

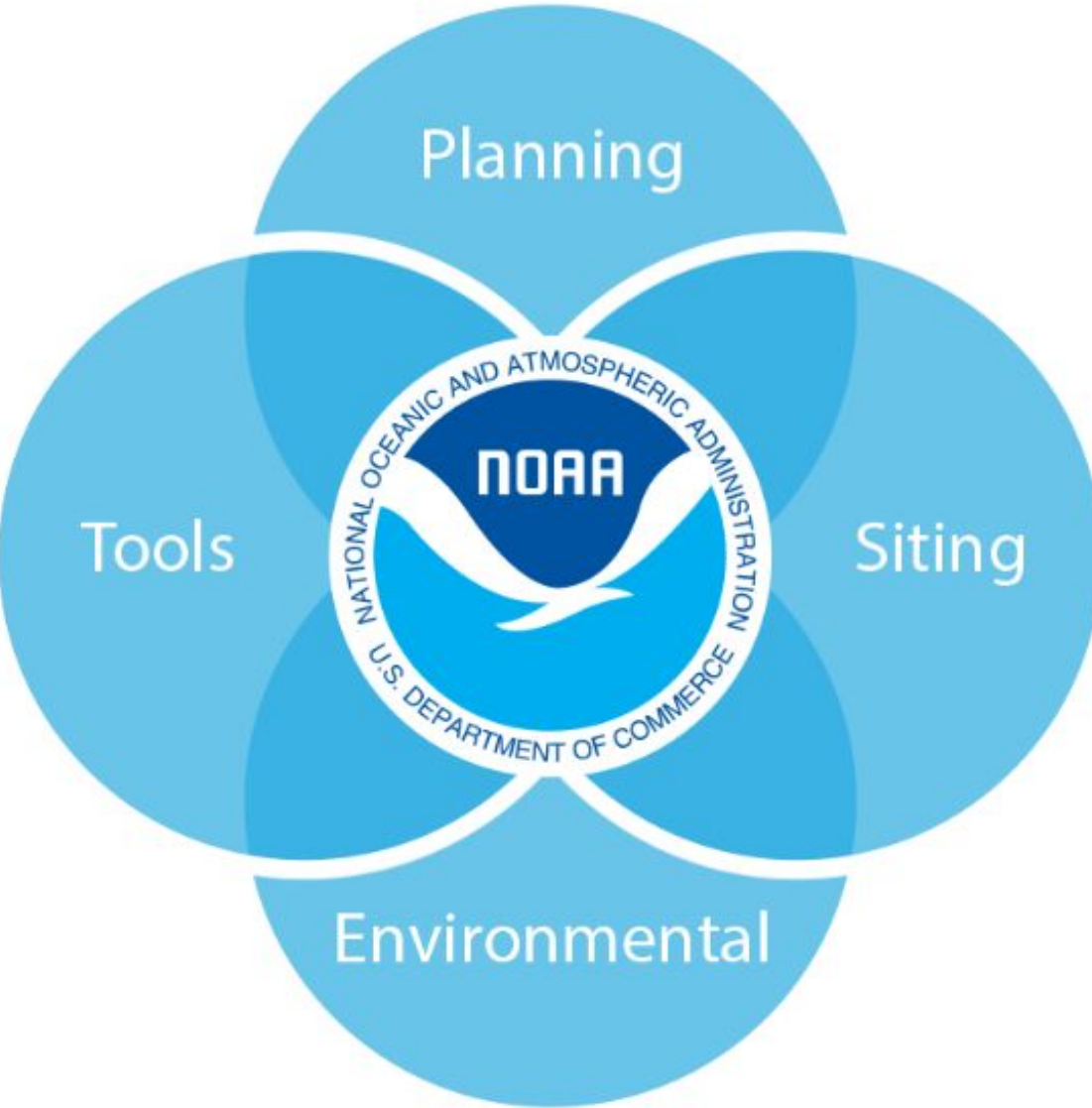
# Spatial Planning for Aquaculture Opportunity Areas

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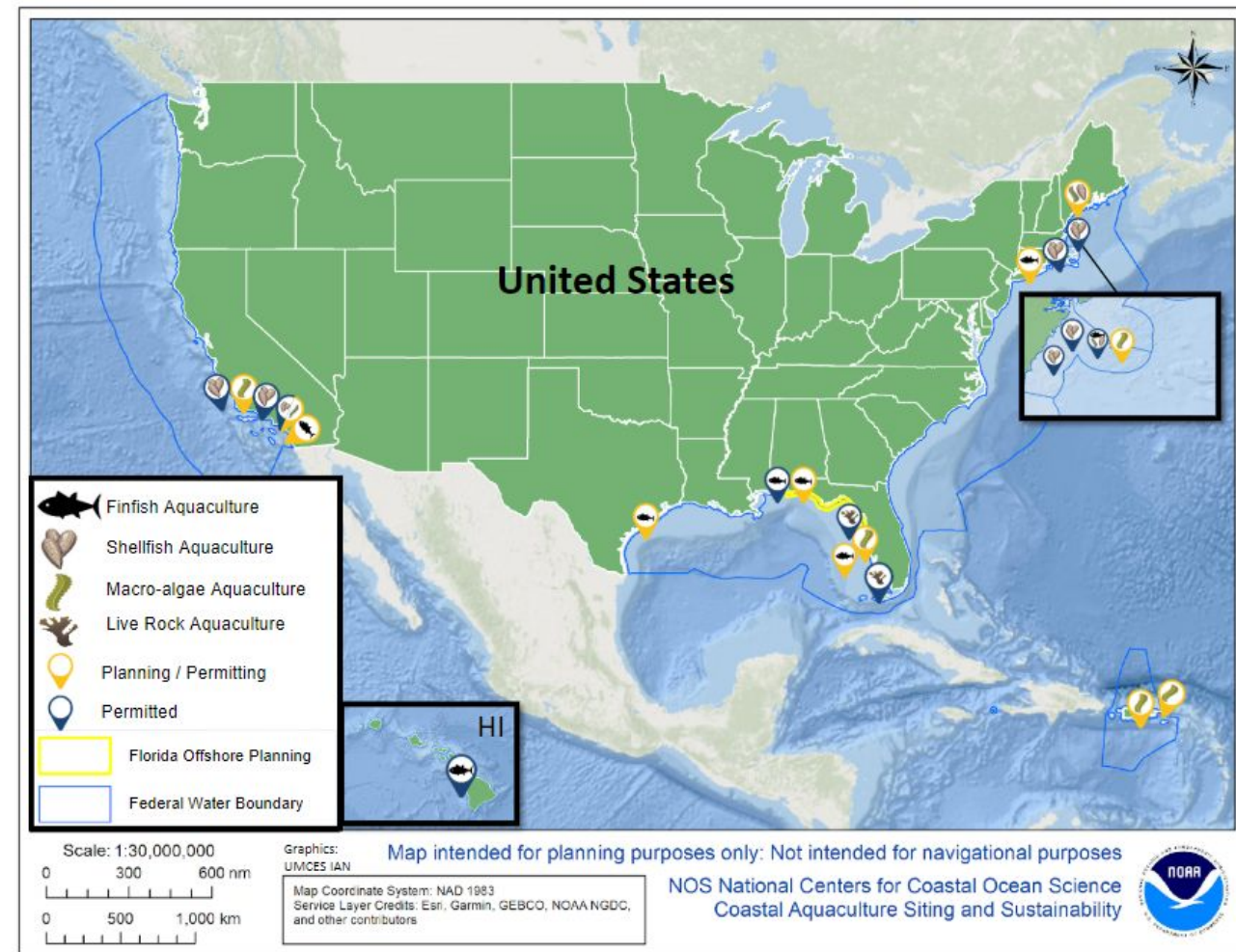
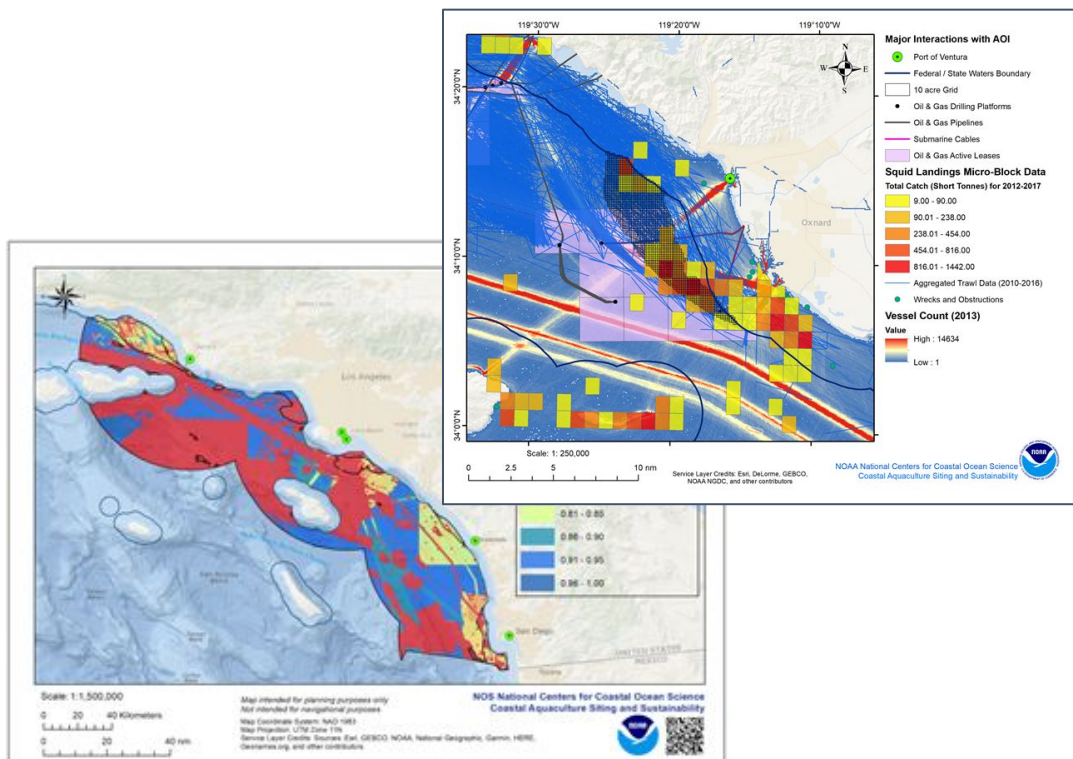


