-1980','mm-dd-yyyy'))
```

- DLR\_DATE (Reported)

DLR\_DATE is a reported Sold day with an assumed closing time of 11 PM.



**NOAA FISHERIES**

**NEFSC Science and Research Director's  
Annual Guidance Memo for Fiscal Year 2019**

April 16, 2018

**Northeast Fisheries Science Center**

**NOAA Fisheries**

# Preface

In the face of a rapidly changing natural and human environment we must adapt our science and our organization to meet present and future as well as internal and external challenges.

This Annual Guidance Memo builds off of the framework for the scientific enterprise of which the NEFSC is part – and highlights the anticipated results we would achieve in FY19 to support NOAA Fisheries’ three national Strategic Goals:

1. Maximize fishing opportunities while ensuring the sustainability of fisheries and fishing communities
2. Recover and conserve protected species while supporting responsible fishing and resource development
3. Improve organizational excellence and regulatory efficiency

Cross-cutting priorities for FY19 are communication and collaboration - both internal and external. We must express this commitment to each other and to our external stakeholders and partners. Throughout the year, we will plan multiple events focused on communication and collaboration. Where appropriate, Divisions and Branches are encouraged to pursue development of their annual activity plans by reaching across divisions and outside the NEFSC to build durable and effective partnerships. The Staff Advisory Council will be given dedicated resources to address communication issues throughout the NEFSC. Our recently initiated Facility Directors Board and the Supervisors Council will be continued and these groups will also address issues related to communication, collaboration, and organizational excellence more broadly.

This Annual Guidance Memo gives specific guidance for activities to be emphasized in FY19. This document does not prioritize different aspects of the NOAA Fisheries Mission, nor is it an attempt to prioritize one aspect of the NEFSC Science Strategic Plan over other aspects. Rather, it presents a limited number of high priority results we will endeavor to achieve in FY19 in support of our national and regional strategic goals and priorities.



Jon Hare  
Science and Research Director  
Northeast Fisheries Science Center

## NOAA Fisheries Mission

*Stewardship of living marine resources  
Through science-based conservation  
And management and the promotion of  
Healthy ecosystems*

# Mission & Challenges

The mission of the Northeast Fisheries Science Center (NEFSC) is to provide scientific advice in support of living marine resource management. More specifically, the NEFSC conducts ecosystem-based research and assessments of living marine resources, with a focus on the Northeast U.S. Shelf Ecosystem. These assessments and advice promote the recovery and long-term sustainability of living marine resources in the region, and generate social and economic opportunities and benefits from the use of these resources<sup>1</sup>. These assessments and advice are based on the best available science and are provided in an objective and impartial manner. To achieve this mission, the Northeast Fisheries Science Center strives for scientific and organizational excellence. These two elements were captured in The [Northeast Fisheries Science Center Strategic Science Plan](#) (2016-2021).

There are multiple challenges facing the science of living marine resource management in the Northeast U.S. First and foremost is the complexity and array of issues related to living marine resource management: wild-captured fisheries, aquaculture, protected species, habitat, various natural and human interactions, and broader ecosystem interactions.

The second major challenge is the recognition that our stock assessment process needs to be modified to ensure new research can be planned and brought to bear in an effective manner, while also providing regular and timely advice. Working with our partners, we need to continue the development of assessment approaches and modify the manner through which assessments are conducted, while meeting the region's ongoing assessment needs. Changing an operational system during operation is challenging but implementing these changes is a priority for NOAA Fisheries<sup>2,3,4,5</sup> and the Northeast Fisheries Science Center<sup>6,7</sup>.

The third major challenge is that the Northeast U.S. Shelf Ecosystem is one of the fastest changing ecosystems in the world. Over the past 15 years, waters in the Northeast U.S. Shelf have warmed in excess of 2°C, in part due to multi-decadal variability in climate and in part longer-term changes in climate. Human use of the ecosystem also continues to change, with changes in fishing patterns, wind energy development, coastal aquaculture, and the potential for offshore aquaculture development. Understanding the effects of these changes in the physical system and human uses of the system on living marine resources is a priority, as is understanding the impacts of these changes on living marine resources management<sup>8</sup>.

The fourth major challenge is that the Northeast U.S. Shelf Ecosystem is home to two highly endangered marine species. There are fewer than 460 North Atlantic right whales and the population is declining. Atlantic salmon populations remain very low. Promoting the recovery of these species in a changing environment (changing climate, increasing human use) will require continued assessment as well as developing and testing recovery approaches. There are a number of other marine mammals, sea turtles, and diadromous fish in the ecosystem that are protected or species of concern.

