



BOEM Bureau of
Ocean Energy Management

Offshore Wind Energy Planning

Process – Data Gathering – Studies – Analysis

Pacific Fishery Management Council Webinar
July 22 - 23, 2021

Today's Participants from BOEM Pacific Regional Office

- **Frank Pendleton**, GIS Analyst
- **Donna Schroeder**, Marine Ecologist
- **Susan Zaleski**, Marine Ecologist
- **Doug Boren**, Regional Supervisor, Office of Strategic Resources
- **Rick Yarde**, Regional Supervisor, Office of Strategic Resources
- **Necy Sumait**, Chief, Renewable Energy Section



Presentation Topics

- **Leasing Process and Status**

- Overview of leasing process
- Status of planning in the Pacific
- Upcoming events/Next steps

- **Data Acquisition and Mapping**

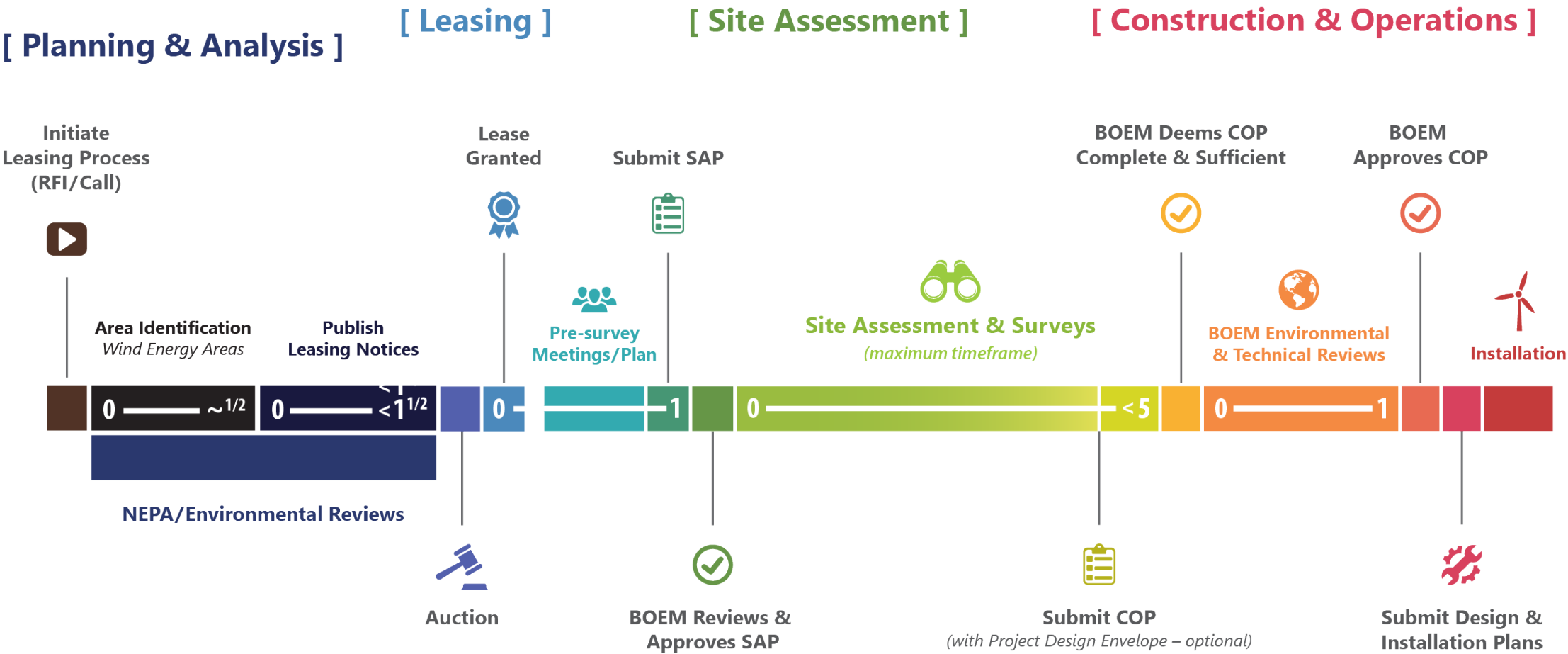
- Summary of data acquisition and repository for OSW planning (Oregon/California)
- Sources of data – partners in the analysis
- Preliminary analysis of available data sets (VMS etc.)

- **Studies and Analysis**

- BOEM Studies Program
- BOEM environmental analysis

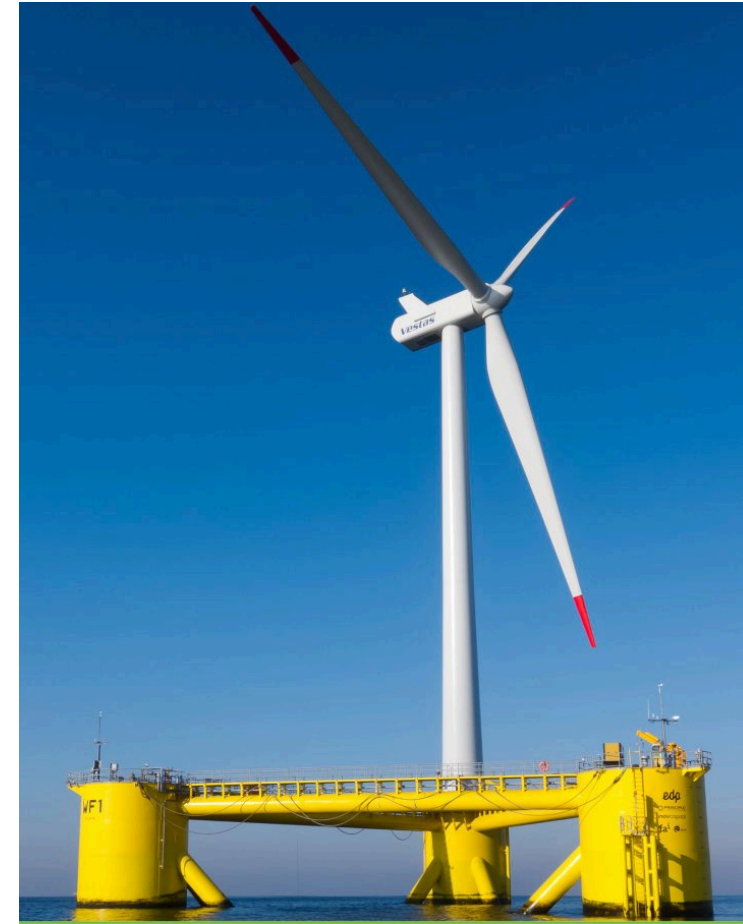


BOEM's Offshore Wind Energy Authorization Process



Renewable Energy Process: Calls, Wind Energy Areas and Lease Areas

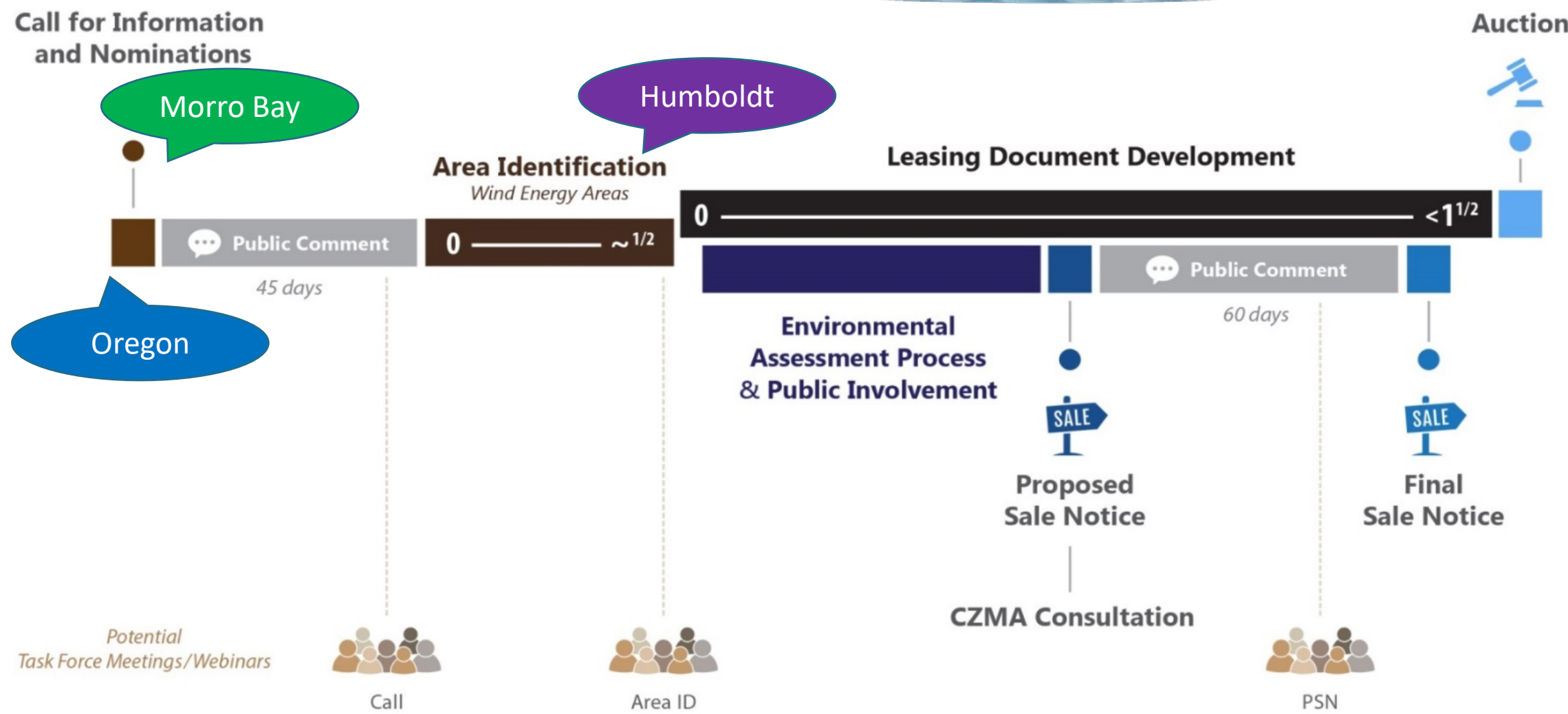
- **Call for Information and Nominations**
 - Calls for formal public comment about the area, uses and concerns
 - Requests nominations of interest for development
- **Wind Energy Area**
 - An area within a Call Area identified by BOEM for environmental review
 - Basis for a lease area(s)
- **Lease Area**
 - An area BOEM offers for lease during a Lease Sale



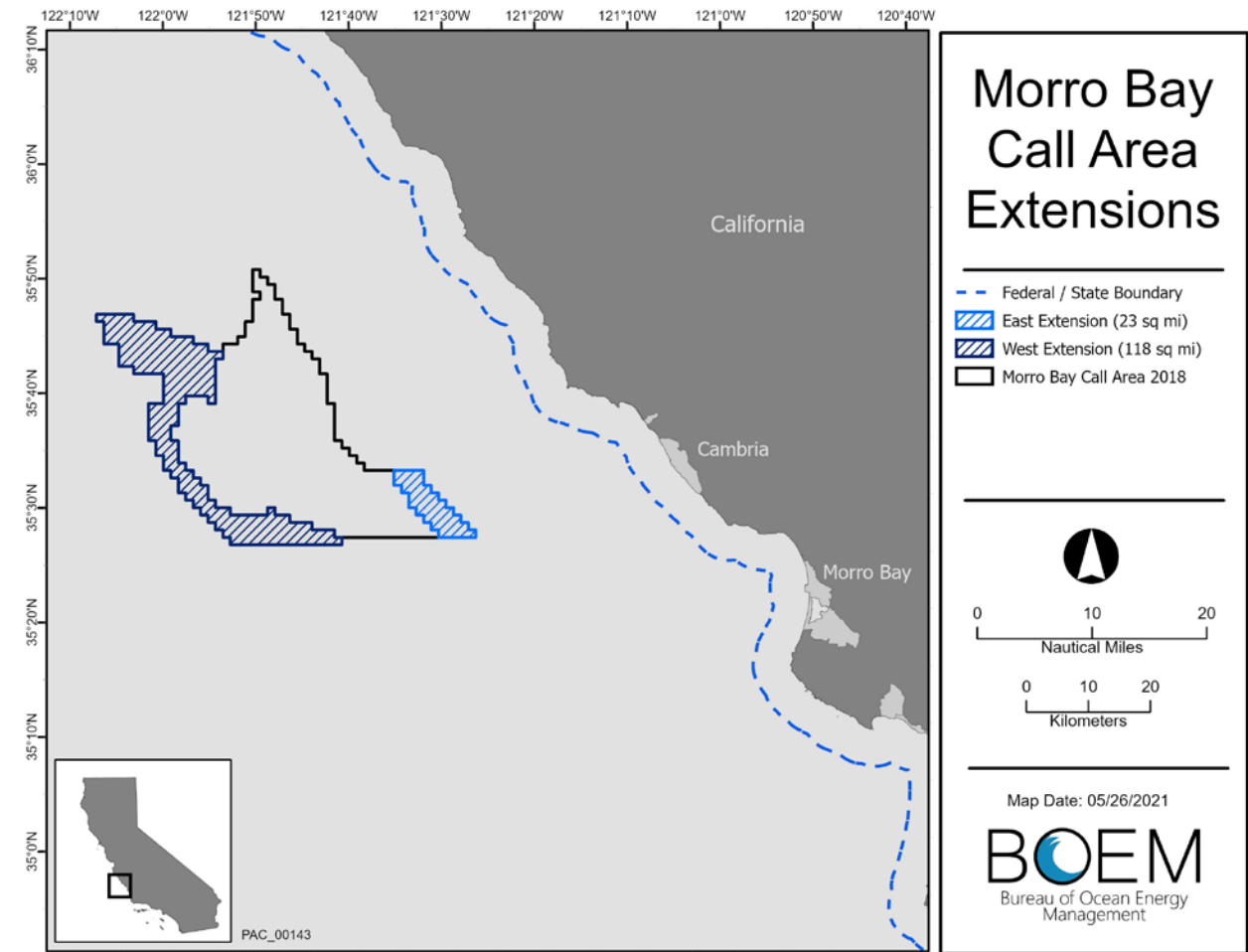
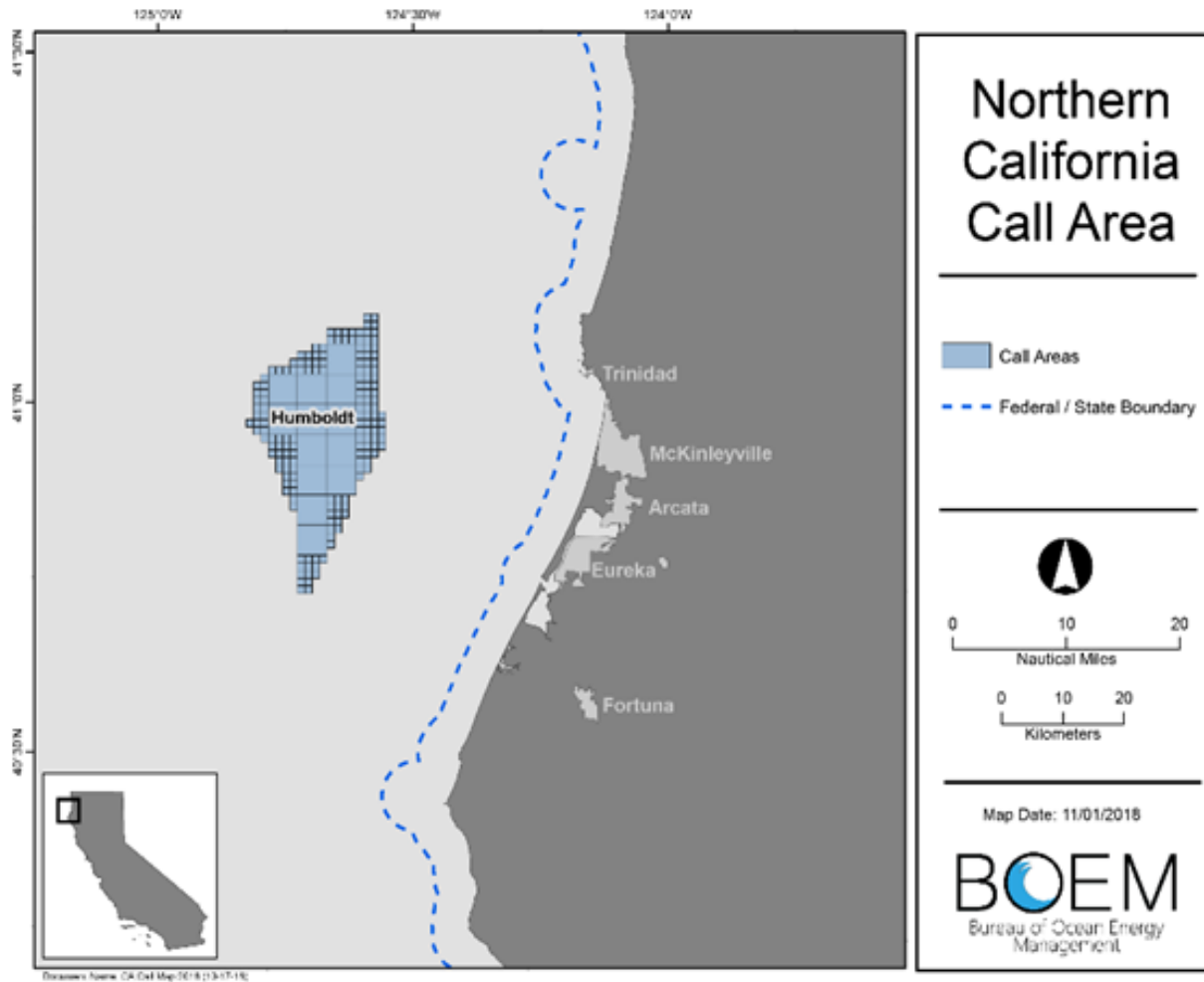
Aguçadoura WindFloat Prototype
October 2011 - 4KM Offshore of Aguçadoura, Portugal



Pacific Offshore Wind Planning Status



Northern California and Central California Areas



Anticipated Next Steps - California

Identify Wind Energy Area on the North Coast

- Conduct environmental analysis for potential lease issuance and site characterization

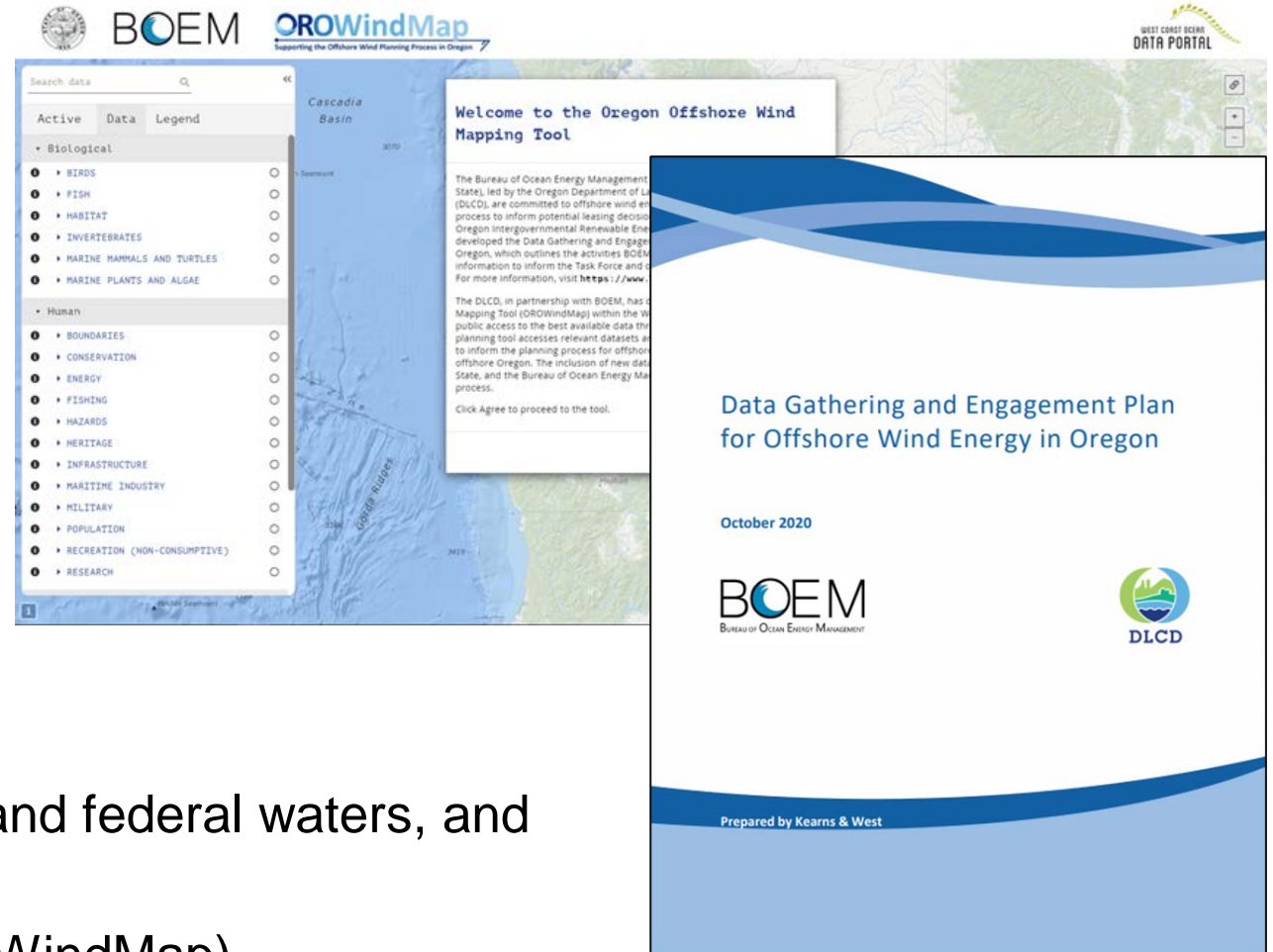
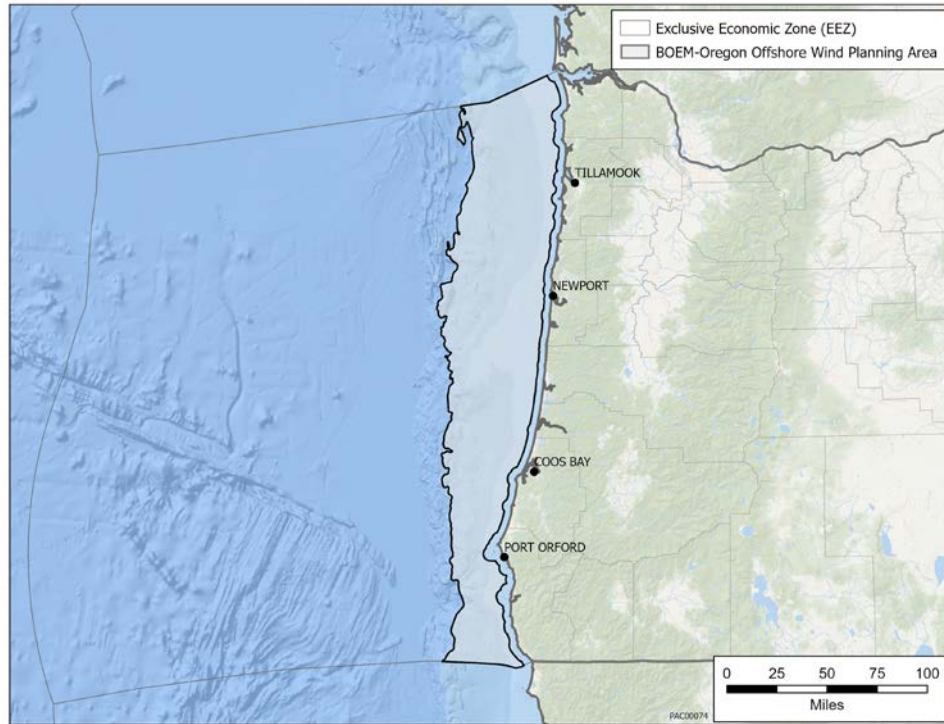
Publish Call for Information on additional areas adjacent to the 2018 Morro Bay Call Area

Outreach and engagement in coordination with California state agencies

Stay informed about BOEM California activities at www.boem.gov/California and sign up for updates at www.boem.gov/CaliforniaUpdates



Oregon Offshore Wind Energy Planning



Data Gathering and Planning Area: State and federal waters, and onshore with pertinent data and information

Oregon Offshore Wind **Mapping Tool** (OROWindMap)

Anticipated Next Steps - Oregon

Continue data gathering and engagement throughout BOEM's authorization process

Offshore Wind Energy Planning Data Review Virtual Workshops

- August 4, 2021, from 9:00 AM -12:00 PM PT: Physical, human, and biological datasets
- August 11, 2021, from 9:00 AM -12:00 PM PT: Fisheries-related datasets

