



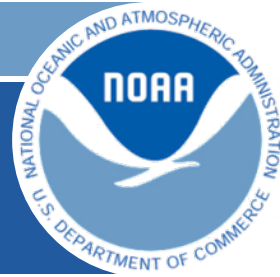
UNITED STATES DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION



# Supporting Offshore Renewable Energy with the Multipurpose Marine Cadastre

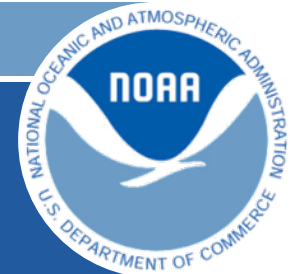
**MAFAC Briefing**

October 26, 2011

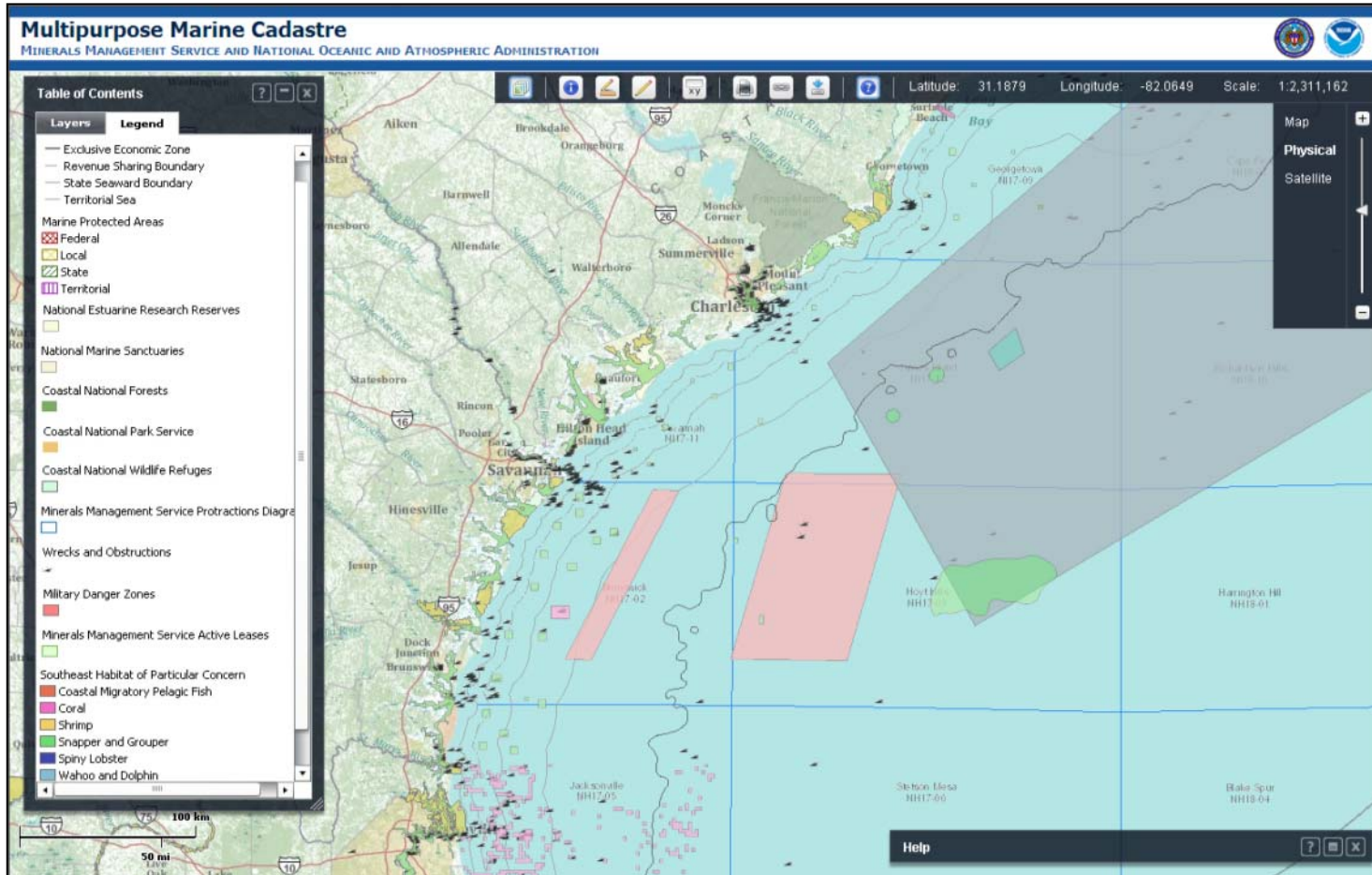


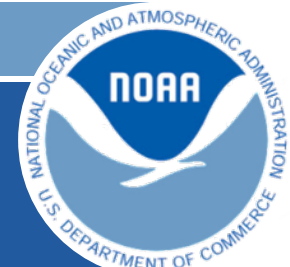
# Discussion Topics

- Introduce the Multipurpose Marine Cadastre (MMC)
- Discuss the core components: data, viewer, and technical support
- Discuss how the MMC suite of products are being applied
- Describe the connections between MMC and CMSP
- Describe NOAA Fisheries inputs into CMSP and MMC



# Brief History and Overview





# MMC Components

The screenshot shows the MARINECADASTRE.GOV website. At the top, there is a navigation menu with links for Home, About, Partnerships, Data, Regional Resources, Map Gallery, Support, and Updates. The main content area features a large map of the United States with various colored overlays representing marine data. Below the map, there is a section titled "MMC Viewer and Data Registry" with a brief description of the system and two buttons: "Launch the Viewer" and "Access the Data". To the right of the map, there is a "Highlights" section with text about new data sets and offshore wind resource potential. At the bottom, there are three columns: "Map Gallery" with a button to "View and create custom maps", "Regional Resources" with a button to "Visit regional portals and atlases", and "Need to Know" with a list of links for information about the MMC, how to view data services, and tips for using the national viewer. The footer includes contact information and a "Sign In" link.

Authoritative Ocean Data

- Web portal
- Web services

Web Map Viewers

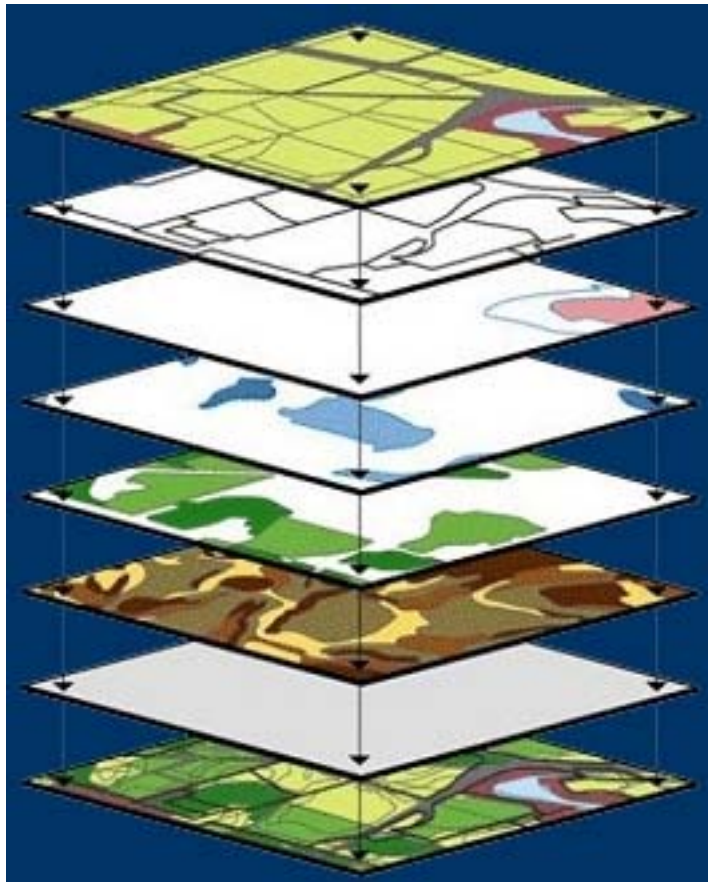
- Visualize data
- Make and share maps
- Plot points, draw areas

Technical Consultation

- Best practices
- Templates and code
- Consultation



# MMC Data Themes



Jurisdictional boundaries

Federal georegulations

Navigation and marine infrastructure

Marine habitat and biodiversity\*

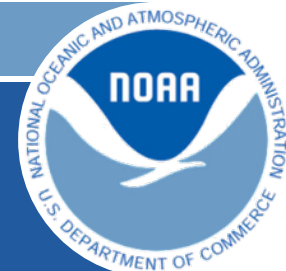
Human uses\*

Physical and oceanographic

Basemaps

\* significant data gaps





# MMC - Data

## Jurisdictional Boundaries and Limits

State Seaward Boundary  
Revenue Sharing Boundary  
Territorial Sea Boundary  
Contiguous Zone  
Exclusive Economic Zone  
Submerged Lands Act Boundary  
Federal Fishery Management Areas  
National Estuarine Research Reserves  
National Marine Sanctuaries  
Coastal National Forests  
Coastal National Parks  
Coastal Indian Lands  
Coastal National Wildlife Refuges  
Coastal Barrier Resources Act Zones  
MMS Protractions Diagrams  
Outer Continental Shelf Lease Blocks  
MMS Planning Areas  
Federal OCS Administrative Boundaries