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<sup>1</sup> <http://www.nefsc.noaa.gov/mission.html>

<sup>2</sup> <http://www.st.nmfs.noaa.gov/ecosystems/ebfm/creating-an-ebfm-management-policy>

<sup>3</sup> [https://www.st.nmfs.noaa.gov/stock-assessment/saip\\_and](https://www.st.nmfs.noaa.gov/stock-assessment/saip_and)

[https://www.st.nmfs.noaa.gov/Assets/stock/documents/SAIPCompleteDraft\\_2-16-17.pdf](https://www.st.nmfs.noaa.gov/Assets/stock/documents/SAIPCompleteDraft_2-16-17.pdf)

<sup>4</sup> <http://www.st.nmfs.noaa.gov/stock-assessment/stock-assessment-prioritization>

<sup>5</sup> <https://www.st.nmfs.noaa.gov/stock-assessment/future-of-stock-assessment>

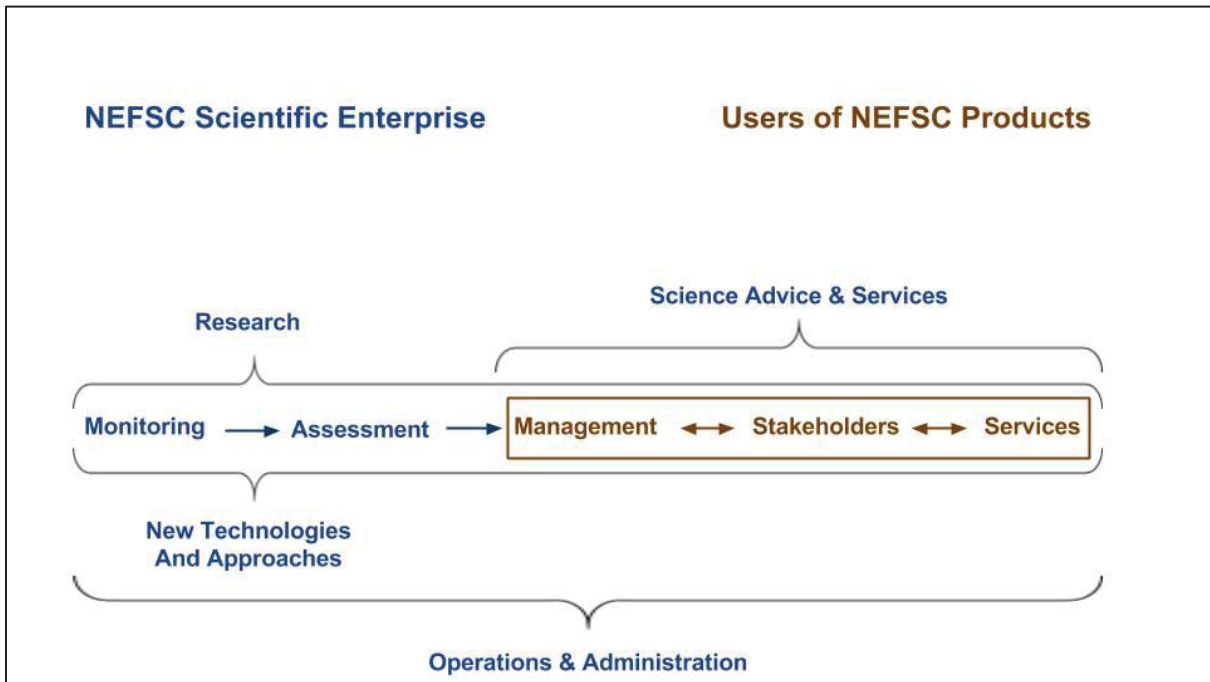
<sup>6</sup> <http://www.nefsc.noaa.gov/rcb/stratplan/nefsc-strategic-science-plan.pdf>

<sup>7</sup> [http://www.nefsc.noaa.gov/program\\_review/pdfs/nefsc-directors-memo-2014-program-review.pdf](http://www.nefsc.noaa.gov/program_review/pdfs/nefsc-directors-memo-2014-program-review.pdf)

<sup>8</sup> <https://www.st.nmfs.noaa.gov/ecosystems/climate/rap/northeast-regional-action-plan>

# Scientific Enterprise

Our goal is scientific excellence: accurate, precise, accountable, objective, efficient, timely, useful, transparent, and novel. Our science is conducted to support the management of living marine resources in the Northeast U.S. Shelf Ecosystem, which extends from North Carolina to Maine, and includes watersheds, estuaries, the continental shelf, and open ocean. The NEFSC science enterprise has six components: research, development of new technology and approaches, monitoring, assessment, providing scientific advice and services, and operations and administration (Figure 1). These components interact with three other components that are external to the NEFSC: management, stakeholders, and services. We must work across this enterprise to be successful.



**Figure 1.** Conceptual diagram of the scientific enterprise that supports stewardship of living marine resources. Blue represents the scientific enterprise of the NEFSC and brown represents external partners: managers, stakeholders, and services.

**Monitoring** is the systematic collection of data that provide information on changes in biological, physical, chemical, or human conditions. NEFSC data collection systems are designed to support the development of assessments and other scientific advice and services.

**Assessments** estimate the current status of managed species and the social and economic status of human systems connected to these species with the goal of providing the best available science and scientific advice for making decisions that support management goals and objectives.

**Scientific Advice and Services** broadly support management programs and decision-making. These activities develop a wide variety of products that support the NOAA Fisheries mission and the decisions of managers in the region. The goal is to develop science-based decision tools to support the sustainability of living marine resources, to enhance coastal community resilience and society's capability to respond to changing ecosystem conditions, and to manage risk to different components of the ecosystem.

**Research** includes laboratory experiments, field-based experiments and process studies, retrospective analyses, and modeling studies designed to understand and predict changes to living marine resources, the ecosystems they depend upon, and the human communities with which they interact.

*New Technologies and Approaches* are developed and evaluated to improve scientific advice. These technologies and approaches can apply to any element of the NEFSC scientific enterprise or connecting elements across the NEFSC scientific enterprise. New technologies include passive and active acoustics, imaging of water column and benthic habitats, gear engineering, electronic monitoring of fisheries, and genetic applications such as measurements of environmental DNA to assess ecosystem services. New approaches include more involvement of industry in monitoring and research activities and improvements to assessment and advice processes.

*Operations and Administration* are fundamental to the scientific enterprise and represent the internal functions and services necessary for the NEFSC to operate. These functions and services include secure and safe facilities and IT infrastructure, highly functioning workforce management support, effective personnel management, active communication techniques and strategies; effective and compliant budget execution, budget planning, procurement, grants, and contracts; and enabling IT support at the facility- and programmatic levels.