Fall 2021: BOEM Oregon Task Force Meeting

- Present the results of the 12-month effort and seek input

Winter 2021-2022: BOEM Oregon Task Force Meeting

- Review draft Call Area(s) with the Task Force

BOEM to publish Call for Information and Nominations (Call) in the *Federal Register*

- Describes geographically distinct areas (Call Area(s))
- Invites submission of information and nominations of interest for commercial wind leases

Stay informed about BOEM Oregon activities at www.boem.gov/Oregon and sign up for updates at www.boem.gov/OregonUpdates

Fishing Community Outreach and PFMC Coordination

○ PFMC

- Check-ins prior to PFMC meetings with PFMC staff and State representatives since ~ July, 2020
- February 24, 2021: Webinar Presentation to Habitat Committee and PFMC Advisory Bodies
- March 5, 2021: PFMC - Marine Planning Update
- June 29, 2021: Brief update by BOEM
- July 22-23, 2021: Marine planning and offshore development online meeting

○ Outreach to fishing community in coordination with State partners

- Inform on status of offshore wind planning
- Ask for data and information
- Share preliminary analysis on VMS information





NOAA
FISHERIES

NWFSC Observer Program Spatial Data

PFMC and BOEM Meeting
July 22-23, 2021

Spatial Data Collected by Observers

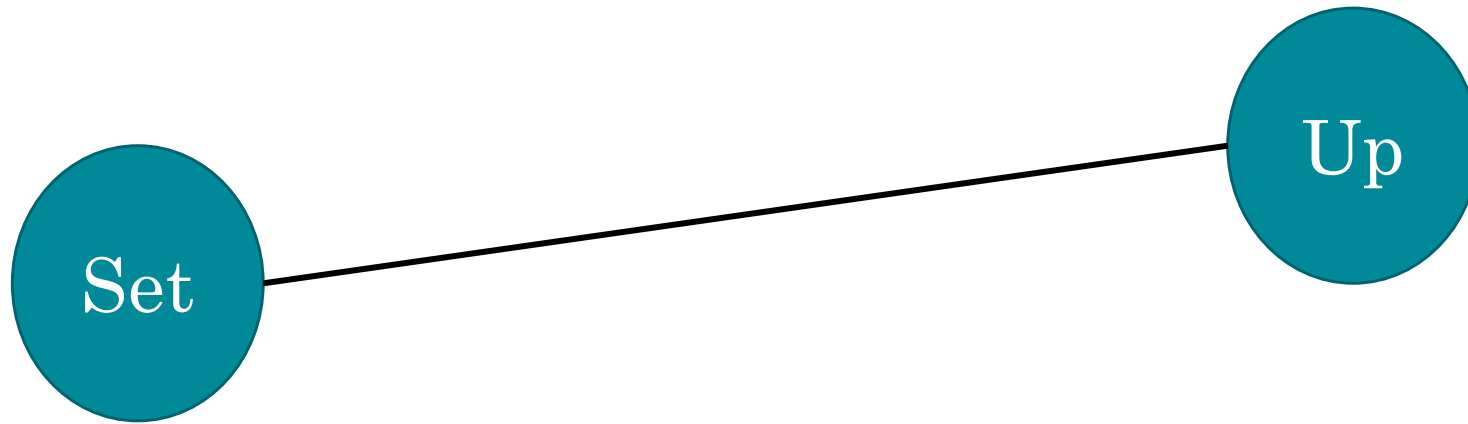
TRIP FORM - HAUL LOCATIONS

Gear Type Codes:	Haul/ Set #		Date		Time	Latitude		Longitude		Depth of Catch (fathoms)	Gear Type	Trawl BRD (Present?)	Target Strategy
			Month	Day		Degree	Minutes	Degree	Minutes				
1 - Trawl Small Footrope (<8 inches) 2 - Trawl Large Footrope (>8 inches) 3 - Midwater Trawl 4 - Danish/Scottish Seine 5 - Other Trawl Gear 7 - Vertical Hook and Line 8 - Pole (Commercial) 9 - Other Hook and Line 10 - Fish Pot 12 - Shrimp Trawl Single Rigged 13 - Shrimp Trawl Double Rigged 14 - All Net Gear Except Trawl 15 - All Trawl Gear 16 - All Other Miscellaneous Gear 17 - OR Setback Flatfish Net (Pineapple) 19 - Longline (Fixed Hooks) 20 - Longline (Snap-on Hooks)		Start											
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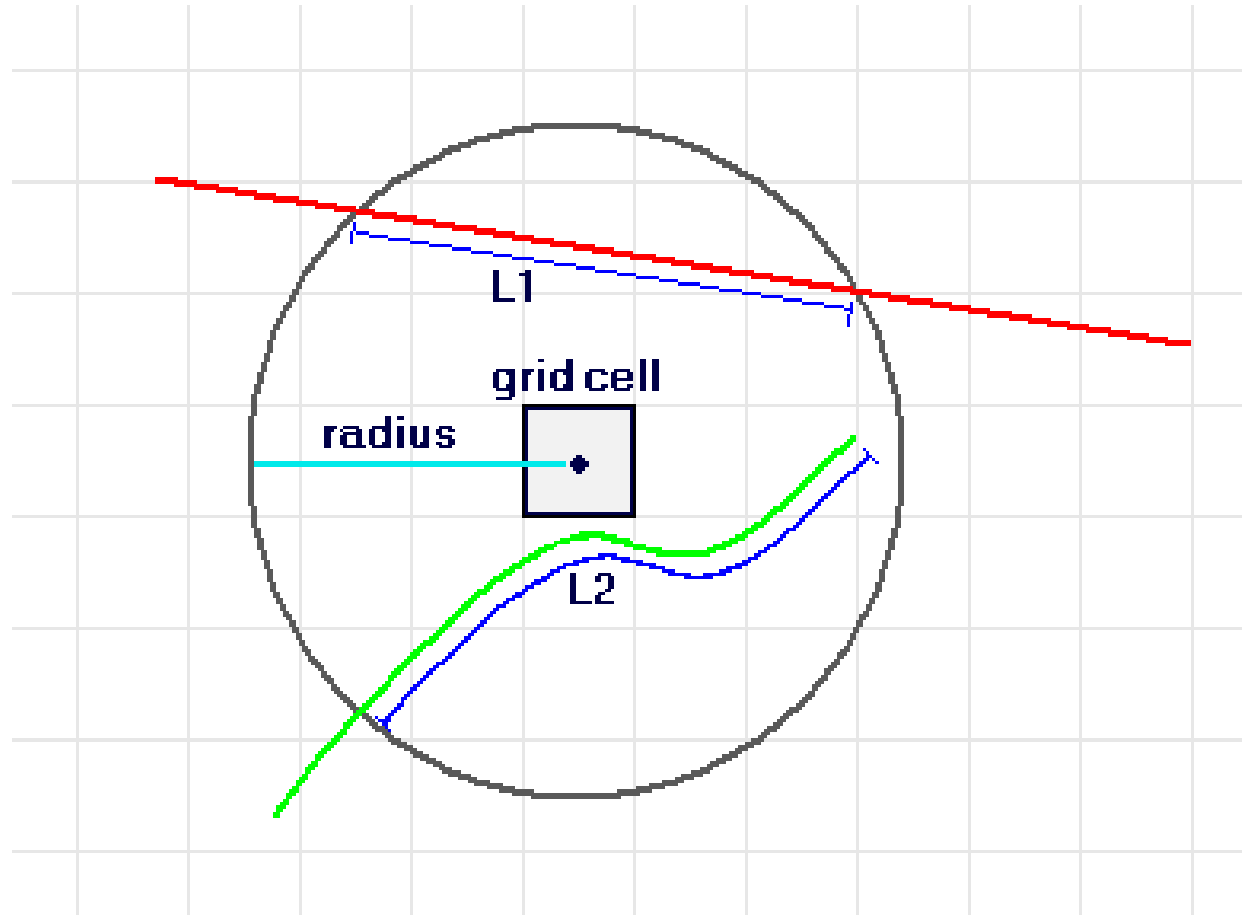


NOAA
FISHERIES

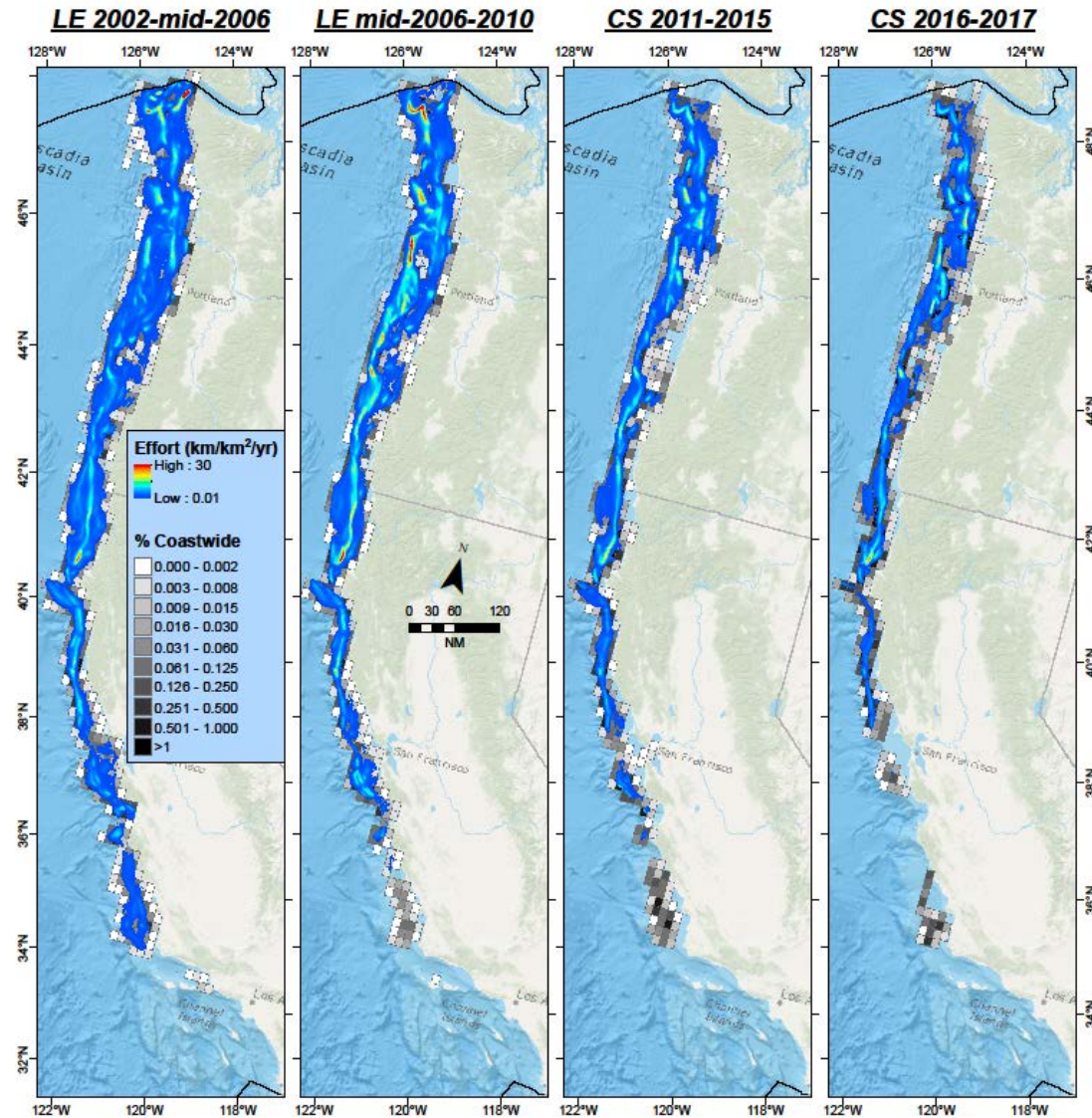
Analysis of Spatial Data



Analysis of Spatial Data



Publicly-Available Spatial Data



NOAA
FISHERIES



BOEM Bureau of
Ocean Energy Management

VMS Analysis

Pacific Fisheries Management Council Webinar

July 22 - 23, 2021

VMS Analysis

We are asking for your expertise.
Is there...

Other datasets that show where fishing occurs?

A specific concern we should address in our analysis?

Something about a fishery we should consider when analyzing the data?

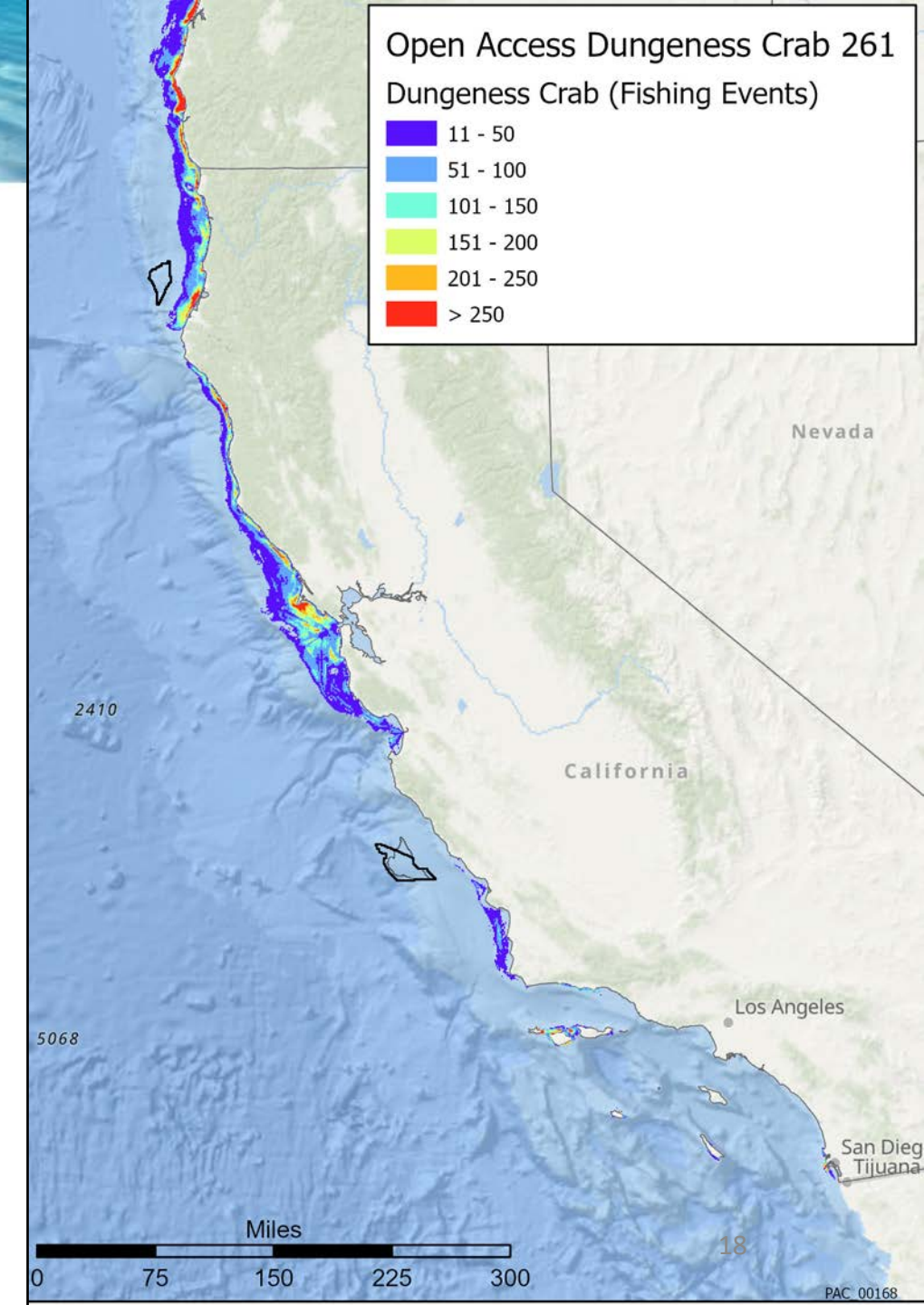
Fishing speeds vs Transit speeds

Fishing times

Big change by year

People/Organizations/Fishing Meetings BOEM and the States should talk to about Offshore Wind Planning or datasets?

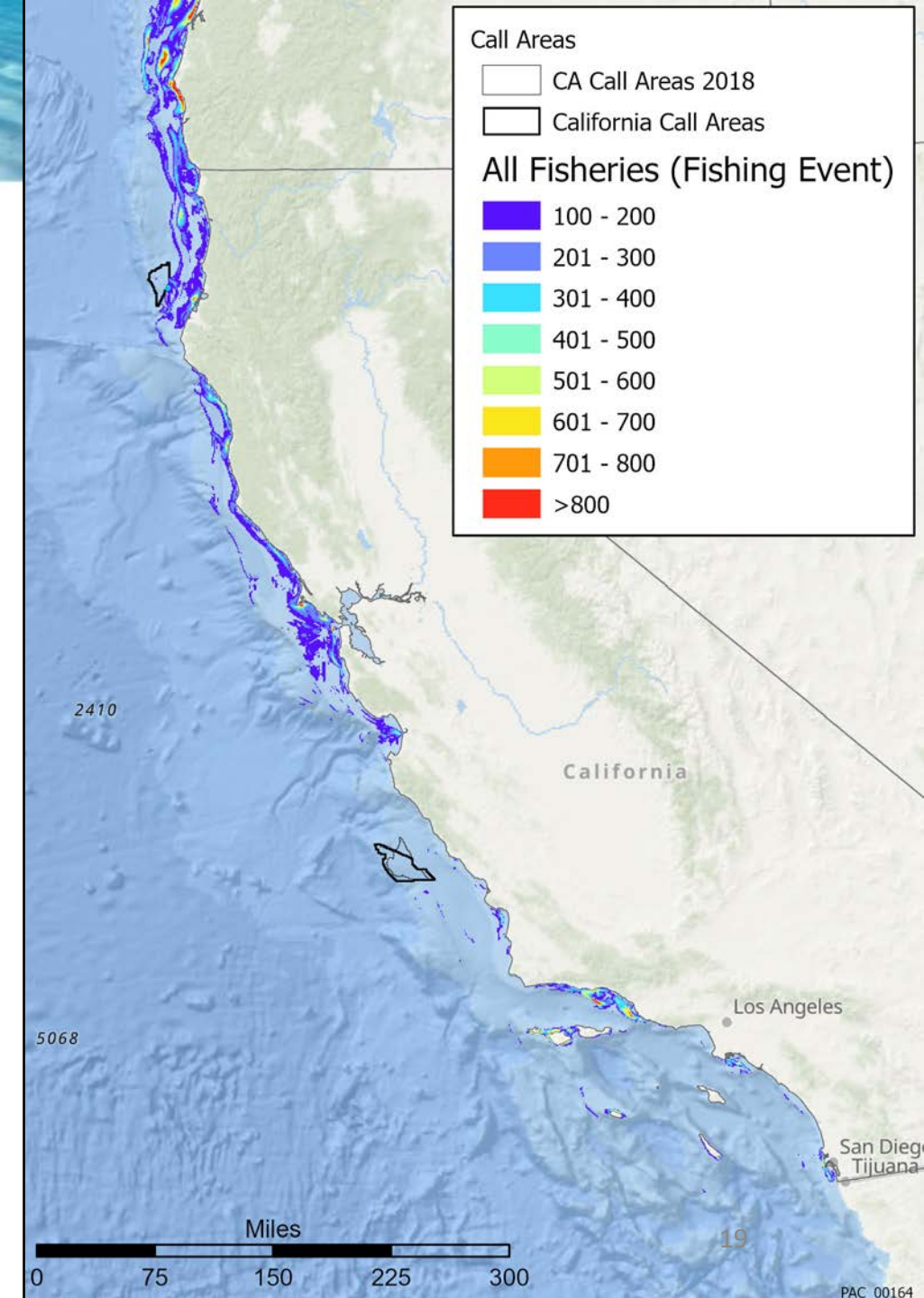
Anything else?



Fisheries Datasets

Extensive data discussions, including with:

- California Dept of Fish and Wildlife
- Oregon Dept of Fish and Wildlife
- NOAA Aquaculture Team
- NOAA NWFSC
- PFMC
- PSMFC
- Fishing Commissions



Vessel Monitoring System (VMS)

GPS for tracking fishing vessels

NOAA Office of Law Enforcement

Non-Disclosure Agreement

At least 3 vessels in any block
(Example is AIS data)

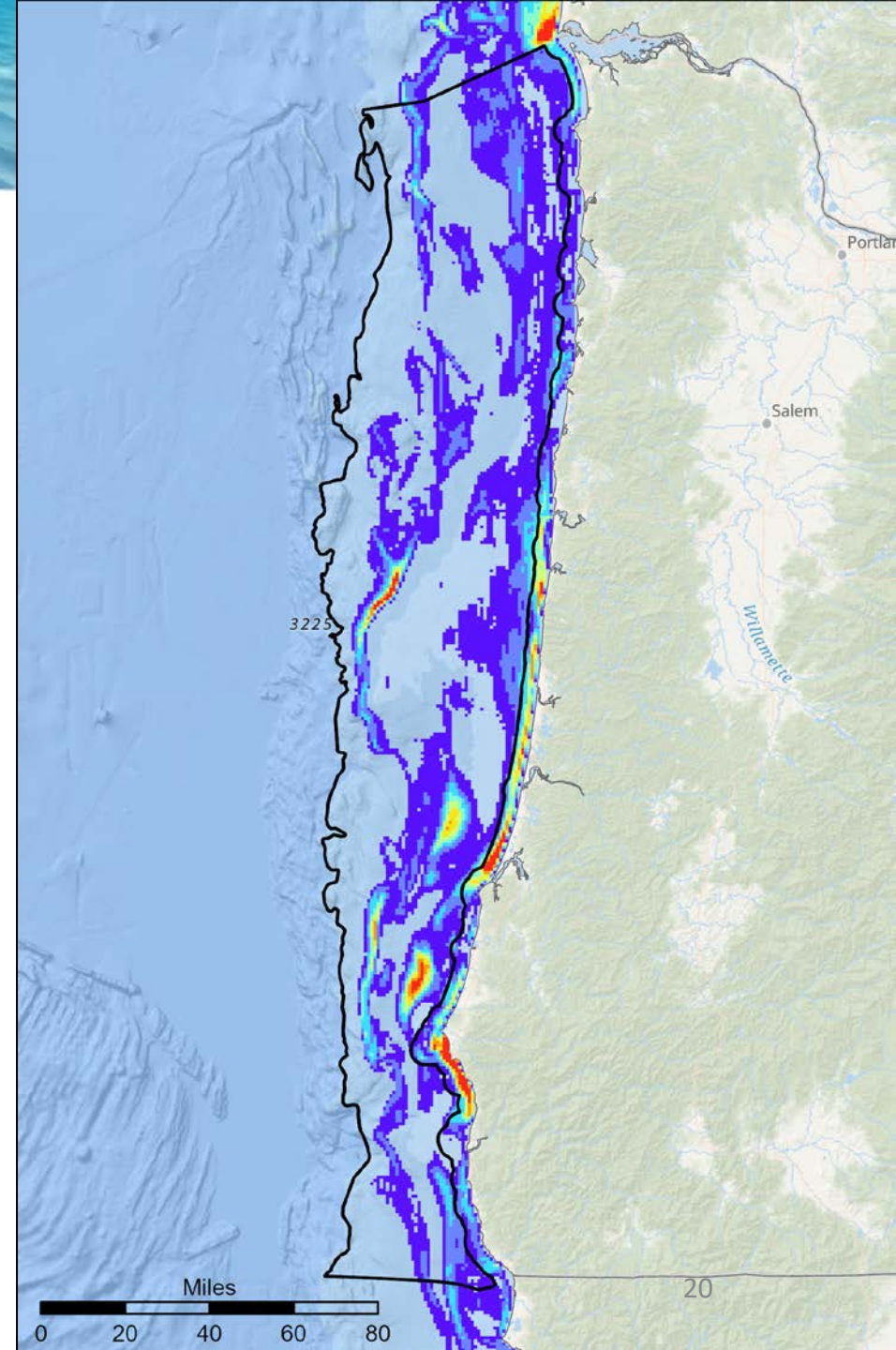
Data

Vessel ID

Declaration code

Date Time, Lat/Long, Course, Speed

Our Dataset = 2010 – 2017



Vessel Monitoring System (VMS)

Who is required to have VMS

Any vessel registered to a **limited entry groundfish** permit

Non-groundfish trawl vessels, vessels that use trawl gear but are not registered to limited entry groundfish permits, **must have VMS to fish in federal waters** (3-200 nautical miles offshore)

Any vessel using non-trawl gear, that is not registered to a limited entry groundfish permit, **must have VMS on trips in which groundfish are taken and retained, possessed or landed in federal waters** (3-200 nautical miles offshore)



