

# **Data Matching & Imputation System**

## **DMIS**

Purpose/Abstract: DMIS is a Northeast Regional Office data record matching system. The purpose of the system is to provide timely fishery trip level data in support of weekly catch and landing reports, and analysis to support, improve, and evaluate the region's fishery management decisions and programs.

DMIS was initially developed to support the catch monitoring requirements of Amendment 16 to the Northeast Multispecies FMP. The tables are constructed consistently with that fishing year, May 1<sup>st</sup> through April 30<sup>th</sup>. DMIS contains trip information for federally permitted vessels from January 1, 2007. The data for the current fishing year is updated weekly with plans to update daily. Past years are updated periodically.

The system consists of three major parts 1) building a map of matched data sets, 2) classifying match data into individual trips, and 3) applying fishery management plan business rules to the individual trips. Missing data including area fished, gear type, amount of species landed and discarded is estimated through an imputation procedure based on fully matched historical data within the DMIS data set.

DMIS is NERO's strongest data matching tool and that aspect is used to support catch monitoring in many fisheries. Additional FMP specific rules are being /have been developed to expand DMIS to all monitoring requirements.

Primary data sources include Allocation Management System (AMS) Database, Vessel Trip Reports (VTRs), Dealer Reports, Vessel Monitoring System (VMS) Catch Reports, Observer Reports, Vessel Permit Database, and the MQRS database which tracks limited access fishing eligibilities .

# Data Matching Imputation System (DMIS) Dictionary

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The DMIS tables and are divided into groundfish fishing years, May 1st through April 30<sup>th</sup>.

## *Table Dictionaries*

### Trip Level Table Data

PERMIT: Vessel Permit Number  
TRIP\_ID: Trip ID (Not in chronological order, use trip date to sort)  
TRIP\_DATE: Trip date, assigned in order of availability: VTR land date, AMS Land Date, Dealer Sold Date  
Trip date is broken down into fields Calendar\_Year, Month\_of\_Year, Week\_of\_Year, and Day\_of\_Year

### Vessel Information (Permit Database)

GTONS: Gross registered tonnage specified on the USCG documentation for a vessel  
LEN: Length, in feet, of the vessel  
VHP: Vessel engine horsepower  
HPORT: Hailing (Home) port -vessel mooring location  
HPST: State in which hailing (home) port is located  
PPORT: Principal port - main vessel landings location  
PPST: State in which principal port is located

### Multispecies/Sector Membership Fields (As of Trip\_Date)

SECTOR\_ID: Sector identification number (See Table 5)  
MULT\_MRI: Multispecies MRI  
MULT\_YEAR: Mutispecies fishing year (May through April)

### Allocation Management System (AMS Database)

DAS\_ID: Day at Sea ID number  
ACTIVITY\_CODE: Declaration Code  
BROAD\_AREA: Groundfish Broad Stock Statistical Area: Based on last character of Activity Code  
A,515; B,521; C,525; D,616; E,515; F,515; G,616; H,521; I,521; J,616; K,521  
L,616; M,616; N,616: **If unknown defaults to 616.** A through D are single area declarations, and E through N are multi-area declarations.  
AMS\_SAIL: AMS Sail Date  
AMS\_LAND: AMS Land Date

## Vessel Trip Report (VTR Database)

DOCID: VTR Document table record identifier; Each DOCID represents one trip; CREW  
TRIPCATG: Type of trip: 1=Commercial; 2=Party; 3=Charter, 4= Research Set Aside/Exempted  
Fishing Permit (RSA/EFP), in effect early multispecies FY10  
NANGLERS: Number of anglers  
VTR\_SAIL: VTR Sail Date  
VTR\_LAND: VTR Land Date  
VTR\_PORT: Name of first VTR Port landed  
VTR\_STATE: Name of fist VTR state landed

## Multispecies Records

GILL\_SET: Gill Net Setting Trip (T/F)  
PTNS\_SET: Declared Gill Net Setting Trip in Pre Trip Notification System

## Permit Information (As of Trip Date)

### NORTHEAST MULTI-SPECIES

Limited Access (Type if any): GROUND FISH PERMIT  
Open Access (T/F): HB\_PERMIT, I\_PERMIT, J\_PERMIT, K\_PERMIT

## OTHER FISHERIES PERMITS (Fishery Plan Fishery Category) (T/F)

HERRING: HRG\_A, HRG\_B, HRG\_C, HRG\_D  
MONKFISH: MNK\_A, MNK\_B, MNK\_C, MNK\_D, MNK\_E, MNK\_F, MNK\_H  
RED SEA CRAB: RCB\_A, RCB\_B, RCB\_C  
SURF CLAM: SF\_1, SF\_6, SF\_7  
TILEFISH: TLF\_1, TLF\_2, TLF\_A, TLF\_B, TLF\_C, TLF\_D  
SUMMER FLOUNDER: FLS\_1, FLS\_2  
SCUP: SCP\_1, SCP\_2  
SQUID/MACKEREL  
/BUTTERFISH: SMB\_1, SMB\_2, SMB\_3, SMB\_4, SMB\_5  
AMERICAN LOBSTER: LO\_1, LO\_2, LO\_A1, LO\_A2, LO\_A3, LO\_A4, LO\_A5, LO\_A5W, LO\_A6,  
LO\_AOC