Outside of the NEFSC Science Enterprise, there are three other components of living marine resource management with which NEFSC science interacts.

*Management* includes all organizations involved in managing living marine resources in the Northeast U.S. Shelf ecosystem. First and foremost is the NOAA Fisheries Greater Atlantic Regional Fishery Office (GARFO), which is responsible for management of living marine resources in the Northeast region. The Atlantic States Marine Fisheries Commission, the two regional federal fishery management councils, and the NOAA Fisheries Highly Migratory Species Management Division are also important management bodies in the region. Other federal agencies are also supported, including the Bureau of Ocean Energy Management, the Army Corps of Engineers, and the U.S. Fish and Wildlife Service. Where resources overlap, management organizations in the southeast U.S. are also supported. These include the Southeast Regional Office and South Atlantic Fishery Management Council. There are also a number of advisory groups that review and use NEFSC science including those concerned with protected species like whales: the Atlantic Scientific Review Group, Status Review Teams, and Take Reduction Teams. NEFSC science also supports internationally managed resources through engagement in bilateral discussions of transboundary resources with Canada, and contributions to the advisory processes in the Northwest Atlantic Fisheries Organization, the International Council for the Exploration of the Sea, the International Commission for the Conservation of Atlantic Tunas, and the North Atlantic Salmon Conservation Organization. At the state level, we support management by participating on state planning bodies such as the Long Island Sound Management Committee and groups focused on oyster restoration in the Chesapeake Bay. This is not meant to be an exhaustive list, but provides examples of the wide array of managers and decision-makers who use NEFSC science.

*Stakeholders* include the individuals, communities, businesses, organizations, and agencies that rely on or have an interest in living marine resources. Examples are commercial and recreational fishermen and businesses; aquaculture operations; fish and shellfish dealers, processors, and sellers; the shipping, offshore energy, and pharmaceutical industries; local, state, and federal agencies; federally-recognized tribes; other nations; non-governmental organizations; and research organizations and institutions. Defined as such, stakeholders involve a large array of individuals, groups, and governments concentrated in the northeastern U.S. but extending nationally and internationally.

*Services* include all the benefits that stakeholders obtain from living marine resources. These services can be divided into four categories<sup>9</sup>. Supporting services are necessary for the production of other services. For example, forage fish provide a supporting service to their predators. Provisioning services are products obtained from living marine resources, for example, seafood purchased by consumers. Regulating services are benefits obtained from management of living marine resources. For example, conserving Essential Fish Habitat<sup>10</sup> protects the productivity and carrying capacity of fish and shellfish populations. Cultural services are nonmaterial benefits obtained from living marine resources through spiritual enrichment, recreation, and aesthetic and educational experiences such as recreational fishing, whale watching, aquariums or waterfront festivals.

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<sup>9</sup> <http://www.nefsc.noaa.gov/ecosys/ecosystem-status-report/ecosystem-services.html>

<sup>10</sup> <http://www.habitat.noaa.gov/aboutus/statutoryauthorities.html>



## Core Science

*Core science* is science that falls within the NEFSC Science Enterprise (Figure 2) and directly addresses the elements of the NOAA Fisheries mission: fisheries management, aquaculture, protected species management, and habitat and ecosystem management. As such, core science is broad, but there are boundaries; the connection to the NOAA Fisheries mission must be direct. *Core monitoring* includes those programs that directly contribute data to the NEFSC's fisheries, protected species, and ecosystem assessment activities. *Core assessment and advice* activities include fisheries, protected species, and ecosystem assessments, as well as economic and social analyses associated with fisheries, protected species, aquaculture and ecosystems. *Research and the development of new technologies* that are directed and designed to support the NEFSC Science Enterprise are also core - we need to continually work to improve our monitoring, assessments, advice, and services. Finally, core *operations and administration* functions of the NEFSC are those fundamental to executing our work: facilities, IT, budget, procurement, grants, communication, and administration.

# FY19 Priorities & Anticipated Results

## National Goals and Priorities

In general, the priority for FY19 is to support activities that achieve anticipated results that directly contribute to the three national NOAA Fisheries Strategic Goals:

- Maximize fishing opportunities while ensuring the sustainability of fisheries and fishing communities.
- Recover and conserve protected species while supporting responsible fishing and resource development.
- Improve organizational excellence and regulatory efficiency.

The priorities and anticipated results outlined here are consistent with overarching national strategic goals, national priorities, and shared priorities with GARFO.

## Science Operations & Program Reviews

Numerous reviews of NEFSC science and operations have been conducted over the past 5 years. Addressing actions identified in these reviews and plans should continue to be an important element of FY19 activities. These reviews have identified numerous opportunities for improving our science and our organization. Some of these reviews have been part of a formal NOAA Fisheries Program review process<sup>11</sup>: Stock Assessment [Data Collection Program](#), [Stock Assessment Methods](#), [Protected Species Science](#), [Economics and Human Dimensions Program](#), and [Ecosystem and Climate Science](#). In addition, there have been independent reviews of the [Observer Program](#), [Scallop Survey Methods](#), External [Communications & Stakeholder Engagement](#), and [Northeast Cooperative Research Program](#). Deloitte Consulting also recently reviewed human resources and budgeting functions at the NEFSC and an external review of the Data Management System Program will be conducted during FY18. As an FY19 Priority, the NEFSC will review the function of the Directorate, thus completing external reviews of all scientific and administrative programs at the NEFSC.