Pacific Coast Groundfish Fishery Vessel Monitoring Program Compliance Guide

Effective February 4, 2008
Updated and re-published January 2020

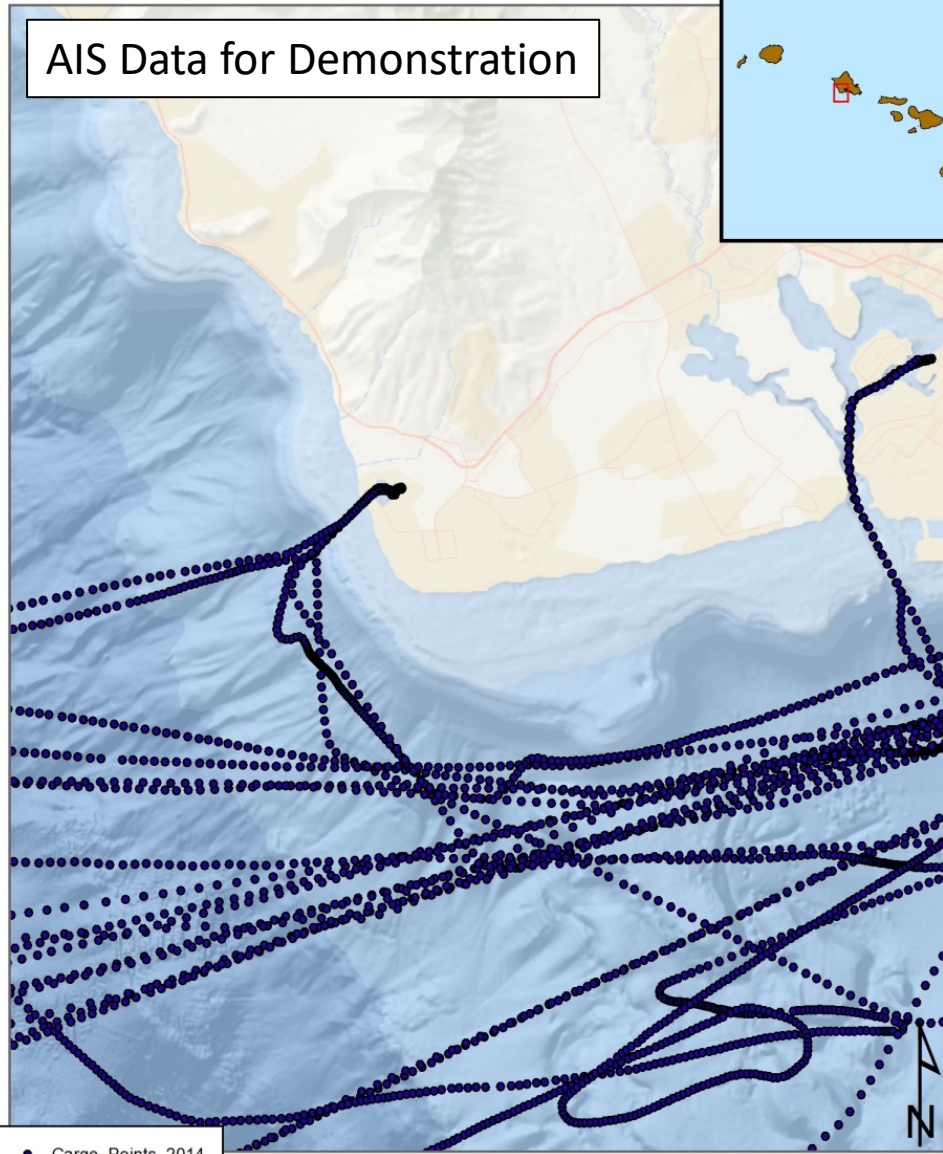


VMS
Declaration
Codes
(West Coast)

Declaration ID	Description
210	Limited entry fixed gear, not including shorebased IFQ
211	Limited entry groundfish non-trawl, shorebased IFQ
220	Limited entry midwater trawl gear, non-whiting shorebased IFQ
221	Limited entry midwater trawl, Pacific whiting shorebased IFQ
222	Limited entry midwater trawl, Pacific whiting catcher/processor sector
223	Limited entry midwater trawl, Pacific whiting mothership sector (catcher vessel or mothership)
230	Limited entry bottom trawl, shorebased IFQ, not including demersal trawl
231	Limited entry demersal trawl, shorebased IFQ
233	Open access longline gear for groundfish
234	Open access groundfish trap or pot gear
235	Open access line gear for groundfish
240	Non-groundfish trawl gear for ridgeback prawn
241	Non-groundfish trawl gear for pink shrimp
242	Non-groundfish trawl gear for California halibut
243	Non-groundfish trawl gear for sea cucumber
250	Tribal trawl gear
260	Open access prawn trap or pot gear,
261	Open access Dungeness crab trap or pot gear
262	Open access Pacific Halibut longline gear
263	Open access salmon troll gear
264	Open access California halibut line gear
265	Open access sheephead trap or pot gear
266	Open access Highly Migratory Species line gear
267	Open access Coastal Pelagic Species net gear
268	Open access California gillnet complex gear

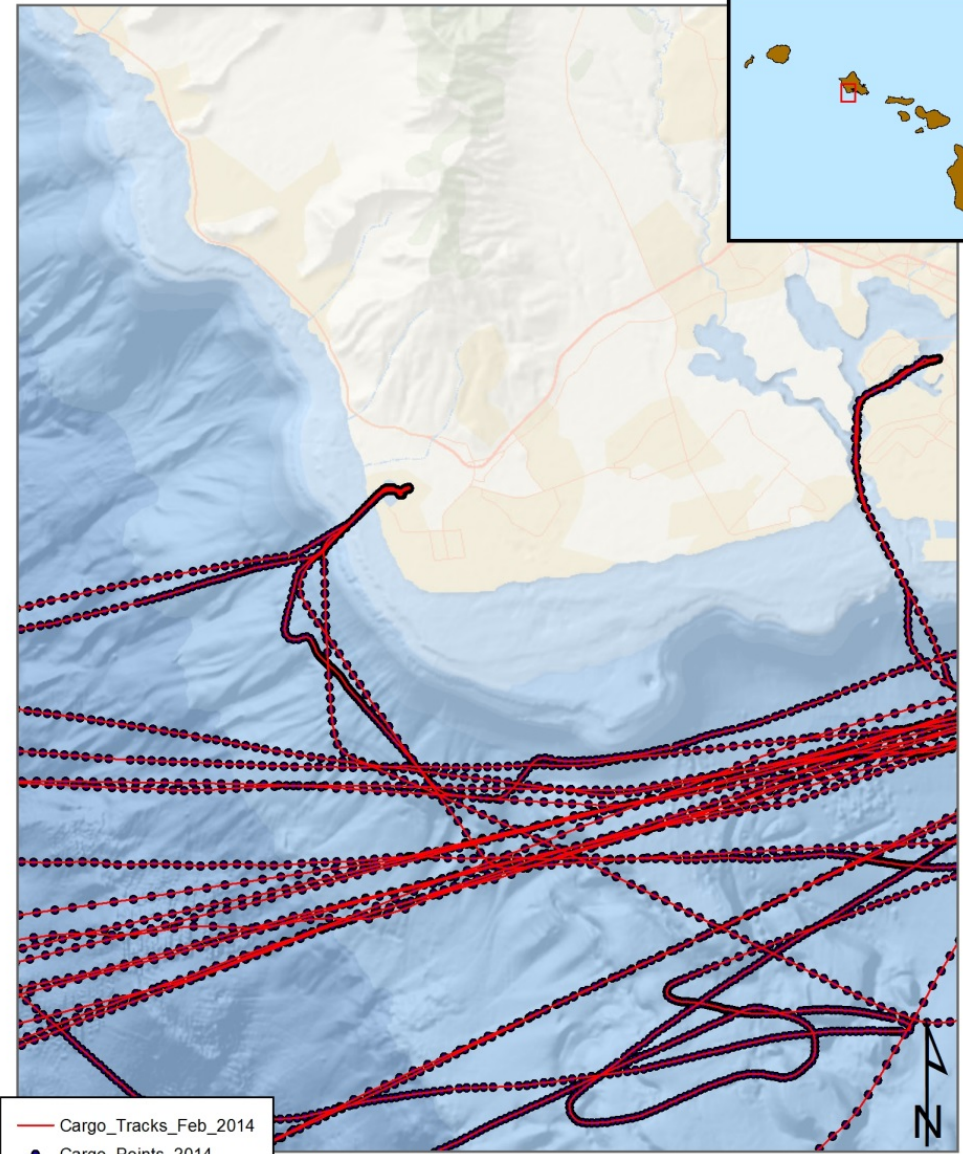
AIS Vessel Traffic

AIS Data for Demonstration



Coordinate System: WGS 84: UTM Zone 4N
Service Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC, and other
Document Path: H:\GIS\Maps\Hawaii\Call\Hawaii Call (AIS 2014) (4-19-16).mxd

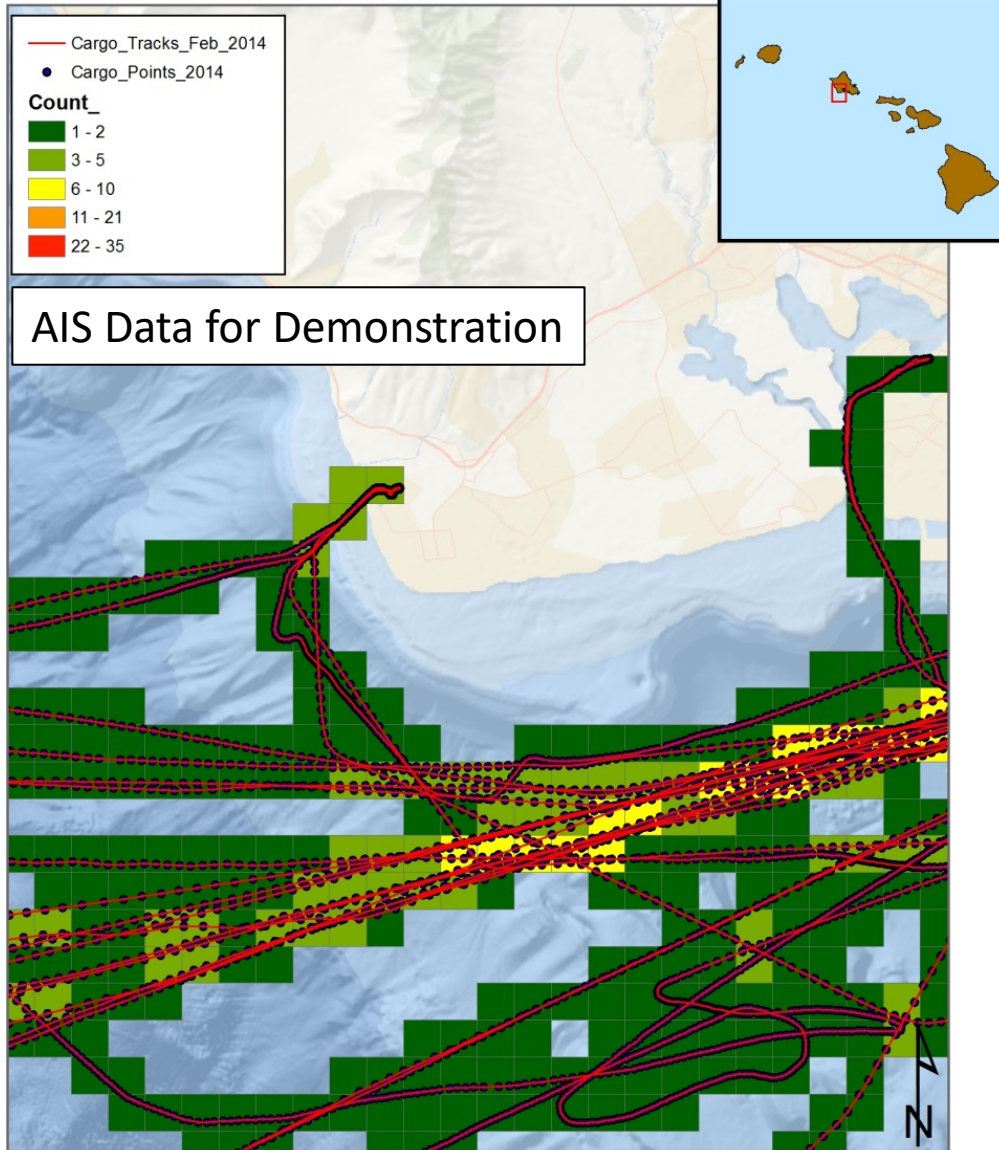
Automatic Identification System (AIS) data downloaded from <http://marinecadastre.gov/ais/>
Point data was converted to tracks, and then summarized by BOEM aliquot (1200m x 1200m). Color represents the number of AIS vessels traveling through an aliquot in 2013.



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Service Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC, and other
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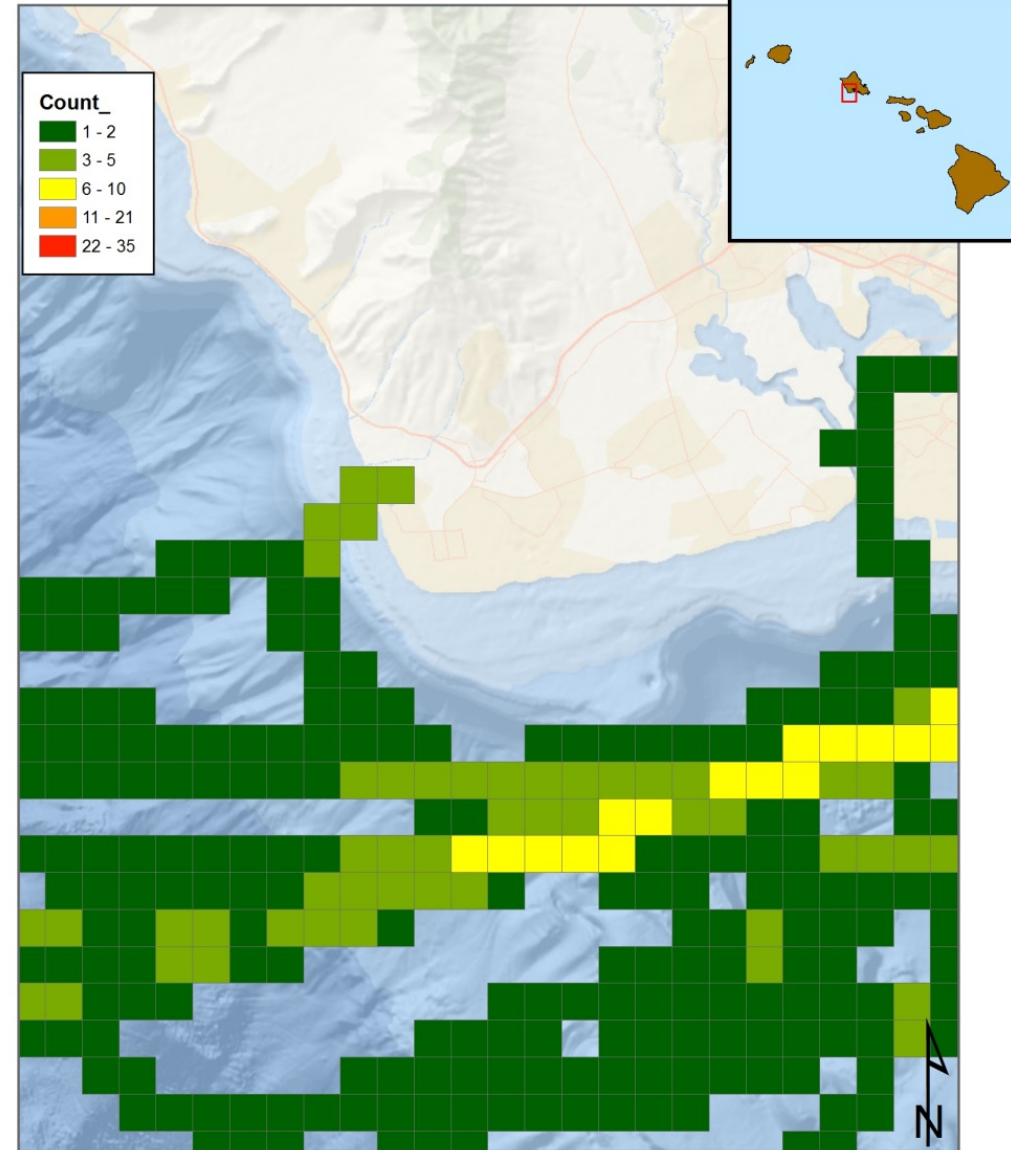
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AIS Vessel Traffic



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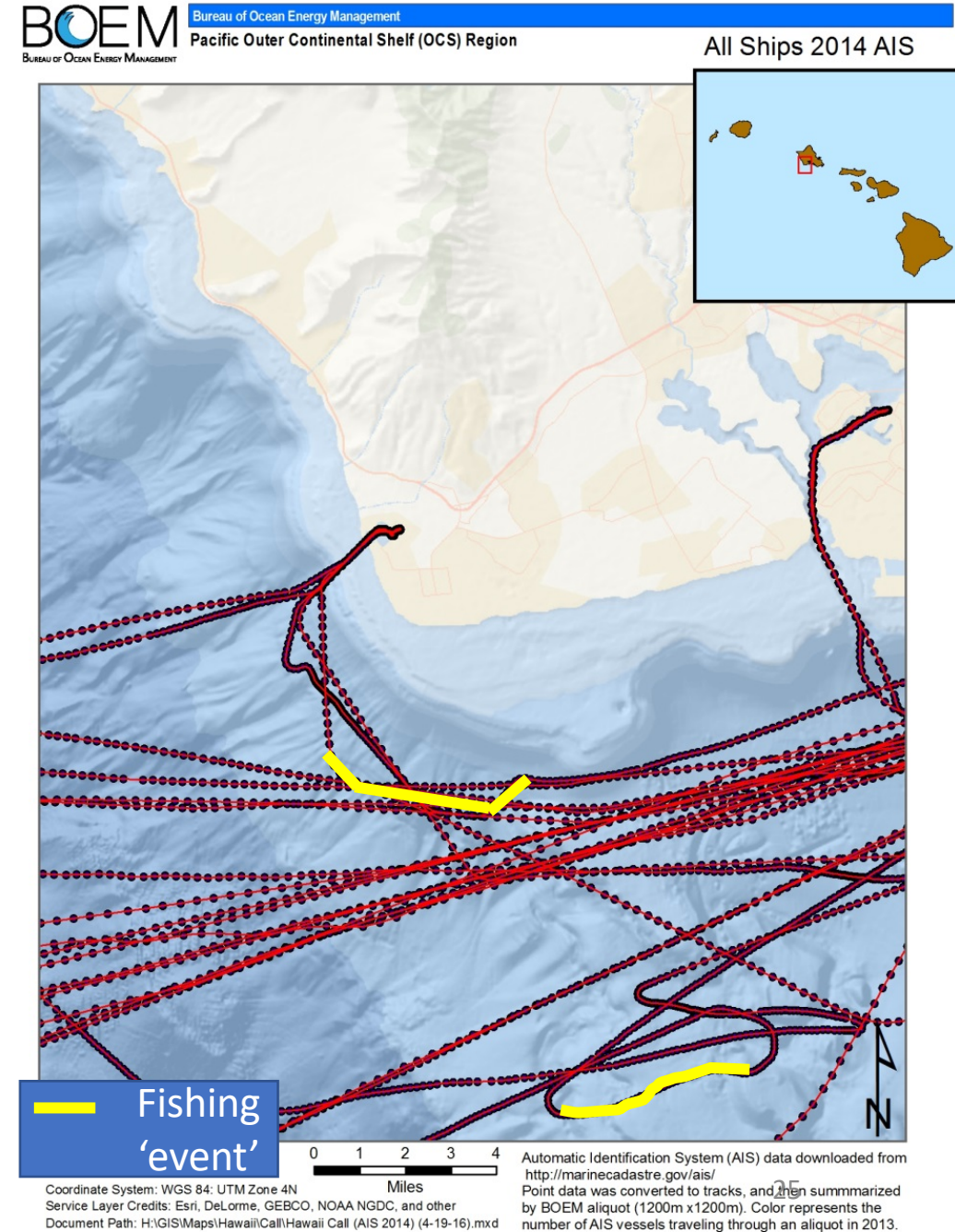
Coordinate System: WGS 84: UTM Zone 4N
Service Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC, and other
Document Path: H:\GIS\Maps\Hawaii\Call\Hawaii Call (AIS 2014) (4-19-16).mxd

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VMS Processing

Fishing Trip begins and ends when a vessel leaves and enters a port

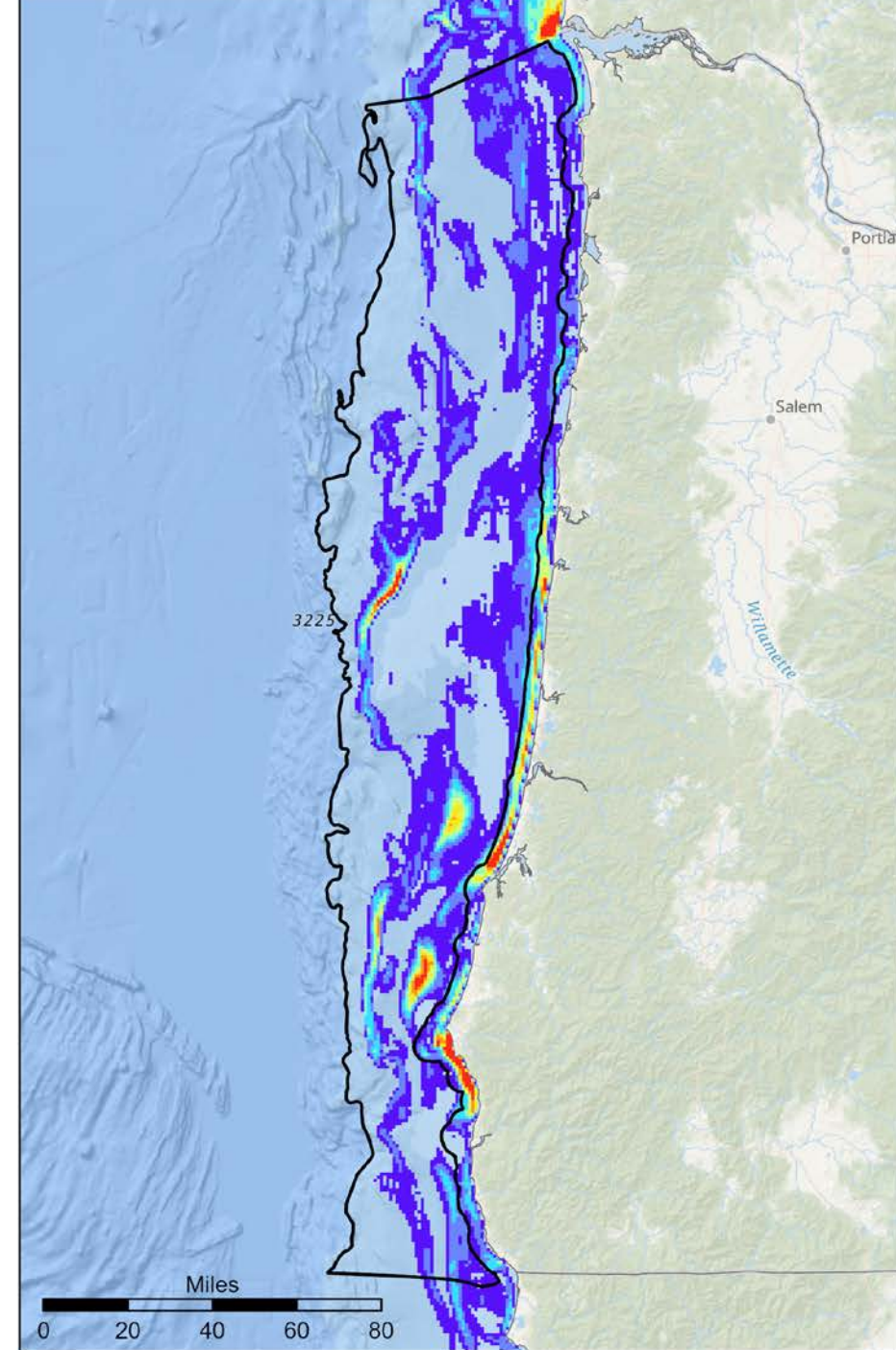
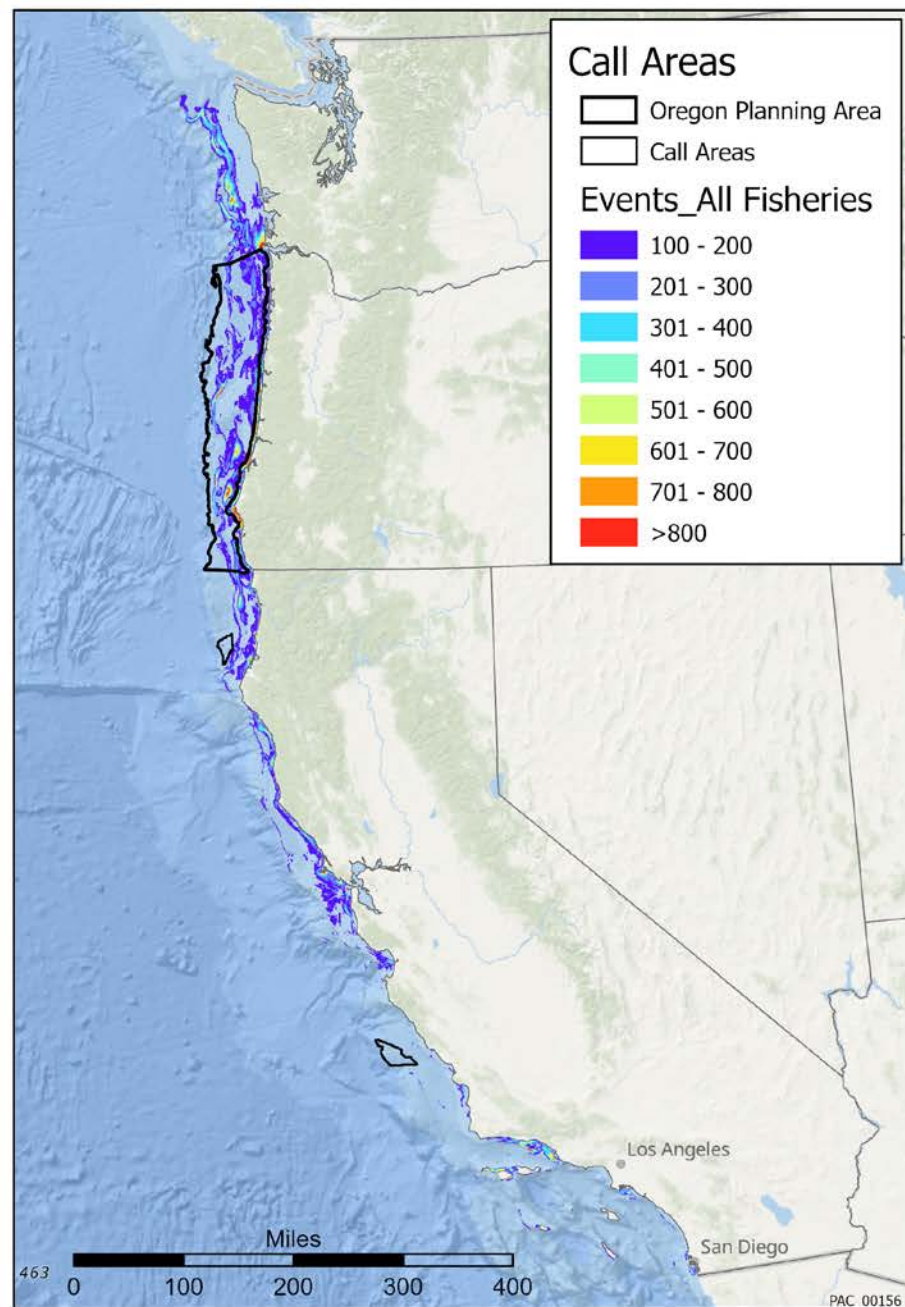
Fishing Event begins when vessels transition from above to below cutoff speed