# The Ocean Service AquaPortfolio



# Planning and Siting

- Aquaculture Opportunity Areas
- State-designated aquaculture use areas
- Spatial planning for Ports/Harbors
- Dozens of projects around the U.S.



# Coastal Manager Support

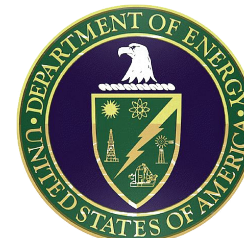
*We have developed a blended research and services portfolio. Services inform science; science inform services.*

## Types of support

- Spatial planning
- Environmental modeling
- Environmental science advice
- Engineering review



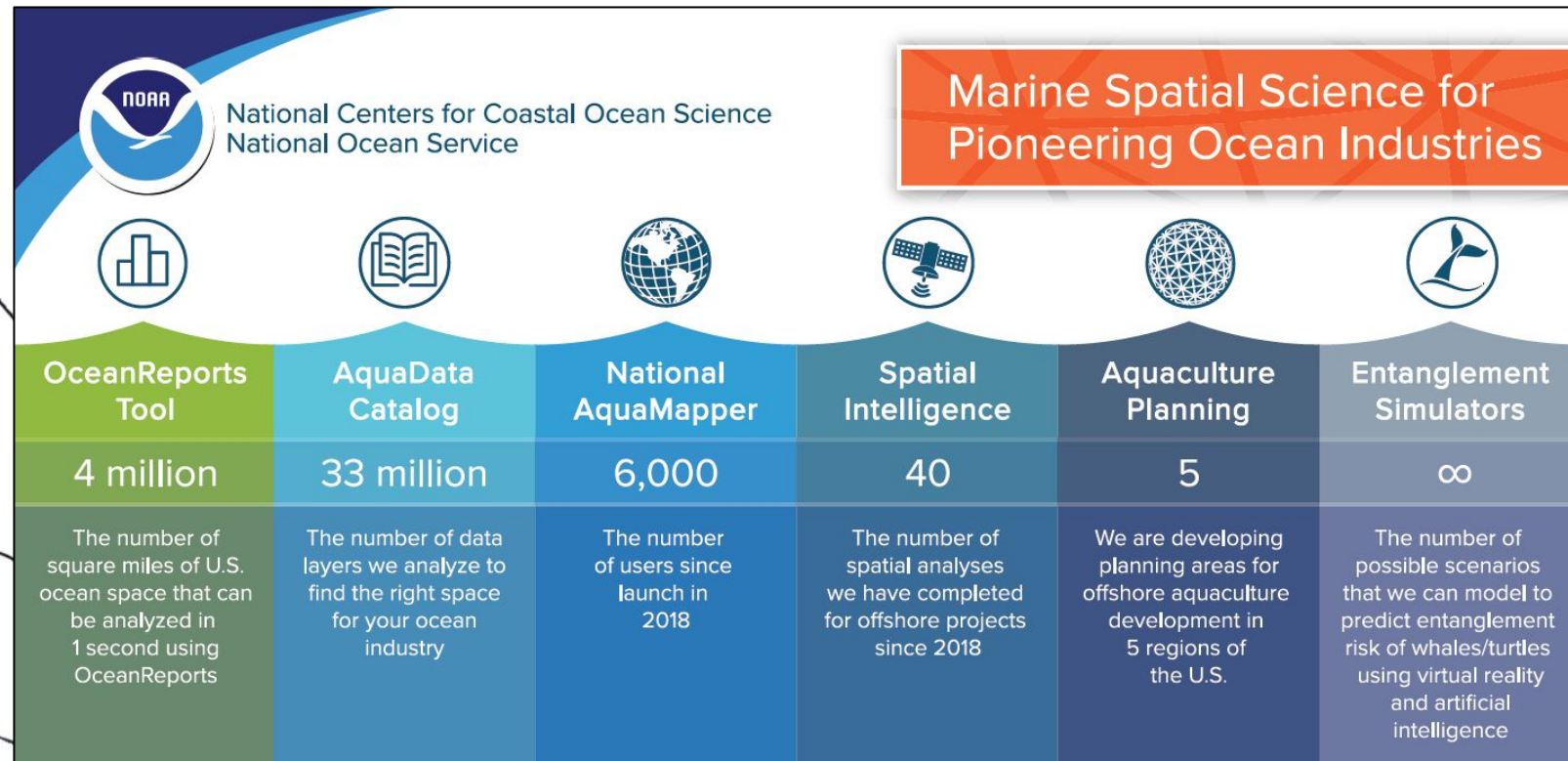
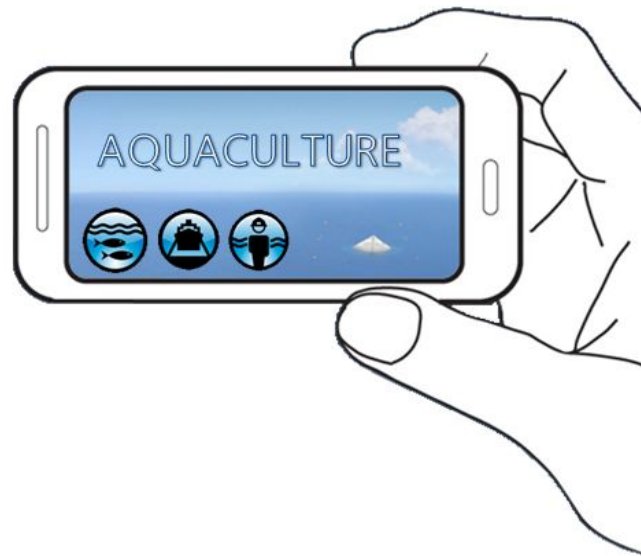
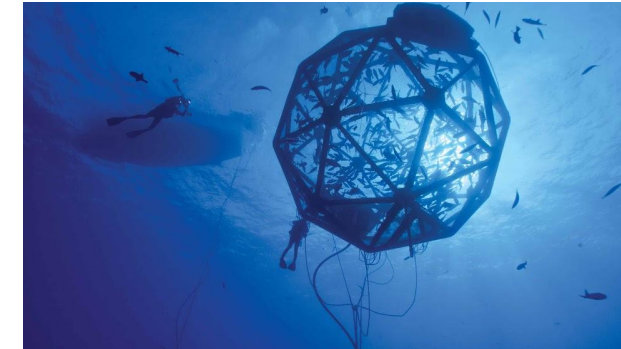
## Customers - All federal and state agencies