In addition to these reviews, there are agency and regional plans for improving NEFSC science that guide our work: including the [Habitat Assessment Improvement Plan](#), [Stock Assessment Improvement Plan](#), [Northeast Regional Action Plan](#), [Ecosystem Based Fisheries Management Roadmap](#), [NEFSC Strategic Plan](#), and [NOAA Marine Aquaculture Strategic Plan](#). There are also fishery management council-led reviews of programs in which the NEFSC is involved. These include a three-year review of the standardized bycatch reporting methodology and the review of the Research Set-Aside Program that will be completed by the New England Fishery Management Council.

## National Strategic Goal 1. Maximize Fishing Opportunities While Ensuring the Sustainability of Fisheries and Fishing Communities

NOAA Fisheries is responsible for managing U.S. fisheries in federal waters to help secure our nation's food security. U.S. fisheries are among the largest and most sustainable in the world. The U.S. science-based fishery management process is designed to provide optimum yield while preventing overfishing and taking into account the

<sup>11</sup> <http://www.st.nmfs.noaa.gov/science-program-review/>

protection of marine, estuarine, and coastal riverine ecosystems. Commercial (including seafood and support industries), recreational, and subsistence fishing opportunities strengthen the economy and our fishing communities. Aquaculture is an important and growing U.S. industry with the potential to provide a significant sustainable supply of healthy seafood for the nation and global markets. The NEFSC provides high-quality stock assessments and ecological and socioeconomic information required for federal management of fisheries, and contributes to the science and assessment of state-managed fisheries. With our partners, NOAA Fisheries executes its scientific enterprise to reduce the number of stocks subject to overfishing, increase the number of rebuilt stocks, support and enhance aquaculture, and develops ecosystem-based fisheries management approaches in the region. This substantially increases the economy in both revenue and jobs.

The NEFSC also provides and continues to develop ecosystem-based fisheries management, which recognizes the physical, biological, economic, and social interactions among fishery-related components of the ecosystem, including humans; and seeks to optimize benefits among a diverse set of societal goals.

## Priorities & Anticipated Results to maximize fishing opportunities

### **National Priority: Leveraging existing resources, identify and implement high-priority, near-term actions from the Ecosystem-Based Fisheries Management (EBFM) Roadmap**

#### **NEFSC Anticipated Results:**

Support continued development of ecosystem-based fisheries management in the region by continuing to develop and evaluate the Fishery Ecosystem Plan in partnership with New England Fishery Management Council, completing the annual State of the Ecosystem reports for each council, and conducting Mid-Atlantic Fishery Management Council risk assessments and supporting EAFM policies. {Scientific Advice & Services Enterprise}

### **National Priority: Maintain and enhance stock assessments to support management of U.S. fisheries:**

#### **NEFSC Anticipated Results:**

Integrate the new Marine Recreational Information Program catch estimates into NEFSC assessments and advice as scheduled by the Northeast Regional Coordinating Committee. {Assessment Enterprise}

Complete the first year of tasking for the Atlantic Cod Stock Structure Working Group, a US- Canadian effort to better understand cod stock structure in the Northwest Atlantic and the management implications of insights gained from that work. {Research Enterprise}

Conduct gear-performance evaluation for the NEFSC bottom-trawl survey fishing operation and examine potential effects on stock assessments in collaboration with the Northeast Trawl Advisory Panel (NTAP). Collaborate on other priority joint research with NTAP and provide research results and improved understanding to the stock assessment process. {Research Enterprise}

Expand internal and external collaboration to improve stock assessments using the new research- and management-track assessment framework, including better integration of ecosystem science into fish stock and protected species assessments. {Assessment Enterprise}

Establish protocols for incorporating cooperative and external research into the assessment processes. {Assessment Enterprise}

Coordinate with the Southeast Fisheries Science Center and the Highly Migratory Species Management Division on high priority research and assessments. {Assessment Enterprise}

### **National Priority: Implement stock assessment prioritization.**

#### **NEFSC Anticipated Results:**

Work with the Northeast Regional Coordinating Committee to implement changes to the assessment process with a goal of enabling scientific developments, including new information and understanding, and improving the responsiveness of science and management to the changing ecosystem. {Assessment Enterprise}

## **National Priority: Modernize and streamline our fishery information systems and data collection**

### **NEFSC Anticipated Results:**

Develop expanded capability to collect accurate and precise observer data electronically, reducing data transcribing errors, streamlining data delivery, and reducing time required to create output products. {Monitoring Enterprise }

Develop a common database structure to support HabCam datasets at the NEFSC so data can be readily accessed by all NEFSC staff. {New Technologies Enterprise }

Collaborate with GARFO and external partners to advance efforts to collect, manage, and use fishery-dependent data in support of the Fishery Dependent Data Vision by developing a unified trip management system and initiating technical teams to integrate pre-trip notifications, vessel trip reports, dealer data, Northeast Fisheries Observer Program data, and biosampling data into a unified system. {Monitoring Enterprise }

## **National Priority: Facilitate marine aquaculture production to increase overall U.S. seafood production.**

### **NEFSC Anticipated Results:**

Provide biological and socioeconomic science products and advice to a more diverse group of customers, supporting expanded sustainable coastal and offshore aquaculture. {Scientific Advice & Services Enterprise }

Conduct research to identify and forecast ecosystem services and aquaculture-ecosystem interactions relevant to the expansion of sustainable offshore aquaculture, and support GARFO in enabling a regulatory framework for aquaculture in federal waters. {Research & Scientific Advice and Services Enterprise }

Rebuild research and service program to address diseases affecting Northeast shellfish aquaculture. {Research & Scientific Advice and Services Enterprise }

## **National Priority: Advance effective and practical electronic technologies to improve collection of fishery-dependent data.**

### **NEFSC Anticipated Results:**

In collaboration with GARFO and our regional partners, expand development and support of electronic reporting in fisheries across the region; assist with the implementation of electronic monitoring in the Northeast groundfish fishery and slippage monitoring in the mid-water trawl fisheries. Develop and assess requirements, standards, operating procedures, and data warehousing. {Monitoring & New Technologies Enterprise }

## **National Priority: Focus habitat conservation efforts on essential fish habitat and deep-sea coral protection in support of regional fishery management councils.**

### **NEFSC Anticipated Results:**

Evaluate the impacts of natural and anthropogenic ecosystem changes on fish and shellfish stocks in support of stock assessments, fisheries management actions, and other spatial decision-making. {Research & Scientific Advice and Services Enterprise }

Proactively address regional fisheries issues in offshore wind development projects and regional planning by working with GARFO, and ensuring NEFSC science advice and data streams are considered in these processes. To address fisheries and offshore energy interactions, support establishment of an inclusive and effective regional fisheries monitoring and research framework.

