



Interactive Habitat Database for Pacific Coast Ocean Observing System

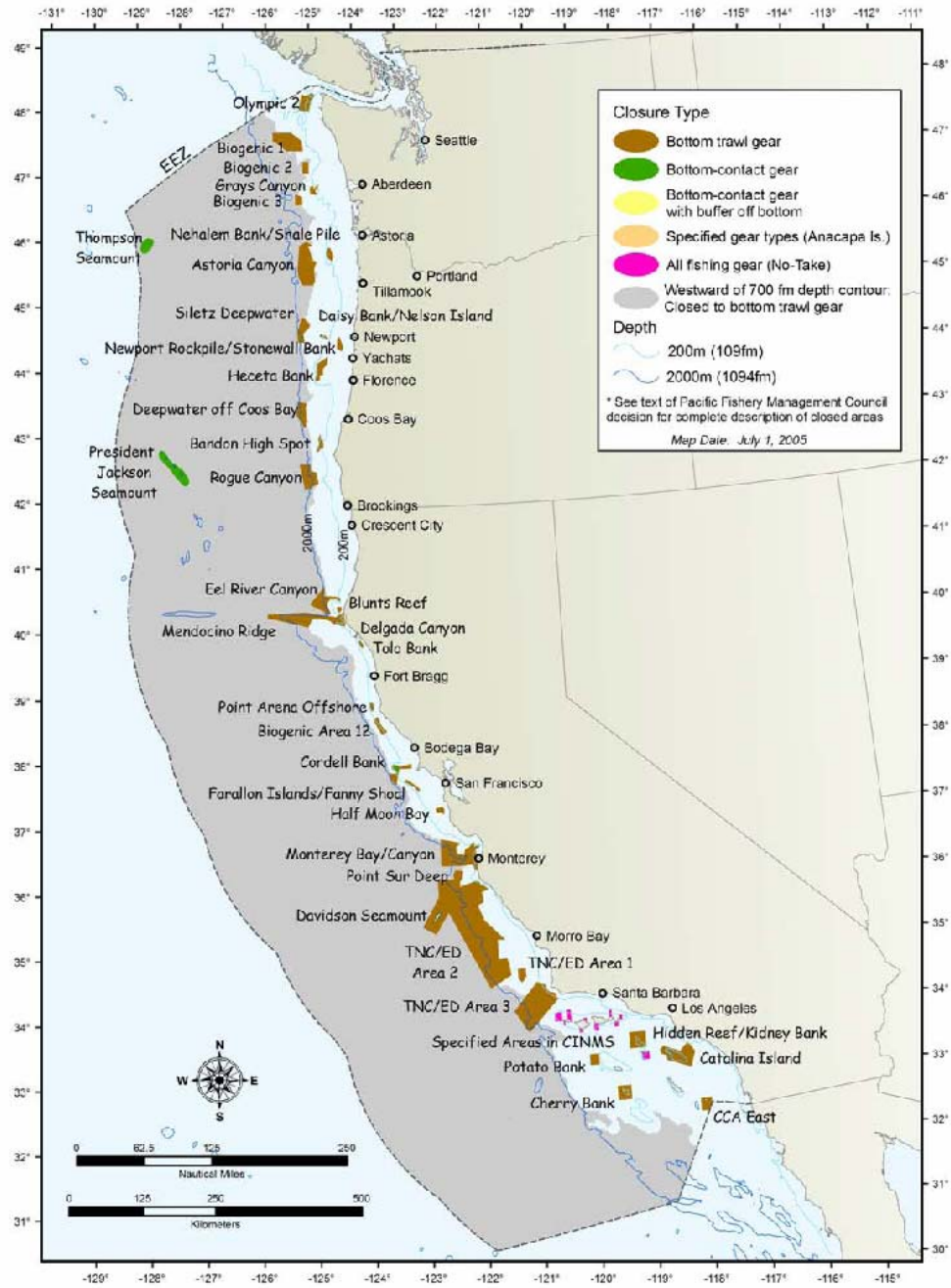
**M. Elizabeth Clarke, B. Gref and W.
Wakefield**