VMS

All VMS Fisheries

VMS All Fisheries (>100 events / aliquot)
2010-2018



Merging VMS and Landings

Dr. Ben Ruttenberg

Center for Coastal Marine Sciences

Biological Sciences Department

California Polytechnic State University

Merging VMS and Landings

- ID VMS 'trips' for an individual vessel in both datasets
- 'Trip' begins and ends when leaves/enters a port
- Fish ticket must match vessel ID, port, and date
- Only using groundfish so far

To distribute catch in space:

- 'Regularize' points (interpolate so each point is 1 hr)
- Distribute catch for a given trip equally to each 'fishing' point

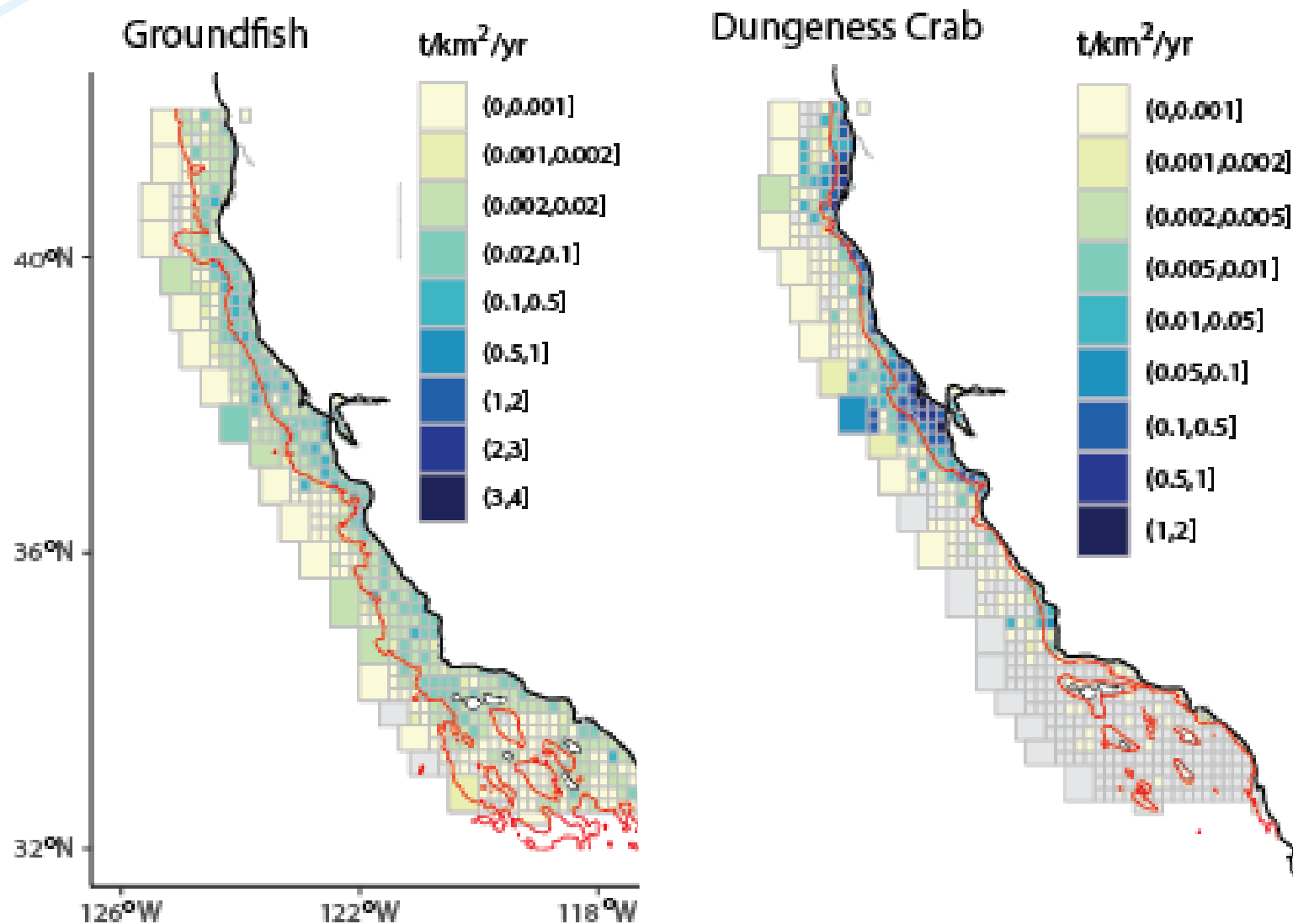
-Number of landings receipts (1 record, 1 date of 1 vessel)

-Before matching: ~98,000

-After matching (with removal criteria): ~24,000

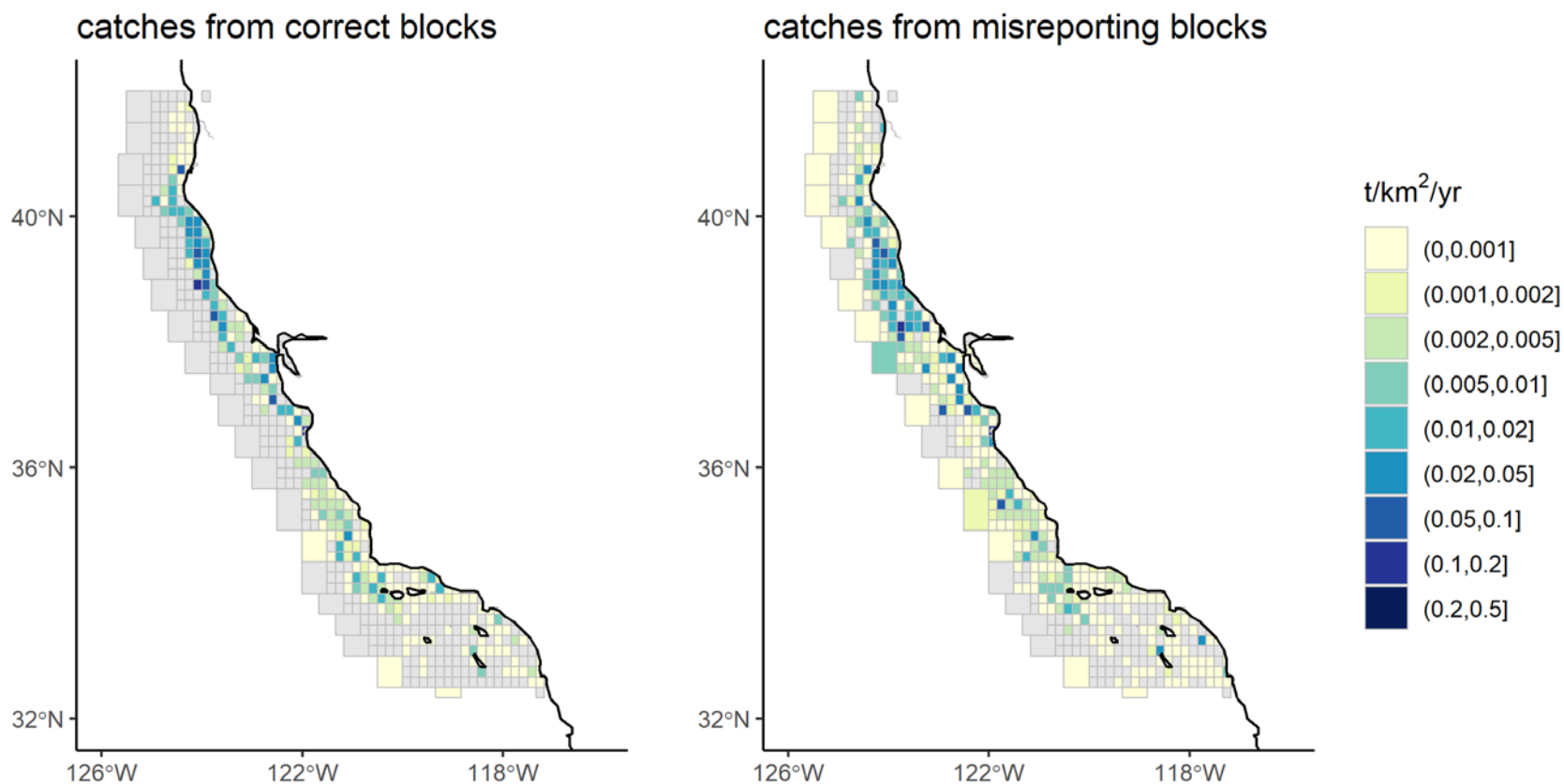
Matched only ~25% of groundfish landings receipts with VMS

Issues with self-reported block data



- **Red lines** are depth limits for each group
- Much of the block data are outside the depth limits for a given group (especially groundfish and Dungeness)

Issues with self-reported block data



- ~24,000 matched trips for groundfish
- 9,250 trips had at least one data point within the reported block(s)
****Only 38.8%****
- Most fishing points were outside of the reported block(s)
****Only 16.5% points were in the reported block****

Merging VMS and Landings

Next steps:

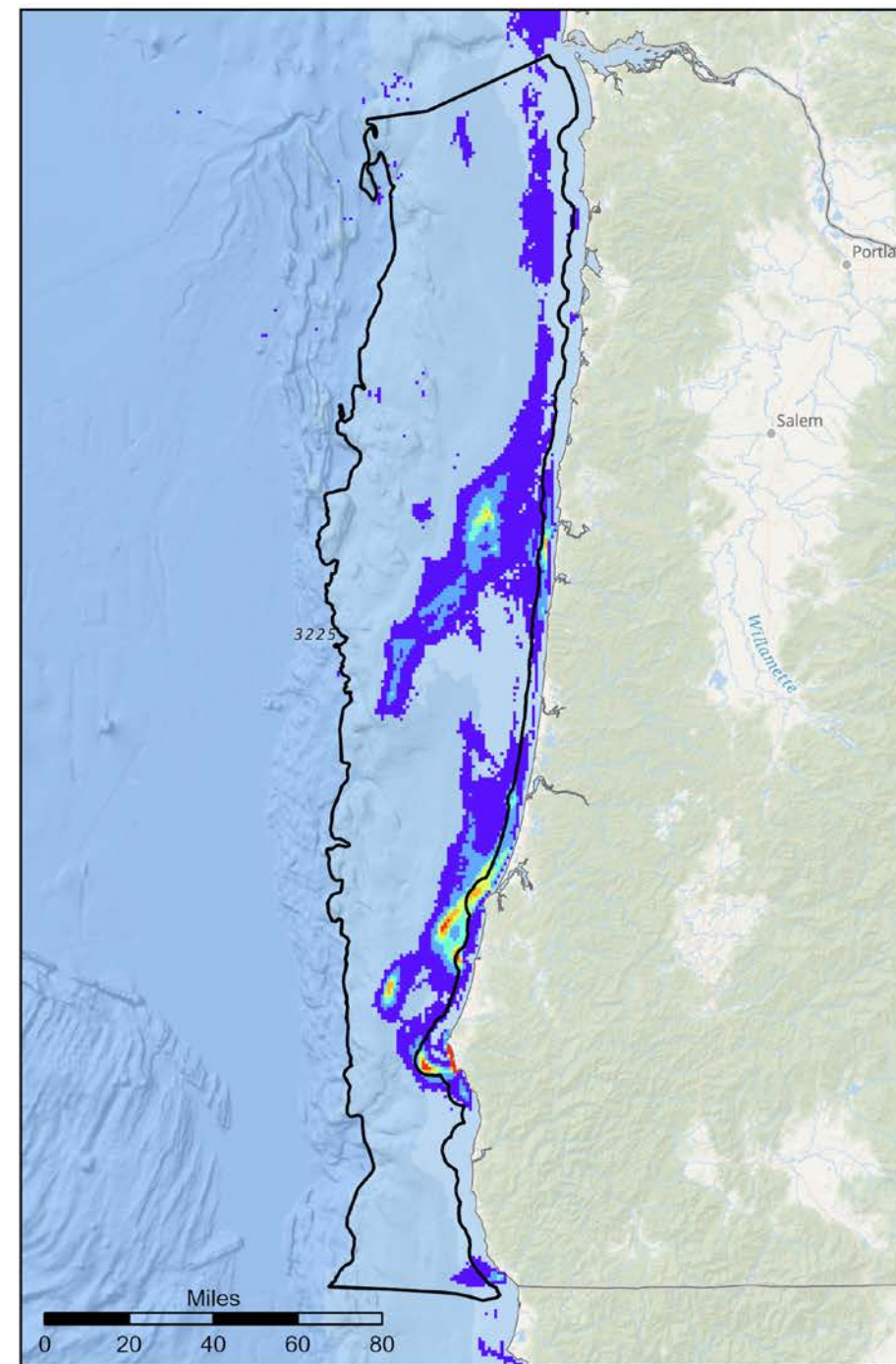
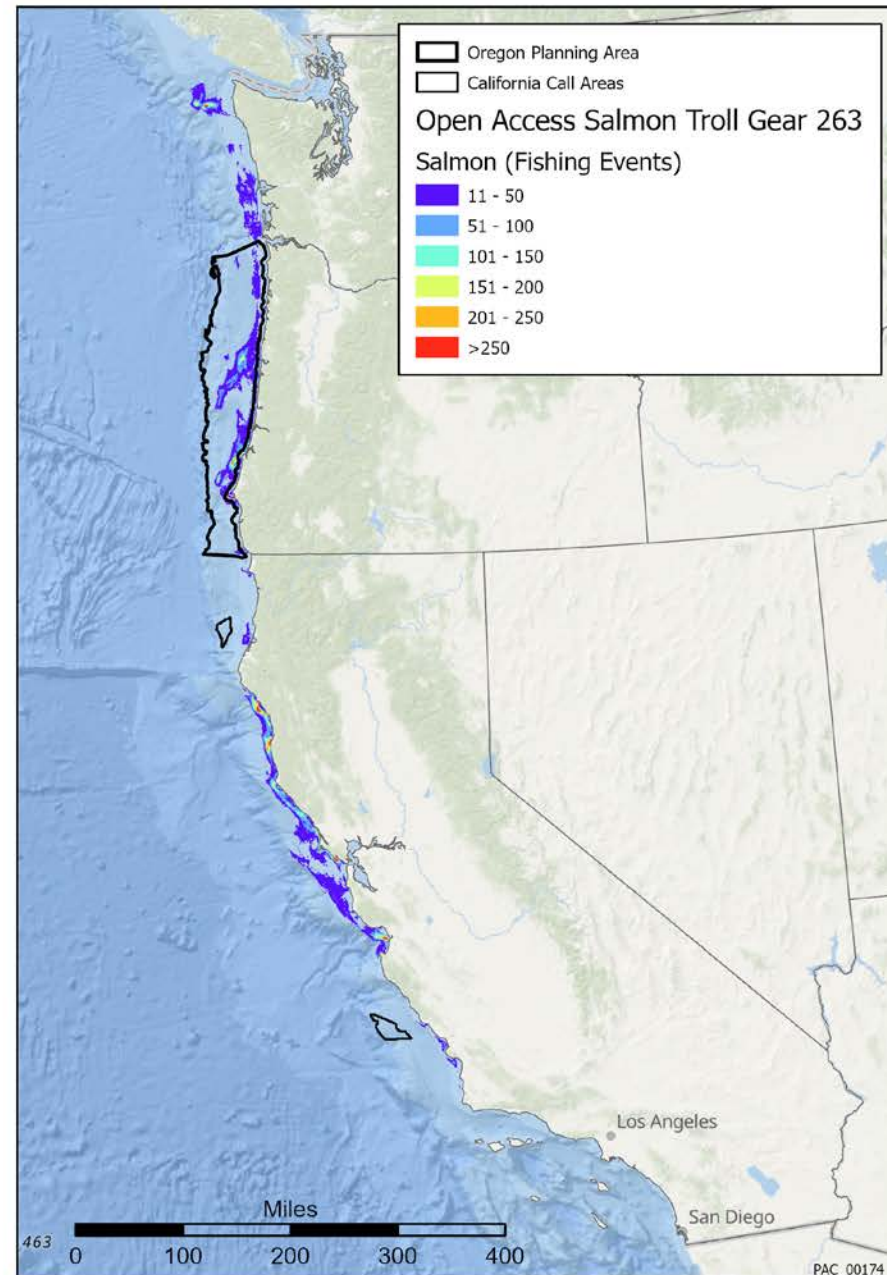
- Make maps “Rule of 3” Compliant
- Explore matched vs unmatched landing receipts for groundfish; are they targeting the same species?
- Replicate for other fisheries (aside from groundfish)

Salmon



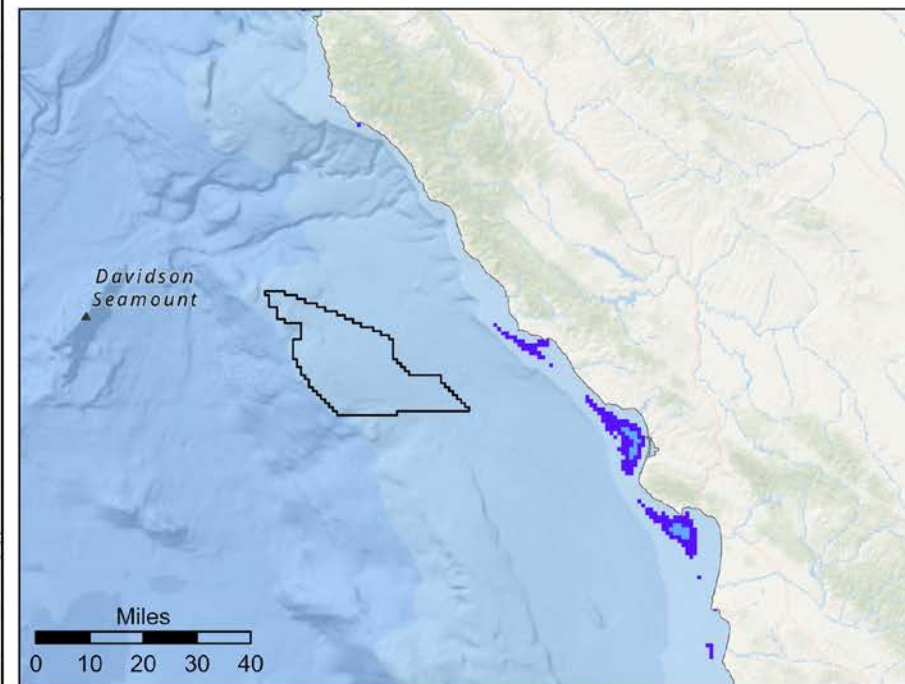
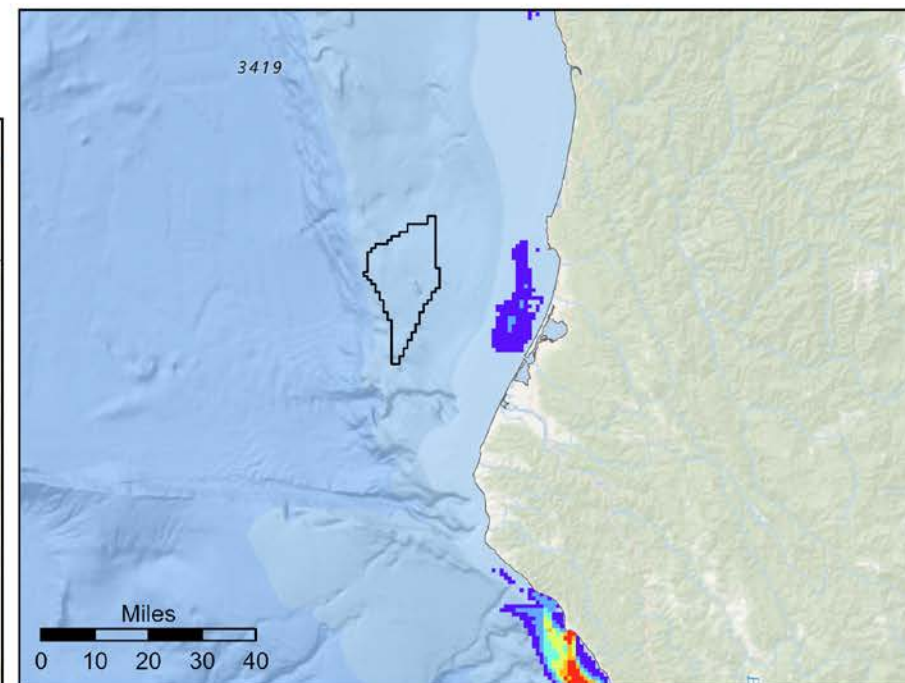
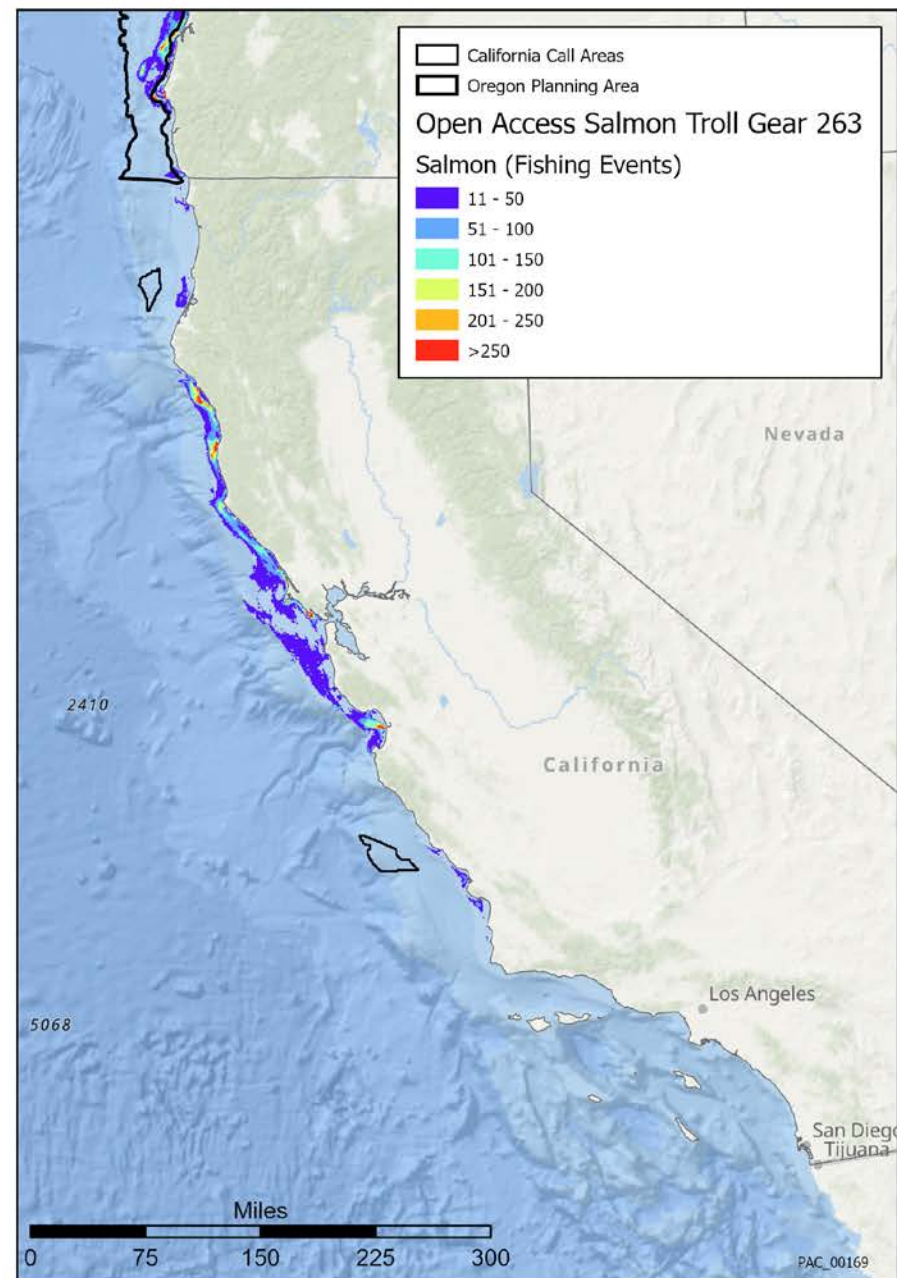
Salmon 2010-2017