## Federal Georegulations

Abandoned Shipwreck Act  
Clean Water Act  
Coastal Zone Management Act  
Endangered Species Act  
Marine Debris Act  
Marine Mammal Protection Act  
Marine Plastics Act

Magnuson-Stevens Fishery Conservation Act  
National Environmental Policy Act  
Outer Continental Shelf Lands Act  
Submerged Lands Act  
Federal Agency Regions  
Federal Agency Regions, Districts, and Planning Areas  
Regional Ocean Council Boundaries  
US/Canada Great Lakes Boundary  
Navigation and Marine Infrastructure Wells  
Liquefied Natural Gas Sites  
Drilling Platforms  
Transmission Lines  
Ports  
Shipping Lanes  
Pipelines  
Fairways  
Wrecks and Obstructions  
Military Danger Zones

## Geology and Seafloor Data

OCS Sand and Gravel Borrow Areas  
California Bathymetry Contours  
New Jersey Bathymetry Contours  
Northeast Bathymetry Contours  
Northwest Bathymetry Contours

Southeast Bathymetry Contours  
Offshore Surficial Sediment  
Atlantic and GOMEX Seafloor Geology  
30-meter Depth Contour

## Human Use

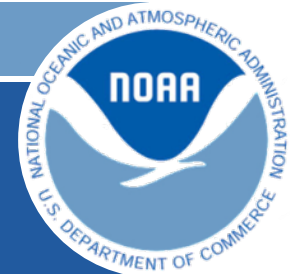
MMS Active Leases  
Alt. Energy Nominated OCS Lease Blocks  
Proposed California Hydrokinetic Sites

## Marine Habitat and Biodiversity

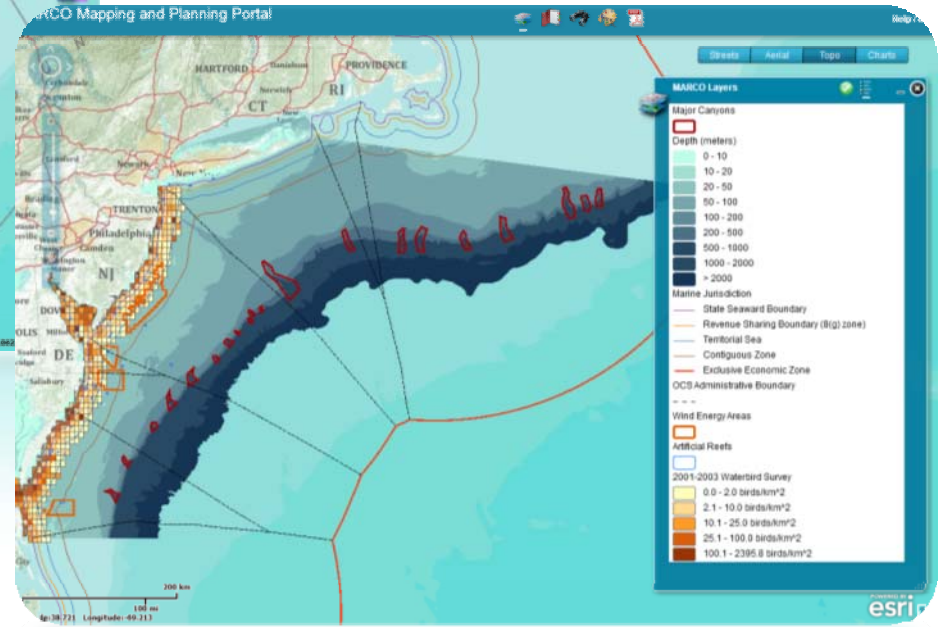
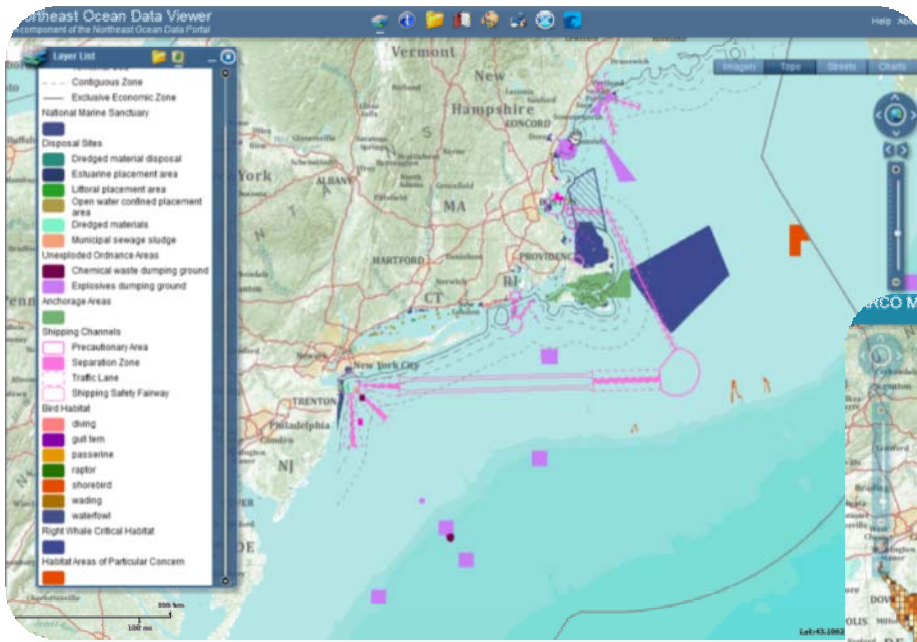
Gray Whale Migration  
Pinniped Haul Outs and Rookeries  
Rocky Reefs  
Kelp Canopy (California)  
Seagrass Beds (California)  
Essential Fish Habitat Points (California)  
NMFS Essential Fish Habitat  
NMFS Critical Habitat  
NMFS Habitat Areas of Particular Concern

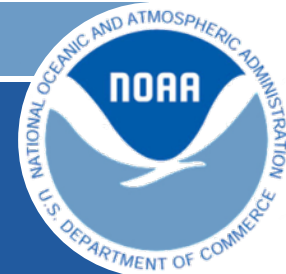
## Webmap Services and ArcGIS Servers

NOAA ENC WMS Service  
Marine-Geo.org Bathymetry WMS Service  
ESRI Geography Network ArcIMS Service  
NOAA RNC ArcGIS Service  
U.S. Marine Cadastre WMS Service



# MMC Use in Regional Data Portals





# MMC Use in National Portals and Decision Support Tools

An Official Web Site of the United States Government Wednesday, August 10, 2011 | Text: A+A-A | Share

**DATA.GOV** / COASTAL & MARINE SPATIAL PLANNING [Login](#) | [Sign Up](#)

**WELCOME TO OUR COMMUNITY!**

We're here to provide you with the data and tools needed to support coastal and marine spatial planning. We want to work with you to build this community. We have some initial offerings from the Federal portfolio and plan to expand these offerings. These data and tools were selected to help begin the planning process. Join in our forum where you can tell us what else you would like to find. Come join us as we move forward with planning the future of our coastal and marine areas.

[More Information](#)

**SPECIAL FEATURES**  
 AIS DATA/TOOLS  
 BATHYMETRY  
 COASTAL HABITATS

[VIEW MORE](#)

[Home](#) [Data](#) [Tools](#) [Community](#) [Regional Planning](#) [Forums](#)

Search This Community... [SEARCH](#)

## Federal Data Resources



We are in the process of making Federal data resources available for the coastal and marine spatial planning process. We are offering the ability to discover and access the data as well as tools to view and interpret the data. Come check out what we have so far...

[Read More](#)

## Regional Planning Efforts and Resources



Coastal and marine spatial planning begins and ends in the regions. Many areas are already starting the planning process. Come see what everyone is doing and learn from these different efforts...

[Read More](#)

## Forum: What Else Should We Be Doing?



We want to hear from you. What do you like about this site? What else should be here?

Tell us what you think and help us build this community...