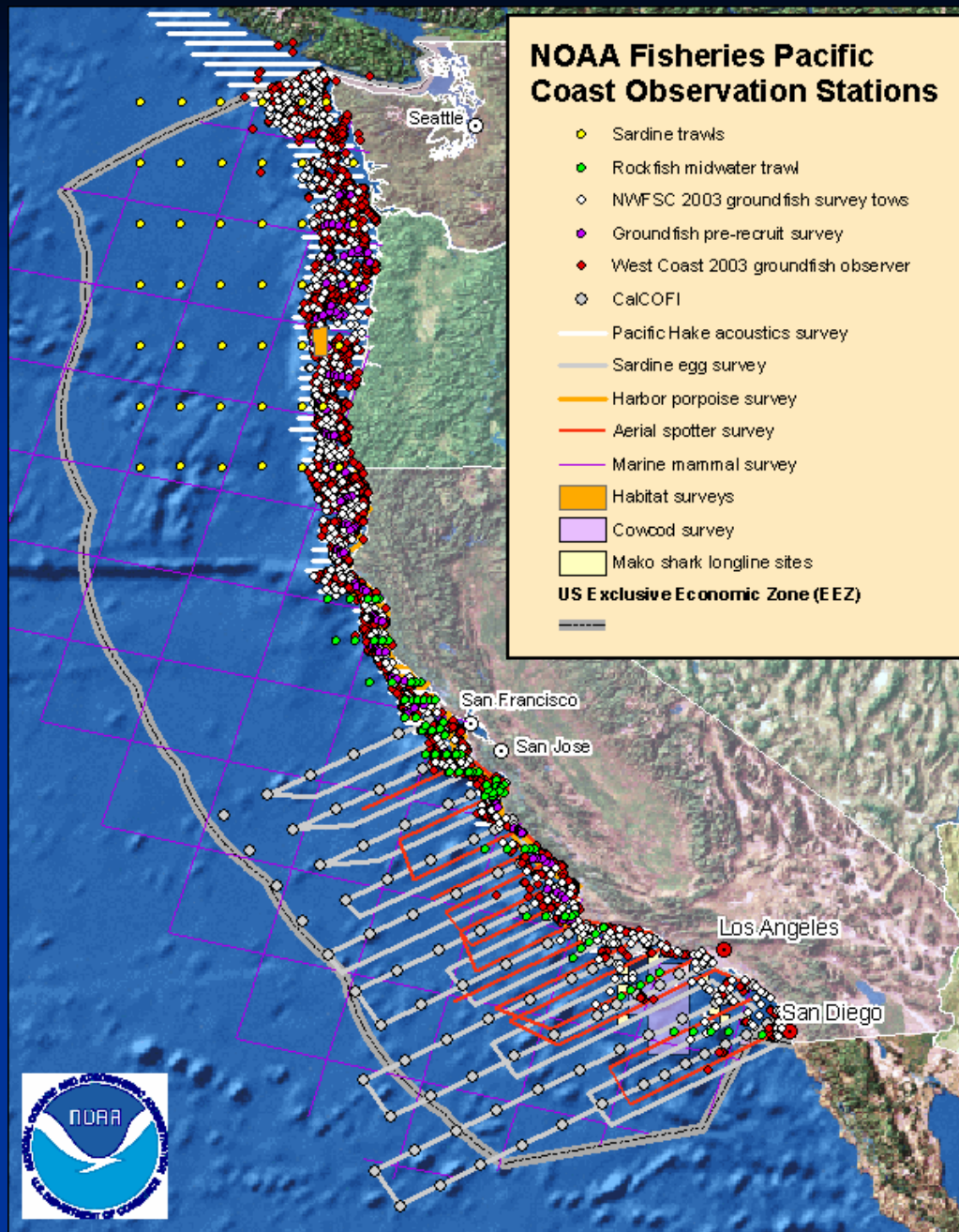
NWFSC-NOAA

**Chris Romsos and Chris Goldfinger
Oregon State University**

Why?