## Catch Level Data

<b>FISHERY_GROUP:</b>	Category for binning groundfish catch into fisheries. Category does not necessarily define a full fishery membership. Multispecies groundfish trips are defined by groups (GROUND, OTHER2).
<b>VMS_CATCH_ID:</b>	Multispecies catch report (replaces DOCID when missing)
<b>VTRSERNO:</b>	VTR Document table sub-record identifier
<b>SECGEARFISH:</b>	VTR Gear code
<b>MESH_CAT:</b>	Groundfish Mesh Category (ELM – Extra Large Mesh, LM – Large Mesh)
<b>OTHER_STRATA:</b>	Groundfish Other Gear Category (Currently NA only)
<b>MESH:</b>	Mesh size for: Trawl-codend/liner (inches); Dredge - ring size (inches); Gillnet - mesh size (inches) Pots - entrance size (inches); Traps - mesh size of crib (inches).
<b>GEAR:</b>	Gear Source: VTR, VTR; VMS, AMS Declaration Code – Groundfish trips Only.
<b>DEALER_RPT_ID:</b>	Confirmation number that identifies the record and is given to the dealer
<b>LINK:</b>	The field (month-document) used to link species and biological sampling data to the trip information. LINK = (month,docn,tallyno,sampno,linkpad), Unique within Calendar year
<b>DLR_MATCH :</b>	VTR – VTR VTRSERNO; VMS – VMS Catch Report VTRSERNO, DATE
<b>DLR_VTRSERNO:</b>	Dealer Reported VTRSERNO
<b>DLR_DATE:</b>	Dealer transaction Date
<b>DLR_PORT:</b>	Combined dealer code for state, port and county
<b>DLR_PORTNAME :</b>	Dealer Port Name where vessel sold the catch
<b>DLR_STATE:</b>	Dealer Port State where vessel sold the catch
<b>DLR_COUNTY:</b>	Dealer County where vessel sold the catch
<b>DLR_REGION:</b>	NMFS Region code: 0=Mississippi River; 1=New England; 2=Mid-Atlantic; 3=Chesapeake Bay; 4=South Atlantic; 5=Gulf of Mexico; 6=Pacific; 7=Great Lakes; 8= Hawaii.
<b>AREA:</b>	Assigned NAFO statistical area (For Source see AREA_SOURCE)
<b>VTR_AREA:</b>	VTR Document table sub-record statistical area
<b>AREA_SOURCE:</b>	AMS, broadstock area (see Table 1); CVT, calculated area from VTR; IMP, Imputed based on vessel permit trip history; RVT, reported area from VTR, VMS, VMS multispecies catch report area

NESPP3:	The Northeast Species code, without the market category
NESPP4:	The 4-digit Northeast Species code
MARKET_CATEGORY:	Market category for a species sold to a dealer
VTR_LIVE:	VTR live pounds for a given species
VTR_LANDED:	VTR reported landed pounds for a given species
BHC_LIVE_POUNDS :	Bait and home consumption VTR live pounds for a given species
BHC_LANDED_POUNDS:	Bait and home consumption VTR reported landed pounds for a given species
DLR_LIVE:	Dealer live weight of species landed.
DLR_LANDED:	Dealer reported pounds landed for a given species.
DLR_DOLLAR:	The value of landed catch to the nearest dollar (U.S.), paid to fisherman by dealer, for a given species
STOCK_ID:	Groundfish Stock ID (See Table Four)
KEPT_SOURCE:	Describes source of pounds: APR, VTR with dealer records; DLR, Dealer record only; VMS, VMS catch report only; VTR, VTR only; SET, Gill Net Setting Trip; SPAG, Imputed based on records with kept source of VTR or APR. SPAG denotes record type match (within Sector, Permit number, broad stock Area, and Gear). Only declared groundfish trips with no matching records are currently imputed.
LANDED:	Assigned landed pounds for a given species
POUNDS :	Assigned live pounds assigned for a given species
DOLLAR_SSB:	Assign Dollar Value (NEFSC SSB algorithm)
DOLLAR_GDP:	Assign Dollar Value (NEFSC SSB algorithm) adjusted for Gross Domestic Product Implicit Price Deflator – 2010 Calendar Year Dollars
TRIP_PORT:	Assigned Trip Port: Trip Port is selected in order of availability (DLR_PORT,VTR_PORT, PPORT)
TRIP_STATE:	Assigned Trip State: Trip State is selected in order of availability (DLR_STATE,VTR_STATE, PPST)
TRIP_COUNTY:	Assigned Trip County: Determined by Trip Port and State
TRIP_REGION:	Assigned Trip Region: Determined by Trip Port and State

## Catch Level Discard Data

OBSERVER:	Discards from Observed Trip (T/F)
STOCK_ID:	Groundfish Stock ID (See Table Four)
DISCARD:	Discards in Live Pounds