

# Aquaculture Opportunity Areas (AOAs): Request for Information November 2020

Tab E, No. 4



# Today's Presenters

- Dr. Jessica Beck-Stimpert:  
NOAA Fisheries Southeast Regional  
Office, Senior Regional Aquaculture  
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for Coastal Ocean Science, Marine  
Ecologist, Coastal Aquaculture Siting  
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# E.O. 13921, Section 7: Aquaculture Opportunity Areas

- The Secretary of Commerce, in consultation with other appropriate Federal officials, appropriate Regional Fishery Management Councils, and in coordination with appropriate State and tribal governments, shall:
  - Within 1 year of date of E.O., identify at least two geographic areas containing locations suitable for commercial aquaculture.
  - Within 2 years of identifying each geographic area, complete a programmatic environmental impact statement (PEIS) for each to assess the impact of siting aquaculture facilities there.
  - Each of following 4 years, identify two more geographic areas and complete PEIS within 2 years.
- These geographic areas will be referred to as AOAs *once the PEIS is complete.*



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## 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.

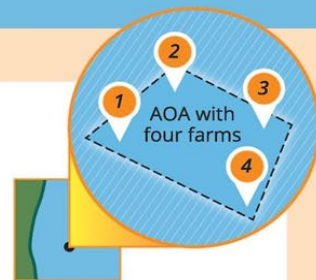
AOAs minimize interactions with other users, such as shipping, fishing, and the military.



### 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.





# Executive Order on Promoting American Seafood Competitiveness and Economic Growth

Year 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
<b>I.D. 2 AOAs*</b>	<b>Complete PEIS* for each AOA</b>					
	<b>I.D. 2 AOAs</b>	<b>Complete PEIS for each AOA</b>				
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			<b>I.D. 2 AOAs</b>	<b>Complete PEIS for each AOA</b>		
				<b>I.D. 2 AOAs</b>	<b>Complete PEIS for each AOA</b>	

\*AOAs = Aquaculture Opportunity Areas

PEIS = Programmatic Environmental Impact Statements



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# First Two Aquaculture Opportunity Areas under Executive Order on Seafood

- Federal waters off Southern California and in the Gulf of Mexico have been selected for science-based evaluation and development of the first two AOAs.
- These selections were based on the already available spatial analysis data and current industry interest in developing sustainable aquaculture operations in the region.



# Aquaculture Opportunity Areas Year 1 Steps

August 2020



May 2021

## What:

Announced Gulf of Mexico and Southern CA as first two regions to look for AOAs

NCCOS data collection for siting analysis

Continued outreach – introduce AOA concept

**Public Notice: request input on siting in 2 initial areas AND national to begin thinking about where to focus for next 8**

NCCOS draft “Aquaculture Opportunity Atlas”

Combine public input and results of Atlas to identify potential AOAs

Announce preliminary AOA alternatives to consider in more detail in PEIS



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# Public Process for AOA

- Request for Information
  - May be used in NEPA PEIS process, e.g. to develop preliminary alternatives
  - Used to determine future AOA efforts
- Notice of Intent to prepare a PEIS
- Draft PEIS



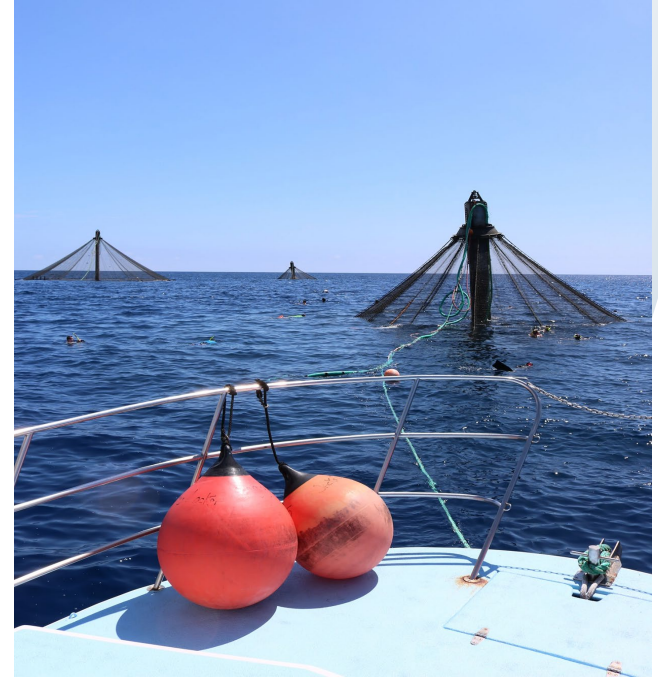
NEPA: National Environmental Policy Act  
PEIS: Programmatic Environmental Impact Statement