263_Open Access Salmon Troll Gear



Salmon 2010-2017

263_Open Access Salmon Troll Gear



Groundfish

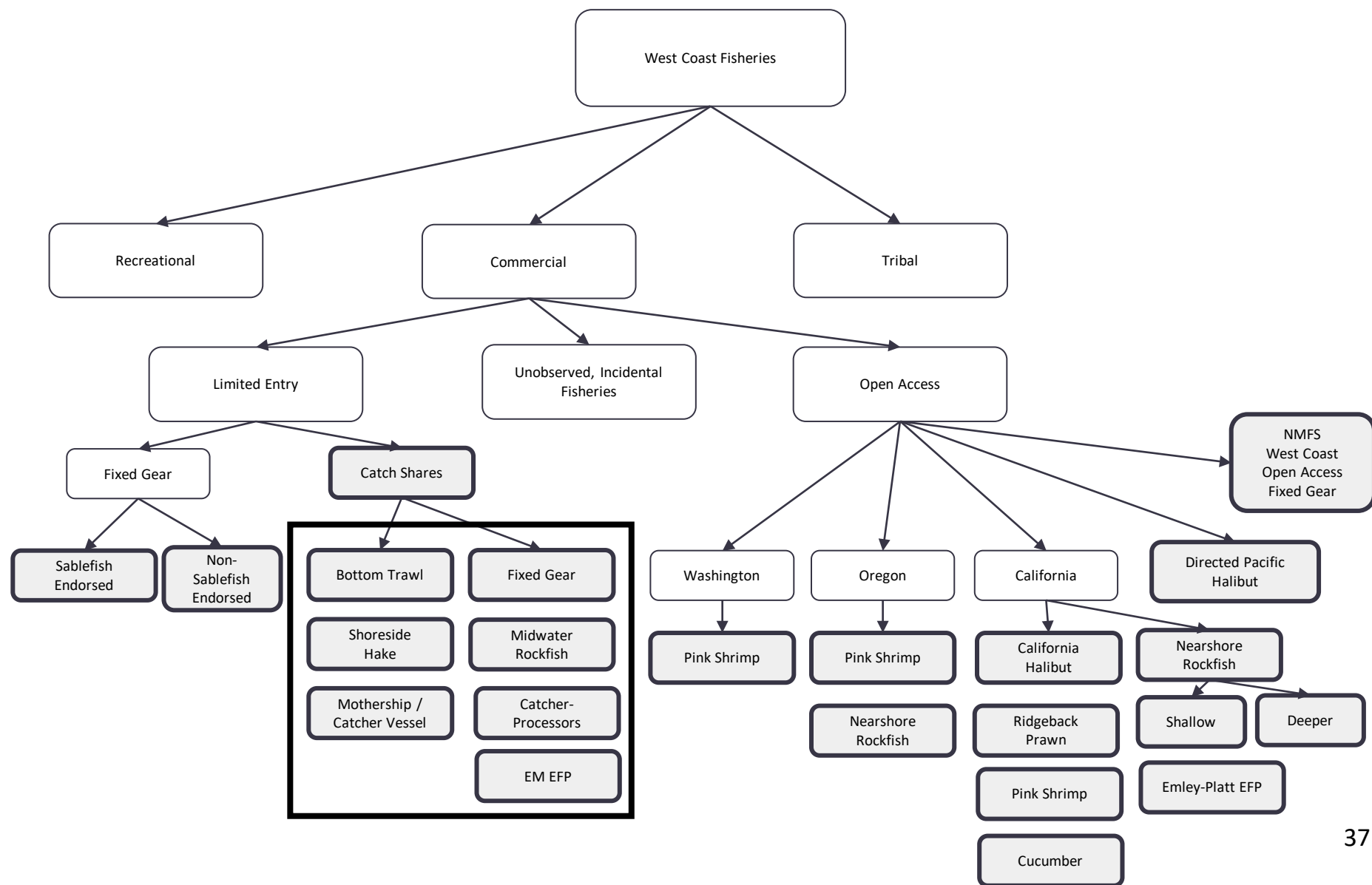


FRAM Datasets

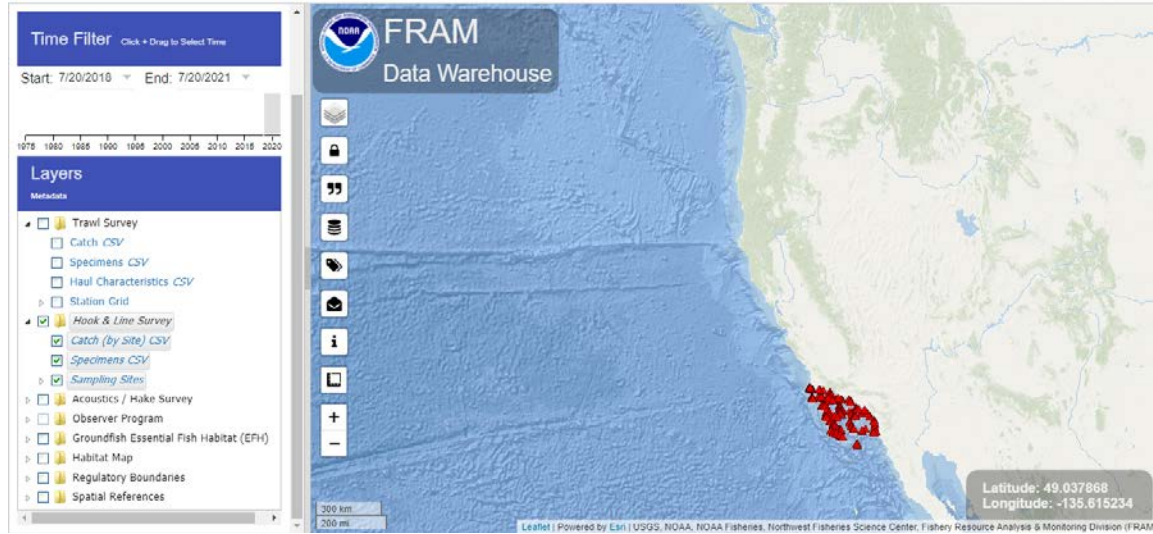
PFMC and BOEM Meeting
July 22-23, 2021



NOAA
FISHERIES



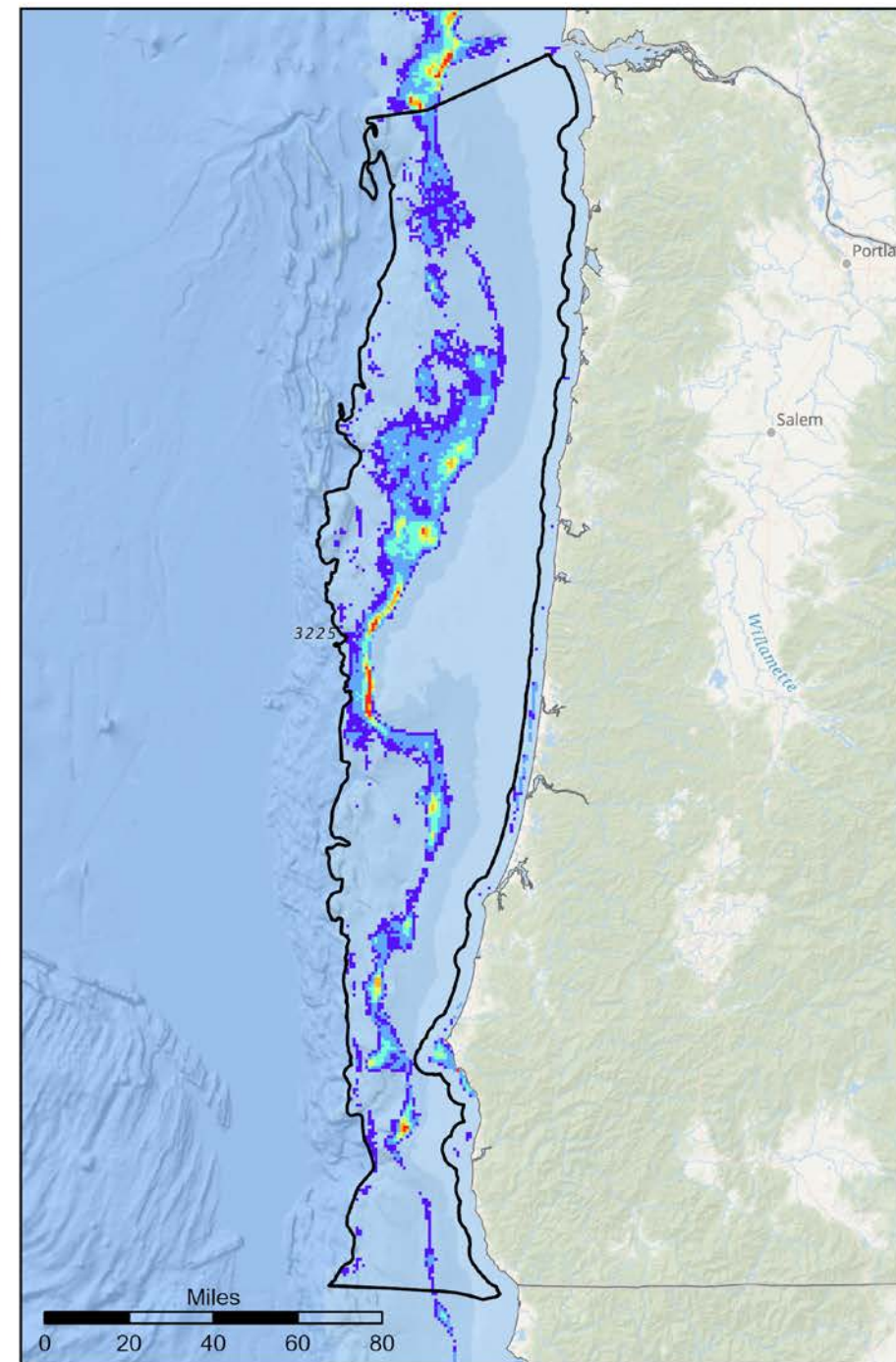
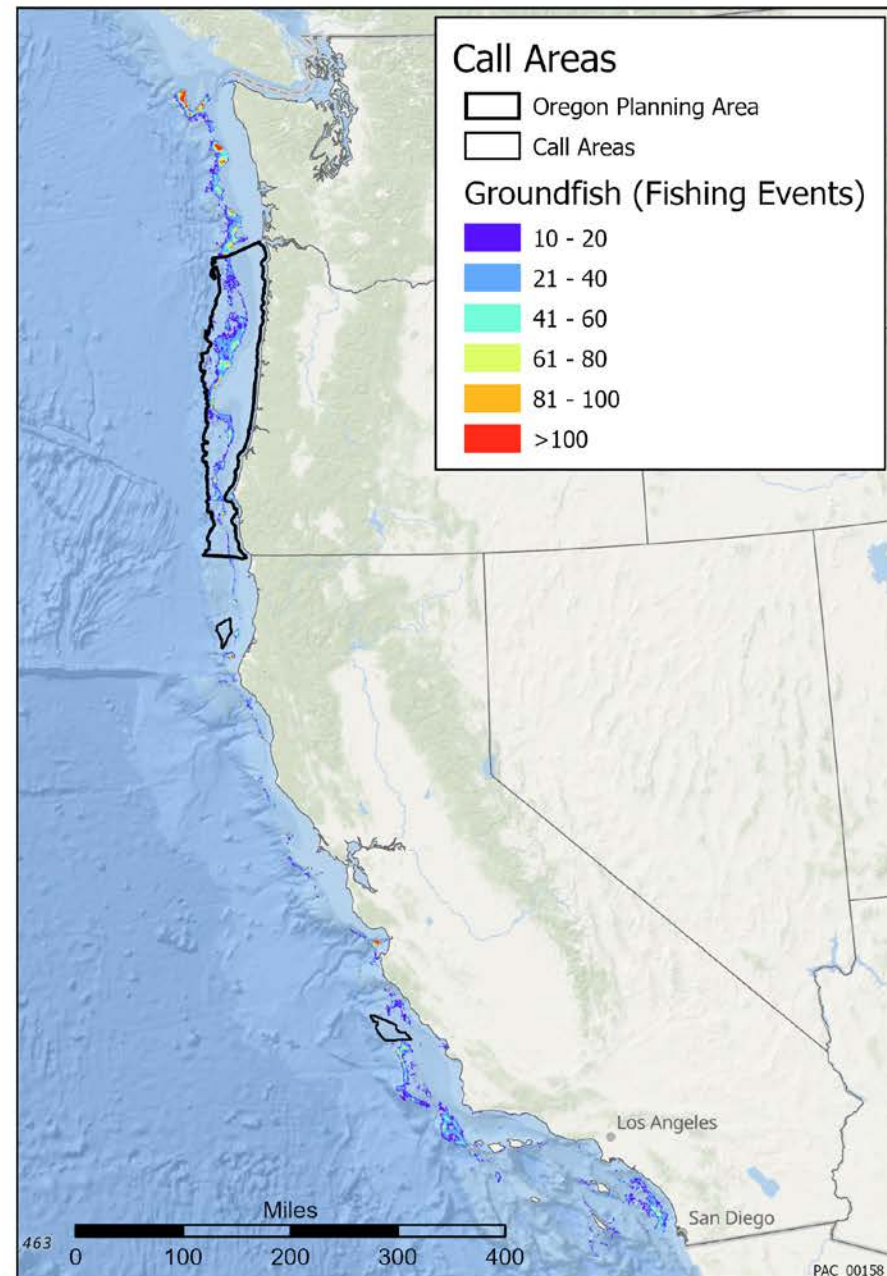
Future Data Possibilities



Groundfish

Limited Entry Groundfish 2010-2017

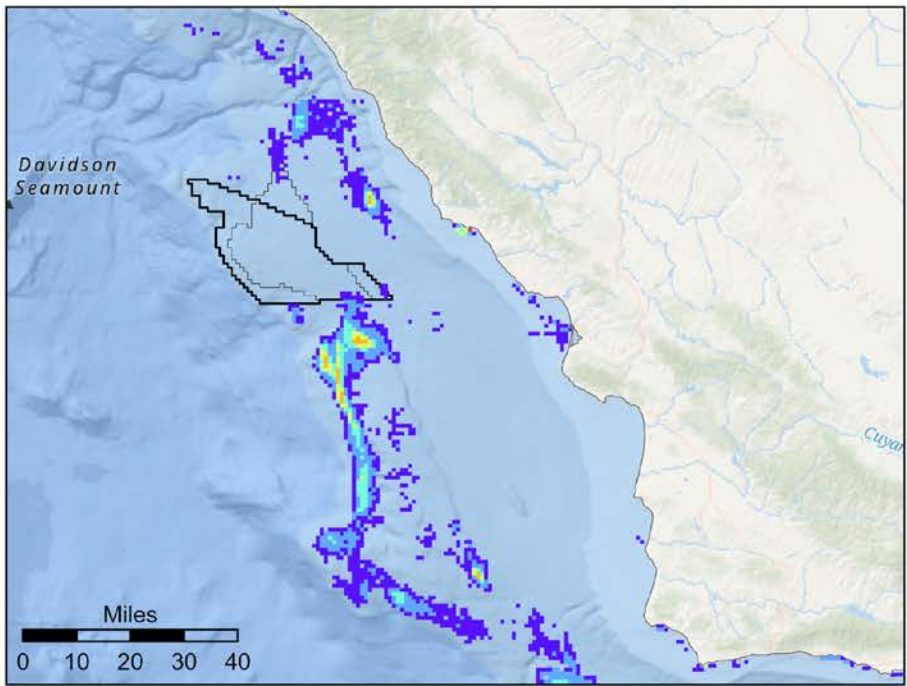
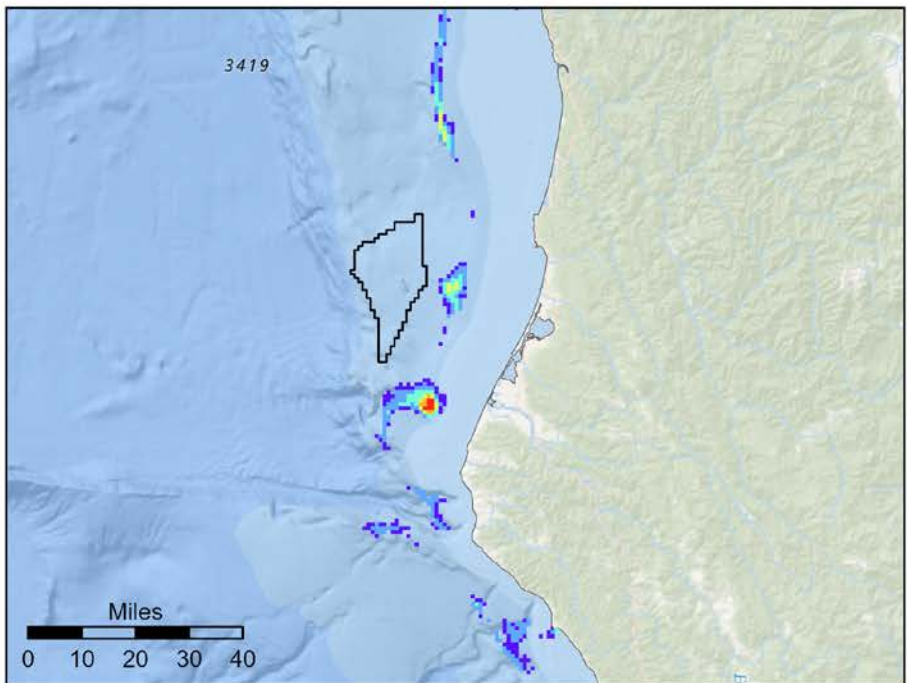
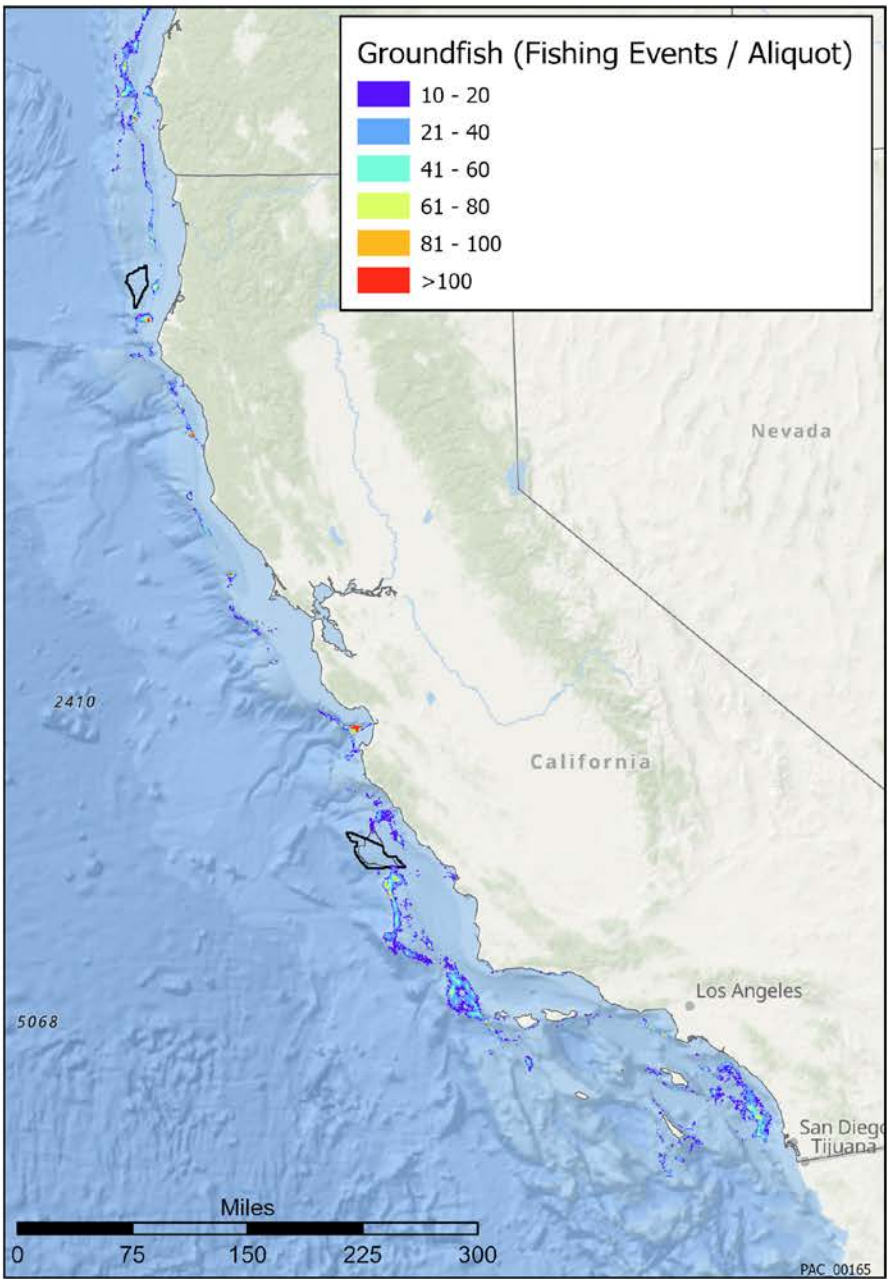
LE Groundfish 210-211