## **National Priority: Implement Regional Action Plans in support of the Climate Science Strategy.**

### **NEFSC Anticipated Results:**

Reliable and effective ecosystem survey efforts in the Northeast U.S. shelf ecosystem, and stronger partnerships with other ecosystem observing activities in the region. {Monitoring }

Better understanding through field and model studies of how the changing climate is affecting groundfish population dynamics, monitoring, assessment, and management. {Research }

**National Priority: Maximize fishing opportunities, revenue, and jobs in U.S. fisheries while ensuring long-term sustainability of the resources.**

**NEFSC Anticipated Results:**

Produce a common set of indicators of social and economic well-being for the Northeast region's fishing fleets and for each Northeast region fishery management plan. Performance indicators will be automated to enable annual updates and posting online. {Monitoring}

Analyze the results of a fishing crew survey to document differences in crew remuneration and perceptions of fishery management processes among fisheries and ports to better understand the effects of fishery management on fishing crew and coastal community resilience. {Research & Scientific Advice and Services Enterprise}

## **National Strategic Goal 2: Recover and Conserve Protected Species While Supporting Responsible Fishing and Resource Development**

NOAA Fisheries is responsible for recovering protected species that are facing extinction and conserving marine mammals. These species are key components of their ecosystems and have particular social and cultural importance. These valuable and vulnerable living resources depend on our collective efforts to conserve them. The NEFSC conducts high-quality science for the recovery and conservation of protected species, including assessments of current status and understanding and reducing human impacts. Science activities include using innovative technologies to survey and assess protected species populations and track their movement; investigating contributing factors to the well-being or mortality of protected species; developing bycatch reduction techniques; supporting the implementation of adaptive management measures; implementing guidelines for reducing anthropogenic sound in oceans; understanding impacts of habitat loss; and focusing on science related to understanding the effects of changes in climate on the resources we manage. In 2019, NOAA Fisheries will continue to focus efforts on the recovery Atlantic salmon and North Atlantic right whales, other marine mammals, diadromous fish, and sea turtles.

### **Priorities & Anticipated Results to Recover and Conserve Protected Species**

**National Priority: Improve the quality of protected species stock assessments.**

**NEFSC Anticipated Results:**

Improved protected species data collection, assessment, and management obtained by using innovative and cost-effective technologies (passive acoustics, genomics, advanced tagging, autonomous systems, photo identification, and image recognition). {New Technologies and Approaches Enterprise}

**National Priority: Reduce the negative impacts of human activities on protected species by advancing scientific understanding, and developing and implementing guidance and tools.**

**NEFSC Anticipated Results:**

Reduce entanglement of North Atlantic right whales through advanced technologies developed with fishermen, engineers, and other partners {Research & Scientific Advice and Services Enterprise}

Understand the factors limiting the recovery of the endangered populations of Atlantic salmon and North Atlantic right whales, research ways to promote recovery, and collaborate with GARFO to support management. {Research Enterprise}

## **National Strategic Goal 3: Improve Organizational Excellence and Regulatory Efficiency**

Improving organizational excellence and regulatory efficiency is a continual process that helps us be more responsive, to deliver better services, and to fulfill our mission. To achieve organizational excellence, NOAA Fisheries emphasizes strategic planning, effective program execution and performance monitoring, and identification and management of risks and challenges. Regulatory efficiency includes identifying and addressing existing regulations and processes that may be outdated, unnecessary, or ineffective, or that inhibit job creation and growth. Increased and improved interactions with GARFO is critical to supporting organizational excellence and regulatory efficiencies goals.

## Priorities & Anticipated Results to Improve Organizational Excellence

**National Priority: Improve science focus on real-time current management issues and data needs.**

**NEFSC Anticipated Results:**

External review of the NEFSC Director's Office to evaluate operations and make recommendations for improvement {Operations & Administration Enterprise}

An "onboarding" process that prepares new staff to better understand the NEFSC mission, operation, culture, and our regional fisheries to better unify our workforce's sense of purpose and collective understanding of our work.

**National Priority: Improve communication of data, products, and activities to external audiences.**

**NEFSC Anticipated Results:**

Improve external communication and engagement, especially fishing industry engagement, through successful launch and execution of an external outreach plan (calendar with messaging, audiences, products, roles/responsibilities). {Operations & Administration Enterprise}

Track and report the quantity and quality of NEFSC publications and reports to allow evaluation of NEFSC data and products and to ensure the Public Access for Research Results timeline and requirements are achieved. {Operations & Administration Enterprise}

NEFSC work with GARFO leadership to improve the working relationships between the two organizations {Operations & Administration Enterprise}.