**US Army Corps of Engineers®**

# Tools and Technology

- AquaData Catalog
- OceanReports
- National AquaMapper
- Wave Exposure Model
- Entanglement Simulators
- Environmental Models



# Big AquaData



AquaData  
Catalog

33 million

The number of data  
layers we analyze to  
find the right space  
for your ocean  
industry



# Executive Order on Promoting American Seafood Competitiveness and Economic Growth

 ECONOMY & JOBS | Issued on: May 7, 2020



## Section 7: Aquaculture Opportunity Areas

- Within year 1, identify at least two geographic areas for AOAs
- Within 2 years, complete a PEIS for each to assess the impact of siting aquaculture facilities
- Each of following 4 years, identify 2 more geographic areas and complete PEIS within 2 years
- Coordination between NOAA, Regional Fishery Management Councils, State and tribal governments



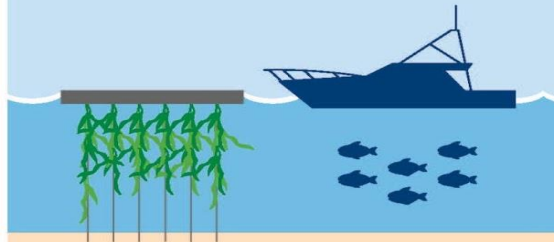
## What is an Aquaculture Opportunity Area?

**Aquaculture Opportunity Areas** show high potential for commercial aquaculture. A science and community-based approach to identifying these areas helps minimize interference with other enterprises, account for current fishing patterns, and protect the ecosystem.

AOAs will expand economic opportunities in coastal and rural areas, and increase our nation's seafood security.

AOAs use the best available science to find appropriate spaces for sustainable aquaculture.

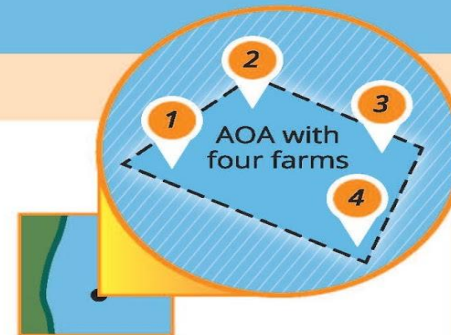
AOAs minimize interactions with other users, such as shipping, fishing, and the military.



### Assessment and Use of AOAs

Stakeholder input is essential in the design and location of AOAs and NOAA expects these areas will be shaped through a public process that allows constituents to share their community and stewardship goals, as well as critical insights.

AOA size, exact location, and farm types will be determined through spatial analysis and public input to expand sustainable domestic seafood production while minimizing potential user conflicts. Farms will still need to go through the permitting process and environmental reviews.