Groundfish

Limited Entry Groundfish 2010-2017

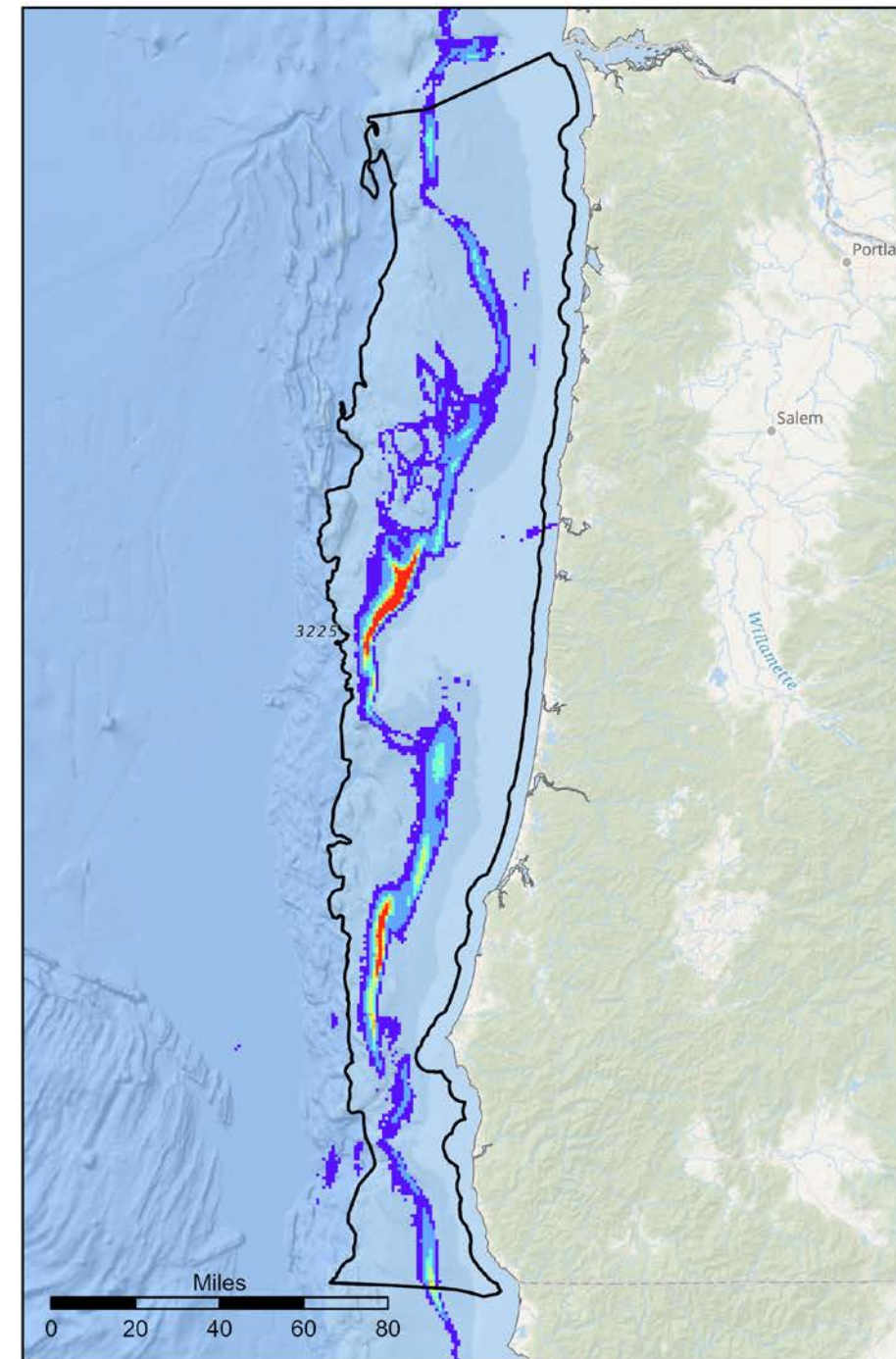
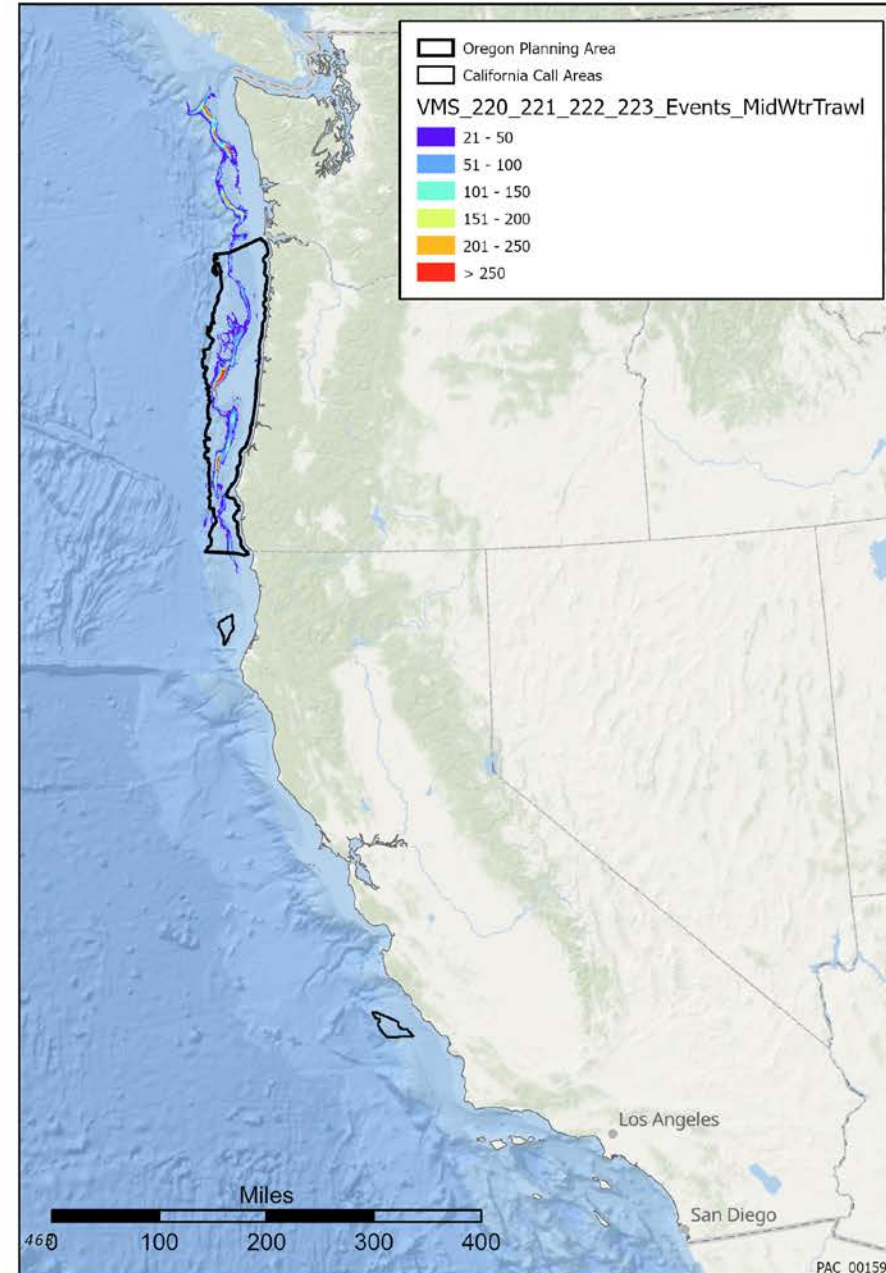
LE Groundfish 210-211



Groundfish

Midwater Trawl 2010-2017

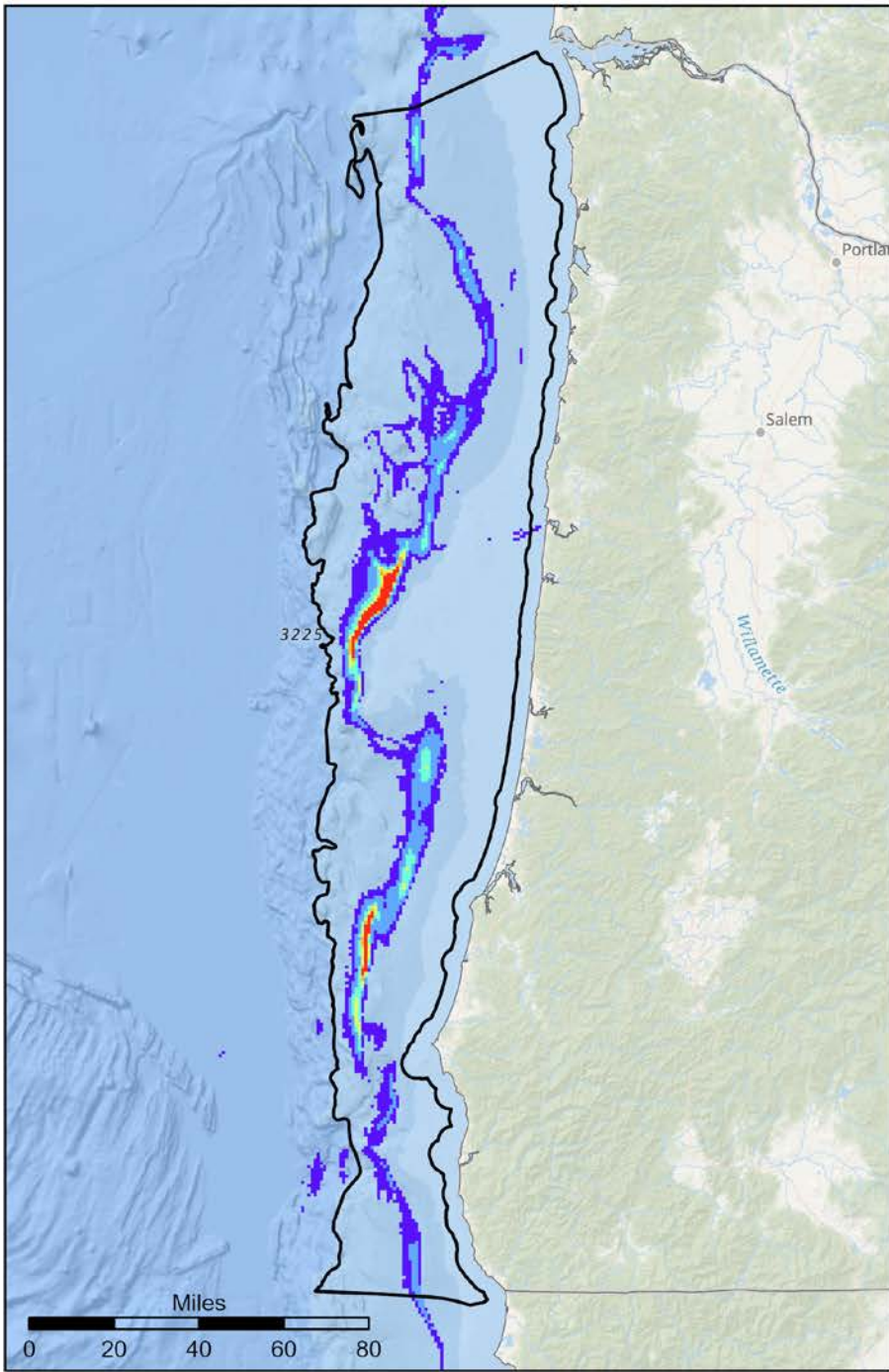
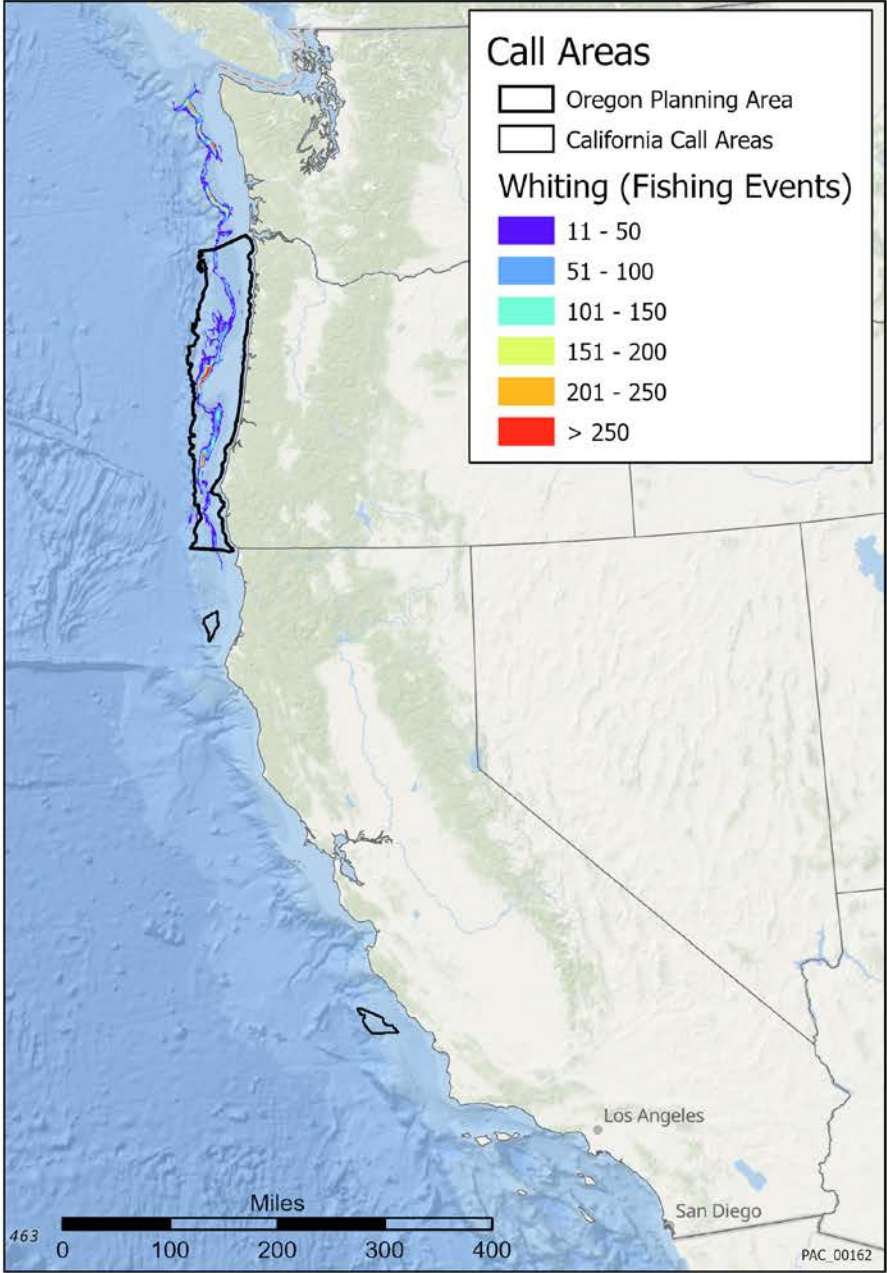
Midwater Trawl 220-223
2010-2017



Groundfish

Whiting 2010-2017

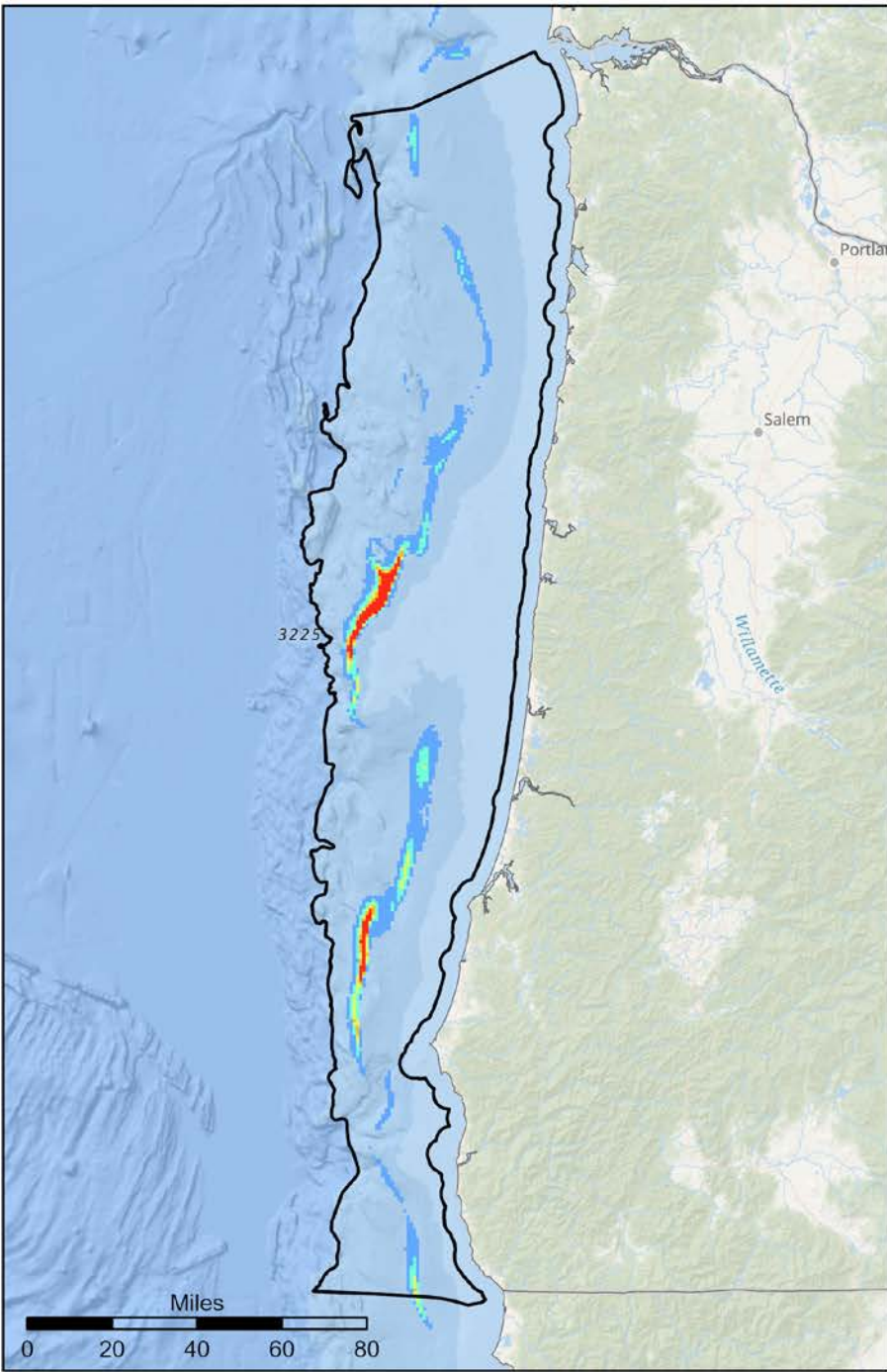
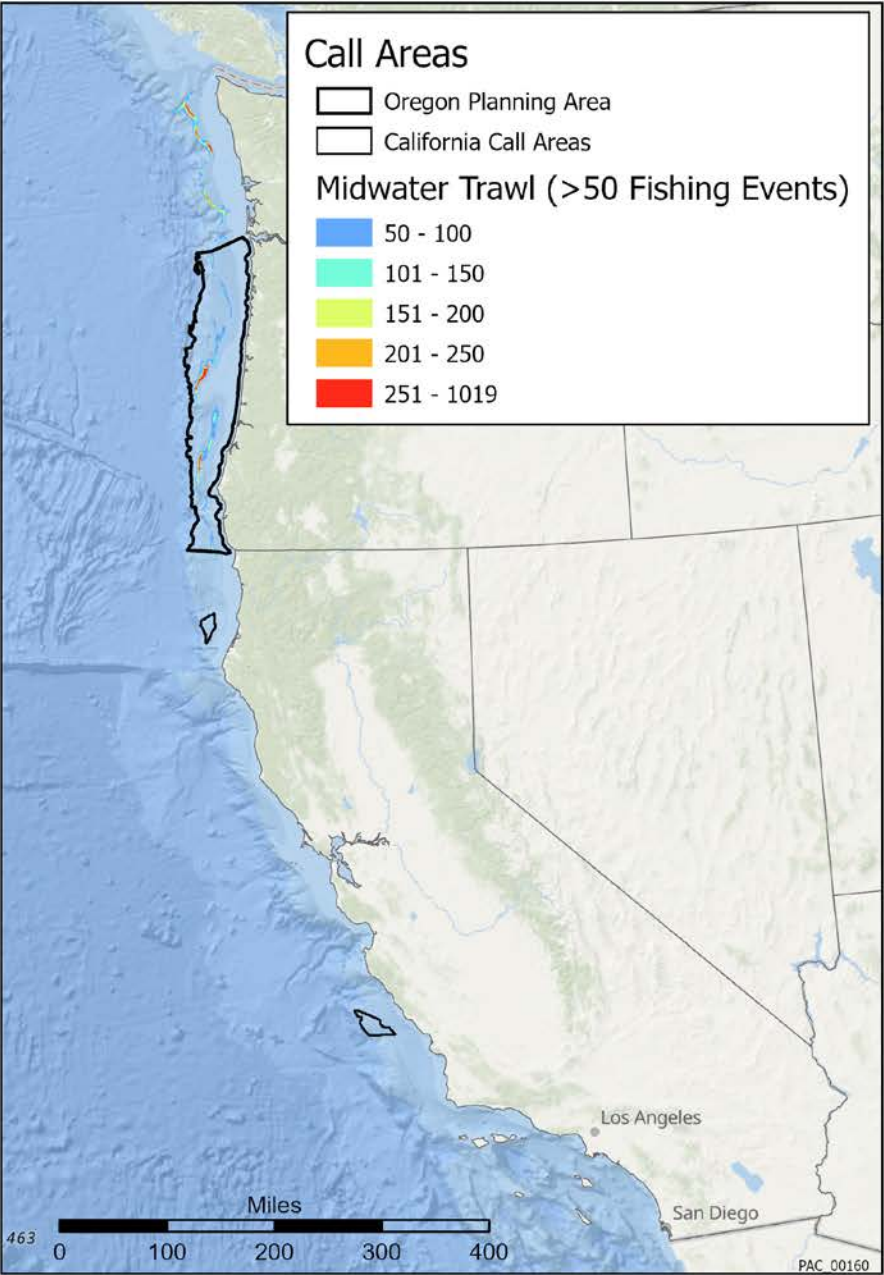
Whiting 221-223