[Read More](#)

[About](#) | [FAQ](#) | [Contact Info](#) | [Data Policy](#) | [Accessibility](#) | [Privacy Policy](#) | [Sitemap](#)

DATA.GOV

**MarineMAP Decision Support Tool**

MPAs, Anxys, and Proposals | Data Layers | Login | Help

29° 49' 25" -117° 10' 59"

**Data Layers**

Name	Category
Satellite Imagery	Base
Bathymetry	Base
Nautical Charts	Base
Study Region	Base
Obstacles	Base
Islands	Base
Mileage	Base
Coastline Buffers	Biological
Marine Habitats	Biological
Sea Bird Diversity	Biological
Graben Spawning Links	Biological
Recreational Fishing	Consumptive
Habitat Tract Grounds	Consumptive
Human Uses Layers	Consumptive
Place Names	Cultural
Harbour Locations	Cultural

**ERMA** Environmental Response Management Application

New England

Levels: [Layers](#) [Data Tools](#) [Alerts](#) [Account](#) [Logout](#)

**Real Time Conditions**

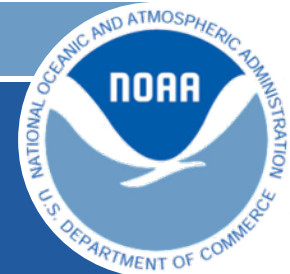
**Tropical Weather (Hurricanes)**

Tropical Cyclone Location and Forecast DWS's hosted by NOAA

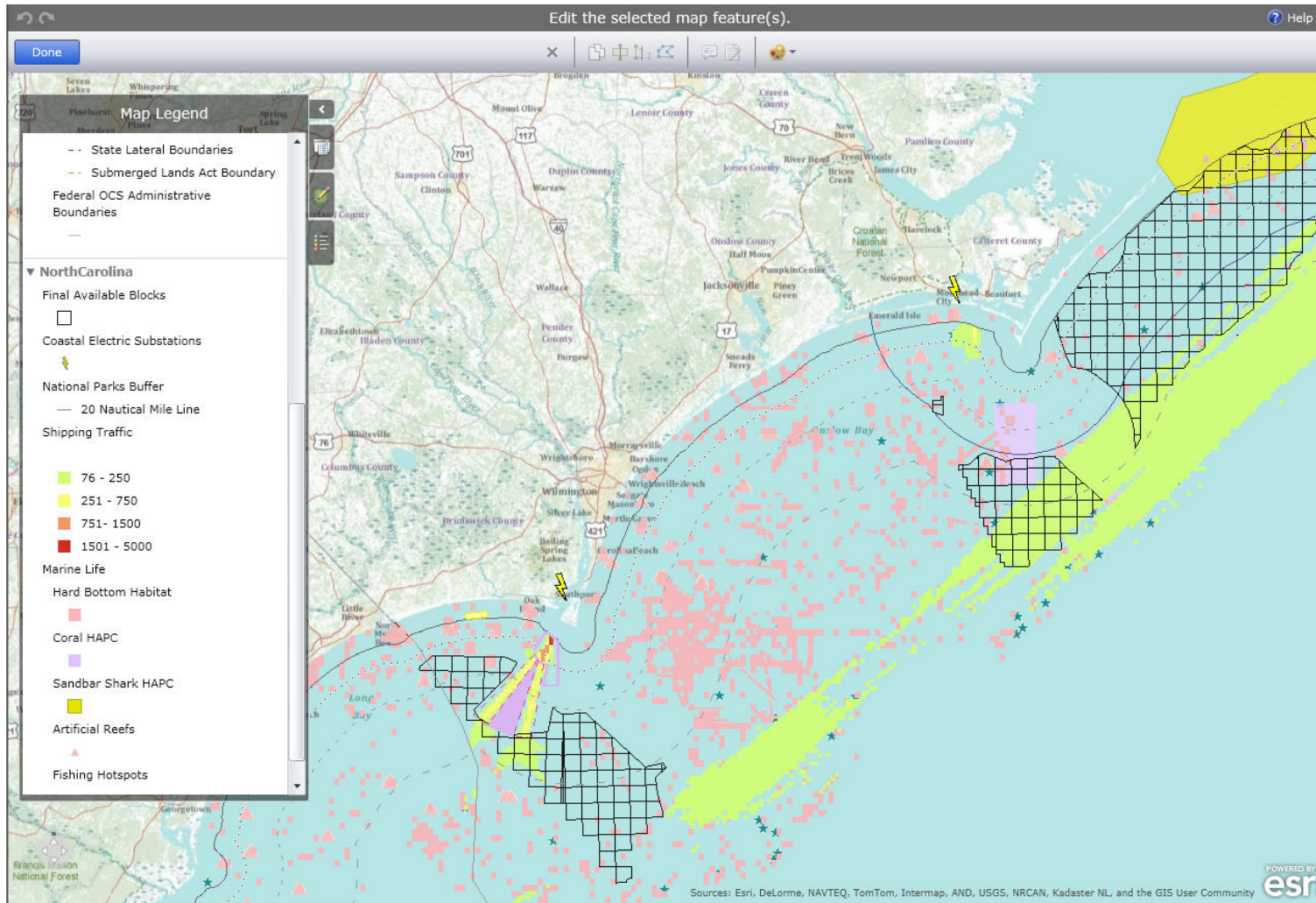
**Real Time Buoys & Observations**

NOAA CO-OPS Water Levels



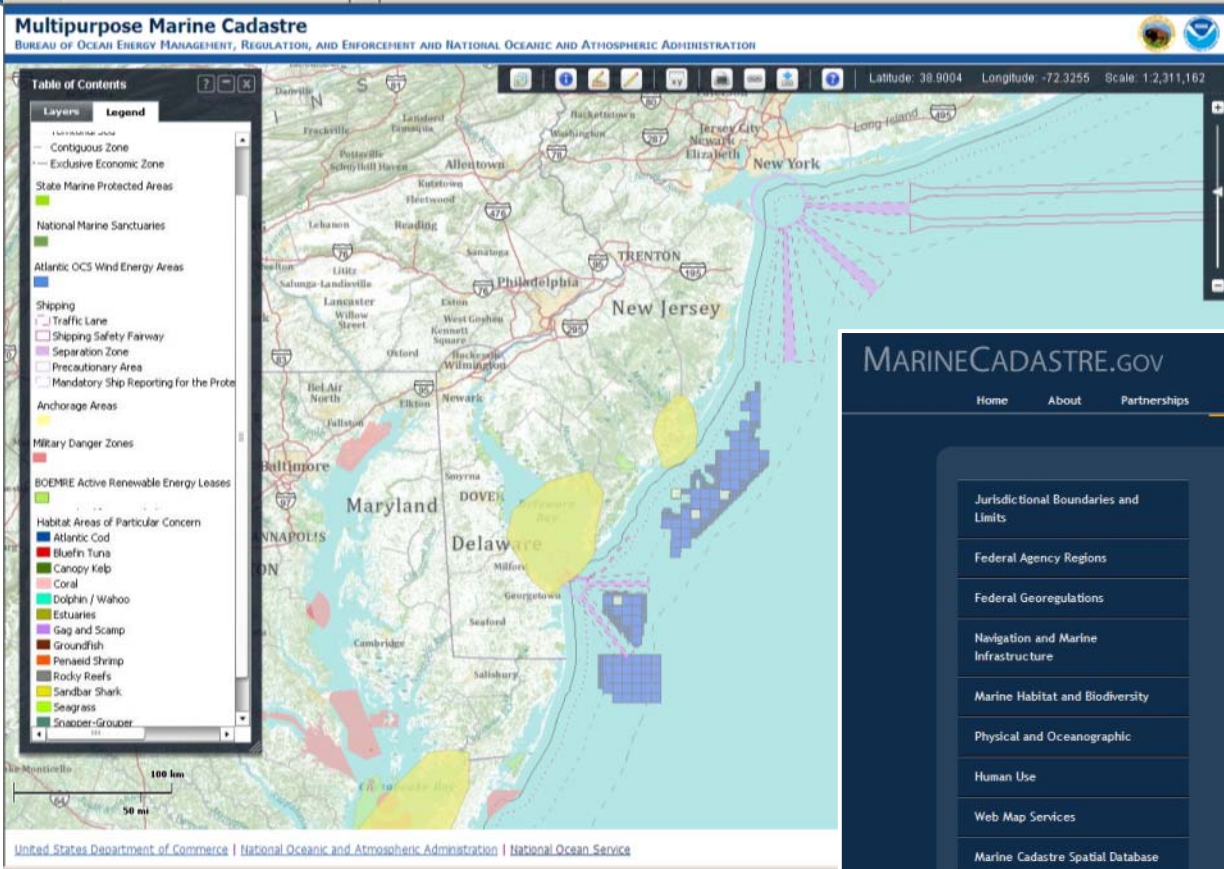


# MMC Use in State Renewable Energy Task Forces





# MMC Use by Industry and Consultants



**MARINECADASTRE.GOV**

[Home](#) | [About](#) | [Partnerships](#) | [Data](#) | [Regional Resources](#) | [Map Gallery](#) | [Support](#) | [Updates](#)

- Jurisdictional Boundaries and Limits
- Federal Agency Regions
- Federal Georegulations
- Navigation and Marine Infrastructure
- Marine Habitat and Biodiversity
- Physical and Oceanographic
- Human Use
- Web Map Services
- Marine Cadastre Spatial Database

**Data Registry**

This registry provides access to authoritative marine boundary data distributed by various agencies as well as data commonly used to support renewable energy siting and larger coastal and marine spatial planning efforts.

Data is organized based on the National Spatial Data Infrastructure (NSDI) themes and categories.

Click on one of the categories to explore.

**Marine Cadastre Spatial Database**

The Multipurpose Marine Cadastre team has produced several national-scale spatial datasets to support planning and decision-making in the coastal and marine environment. By providing standardized data in a readily useable format, the Marine Cadastre Spatial Database provides the framework data needed by coastal and marine spatial planning professionals, while reducing the costs associated with collecting and processing spatial data.