# Spatial Planning for Aquaculture Opportunity Areas

## What are the planning requirements?



**What are the boundaries?**

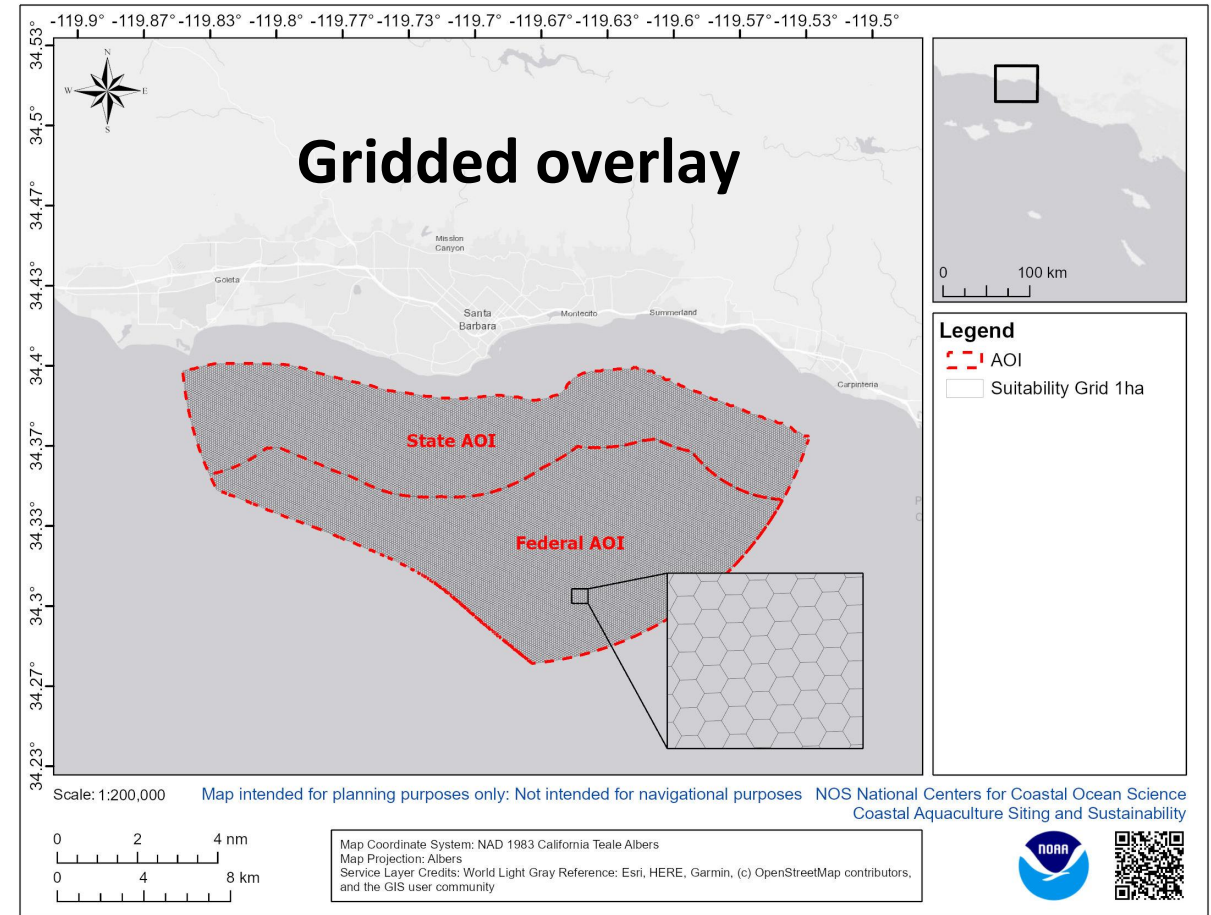
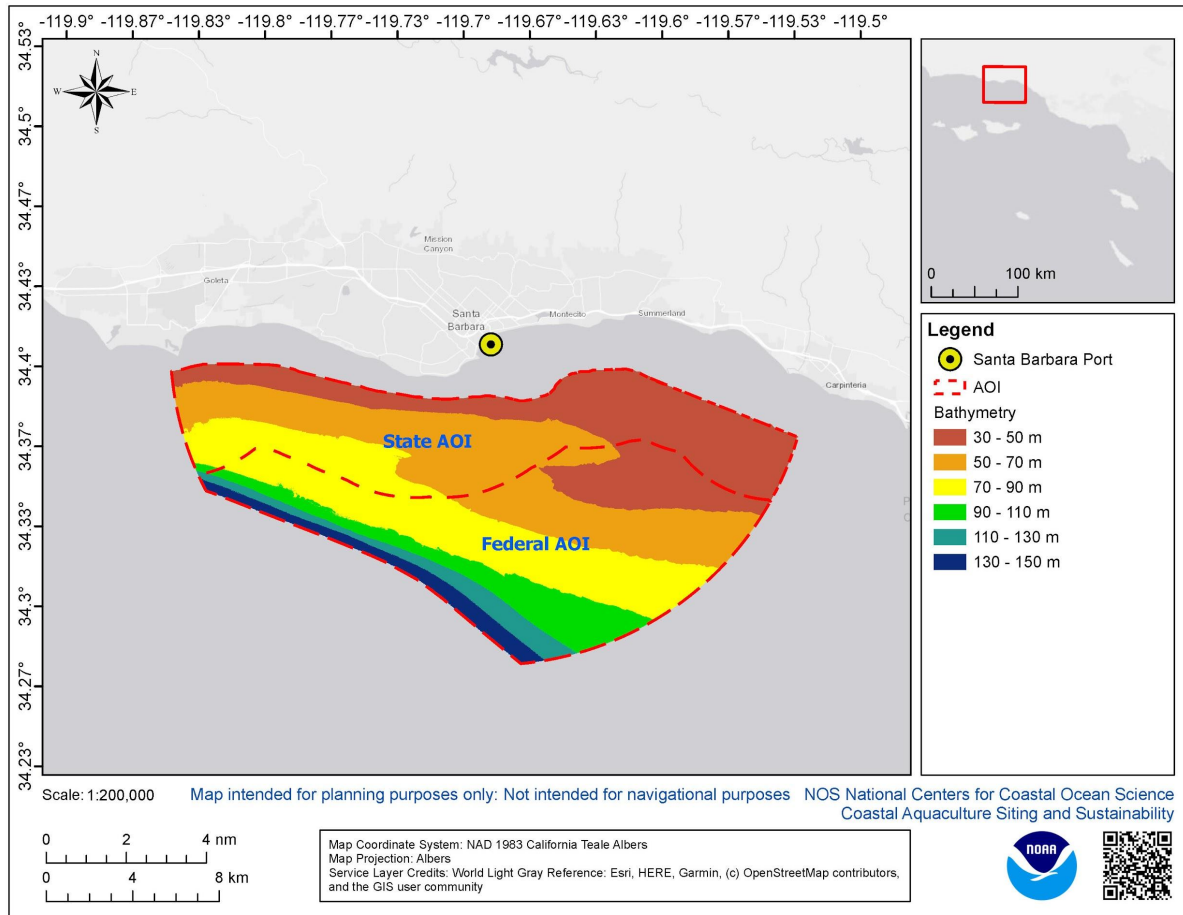
**Type of aquaculture?**