Groundfish

Midwater Trawl 2010-2017

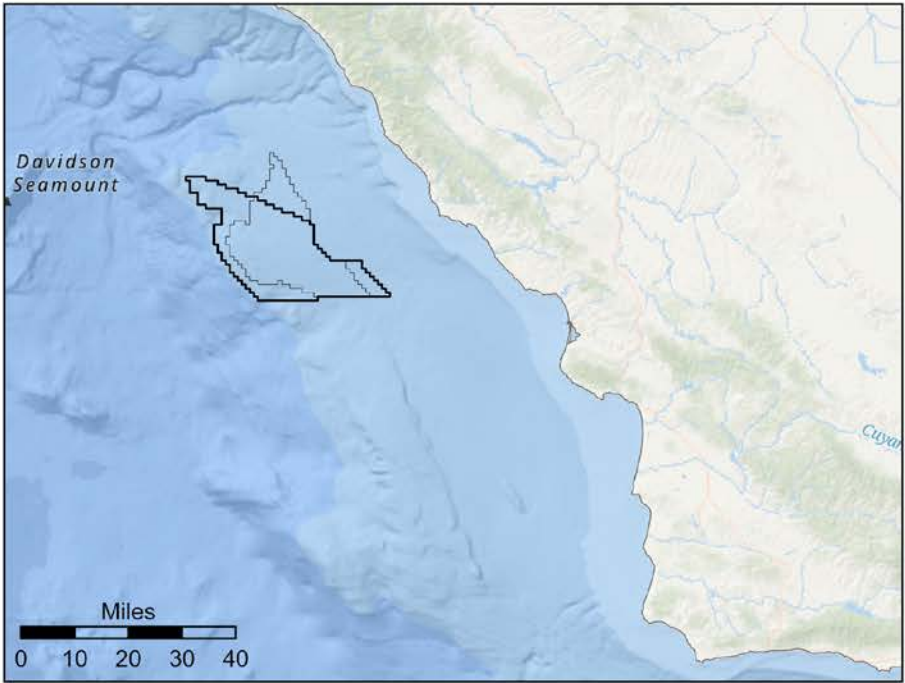
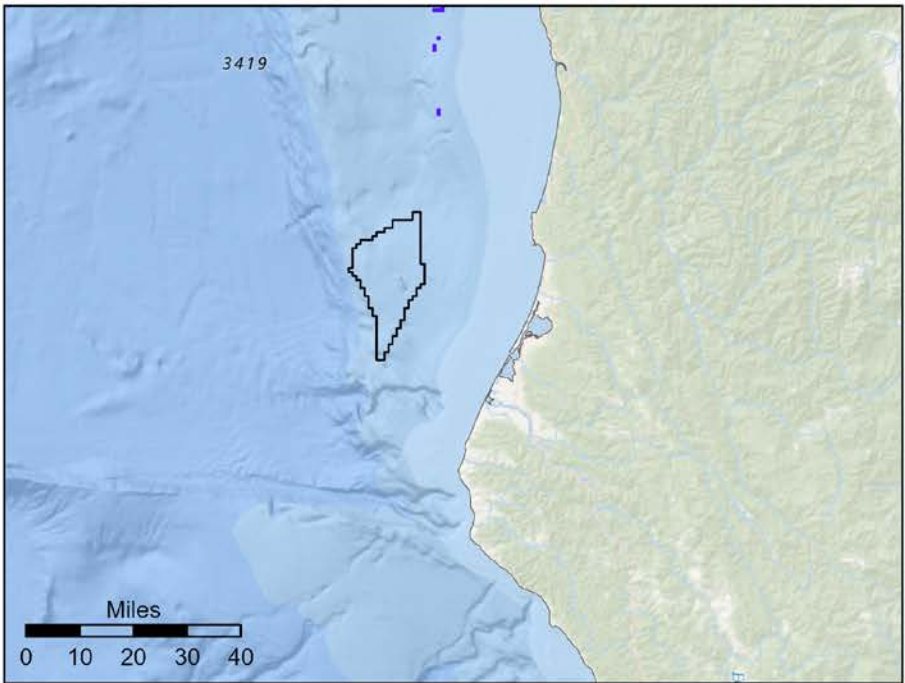
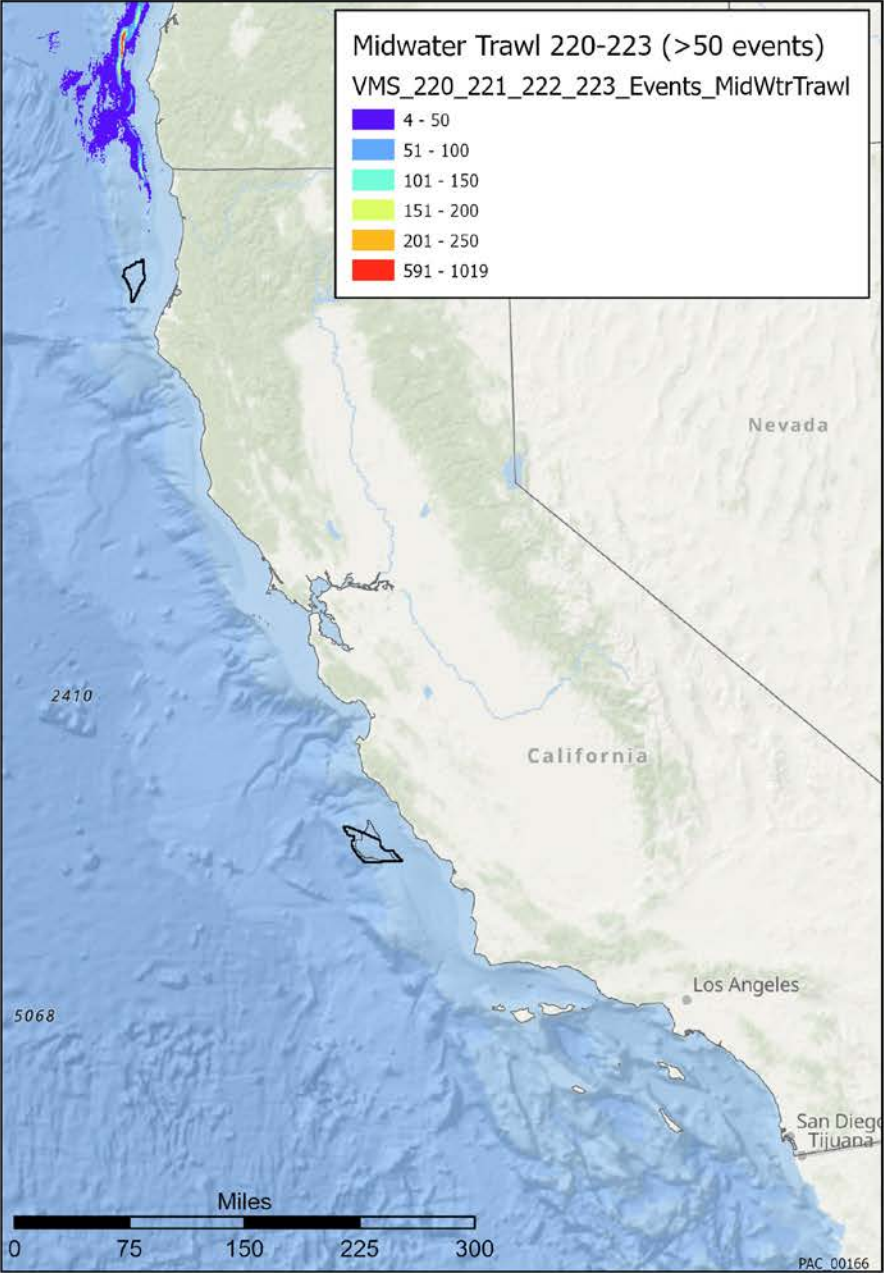
Midwater Trawl 220-223



Groundfish

Midwater Trawl 2010-2017

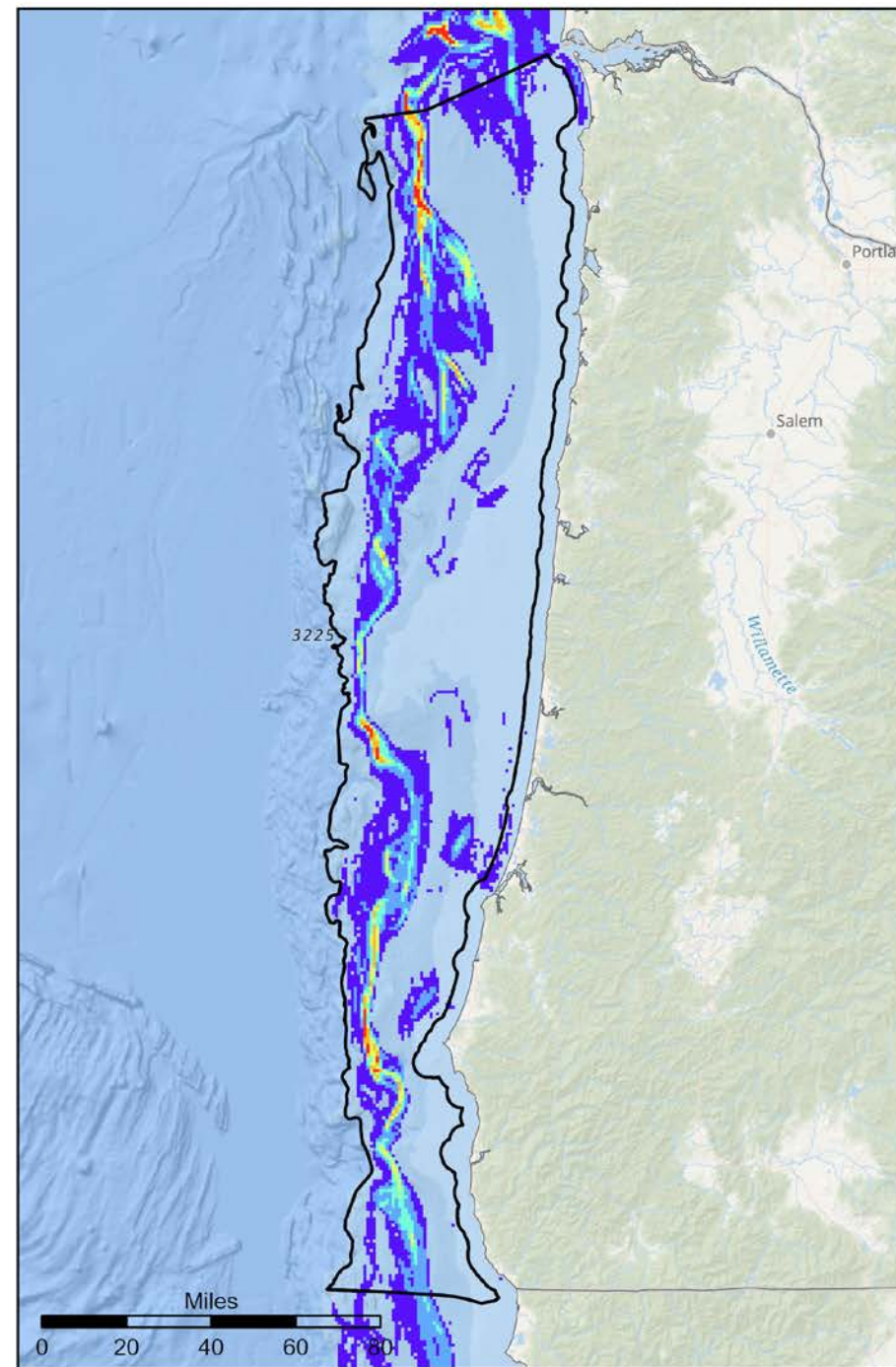
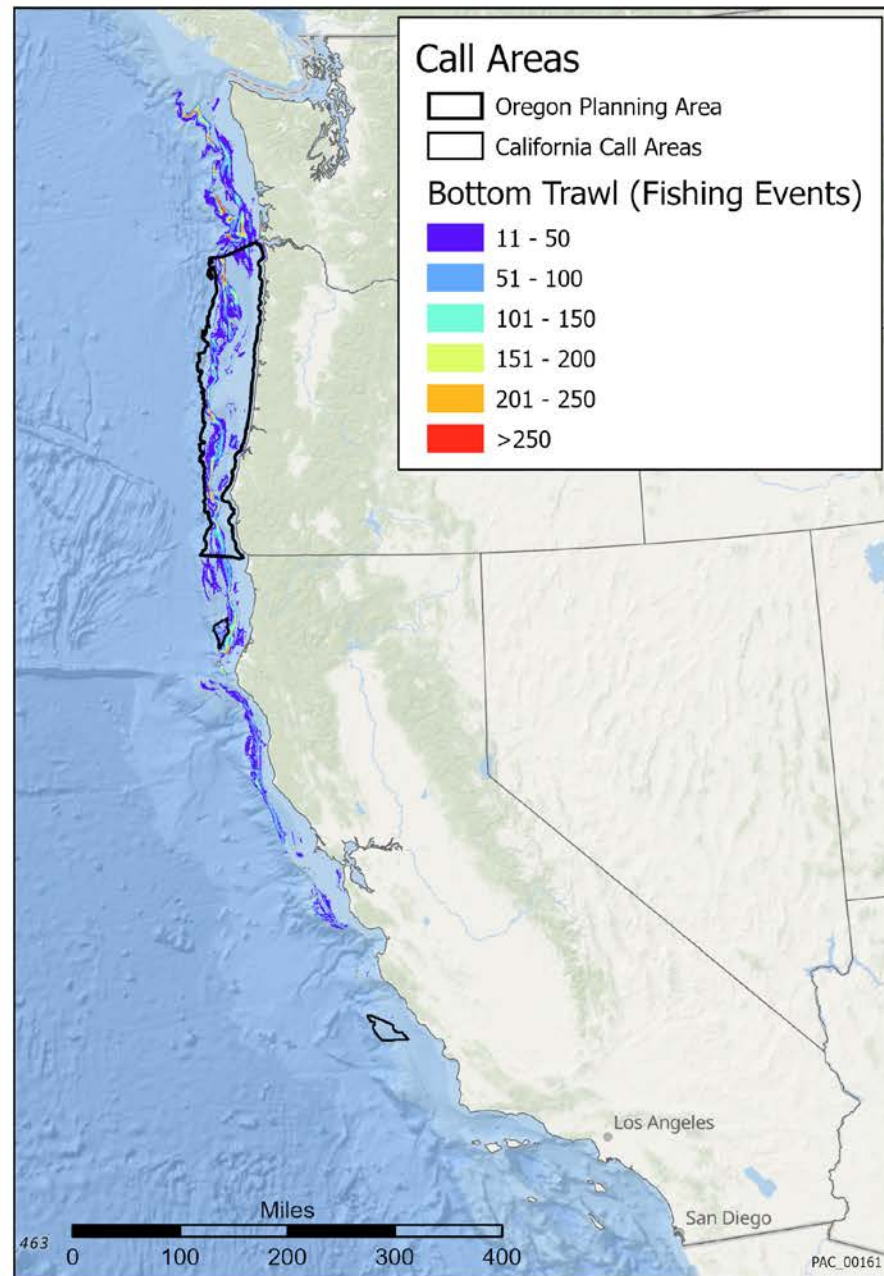
Midwater Trawl 220-223



Groundfish

Bottom Trawl 2010-2017

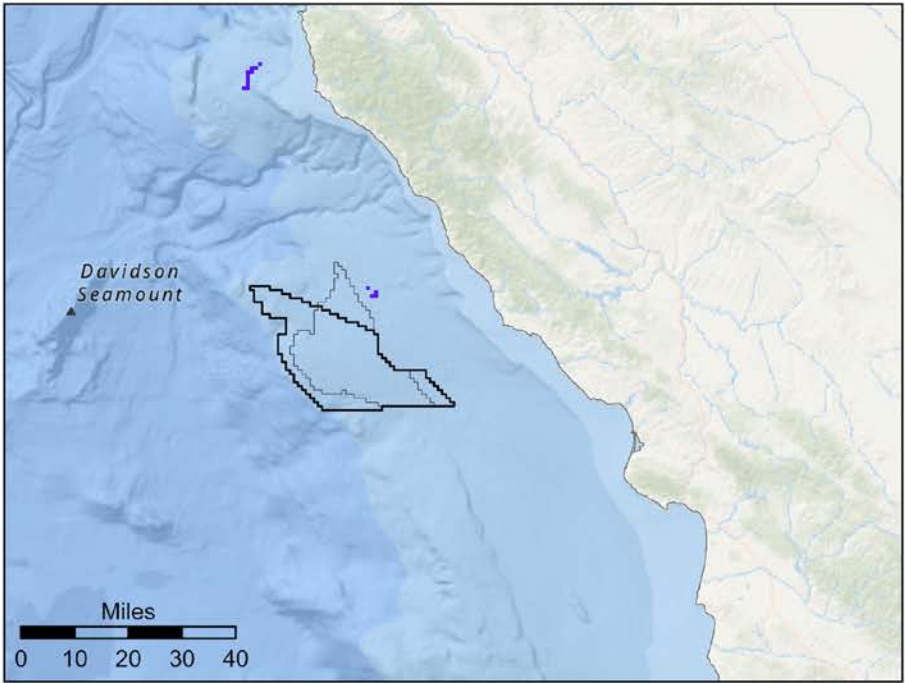
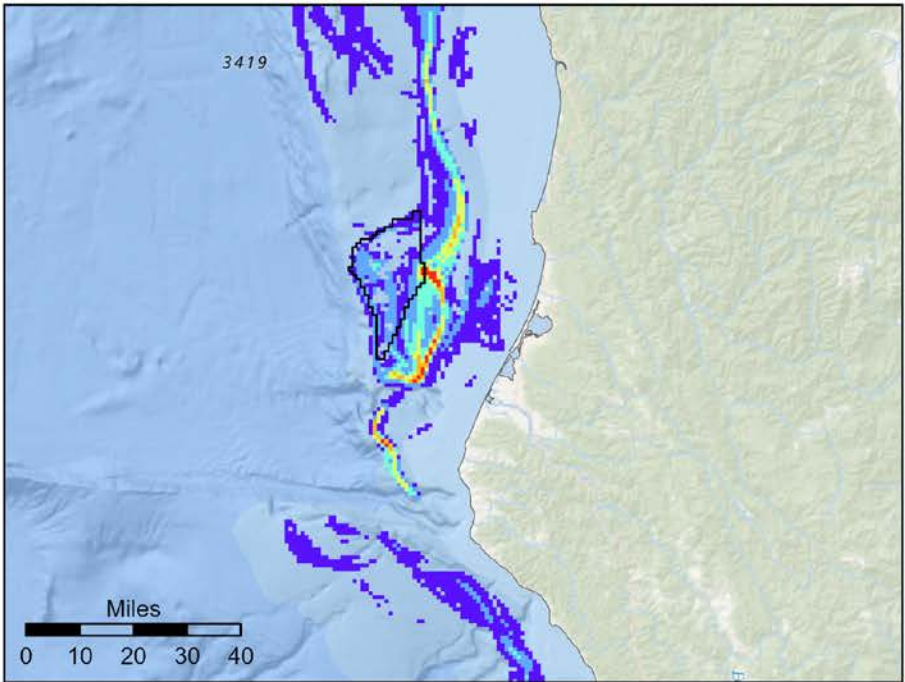
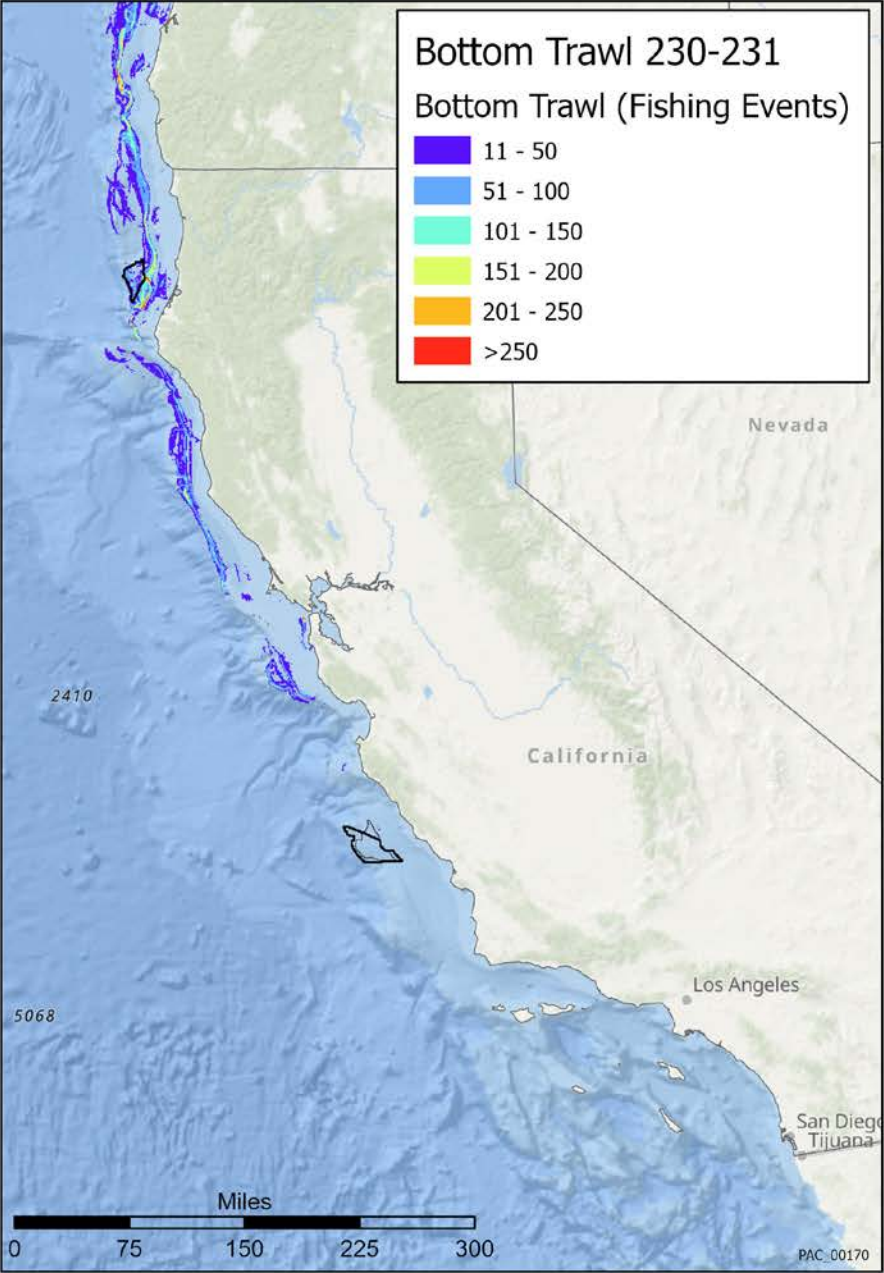
Bottom Trawl 230-231



Groundfish

Bottom Trawl 2010-2017

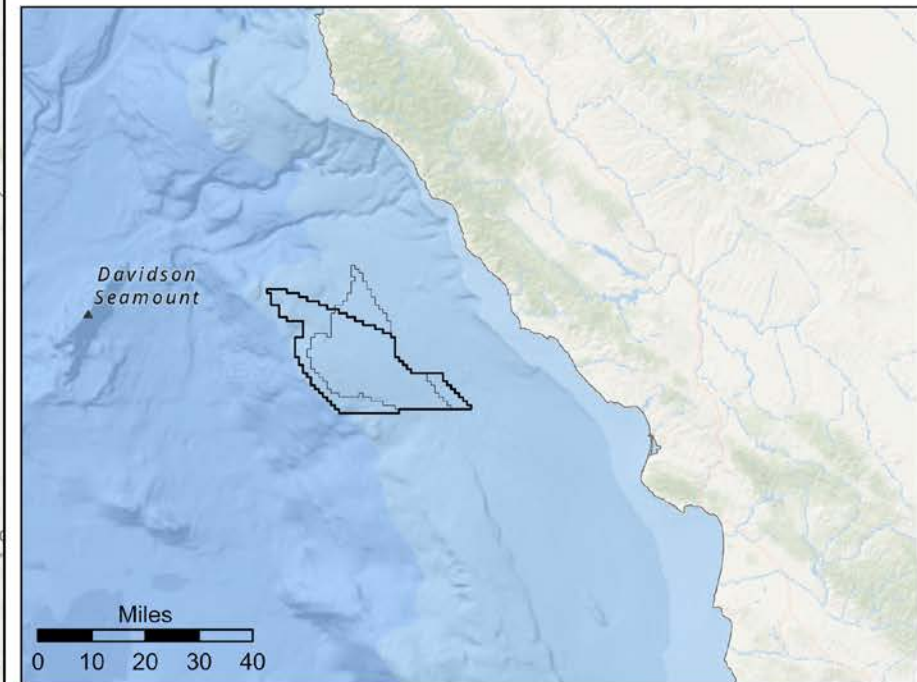
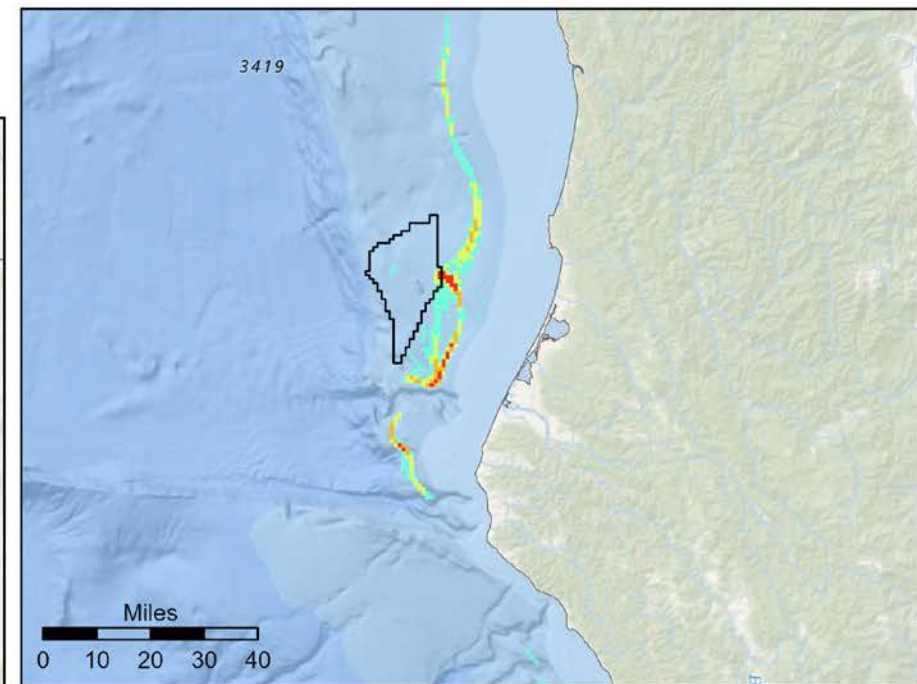
Bottom Trawl 230-231