# Aquaculture in AOAs

- After 3-year process to identify and complete PEIS for each AOA, proposals for operations in AOA
- Aquaculture not required to be in AOA
- The identification of AOAs would not prohibit other legal activities



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# Permitting Still Required for AOAs

- The federal and state permitting and authorization requirements are the same within AOAs as anywhere else.
  - Aquaculture operations proposed within an AOA would be required to comply with all applicable federal and state laws and regulations (e.g., Clean Water Act, Rivers and Harbors Act, Endangered Species Act [ESA], essential fish habitat under the Magnuson-Stevens Act, Marine Mammal Protection Act).
- Potential impacts to protected species and habitats will be considered at multiple points in the process.
- Coordination with permitting agencies throughout AOA process; include information in PEIS to help inform future permitting needs

# Benefit of AOAs

- Identifying areas and completing a PEIS for each AOA will help maximize compatibility of AOAs with other ocean uses
- Background siting and environmental analysis already done; outside AOA applicant still needs that info



# Key Takeaways & Common Questions

- The selection of federal waters of the Gulf and southern California **does not** mean the entire regions are AOAs.
- AOAs are about spatial analysis and environmental planning. They are not regulatory; NMFS is not permitting or authorizing aquaculture through AOAs.
- The federal and state permitting and authorization requirements are the same within AOAs as anywhere else.
- The identification of AOAs would not prohibit other legal activities from occurring within AOAs.
- AOAs are not related to any specific permit application.







# Spatial Planning for Aquaculture Opportunity Areas

**Marine Spatial Ecology Division**  
National Centers for Coastal Ocean Science  
National Ocean Service

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## A Team Effort!



Dr. James Morris  
Marine Ecologist  
Program Lead



Dr. Ken Riley  
Marine Ecologist  
Program Co-lead



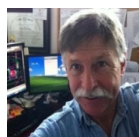
Meghan Balling  
Program Analyst



Troy Rezek  
Aquaculturist



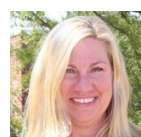
Jennica Hawkins  
Aquaculturist



Barry King, P.E.  
Engineer/Modeler



Gary Fisher  
Biological Tech



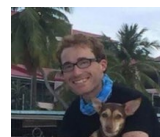
Dr. Gretchen Bath  
Enviro policy



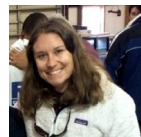
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Ocean Engineer



Brandon Jensen  
Habitat biologist



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Geospatial



Dr. Lisa Wickliffe  
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Amit Malhotra  
Geospatial