National Ocean Service | [Privacy Policy](#) | [Link Disclaimer](#) | [Contact Us](#) | [Register](#)  
 Web Site Owner: NOAA Coastal Services Center



**Choose Task**

- Filter Lease Blocks
- Make Report and Perform Analysis

**Depth And Distance** | **Boundaries and Dumping Grounds** | **Wind and Geology**

Min/Max Depth (in feet): 0ft 25ft 50ft 75ft 100ft 125ft 150ft 175ft 200ft 225ft 250ft

Min/Max Nautical Miles from shore: 0M 5M 10M 15M 20M 25M 30M 35M 40M 45M 50M

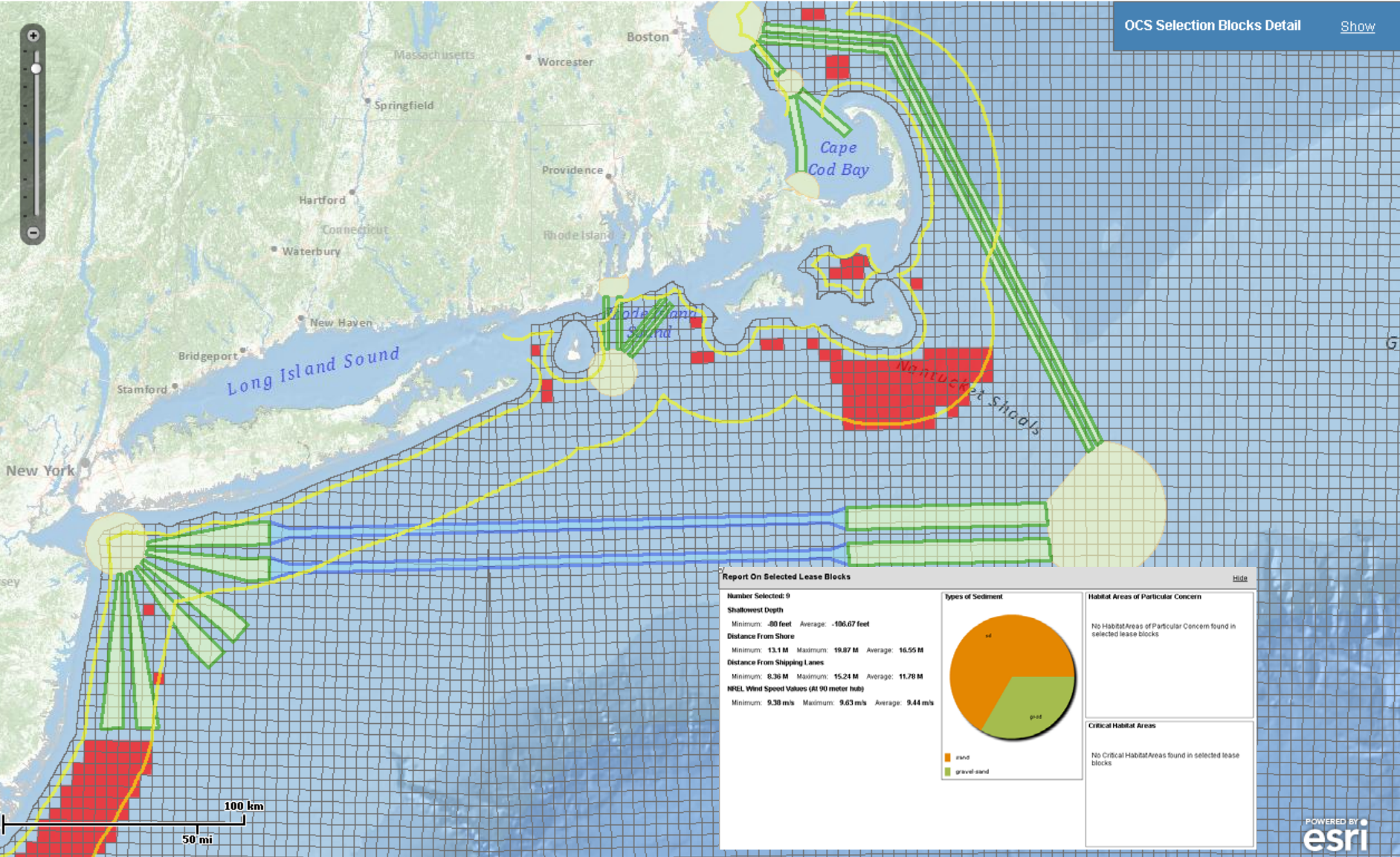
Min Nautical Miles from shipping lanes: 0.25 0.5 0.75 1 2 3 4 5 6

Update Values

Clear Values

**Other Data Of Interest**

- Habitat Areas of Particular Concern [Show](#)
- Critical Habitat Areas [Show](#)



OCS Selection Blocks Detail [Show](#)

**Report On Selected Lease Blocks**

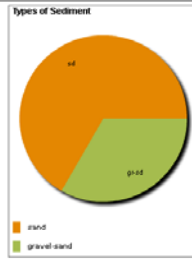
Number Selected: 9

**Shallowest Depth**  
Minimum: -80 feet Average: -106.67 feet

**Distance From Shore**  
Minimum: 13.1 M Maximum: 19.87 M Average: 16.55 M

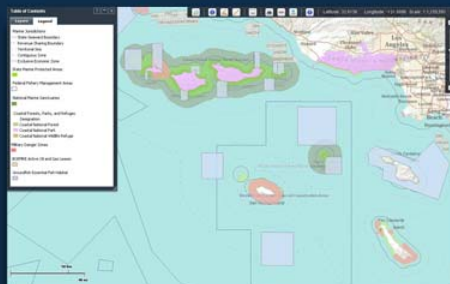
**Distance From Shipping Lanes**  
Minimum: 8.36 M Maximum: 15.24 M Average: 11.78 M

**NREL Wind Speed Values (At 90 meter hub)**  
Minimum: 9.38 m/s Maximum: 9.63 m/s Average: 9.44 m/s



**Habitat Areas of Particular Concern**  
No Habitat Areas of Particular Concern found in selected lease blocks.

**Critical Habitat Areas**  
No Critical Habitat Areas found in selected lease blocks.



## MMC Viewer and Data Registry

The Multipurpose Marine Cadastre (MMC) is an integrated marine information system that provides authoritative and regularly updated ocean information, including offshore boundaries, infrastructure, human use, energy potential, and other data sets. The MMC is especially useful to those looking to assess suitability for ocean uses, such as energy siting. Data can be viewed in the national viewer or downloaded from its original source.

[Launch the Viewer](#)

[Access the Data](#)

### Highlights

#### New Data Sets in the MMC Viewer

New and updated data have been added to the Multipurpose Marine Cadastre Viewer under the following categories: Marine Habitat and Biodiversity- Pacific Whale Summer Densities (new) Navigation and Marine Infrastructure- Navy Aviation Warning Areas (new)- ...

#### So What? Offshore Wind Resource Potential

This series will explain the importance of various datasets within the Multipurpose Marine Cadastre and why they should be considered when determining ocean use. Offshore wind is emerging as a promising renewable energy resource for ...

[Read More](#)

### Map Gallery



[View and create custom maps](#)

### Regional Resources





[Visit regional portals and atlases](#)

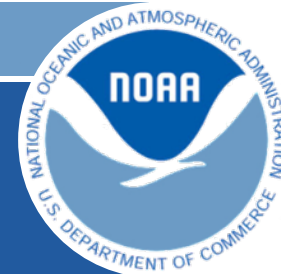
### Need to Know

- [Information about the MMC](#)
- [How to view MMC data services in ArcMap](#)
- [Tips and tricks for using the national viewer](#)

[Get other technical support](#)

Follow us:  

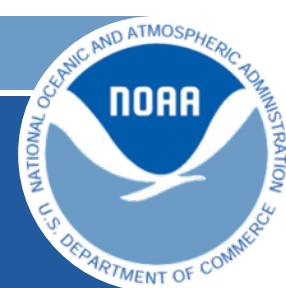




# NMFS Data in Support of CMSP

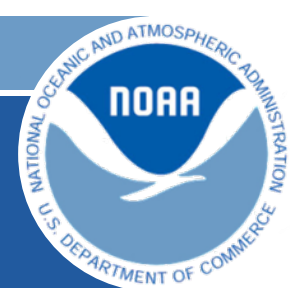
## *What types of information do the users want?*

- NROC and MARCO have identified priority data types needed in their region
  - Highest Priority - Commercial fishing efforts with geographic locations
- Additional data that may be pertinent to CMSP users includes:
  - Environmental variables, Marine mammal sightings and interactions, Species distributions, Benthic habitat type, Fishery management boundaries.