Groundfish

Bottom Trawl 2010-2017

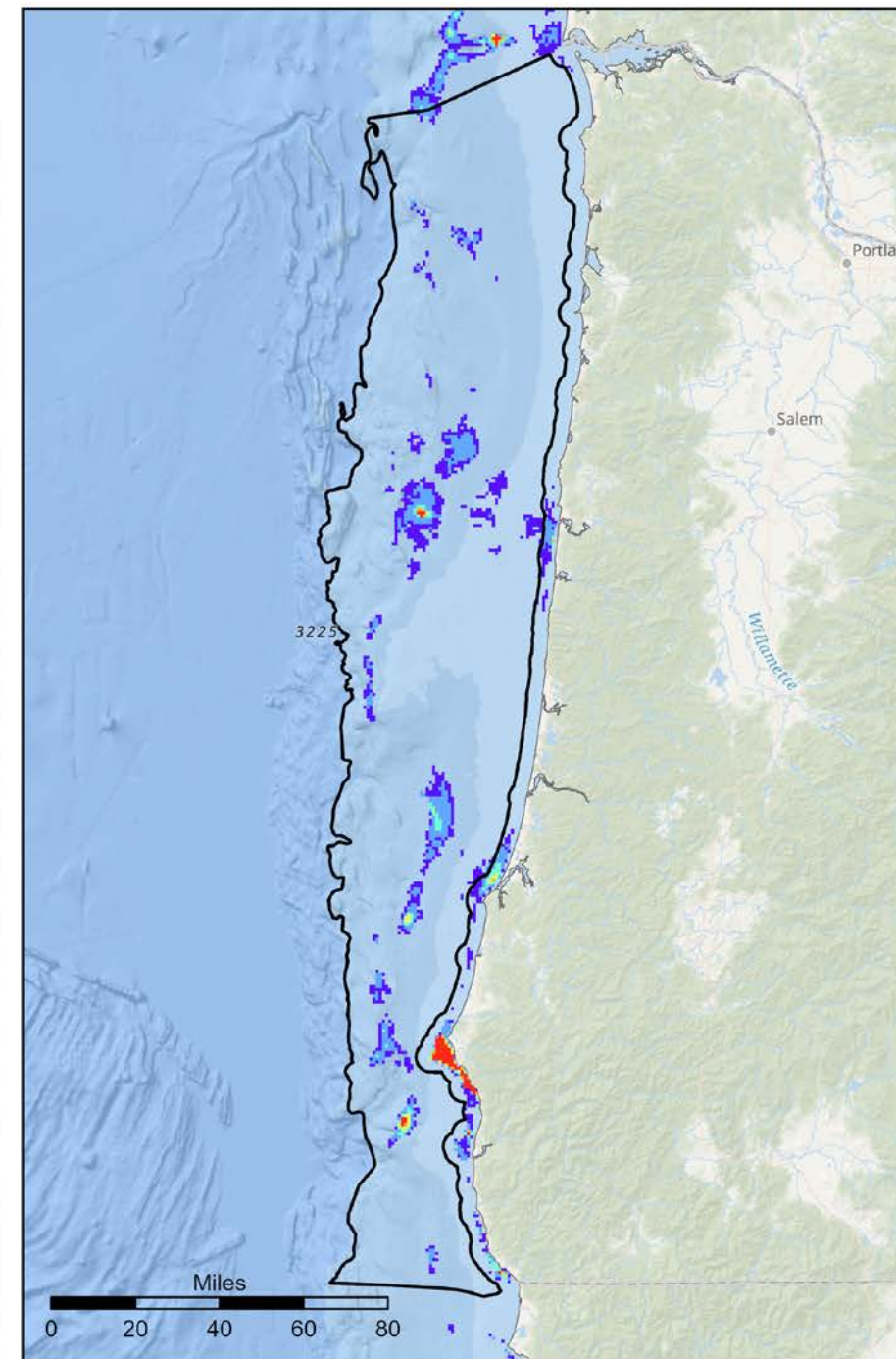
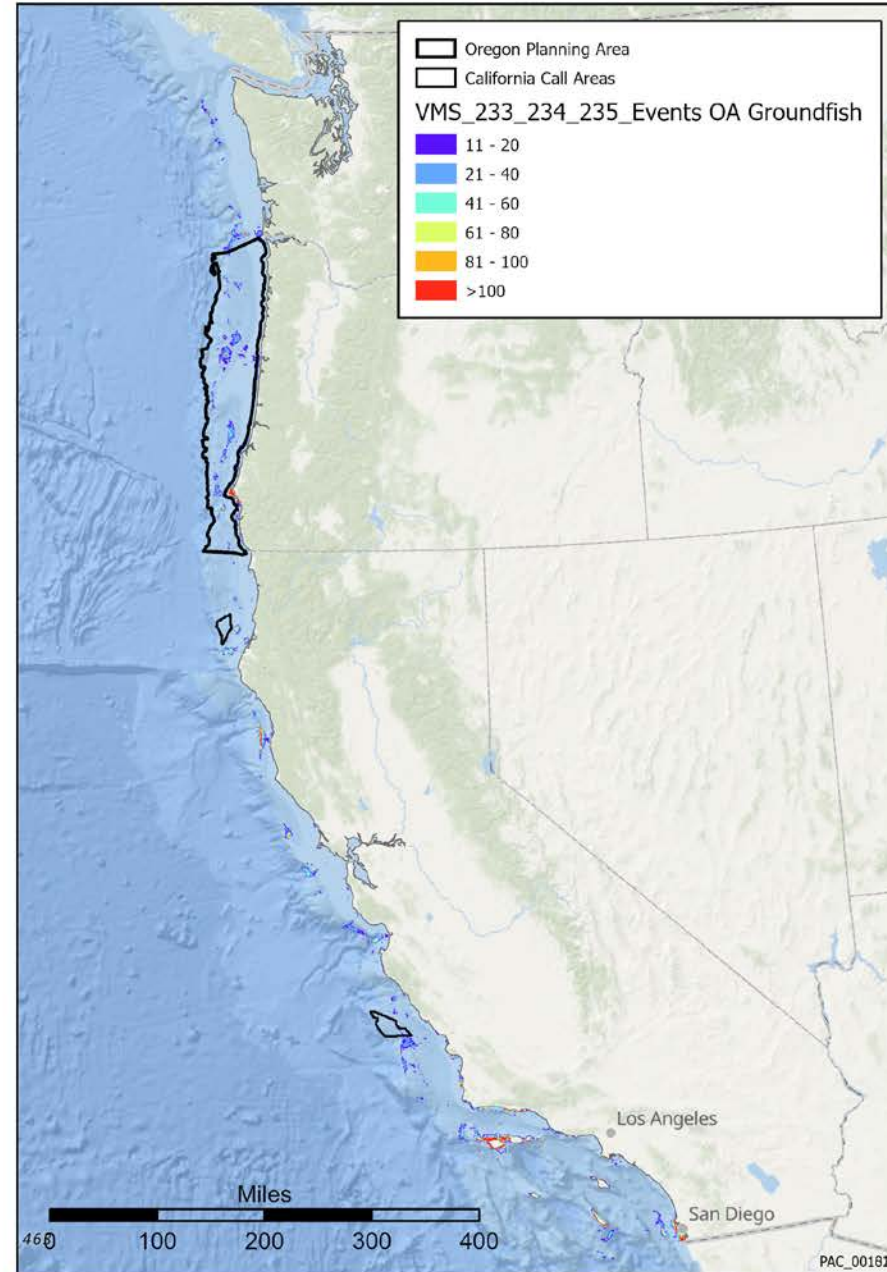
Bottom Trawl 230-231 (>100 Fishing Events)



Groundfish

Open Access Groundfish Longline, Line, Trap or Pot 2010-2017

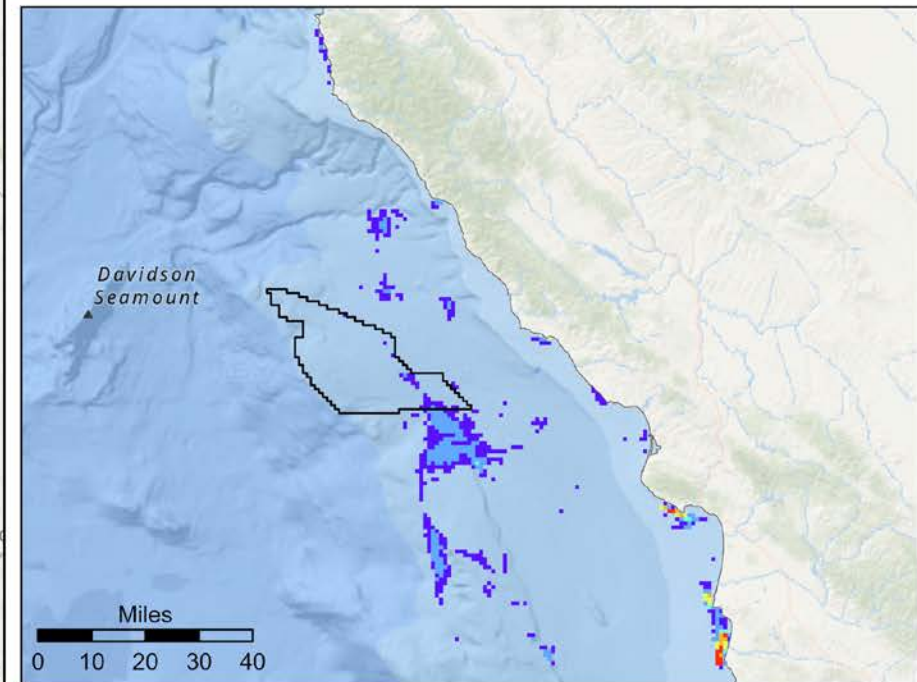
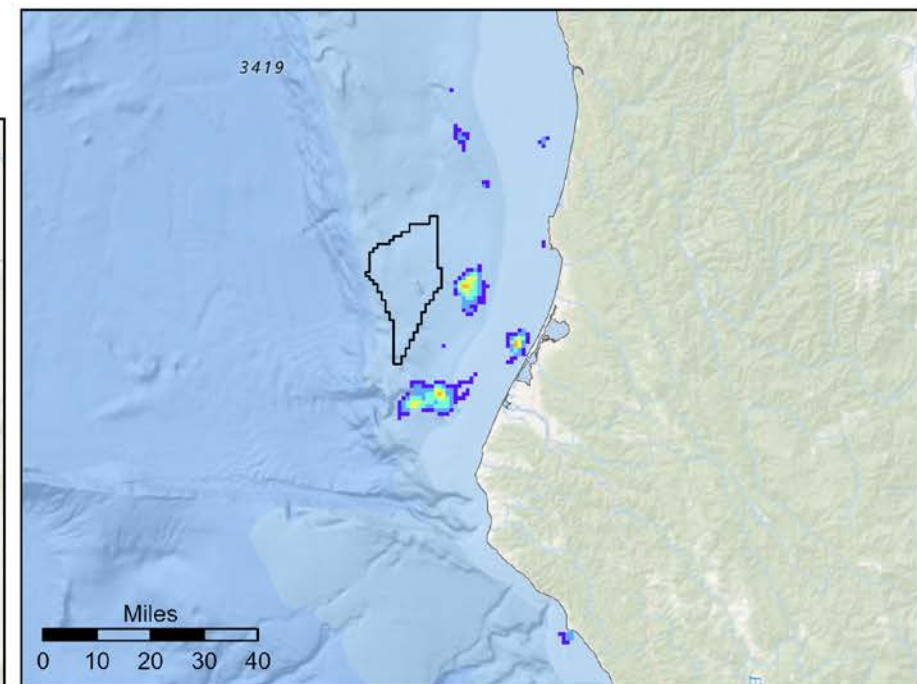
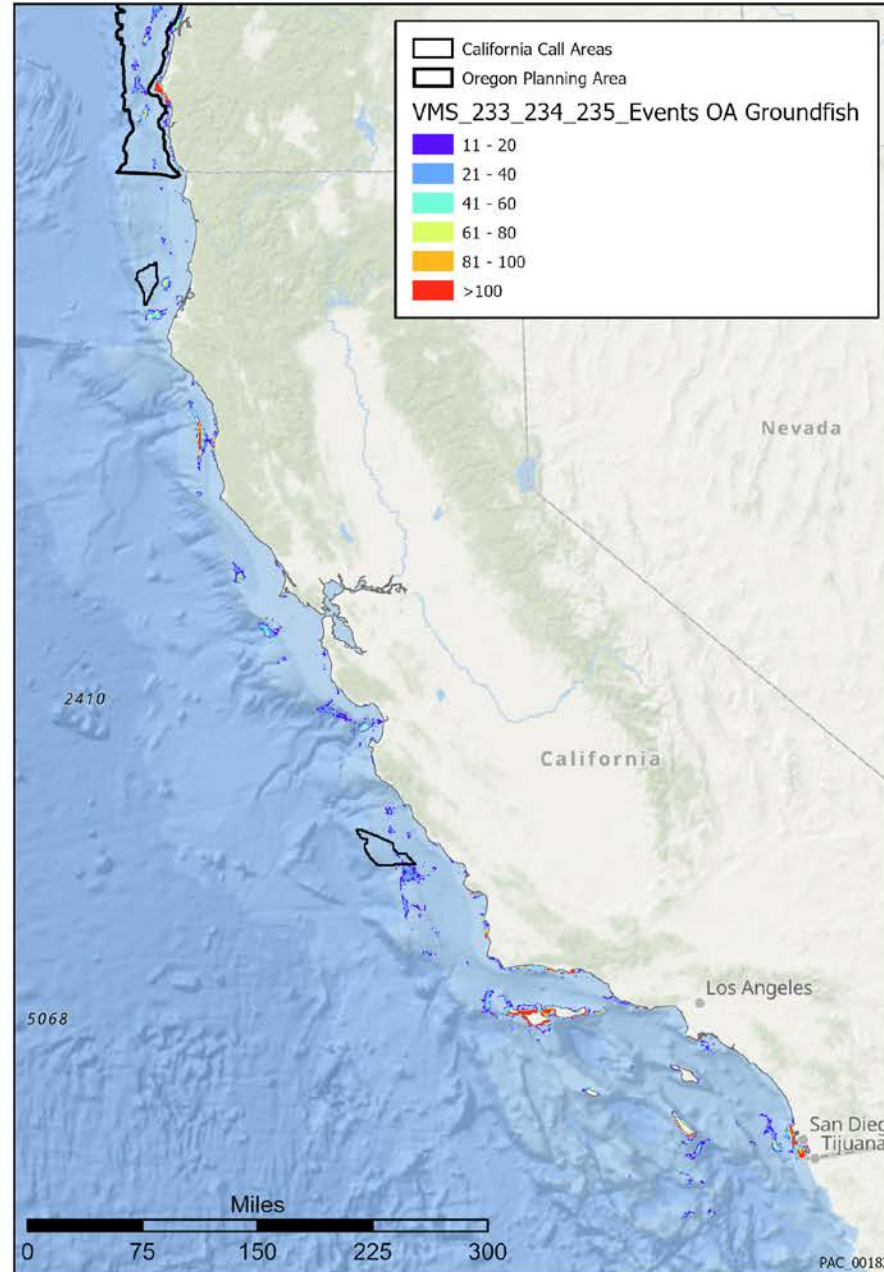
OA Groundfish, Longline, Trap or Pot, Line



Groundfish

Open Access Groundfish Longline, Line, Trap or Pot 2010-2017

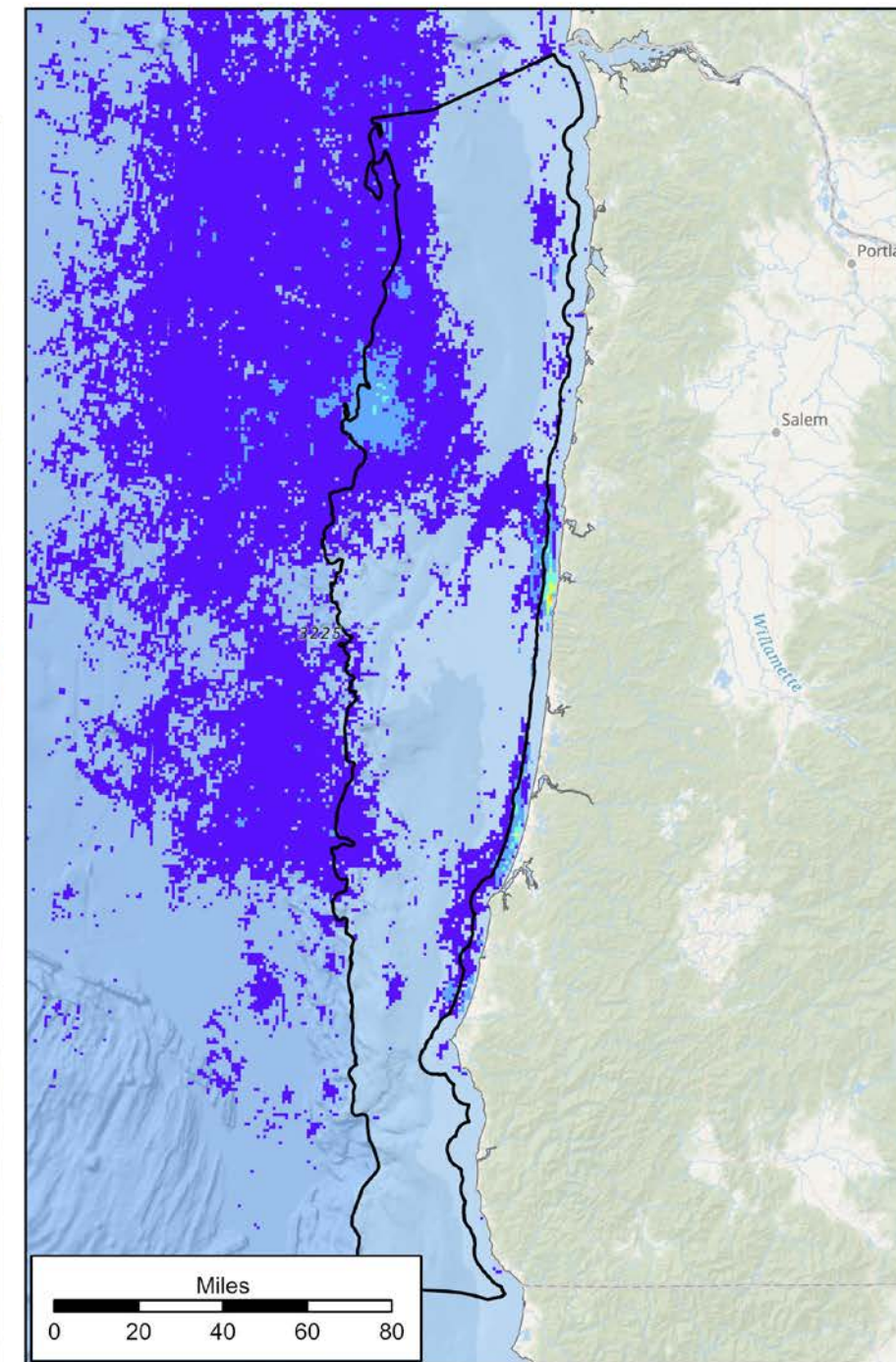
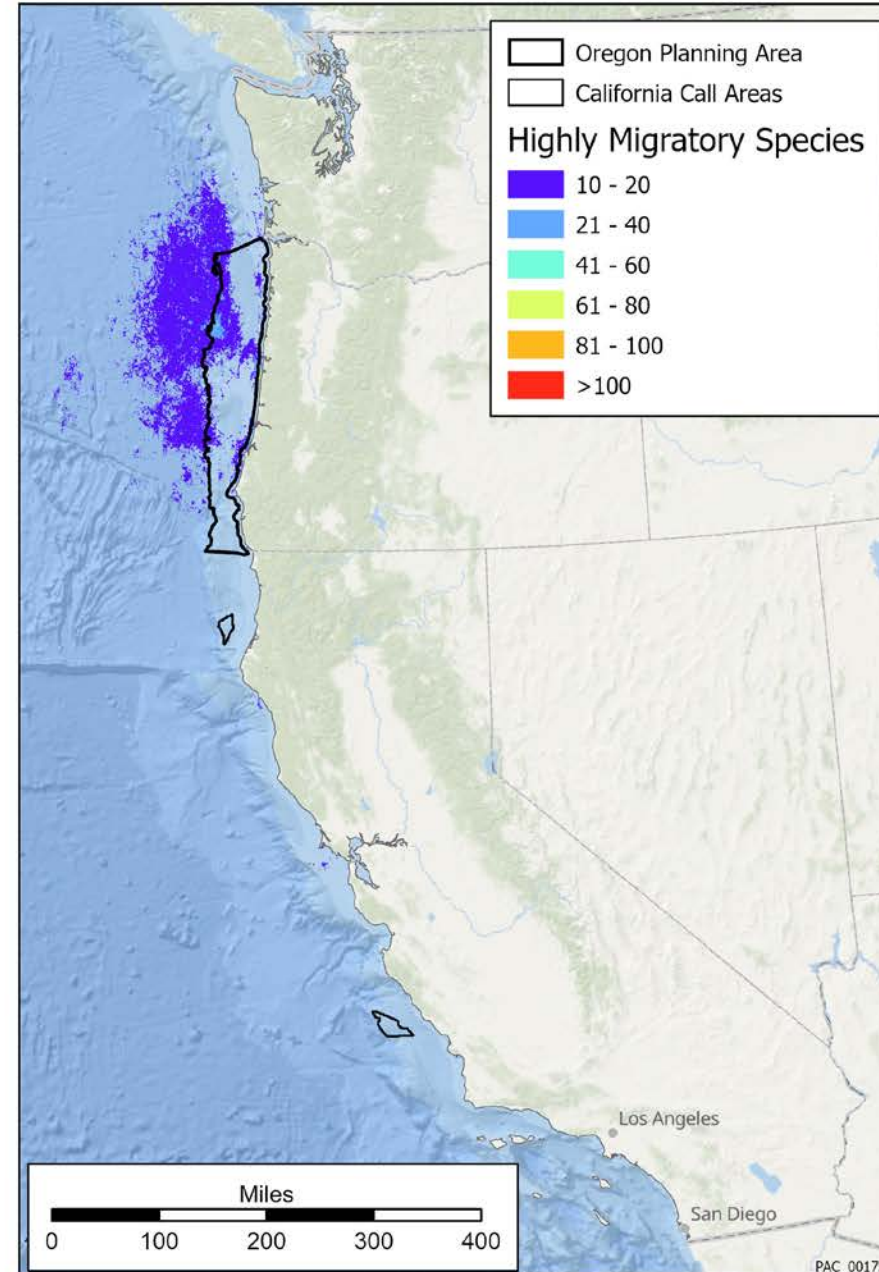
OA Groundfish Longline, Trap or Pot, Line



Highly Migratory Species

Highly Migratory Species 2010-2017

266_Open Access Highly Migratory Species Line Gear



Coastal Pelagic Species

Coastal Pelagic Species

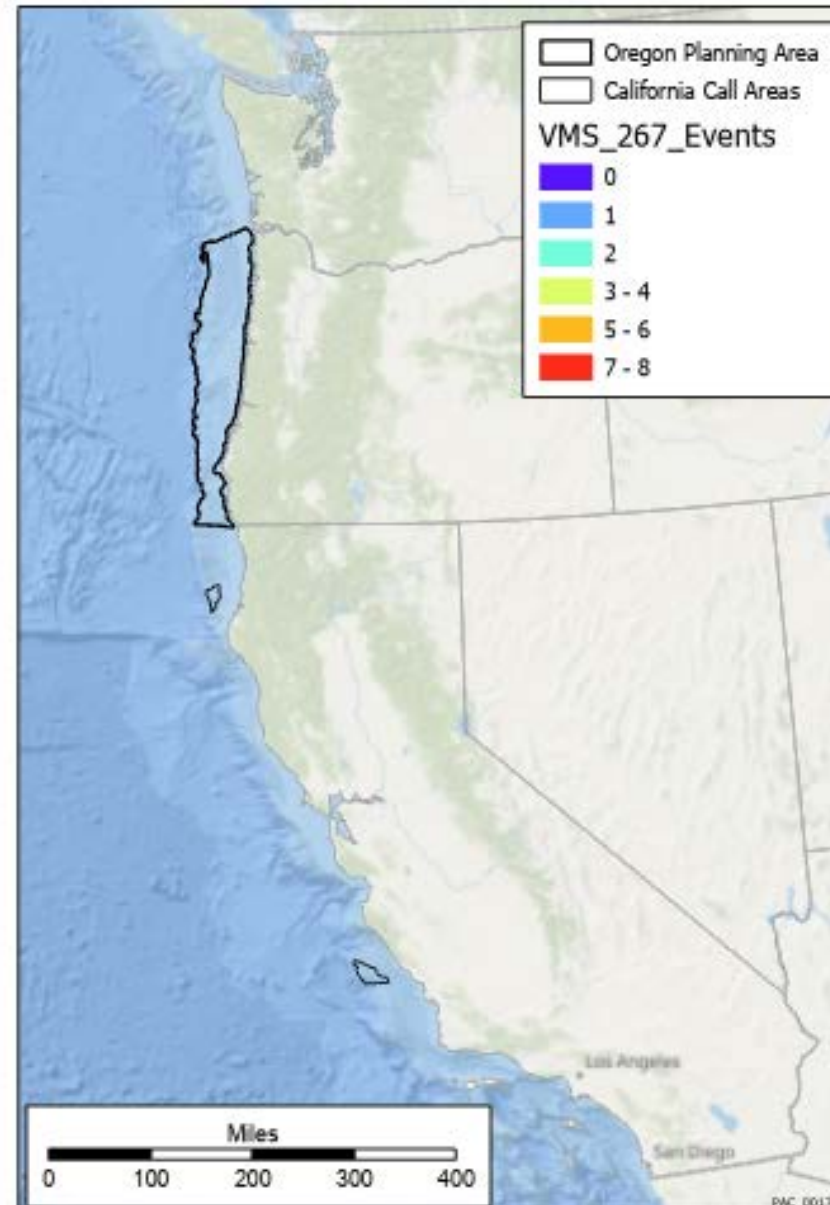
2010-2017

No VMS data due to
“Rule of 3”

Advanced symbology options

- Format labels
- Sample size
 - Maximum sample size: 500000
- Data exclusion
 - Load Save Remove
 - SQL ☐
 - Where: VMS_267_Vessels is less than 2
 - + Add Clause
 - 0
 - 1
 - 2
 - ☒ Values
 - ☐ Fields
- Feature level masking

266_Open Access Highly Migratory Species
Line Gear





Bureau of Ocean Energy
Management

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