- Essential Fish Habitat - EIS
 - Data consolidated for EIS with no long term home
- IOOS
 - New Observing System with a need for integrated biological and geophysical information
- Large amount of California Current wide biological data with no publicly accessible home





Physical Architecture - 2008

Internet Clients

OSU Firewall – Corvallis, OR

NWFSC Firewall – Seattle, WA

DMZ Public Access

webapps

Free BSD Reverse Proxy Server

NWFSC Firewall – Seattle, WA

NWFSC Private Address Space

PUBWAS

Dell Poweredge 2650

- OC4J 10.1.3
- Tomcat
- OPeNDAP

PUBEDB

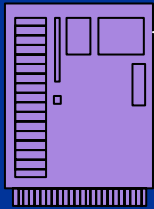
Dell Poweredge 2850

- Oracle 10g Database (10.1)
- Moving to Oracle 64-bit on Linux soon!

OSU Firewall – Corvallis, OR

OSU Firewall – Corvallis, OR

DMZ Public Access



TOMCAT

Dell Poweredge 2850

2 Processor 3.6GHz

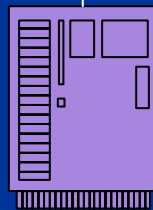
8 Gig RAM

3 - System Disks 146 GB HD, 15K RPM

7 - 500GB SATA Drives, 7.2K RPM

•ArcIMS Server 9.2, SDE 9.2, ArcGIS 9.2

•OPeNDAP



EXTRA

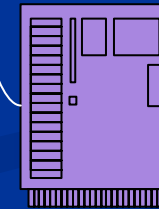
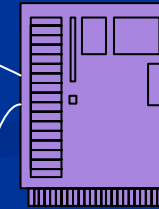
Dell Precision 690

2 Processor 2.66 GHz

4 Gig RAM

ESRI Portal Toolkit

ESRI 9.2 Products



Integration



Integrated Portal

SERVICES
Image Services
Catalog Service (portal)
OPeNDAP
WFS

SERVICES
Image Services
Catalog Service
OPeNDAP

SERVICES
Other Data Services
WCS
THREDDs
OPeNDAP

NWFSC & OSU

NCDDC

PFEL SW

- *Biologic and habitat data
- *Habitat, Seafloor imagery and bathymetry
- *Ocean Climatologies

- *NMSP – West Coast Obs.
- *NMSP – Beach Comber
- *NMSP – Beach Watch

- *Coast Watch Oceanographic data
- *Other Satellite data streams

IOOS Data Standards

We follow DMAC Standards and provide our data via:

- OPeNDAP (Binary and ASCII) – All tabular data served up in OPeNDAP.
- Geospatial data is available via OpenGIS Web Feature Service (WFS)
- Metadata is in FGDC format

We chose to provide a set of tools for the user (so they are not required to provide their own) AND also serve the data up so they can consume the data using the tools of their choice. We want the broadest possible set of users.

Some of the information...

- Bathymetry
- Management Areas
- Habitat Maps
- OR/WA Tectonic Structure
- Seafloor Sample Locations
- Ocean Climatologies
- Coastwide ADCP
- Groundfish Survey
- Cold Water Coral
- Kelp Distributions
- Fish Habitat Utilization Data
- Fishery Observer Information
- Coming soon.....
Sea Bird Mortalities

Table of Contents

Auto Update?