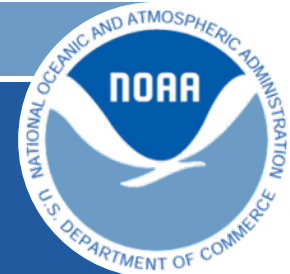
# Challenges Making NMFS Data Public

- Legal
  - Confidentiality requirements must be adhered to when presenting commercial fishing data (Rule of 3 or 4).
  - Risk of misuse or misinterpretation opening us up to lawsuits.
- Information Sharing and Trust
  - Data held by Fisheries Information Networks (FINs) which are state-federal partnerships which are primarily managed by regional Marine Fisheries Commissions. These FINs are resistant to provide data to NMFS except rolled-up at high levels.
- Resources
  - Data collected under legal mandates usually must be re-configured and re-packaged across many databases to be useful for CMSP purposes.

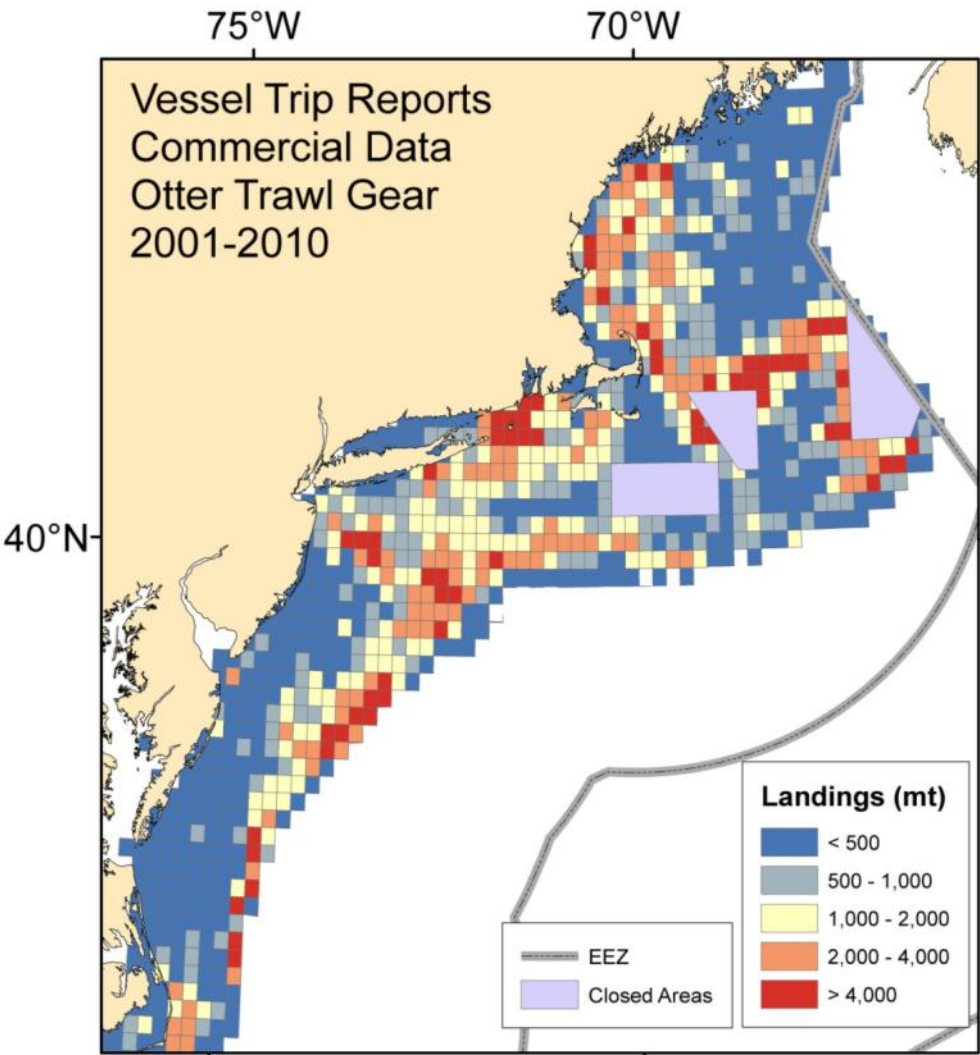


# Progress To Date: Making NMFS Data Available

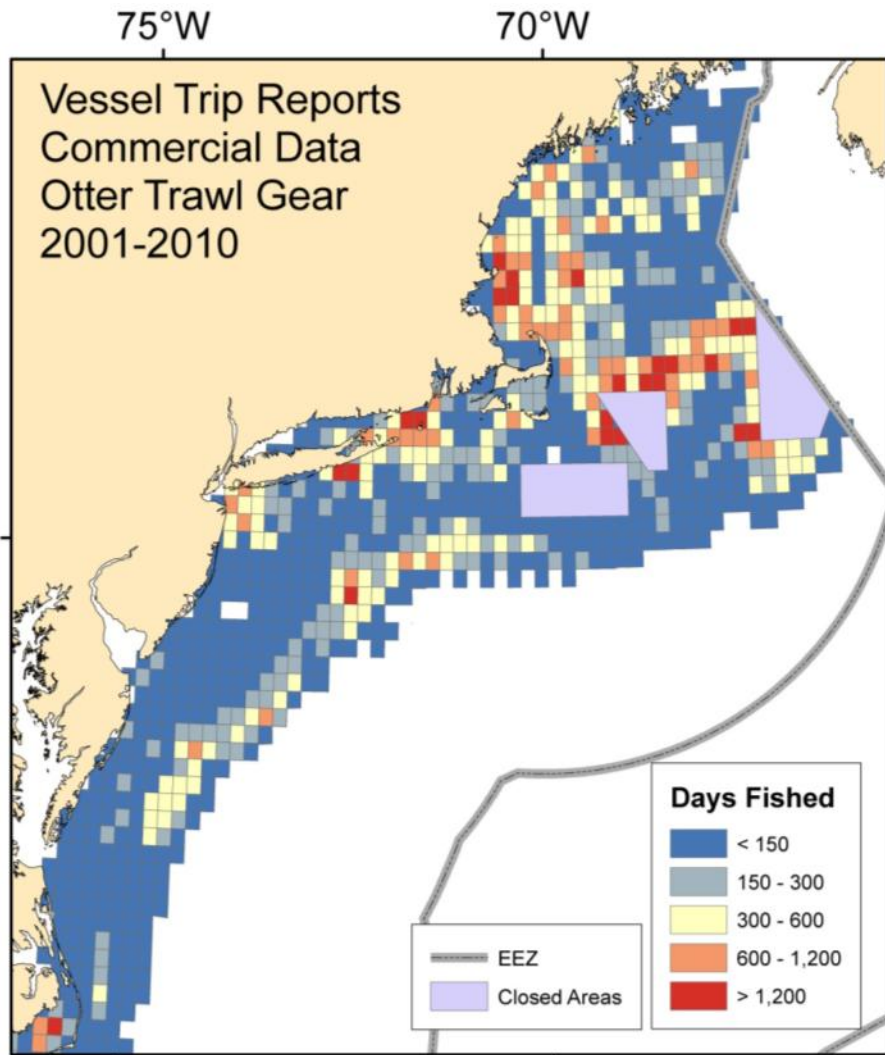
- 3 National Data Sets
  - EFH protected areas from fishing
  - Habitat Areas of Particular Concerns (HAPCs)
  - Critical Habitats for endangered and threatened species
- Northeast Region
  - Summary of commercial fishing effort by gear type over 10 years, environmental variables, marine mammal sightings, species biomass estimates, regulatory boundaries
  - These datasets provided to NROC and MARCO for inclusion in their portals
  - Also developing web service and metadata for inclusion of these datasets into NIMS



# NE Sample Data

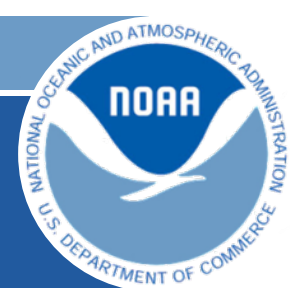


NEFSC Ecosystem Assessment Program



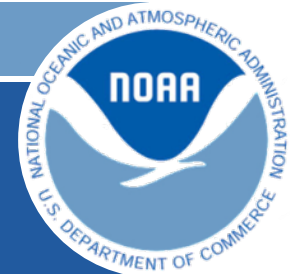
NEFSC Ecosystem Assessment Program





# Plan for Making Additional Data Available

- Fully implement 3 NMFS national data systems for consistency, interoperability and public access
  - Fisheries One-Stop-Shop (FOSS)
    - Landings, fishing effort (days at sea), catch
  - Fisheries Independent Survey System (FINSS)
    - Scientific surveys, data types collected, station locations, metadata for all surveys in system
  - InPort
    - Metadata for all data collected in reported surveys, research projects, experiments



# Fisheries One-Stop-Shop (FOSS)

TESTER Last Login: Tue Aug 09 2011 09:29:00 GMT-0400 (Eastern Daylight Time)

## FOSS NATIONAL EDITION FISHERIES ONE-STOP-SHOP

- Home
- FILTERS**
- CHART
- MAP
- COMMENTS
- Filters New

### Parameters

Year: 2009, 2007, 2006 | 2008, 1958

State Landed: AK - Alaska, AL - Alabama, AR - Arkansas, AUS - Australia, AZ - Arizona | NC - North Carolina, HI - Hawaii

Species: ABALONE, BLACK, ABALONE, FLAT, ABALONE, GREEN, ABALONE, PINK, ABALONE, PINTO, ABALONE, RED, ABALONE, THREADE, ABALONE, WHITE, ABALONES, ACADEMY EEL | SNAPPER, RED

Go Mail

Click the Go button to run the selected query immediately.