**National Priority: Ensure that NOAA employees and contractors work in a safe and secure environment.**

**NEFSC Anticipated Results:**

Improved observer safety, oversight of observer code of conduct to be responsive to the National Observer Safety Review, protection of observer and fishermen rights, improved observer retention, and progress toward a professional observer corps. {Operations & Administration Enterprise}

Completed renovation and consolidation of the James J. Howard Marine Sciences Laboratory at Sandy Hook, NJ. {Operations & Administration Enterprise}

**National Priority: Proactively recruit qualified individuals at all experience levels and grades, whose diverse background, educational experience, and skills will advance the overall mission of the agency.**

**NEFSC Anticipated Results:**

Promotion of workforce diversification by increasing the number of student internships at NEFSC, strengthened bonds with universities serving underrepresented communities, and increased employment/research opportunities for recent graduates of the Living Marine Resources Cooperative Science Centers. {Operations & Administration Enterprise}

Number	Priority/Task Title	September 27, 2018	Status	Multi_Year	il/Regulatory Requirem Source
<b>Groundfish</b>					
1	<u>Set ABCs/ACLs for all groundfish stocks for FY2020-2022 and US/CA stocks for FY 2020</u>				Y Requirement
2	Amendment 23/Groundfish Monitoring (including Fishery Data for Stock Assessment Working Group and possible workshops)		Ongoing	Y	
3	Cod Stock Structure Working Group		Ongoing	Y	Jan 2012 SSC report; 2015-2018 priorities
4	Specify allocation review triggers		Ongoing		NMFS allocation review policy; 2018 priorities
5	Consider results of public listening sessions for possible initiation of an amendment to develop a limited access program for the party/charter fishery			Y	Follow-up from 2018 priorities
6	Possible recreational sub-ACL for GB cod				
7	<u>Address SDC issue when analytic assessments fail</u>			Y	2018 priorities
8	Address commercial/recreational allocation issues if raised by new MRIP data		Ongoing	Y	
9	Modify the GF control rule for stocks without analytical models – i.e., empirical and index-based (see SSC list below, item 10 above)				SSC meeting August 2017 and 2018
10	Get input on different ways to manage recreational fishery in light of highly variable catch estimates: for example, consideration of catch error estimates under MRIP, and errors in bioeconomic model used to determine measures		Ongoing		Groundfish Committee, Sept 2017 Council meeting, 2018 priorities
11	Staff Sector five-year review		Ongoing	Y	NMFS catch share policy
12	Staff Groundfish operational assessments				
13	Staff TRAC/TMGC				
<b>Monkfish</b>					
14	<u>Monkfish specifications for 2020-2022</u>				Y
<b>Sea Scallops</b>					
15	<u>Prepare a specifications package to set FY 2020 (2021 default) specifications (i.e. setting DAS, access area trips, Northern GOM TAC, limited access general category IFQ allocations, etc.).</u>				Y Requirement
16	Action to modify scallop access areas to be consistent with OA2 revised management areas				2018 priority
17	NGOM scallop management measure changes: such as changing opening date, consistent gear restrictions, possession limits, effort controls.			Y	2018 priority
18	Measures to address DAS and IFQ carryover				
19	Gear modifications to protect small scallops (extended link)				
20	Specify allocation review triggers		Ongoing		NMFS allocation review policy
21	Adjustments to scallop industry funded observer program (NGOM coverage, etc.)				NEFSC letter August 2017

2019 Priorities  
Initial Task List  
Council Meeting

Number	Priority/Task Title	September 27, 2018	Status	Multi_Year	il/Regulatory Requirem	Source
22	Staff	NMFS and PDT have annual responsibilities related to estimating scallop, YT, windowpane catch during the year (i.e. LA AM exception, re-evaluation of YT sub-ACL based on updated information).	Ongoing		Y	
23	Staff	Support annual scallop RSA process, including priority setting, and technical and management reviews.	Ongoing			
<b>Herring</b>						
24		Submit A8: ABC control rule and measures to address potential localized depletion and user conflicts	Ongoing	Y		2015 Priorities
25		2020-2021: revise reference points; consider different methods for RH/S catch caps; and potentially other measures			Y	
26		Workshop to solicit feedback on MSE process				
27	Staff	Coordination with MAFMC, ASMFC on various herring issues (RH/S, etc.)	Ongoing			
28	Staff	2019 specifications development (if needed)				
<b>SBRM</b>						
29		No action planned				
<b>Red Crab</b>						
30		No action planned				
<b>Habitat</b>						
31		Initiate action to revise habitat management areas on northern edge of Georges Bank		Y		2015 Priorities
32		Complete framework action to address surfclam access to HMAs	Ongoing	Y		Triggered by OHA2
33	Staff	Brief HC and Council on 2017-18 updates to SASI model and identify next steps	Ongoing	Y		Contract issued 2017 w/ NMFS support
34		Develop Council policies on additional non-fishing activities (offshore energy policies adopted 2018)	Ongoing	Y		2018 priorities
35	Staff	Habitat impacts of other management actions	Ongoing	Y		
36	Staff	SBNMS advisory panel and ASMFC habitat committee	Ongoing			
37	Staff	Develop habitat and fishery related comments on non-fishing activities, particularly wind power, in consultation with other agencies, (including BOEM)	Ongoing			
38		NEFMC-MAFMC Workshop on offshore wind fisheries issues				
<b>RSC</b>						
38		Continue to steer research to support NEFMC plans	Ongoing			
39		Improve RSC priority process and RSC role/mission				RSC meeting July 2017
40	Staff	Support S-K program	Ongoing			
<b>SSC</b>						



2019 Priorities  
Initial Task List  
Council Meeting

Number	Priority/Task Title	September 27, 2018	Status	Multi_Year	il/Regulatory Requirem	Source
41	Support Council activities such as <u>recommending ABCs</u> and making recommendations in the FMP development process		Ongoing		Y	
42	Understand and resolve poor assessment model performance (primarily groundfish assessments)					
43	Develop consistent guidelines for application of Plan B approaches					
44	Consider modifications to groundfish ABC control rules (see Groundfish)					August 2017 SSC meeting
<b>Enforcement, Safety, VMS</b>						
45	Continue to support enforcement, safety and VMS issues.		Ongoing			
46						
<b>Whiting</b>						
47	Submit final preferred alternatives with FEIS for Amendment 22, limited entry		Ongoing	Y		2018pPriorities
48	<u>Address overfished condition/develop rebuilding plan for southern red hake</u>				Y	Requirement
49	Modify northern red hake AM (framework or specifications action)					May be bundled with item 47
50	Consider whiting exemption area adjustments					May be bundled with item 47
51	Staff PDT receives annual monitoring report from Regional Office and advise Council whether management adjustments are needed		Ongoing		Y	
<b>Skates</b>						
52	Prepare an amendment to consider limited access in the skate fishery		Ongoing	Y		2016 Priorities
53	<u>Skate specifications for 2020-2021</u>				Y	
54	Staff Skate monitoring report				Y	
<b>EBFM</b>						
55	Complete example Fishery Ecosystem Plan for Georges Bank and develop a Management Strategy Evaluation process to engage fishermen and other stakeholders while conducting testing and validation.		Ongoing	Y		2014 Priorities