- Closed Fishing Areas
- Data Index Layers
- Buoys
- Fish and Invertebrate Data
- Kelp Data (zoom close to the coast?)
- Geological Data
 - Habitat Maps
 - Surficial Geologic Habitat OR-WA
 - EPH E55 Surficial Geologic Habitat WA
 - EPH E55 Surficial Geologic Habitat OR
 - EPH E55 Surficial Geologic Habitat CA
 - Greater than 10 degree slope
 - SGH H3 Fathom Bank
 - SGH Cherry Bank
 - SGH Osborn Bank
 - SGH Pilgrim-Kidney Bank
 - SGH Potato Bank
 - OR/WA Tectonic Structure
 - Midcean Sonar Imagery
 - Seafloor Samples
 - Tsunami Inundation
 - Submersible Cruises
 - Oceanographic Data
 - Oregon Territorial Sea Data
 - Remote Databases (for query only)
 - NOAA Habitat Use Database
- Testing
 - Southwest Center

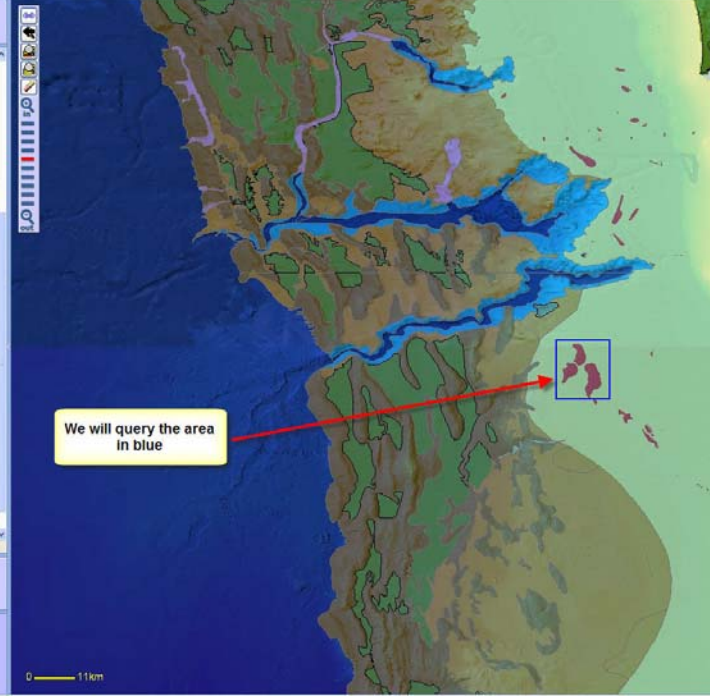
Query Layers

Allow Multiple?

NOAA Habitat Use Database

Table of Contents Usage

- > Left click TOC layer for meta data
- > Right click TOC layer for legend
- Select visible layers
- +? Select feature layer for queries



Spatial Query - Windows Internet Explorer

http://pacoos.coas.oregonstate.edu/MarineHabitatViewer/Query.aspx?SpabaEnvelope=-124.65704404525726,45.825694138253475,-124.48640

Latitude 45.82570 <=> 46.01387 Longitude -124.65700 <=> -124.48640

Avg Depth	164.07	Min Depth	122	Max Depth	207	Depth S.D.	13.66	Data Coverage	100%
-----------	--------	-----------	-----	-----------	-----	------------	-------	---------------	------