Please note that selecting a large number of parameters may make the query execution take many minutes. In this case the query will run in the background and the output will be delivered to you by email.

You may also use the mail button to get email delivery for any size query.

### LANDINGS

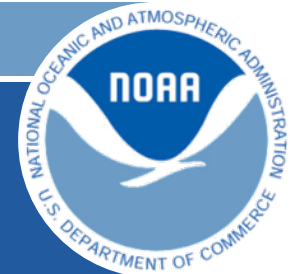
ACCSP				
Year	State	Species	Pounds	Commercial Value
2008	NC	SNAPPER, RED(188853)	8,852	\$30,789
<b>State Total:</b>			8,852	\$30,789
<b>Year Total:</b>			8,852	\$30,789
<b>Provider Total:</b>			8,852	\$30,789
HQHIST				
Year	State	Species	Pounds	Commercial Value
1958	NC	SNAPPER, RED(3764)	27,700	\$7,756
<b>State Total:</b>			27,700	\$7,756
<b>Year Total:</b>			27,700	\$7,756
<b>Provider Total:</b>			27,700	\$7,756
MRIP				
Year	State	Species	Pounds	Commercial Value
2008	NC	SNAPPER, RED(8835360107)	6,815	\$0
<b>State Total:</b>			6,815	\$0
<b>Year Total:</b>			6,815	\$0
<b>Provider Total:</b>			6,815	\$0
<b>report total:</b>			43,367	\$38,545

Export Landings Results 1 - 3

### Footnotes

The following notes are pertinent to understanding and utilizing the data provided in this report.

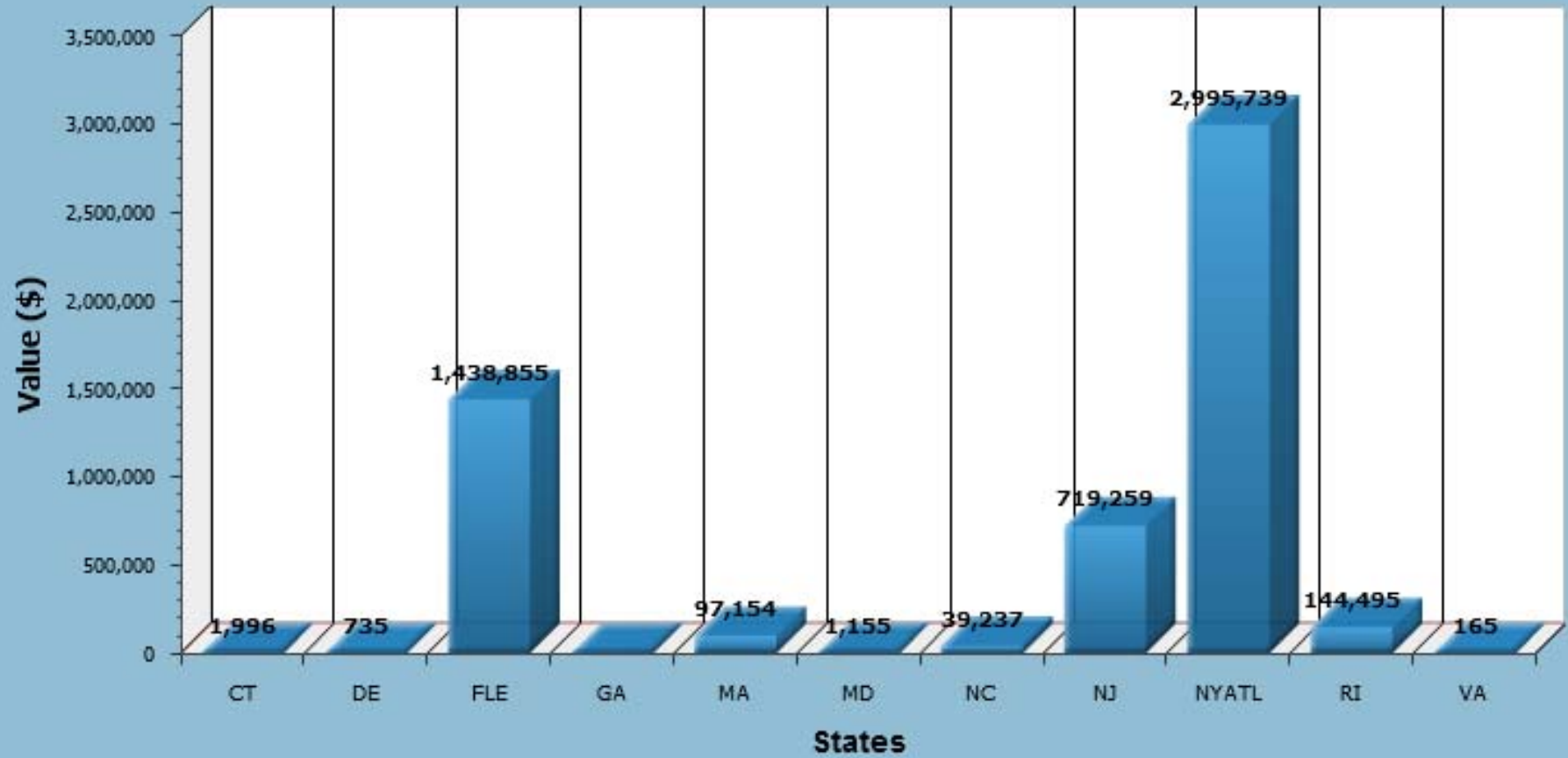
The data presented here may not agree with the data in published versions of Fisheries of the United States.