56	Staff Support EBFM activities (WGNARS, SOE, etc.)					
<b>Observer Committee</b>						
57	Develop a policy and strategic approach to monitor commercial fisheries to address multiple information needs				Y	Jan 2015 Council motion; 2018 priorities
58	Study issue of full retention/no discards.				Y	September 2017 Council meeting
<b>Risk Policy Working Group</b>						
59	Review implementation of Council Risk Policy					
<b>Trawl Survey AP</b>						
60	Address issues identified in AP charter		Ongoing			2015 Priorities



2019 Priorities  
Initial Task List  
Council Meeting

Number	Priority/Task Title	September 27, 2018	Status	Multi_Year	Regulatory Requirement Source
<b>Other: (Interspecies Type Actions)</b>					
61	Fishery dependent data projects: FMAT to begin development of omnibus amendment		Ongoing	Y	NRCC
62	NRCC Working Group Participation		Ongoing	Y	NRCC
63	International Fisheries Management TMGC/TRAC/Steering Committee ICCAT HMS Advisory Panel/HMS FMP NAFO Commissioner		Ongoing		Y
64	Staff Protected Species issues		Ongoing		
65	Review and implement Program Review recommendations		Ongoing		
66	Preliminary work on Aquaculture FMP				GARFO/NRCC initiative
67	Complete review of RSA programs in sea scallops, monkfish, and herring FMPs		Ongoing	Y	2017 Priorities
68	Participate on Large Whale and Harbor Porpoise Take Reduction Teams		Ongoing		
69	Adopt measures for fisheries if required by Northern Right Whale Biological Opinion			Y	

# PROPOSED 2019 DELIVERABLES

*This section provides an overview of deliverables expected by the end of the implementation plan period. Since many of the proposed implementation activities cannot be measured with traditional metrics, the list of deliverables establishes a mechanism for measuring the Council's progress toward achieving the goals and objectives of the strategic plan.*

## SUMMER FLOUNDER, SCUP, BLACK SEA BASS

- 2019 specifications for summer flounder, scup, black sea bass (revise)
- 2020-2021 specifications for summer flounder, scup, black sea bass (develop and approve)
- 2020 recreational management measures for summer flounder, scup, and black sea bass
- Advisory panel fishery performance reports
- Revisions to recreational management system for summer flounder, scup, and black sea bass (develop scoping document)
- Evaluation of commercial scup discards
- Evaluate mesh size regulations for summer flounder, scup, black sea bass
- Summer flounder commercial/recreational allocation study update (contract)

## MACKEREL, SQUID, BUTTERFISH

- Chub mackerel amendment
- 2020 specifications for mackerel, squids, and butterfish (review)
- Advisory panel fishery performance reports
- Butterfish cap review
- Illex* permit and MSB goals and objectives amendment (scoping and development)
- HMS chub mackerel diet study (contract; ongoing)

## RIVER HERRING AND SHAD

- RH/S cap for Atlantic mackerel fishery for 2020 (review)
- RH/S progress update

## BLUEFISH

- 2020-2022 specifications for bluefish (develop and approve)
- Advisory panel fishery performance report
- Bluefish allocation amendment

## GOLDEN AND BLUELINE TILEFISH

- 2020 specifications for golden tilefish (review)
- 2020 specifications for blueline tilefish (review)
- Advisory panel fishery performance reports
- Private recreational permitting and reporting (GARFO lead)

## SURFCLAMS AND OCEAN QUAHOGS

- 2020 specifications for surfclams and ocean quahogs (review)
- Advisory panel fishery performance reports

- Excessive shares amendment
- ITQ review project (contract)
- Surfclam genetic study (contract; ongoing)

#### SPINY DOGFISH

- 2020 spiny dogfish specifications (review)
- Advisory panel fishery performance report

#### ECOSYSTEM AND OCEAN PLANNING/HABITAT

- EFH redo (ongoing)
- Regional habitat assessment (ongoing)
- EAFM conceptual model development
- EAFM risk assessment
- Offshore development and ocean uses
- Review red crab fishery exemption for discrete deep sea coral protected zones

#### GENERAL

- 2020-2024 strategic plan development (contract)
- Commercial fisheries eVTR framework
- Allocation review criteria for all FMPs

#### COMMUNICATION AND OUTREACH

- Implementation of council communication and outreach plan (ongoing)
- Council action web pages
- Fact sheets and outreach materials

#### SCIENCE AND RESEARCH

- Federal fishery dependent data initiative (GARFO lead)
- Risk policy framework
- SSC OFL CV guidelines
- Establish SSC working group for real time *Illex* management

#### POSSIBLE ADDITIONS

- Develop a tilefish survey
- Initiate an aquaculture FMP
- Mid-Atlantic regulations and enforcement
- ACT control rules for monitoring committees
- Evaluation of federal trip limits for spiny dogfish
- Summer flounder, scup, and black sea bass allocations (possible amendment)

Acronyms Used in this Document

ACT – Annual Catch Target

CV – Coefficient of Variation

EAFM – Ecosystem Approach to Fisheries Management

EFH – Essential Fish Habitat

eVTR – Electronic Vessel Trip Report

FMP – Fishery Management Plan

GARFO – Greater Atlantic Regional Fisheries Office

HMS – Highly Migratory Species

ITQ – Individual Transferable Quota

MSB – Mackerel, Squid, Butterfish