**Environmental requirements?**

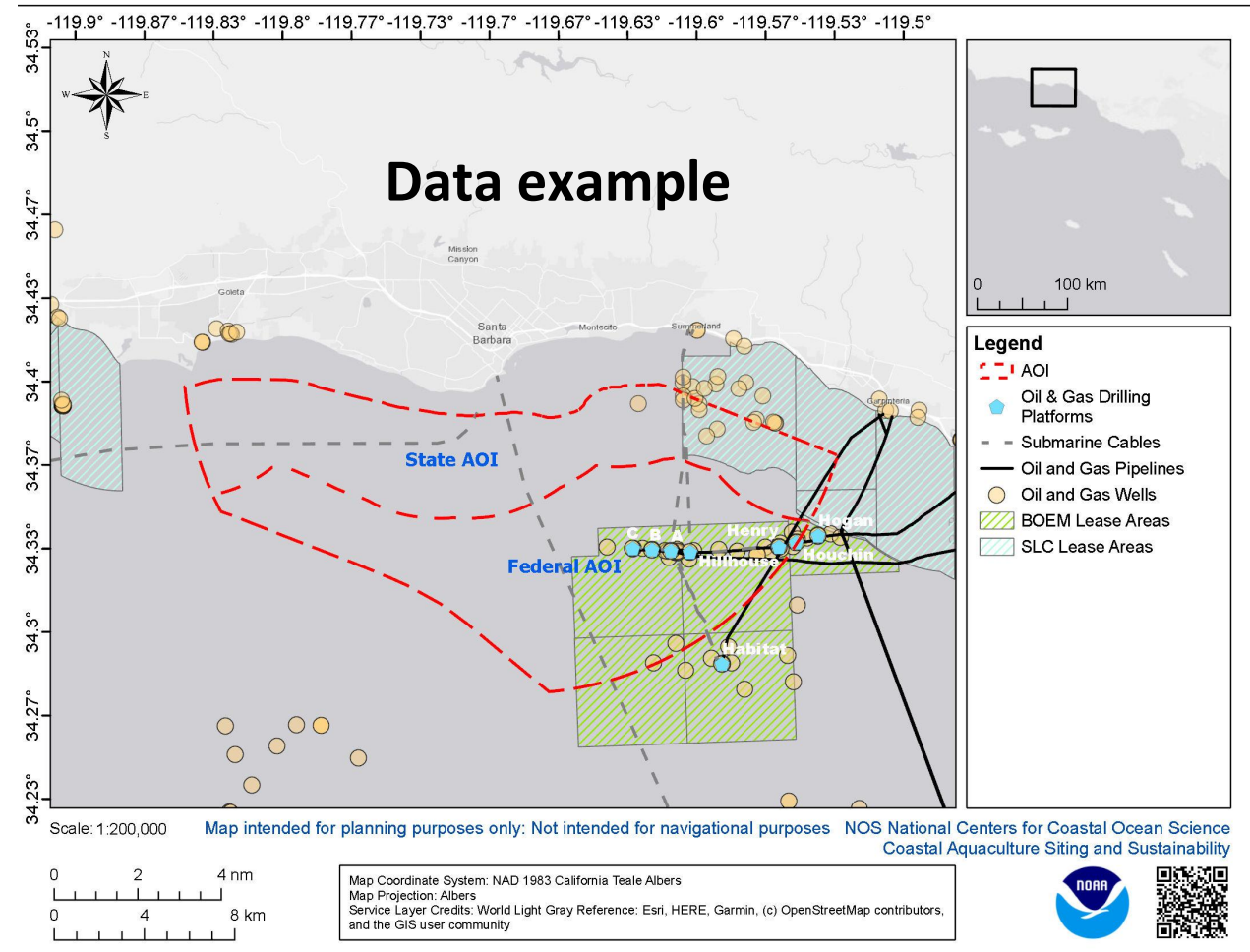
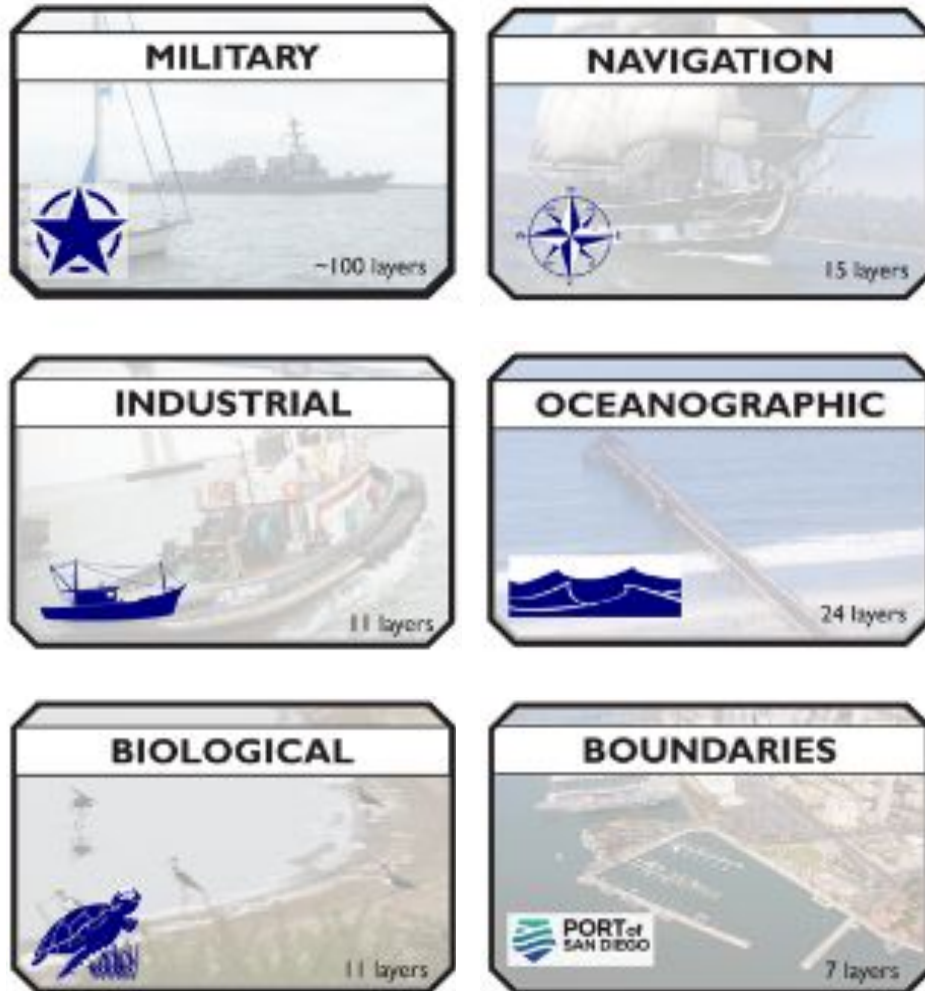
**Maximum distance to shore/port?**

Requirement	
Preferred port	San Barbara
Federal/State waters	Federal or State Waters
Selected culture species	Giant Kelp ( <i>Macrocystis pyrifera</i> )
Farm Footprint Size	133 acres (~54 ha)*
Maximum distance from port	≤ 8 nm
Gear depth requirements	≥ 30 and ≤ 150 m
Seawater temperature	< 20 °C
Current Velocity	< 1.02 m/s
Significant wave height	< 4 m