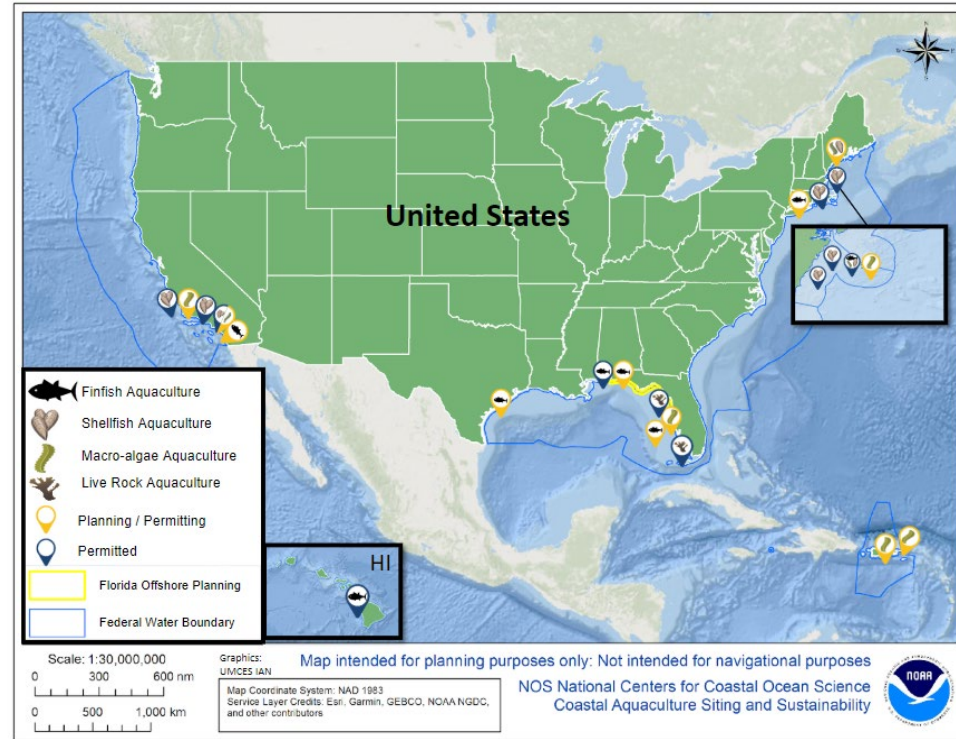
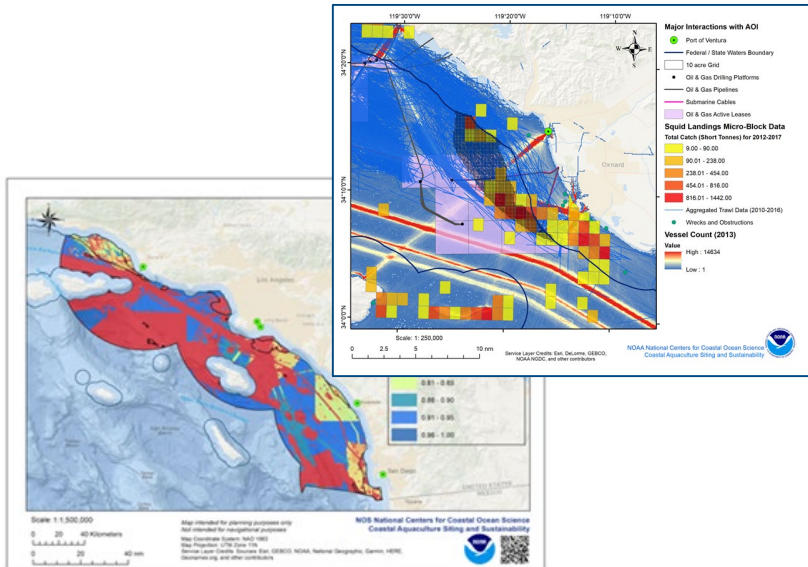
Jonathan MacKay  
Geospatial