OFL – Overfishing Limit

RH/S – River Herring and Shad

SSC – Scientific and Statistical Committee

**Workshop title (draft)**

NOAA Fisheries Atlantic Coast Science Coordination Workshop

**Target date**

Spring 2019

**Location**

TBD

**Envisioned workshop duration**

1.5 - 2 days

**Participants (potential - see [working list](#))**

- NMFS NEFSC and SEFSC personnel
- NMFS GARFO and SERO ecosystem / climate points-of-contact (POCs)
- NMFS HMS and S&T personnel
- Council and Commission staff

**Questions for NRCC**

- **How to engage with NEFMC, MAFMC, ASMFC, and SAFMC?**
- **How does this link to cross-boundary management?**
- **How do we use this workshop to advance broader regional efforts?**

**Workshop Objective**

Improve coordination of NOAA Fisheries science across the Northeast and Southeast U.S. Continental Shelf Large Marine Ecosystems

**Background and Rationale**

- Transition to EBFM
- Climate change (= changing environments and related changing species distributions)
- Both of the above necessitate a coordinated, large spatial-scale approach to data collection, research, and living marine resource (LMR) assessments to support LMR management in waters along the US Atlantic coast
- There is a need to (1) inform scientists, managers, and stakeholders of (i) the state of, and trends in, LMRs and their ecosystems and (ii) current data collection, research, and assessment efforts, (2) establish cross-regional points of contact to facilitate coordination among and between scientists and managers, and (3) identify approaches to strengthen cross-regional-scale EBFM.
- [Northeast Regional Action Plan](#)
  - Action 14 - Initiate discussion with NEFSC, GARFO, SEFSC, SERO and HQ to identify overlaps and joint issues of interest. This discussion should include current issues and potential future issues related to climate change and cover all NMFS mission activities. Hold a workshop and develop a document that identifies joint issues of interest. Workshop should include representatives from

NEFSC, GARFO, SEFSC, SERO, and HQ as well as the East Coast Fishery Management Councils and East Coast Marine Fisheries Commissions.

- [Southeast Regional Action Plan](#)
  - Action 40 - Discuss options for coordinating fishery-independent survey approaches to improve the utility of survey-generated information pertaining to species whose ranges overlap the South Atlantic-Mid-Atlantic boundary
  - Action 51 - Implement survey calibration studies or expand current surveys across the South Atlantic - Mid-Atlantic boundary to address data needs for species whose distribution overlaps that boundary (see Action # 48).
- Issues to consider (from [Northeast Regional Coordinating Committee - SAFMC Representatives Input](#))
  - What changes need to be made to ongoing data collection programs to collect data on new species as they show up in catches (e.g., blueline tilefish, groupers, king mackerel)? For landings, we need to ensure that these species become a priority for biological sampling via whatever commercial and recreational sampling programs there are in the MA and NE (for blueline, none of those catches that were landed in NJ were sampled in 2014 because it was not a priority species).
  - How do we ensure such data are made available for stock assessments conducted in the southeast? We need to be able to incorporate some automated or automatic data request for every South Atlantic SEDAR to sift through the NEFSC fishery-independent programs to make sure we are capturing whatever might be available (i.e., don't just stop at getting all coastwide landings from ACCSP, or assume a species hasn't made it into those surveys).
  - How do we gain some participation by northeast assessment scientists in assessments conducted in the southeast?
  - Is there a potential for some assessments to be conducted by northeast assessment scientists? If the NRCC schedules an assessment for a typically "southern" species, there needs to be a way for southeast assessment scientists to also participate.
  - How do we ensure recreational and commercial catches in the Mid-Atlantic and New England areas are reported in a timely manner for ACL monitoring by the southeast regional office? Perhaps how the SEFSC is using verified/reported landings from a date certain from the previous year as a means to project what state waters harvests of cobia might be contributing to federal ACLs in the current year would work (Attachment 4).

### **Objectives (draft)**

*Objective 1: characterize, by region, trends in ecosystem components*

*Objective 2: identify species of interest (including HMS and protected species)*

*Objective 3: characterize, by region, trends in faunal distributions (shifting, expanding, no trends)*

*Objective 4: describe, by region, surveys / data collection programs and extent of coordination across regions*

*Objective 5: describe, by region, stock and protected species assessments (e.g., major species and assessment approaches), and extent of coordination across regions. Address:*

*Objective 6: Identify approaches to strengthen cross-regional scale EBFM.*

*Objective 7: Document Outcome(s)*