# Determine the study area



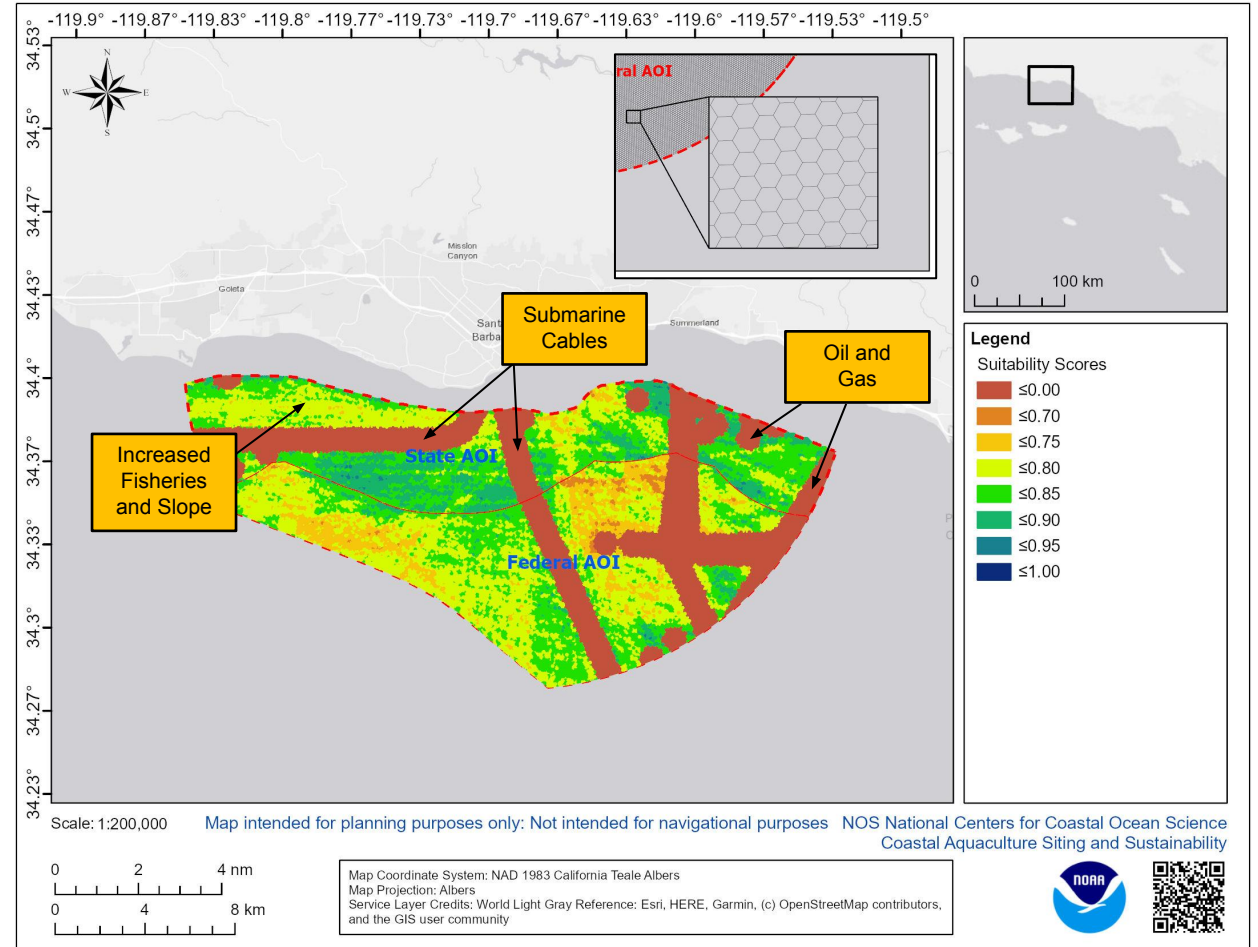
# Compile geodatabase



# Build a suitability model

Data Layer	Score
Danger and Restricted Zones	0.5
Deep Sea Corals (200 m buffer)	0.5
Habitat Area of Particular Concern	0.5
Halibut Trawl Ground	0.5
Hard Bottom Habitat	0
Marine Protected Areas & Preserves	0.5
Offshore Oil and Gas Leases	0.5
Oil and Gas Pipelines (500 m buffer)	0
Oil and Gas Wells (500 m buffer)	0
Shipwrecks & Obstructions (500 m buffer)	0
Squid Landings by micro-block	0.5
Submarine Cables (500 m buffer)	0
Unexploded Ordnance FUDS**	0.5
Wastewater Discharge (500 m buffer)	0

A **suitability model** is a **model** that weights locations relative to each other based on given criteria. **Suitability models** aid in finding a favorable location for a new facility, road, or habitat for a species of bird.



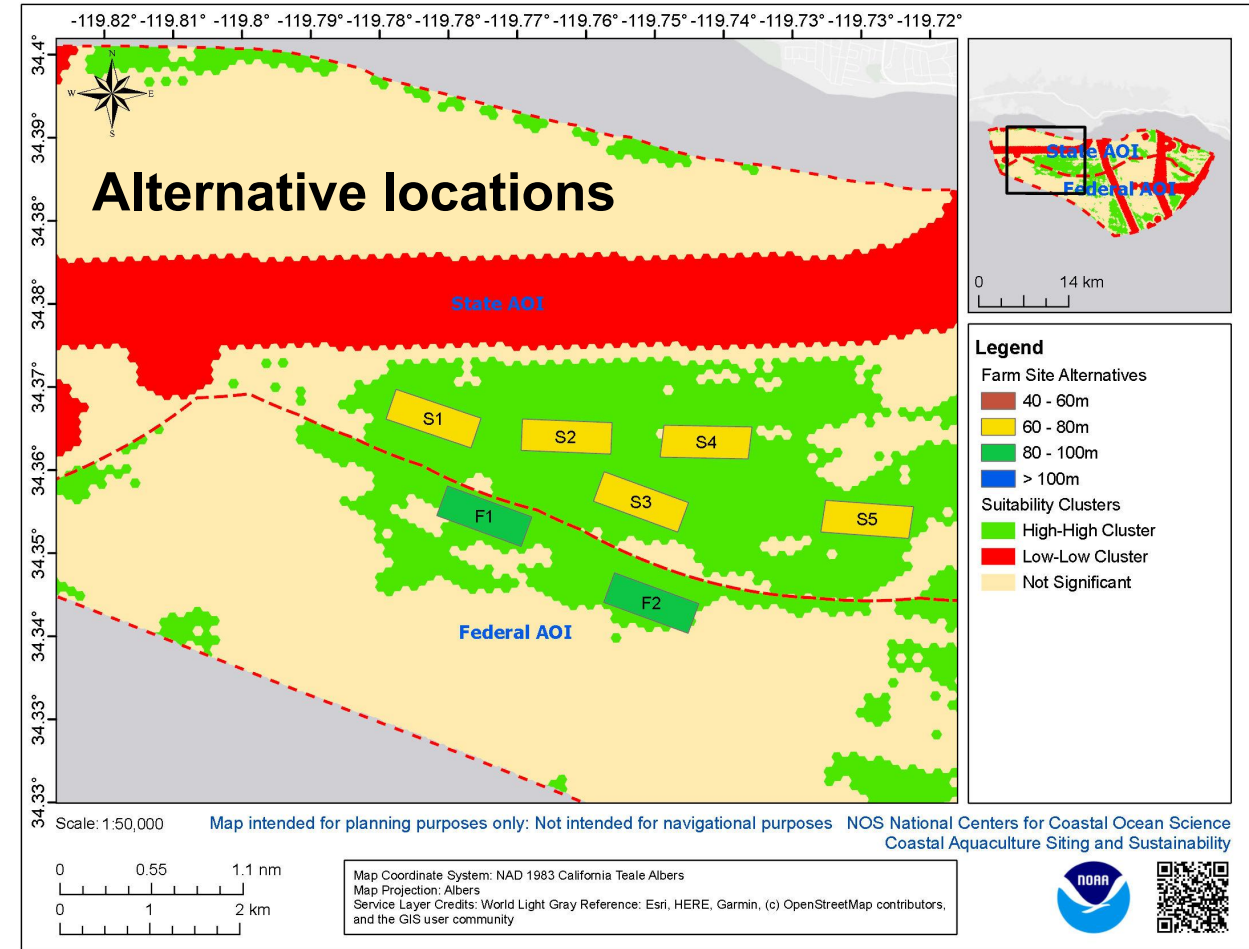
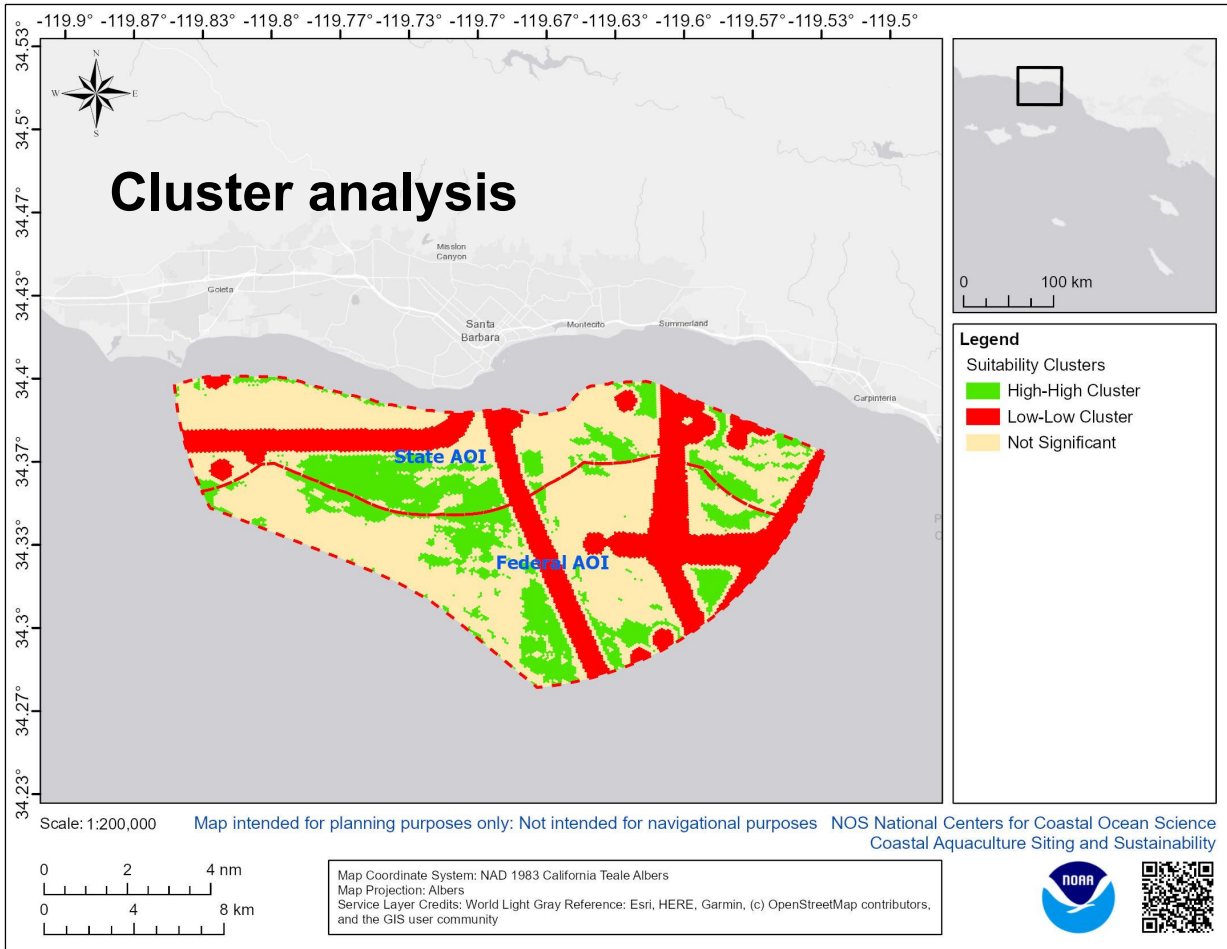
## Data scoring