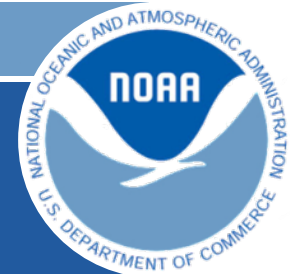
# FOSS Landings

## US Landings Value (\$) by State, Year

Value of Total Landings By State





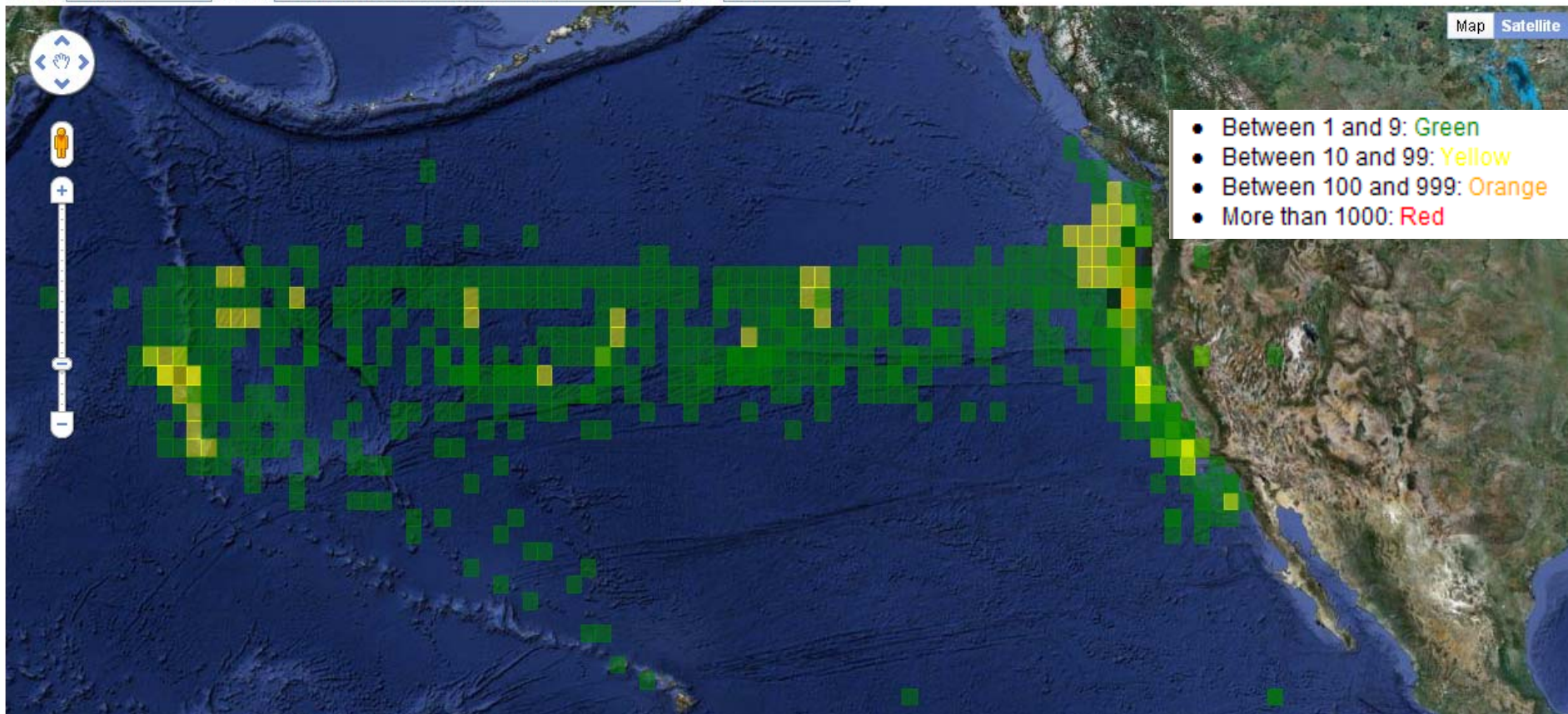


# FOSS Fishing Effort

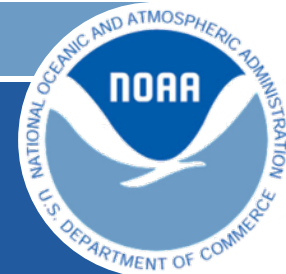
FISHERIES ONE-STOP-SHOP

Search Bar   Catch Map   **Days Fished Map**   3-Degree Map   Map Key

Region  Fishery  Year



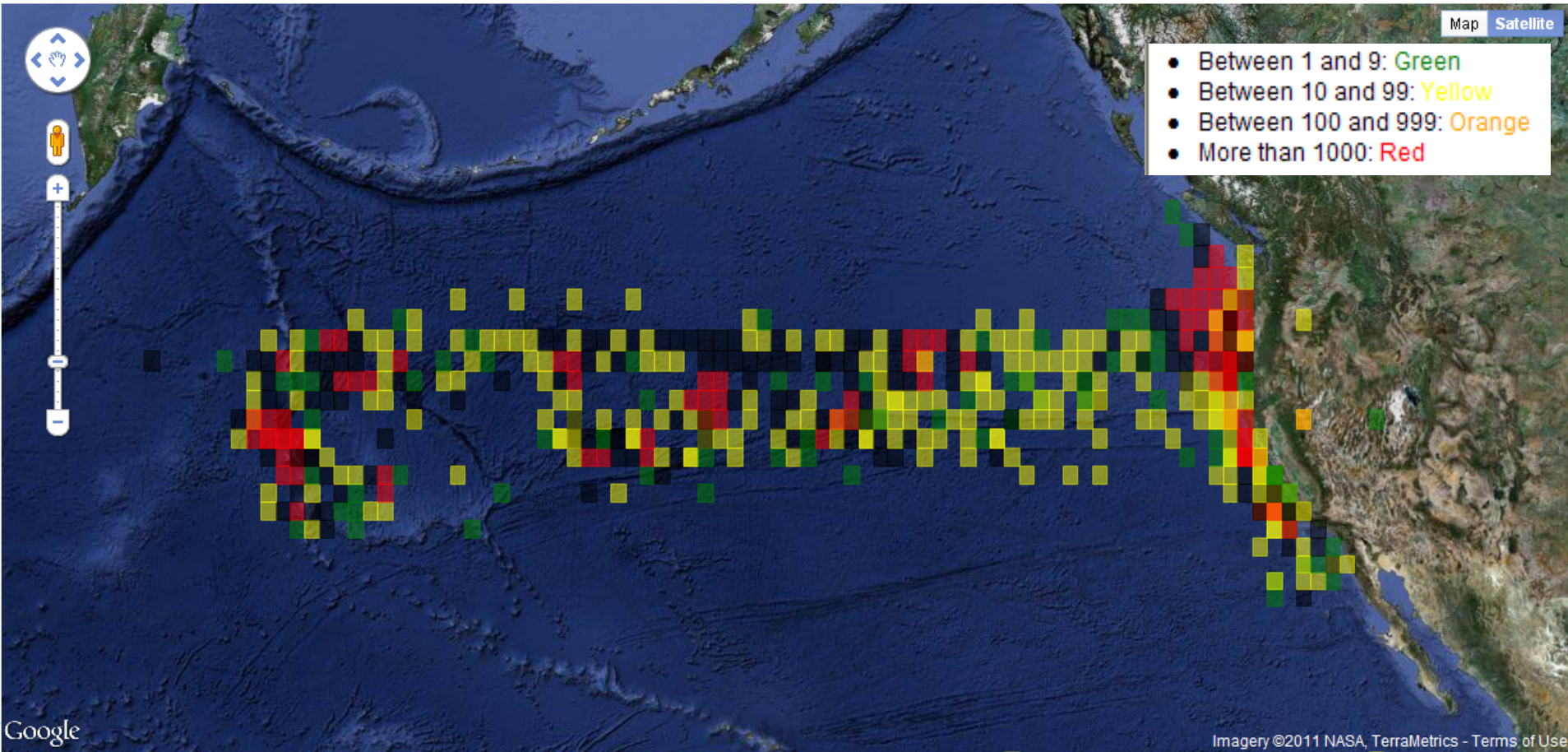


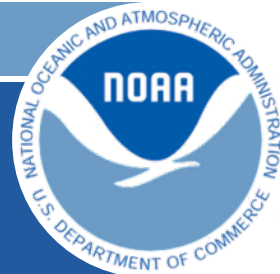


# FOSS Catch

Search Bar **Catch Map** Days Fished Map 3-Degree Map Map Key

Region Southwest Fishery NORTH PACIFIC ALBACORE PROGRAM Year 2001





# For More Information

## MMC Contact

David Stein

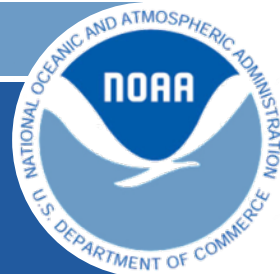
[Dave.Stein@noaa.gov](mailto:Dave.Stein@noaa.gov)

[www.marinecadastre.gov](http://www.marinecadastre.gov)

## NMFS Data Contact

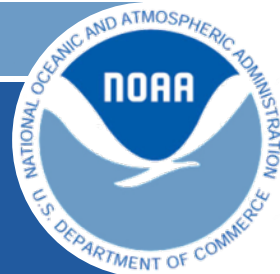
Kirsten Larsen

[Kirsten.Larsen@noaa.gov](mailto:Kirsten.Larsen@noaa.gov)



# BACK UP SLIDES

- **BACKUP SLIDES**

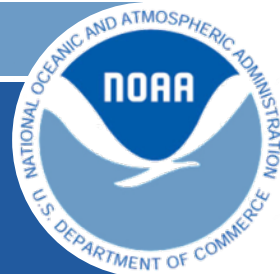


# Northeast Data Sets

Abbreviated list of data provided to BOEMRE, NROC/MARCO.

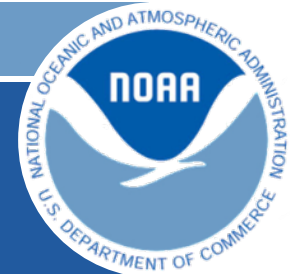
- Fisheries Dependent Data
  - VTR Landings by gear, 2001-2010
- Large-Scale Year-Round Management Areas
  - Canyons, Habitat/Fisheries/Scallop closed areas, right whale exclusion zone
- Physical attributes
  - Bathymetry, Mean, High/Low Temp, Sediment
- Lower Trophic Levels
  - Chl *a*, Primary Production, Cold water corals
- Fisheries Independent Data
  - Trawl and benthic surveys, total biomass, # species
- Marine Mammal Data
  - Right whales from surveys and management areas
- Potential Prey for Birds/Mammals
  - Abundance and biomass of copepods, amphipods, other crustaceans





# FOSS vs FINSS vs InPort

- FINSS contains metadata about each of our surveys and includes station locations
- InPort contains metadata about the data collected on each survey
- Both FOSS and FINSS will be cross-referenced and linked to InPort as part of next development phase



# Fisheries One-Stop-Shop (FOSS)

Search Bar   Catch Map   Days Fished Map   3-Degree Map   Map Key   Refre



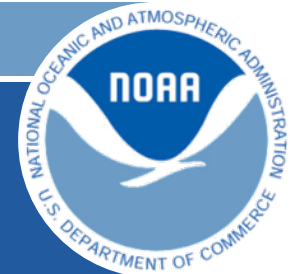
Thumbnail map

• Data found: **Yellow**

Region  Fishery  Year

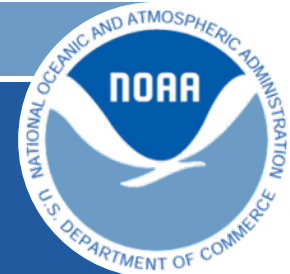
Rows

Latitude	Longitude	Catch	Days Fished
30	-122	.01	1
31	-122	.01	1
31	-120	.17	1
31	-119	.44	3
32	-120	.06	1
32	-118	.63	5
32	-117	.21	3
33	-123	.1	1
34	-177	.02	1
34	171	.05	2
34	172	.23	2
34	173	1.05	1
34	175	.01	2
35	-123	.09	1
35	-121	3.82	8
35	169	.15	3
35	170	1.42	1