NOAA Habitat Use Database

Groundfish predicted to live in this habitat

select Sablefish

- [Sablefish \(*Anoplopoma fimbria*\)](#)
- [Arrowtooth Flounder \(*Atheresthes stomias*\)](#)
- [Pacific Sanddab \(*Citharichthys sordidus*\)](#)
- [Petrale Sole \(*Geopsetta jordani*\)](#)
- [Pacific Cod \(*Gadus macrocephalus*\)](#)
- [Rex Sole \(*Glyptocephalus zachirus*\)](#)
- [Flathead Sole \(*Hippoglossoides elassodon*\)](#)
- [Spotted Ratfish \(*Hyarolagus collicii*\)](#)
- [Butter Sole \(*Isopsetta isolepis*\)](#)
- [Rock Sole \(*Lepidopsetta bilineata*\)](#)
- [Dover Sole \(*Microstomus pacificus*\)](#)
- [Lingcod \(*Ophiodon elongatus*\)](#)
- [English Sole \(*Parophrys vetulus*\)](#)
- [Starry Flounder \(*Platichthys stellatus*\)](#)
- [Big Skate \(*Raja binoculata*\)](#)
- [California Skate \(*Raja inornata*\)](#)
- [Roughve Rockfish \(*Sebastes aleutianus*\)](#)
- [Pacific Ocean Perch \(*Sebastes alutus*\)](#)
- [Redbanded Rockfish \(*Sebastes babcocki*\)](#)
- [Silvergray Rockfish \(*Sebastes brevispinis*\)](#)
- [Darkblotched Rockfish \(*Sebastes crameri*\)](#)
- [Spitnose Rockfish \(*Sebastes diploproa*\)](#)
- [Greenstriped Rockfish \(*Sebastes elongatus*\)](#)
- [Widow Rockfish \(*Sebastes entomelas*\)](#)

Fish Viewer

FishData - Windows Internet Explorer
 http://webapps.nwfsc.noaa.gov/pacoos/faces/FishData.jsp;jsessionid=a137d4c722b8e76d5ce707fe4687b5b2b84eff54af9a
 SnagIt FishData

Choose Fish

Sablefish

Common Name Sablefish

Scientific Name *Anoplopoma fimbria*

[Download Data](#)



Picture Credit
NOAA NMFS NWFS FC FRAM

Select Download Data

Eggs

	Absolute	Preferred
Min. Latitude	28.0	
Max. Latitude	55.0	
Min. Depth (m)	0	300
Max. Depth (m)	1900	1200
Min. Temp		
Max. Temp		

Larvae

	Absolute	Preferred
Min. Latitude	28.0	
Max. Latitude	55.0	
Min. Depth (m)	0	
Max. Depth (m)	1200	
Min. Temp		
Max. Temp		

Juveniles

	Absolute	Preferred
Min. Latitude	28.0	
Max. Latitude	55.0	
Min. Depth (m)	0	
Max. Depth (m)	1200	
Min. Temp		
Max. Temp		

Adults

	Absolute	Preferred
Min. Latitude	28.0	
Max. Latitude	55.0	
Min. Depth (m)	0	200
Max. Depth (m)	1900	1200
Min. Temp		
Max. Temp		

Download Data

Download as OPeNDAP Binary Object		Download as OPeNDAP ASCII Text object	
Coral 1980-2005		Coral 1980-2005	
Groundfish Survey 2003-2006		Groundfish Survey 2003-2006	
HUD Fish Occurrence Details		HUD Fish Occurrence Details	
HUD Fish Species Details		HUD Fish Species Details	
HUD Predators and Prey		HUD Predators and Prey	
HUD References		HUD References	
Observer Fixed Gear 2002-2006		Observer Fixed Gear 2002-2006	
Observer Trawl 2002-2006		Observer Trawl 2002-2006	

You can download the data in any of the four formats

Download as Excel (CSV) Files		Download as Adobe PDF Files	
Coral 1980-2005		Coral 1980-2005	
Groundfish Survey 2003-2006		Groundfish Survey 2003-2006	
HUD Fish Occurrence Details		HUD Fish Occurrence Details	
HUD Fish Species Details		HUD Fish Species Details	
HUD Predators and Prey		HUD Predators and Prey	
HUD References		HUD References	
Observer Fixed Gear 2002-2006		Observer Fixed Gear 2002-2006	
Observer Trawl 2002-2006		Observer Trawl 2002-2006	

New Groundfish Data

- Observer Fixed Gear 2002-2006 (20 x 20 km)
- Observer Trawl 2002-2006 (10x10 km)
- Groundfish Trawl 2005 & 2006
- Groundfish Trawl – added 5 rockfish species retroactive to 2003

Groundfish Trawl Data – 2005 & 2006