0 = not compatible

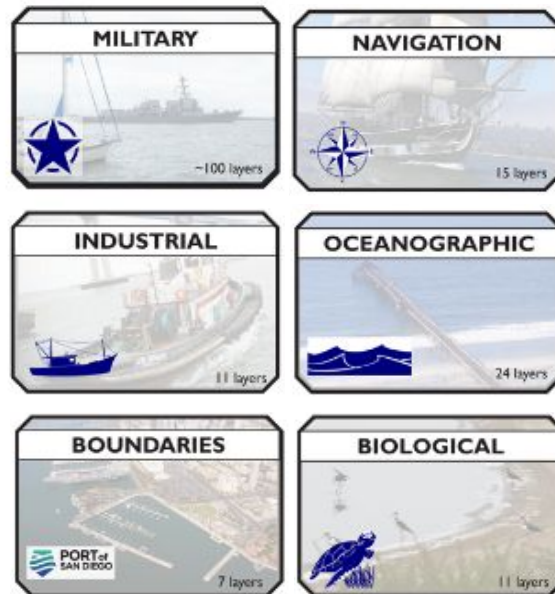
0.5 = may not compatible

1 = compatible

# Locate alternatives



# Characterize and rank alternative locations



Parameter	Location A	Location B	Location C	Location D
Area (Acres)	390	1630	2640	840
Mean Suitability Score	0.86	0.86	0.84	0.86
Mean Bathymetry	44	39	37	33
Mean Slope	0.30	0.43	0.71	0.47
Mean Sediment grain size	0.29	0.68	0.43	0.32
Wave Height hours	50	54	68	58
Temperature hours	3933	3924	3908	3904
Mean VMS Traffic (2009-2019)	23	24	17	12
AIS 2017 Other vessel transits per 1 ha	0.66	0.34	1.90	2.84
AIS 2017 Tug/Tow vessel transits per 1 ha	0.24	0.13	0.33	0.45
AIS 2017 Tanker vessel transits per 1 ha	0	0	0	0
AIS 2017 Pleasure vessel transits per 1 ha	3.66	1.37	1.43	4.04
AIS 2017 Passenger vessel transits per 1 ha	1.03	5.50	3.66	0.57
AIS 2017 Cargo vessel transits per 1 ha	0	0	0	0
AIS 2017 Fishing vessel transits per 1 ha	0.43	1.21	2.38	0.50
Closest Port	Rye Harbor	Hampton Harbor	Newburyport	Newburyport
EPA Region	1	1	1	1
Coast Guard District	1	1	1	1
US Army Corps of Engineers District	New England	New England	New England	New England
Unexploded Ordnance	Yes	No	No	No