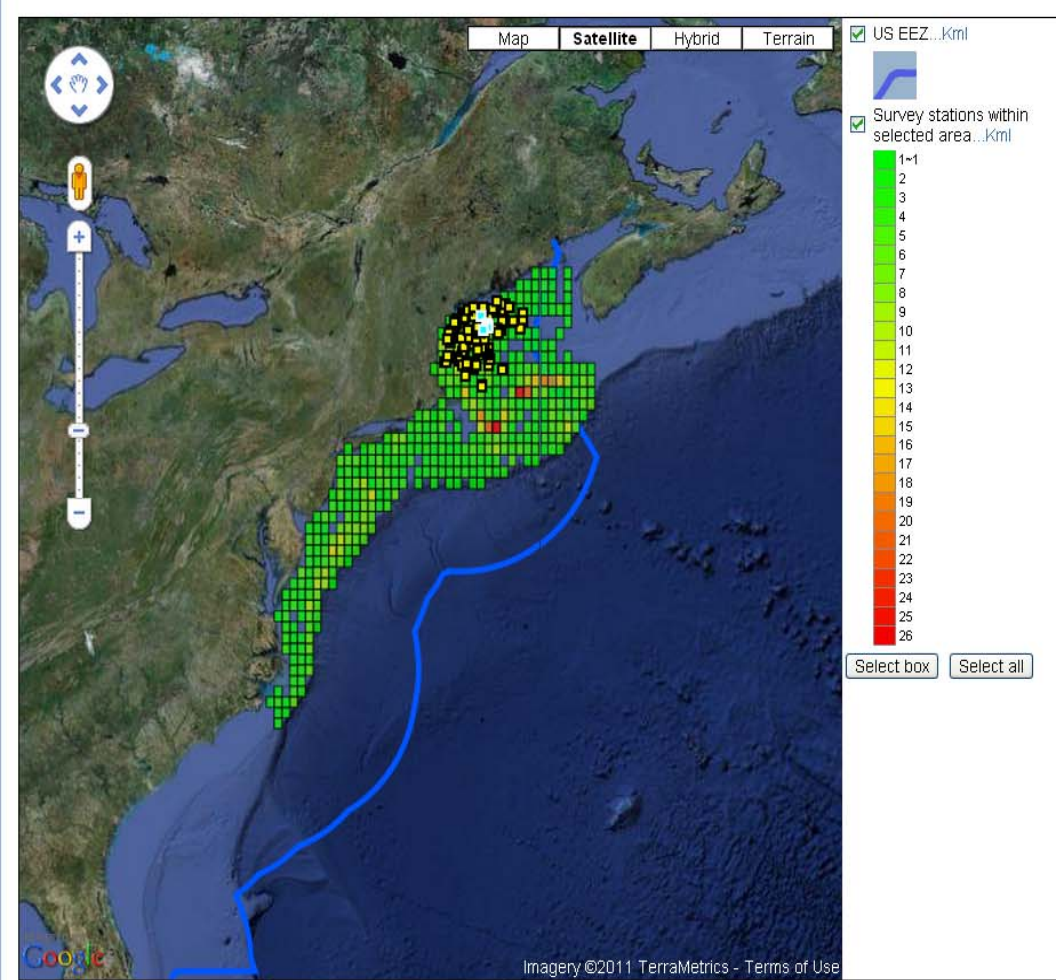


# Fishery Independent Survey System (FINSS)





# FINSS - Northeast Surveys



### Survey instances within selected grid cells

On	Science Center	Survey Name	Year	Stations	GE	
<input type="checkbox"/>	NEFSC	ECOSYSTEMS SURVEY_Winter	2010	105	Kml	
<input type="checkbox"/>	NEFSC	NMFS ACOUSTICS SURVEY_Fall	2010	196	Kml	
<input type="checkbox"/>	NEFSC	NMFS NEFSC BOTTOM TRAWL SURVEY_Fall	2010	373	Kml	
<input type="checkbox"/>	NEFSC	NMFS NEFSC BOTTOM TRAWL SURVEY_Spring	2010	403	Kml	
<input type="checkbox"/>	NEFSC	NMFS NEFSC SEA SCALLOP SURVEY_Summer	2010	498	Kml	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NEFSC	NMFS NEFSC SHRIMP SURVEY	2010	88	Kml
<b>report total:</b>				<b>1663</b>		

### Clicked stations

Science Center	Survey Name	Year	External Id	Begin Lat.	Begin Long.	End Lat.	End Long.
NEFSC	NMFS NEFSC SHRIMP SURVEY	2010	0034	43.334918	-69.354007	43.338045	-69.342958
NEFSC	NMFS NEFSC SHRIMP SURVEY	2010	0035	43.193913	-69.184678	43.187283	-69.176982
NEFSC	NMFS NEFSC SHRIMP SURVEY	2010	0036	43.155307	-69.148428	43.148057	-69.154735
NEFSC	NMFS NEFSC SHRIMP SURVEY	2010	0037	43.118342	-69.155180	43.115595	-69.166373
NEFSC	NMFS NEFSC SHRIMP SURVEY	2010	0038	43.064592	-69.274202	43.056560	-69.270445





# InPort

## NMFS Enterprise Data Management Program


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Type/Org  
Status

Item Summary

 **PRJ/SEFSC**  
Published Internally

### [Wreckfish logbook system](#)

Federally managed fisheries that currently have mandatory logbook and bycatch reporting requirements for the Southeast Region include snapper/grouper/wreckfish. which are required to report all discards, including protected species. Logbook data are most useful in estimating bycatch when reporting is mandatory, because a key advantage of logbooks is the ability to use them to cover all fishing activity relatively inexpensively. However, in the absence of any observer data, there are concerns a . . .

 [View](#)

 **PRJ/SEFSC**  
Published Internally

### [Golden crab logbook system](#)

In November 1995, a voluntary logbook program for the golden crab fishery in the waters under the jurisdiction of the South Atlantic Fishery Management Council (SAFMC) was initiated by the National Marine Fisheries Service (NMFS). This Golden Crab Trip Report Logbook program became mandatory when regulations for the golden crab fishery management plan went into effect on October 28, 1996. Regulations require that all fishers that have been issued a Federal vessel permit for the golden crab fish. . .

 [View](#)


# Lobster Logbook Data

## Pacific Islands Fisheries Science Center

 Data Set (DS) | ID: 1773 | Draft




## NMFS Enterprise Data Management Program

 [View as FGDC](#)

 [View as ISO](#)

 [Metadata Score](#)

 [Fillable Form](#)

 [Print This Page](#)

### Item Identification

**Status:** In Work

**Name:**

**Title:** Lobster Logbook Data

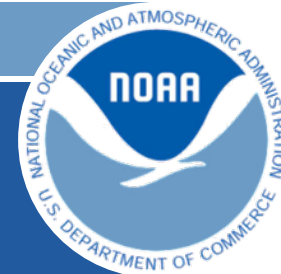
**Abstract:** The NWHI lobster trap fishery, which commenced in the mid-1970s, is a multispecies fishery and primarily targets the Hawaiian spiny lobster and slipper lobster. Three other species, green spiny lobster (*P. penicillatus*), ridgeback slipper lobster (*S. haanii*), and Chinese slipper

lobster (*Parribacus antarcticus*) are caught in low abundance. Fishery statistics during the early developmental phase of the fishery (1976-82), prior to the establishment of the Crustaceans FMP, are scant. Also, despite significant

### Data Attributes

#### Attribute Summary

Name	Data Storage Type	Max Length	Min Length	Req'd?	PKey?
<a href="#">DATASET_CODE</a>	VARCHAR2	5		N	N
<a href="#">VERSION_CODE</a>	VARCHAR2	2		N	N
<a href="#">VESSEL_NAME</a>	VARCHAR2	20		N	N
<a href="#">PERMIT_NUMBER</a>	VARCHAR2	7		N	N
<a href="#">TRIP_NUMBER</a>	VARCHAR2	4		N	N
<a href="#">LANDING_YEAR</a>	VARCHAR2	4		N	N
<a href="#">LANDING_MONTH</a>	VARCHAR2	2		N	N
<a href="#">CREW_SIZE</a>	VARCHAR2	2		N	N
<a href="#">SET_YEAR</a>	VARCHAR2	4		N	N



# Relevance to FY12 Passback Language

FY12 Passback	Related CMSP & DTT Actions
<p><i>By August 1, 2011 please provide a progress report on transferring data from the National Marine Fisheries Service into accessible and metadata compliant formats for the National Information Management System (NIMS), multi-purpose marine cadastre and other CMSP tools.</i></p>	<p>NMFS data is being included as part of the DTT task objective to identify and take necessary actions to make available priority NOAA geospatial datasets and metadata for use by the CMSP community.</p>
<p><i>We request that NOAA provide to OMB a performance measure to quantify the amount of data integrated into NIMS with the expectation that this measure could be adapted to the CMSP Strategic Action Plan.</i></p>	<p>NOAA is leading the interagency development of the CMSP Strategic Action Plan's National Objectives and Performance Measures and is actively working with OMB to define measures specific to the NIMS. This work will inform the development of a NOAA specific measure.</p>