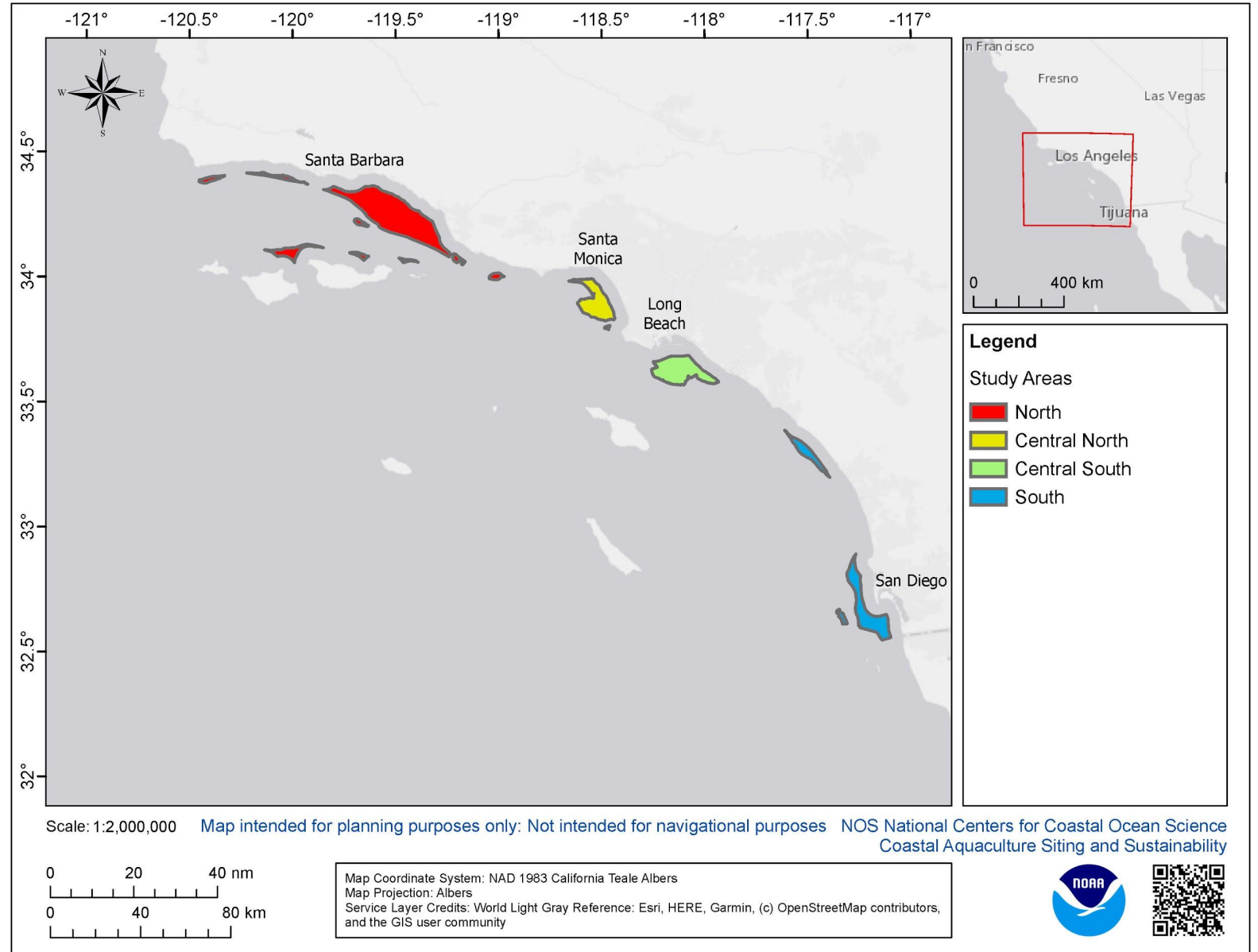
**EXAMPLE**



# Southern California

## Study area criteria

- USA Federal Waters (EEZ)
- Depth = 10 - 150 m
- Distance from shore = 25 nm maximum

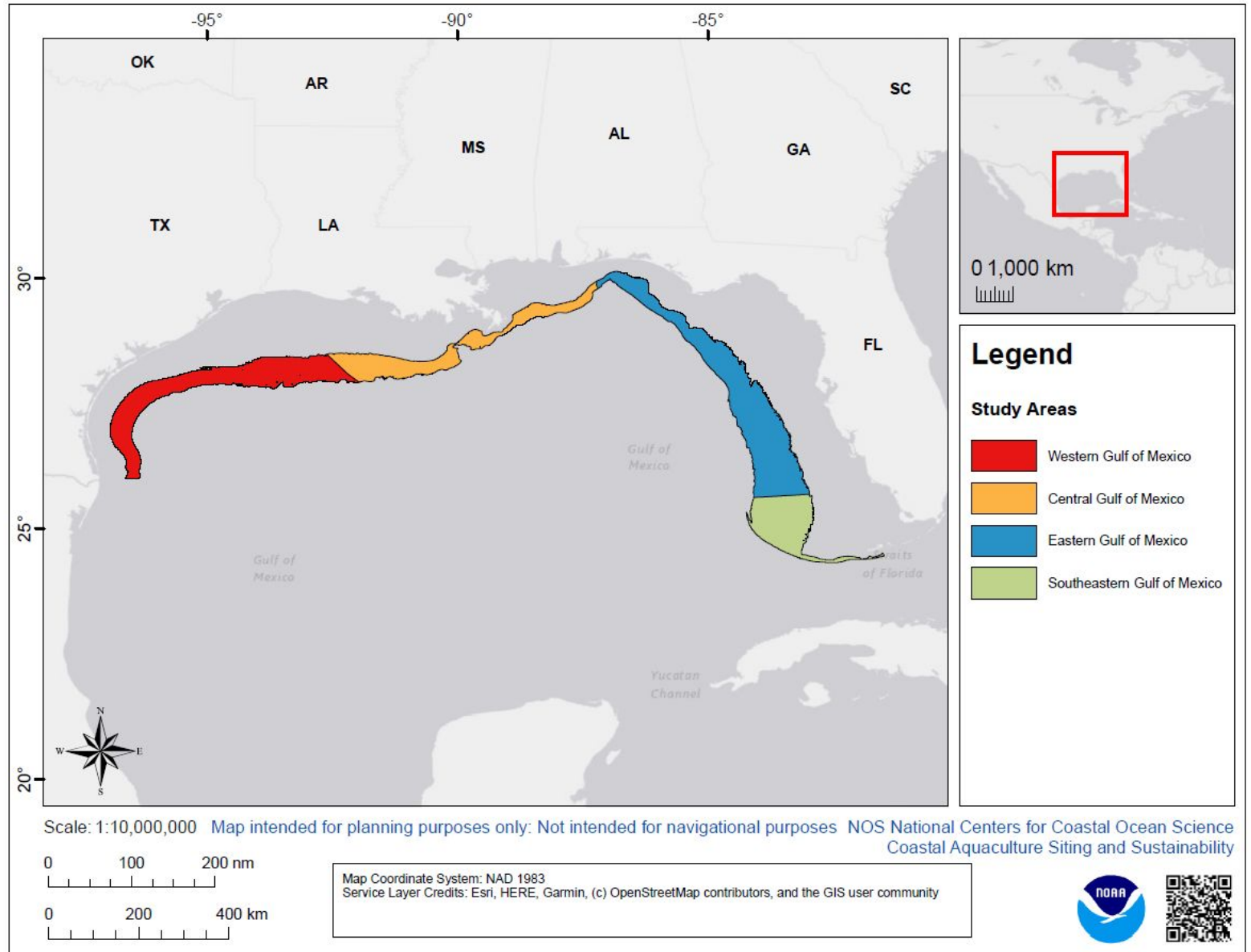
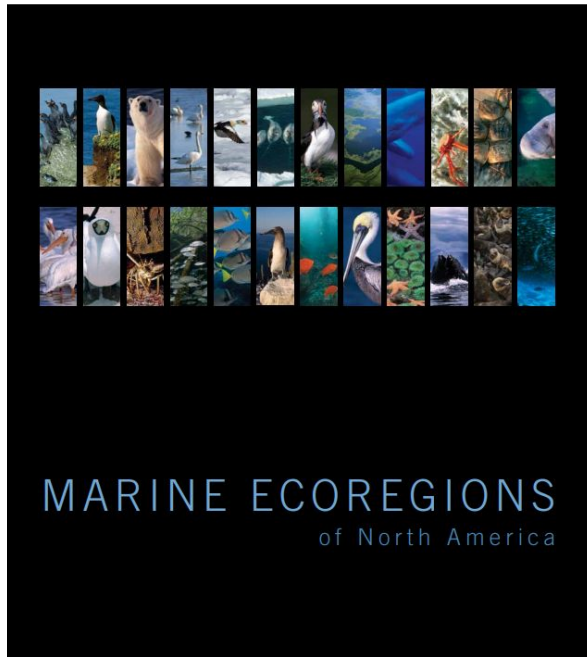




# Gulf of Mexico

Study area criteria:

- USA Federal Waters (EEZ)
- Depth = 50 - 150 m
- Eco-regions from Wilkerson et al. (2009)



# We look forward to hearing from YOU!