Alyssa Randall  
Geospatial

# Planning/Siting Science

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





# Coastal Manager Support

*Our services inform our science and our science improves our services.*

## Types of support

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



## Customers - All federal and state agencies

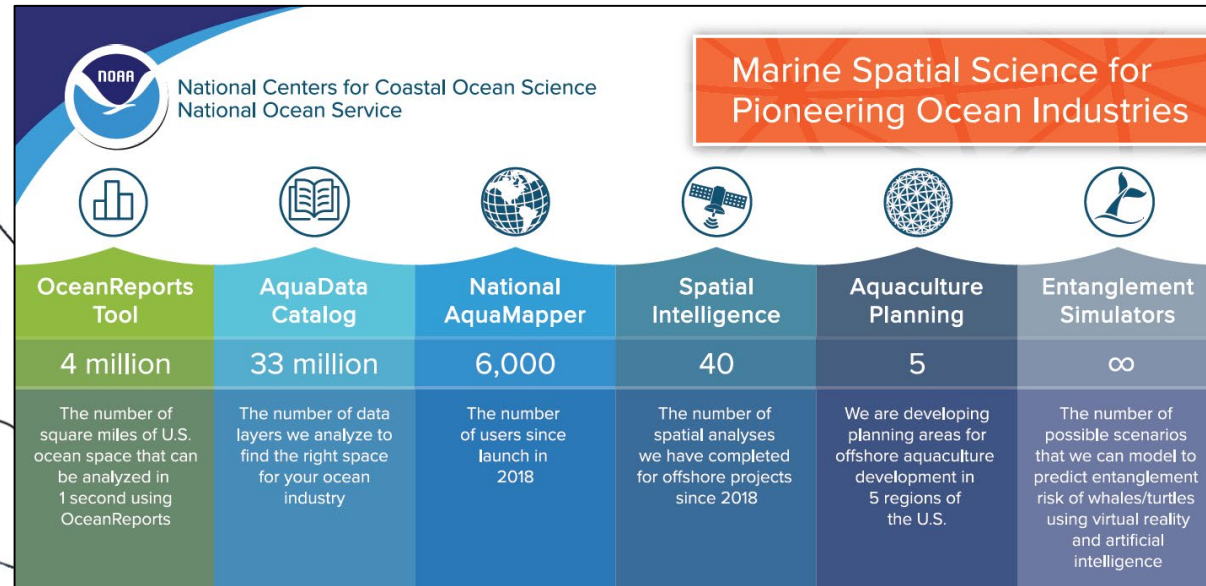
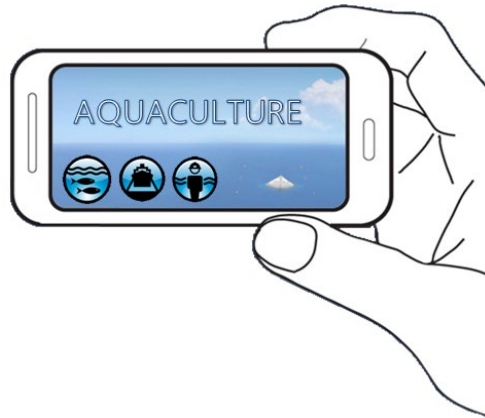


**US Army Corps  
of Engineers®**



# Tools and Technology

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



# Big AquaData



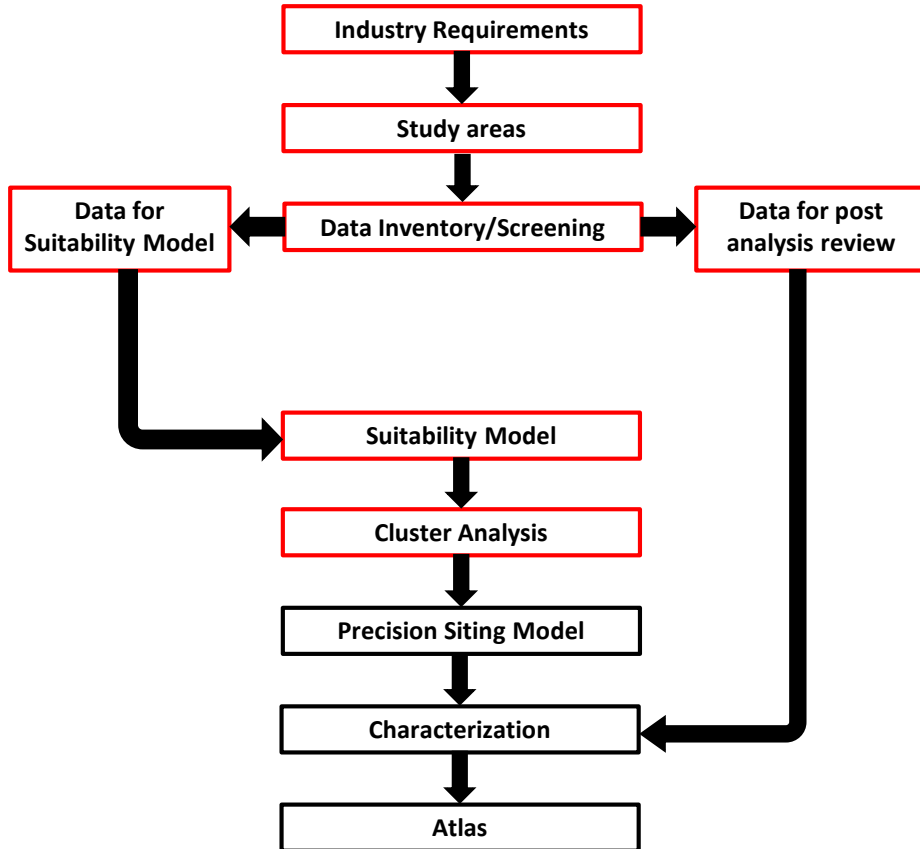
AquaData  
Catalog

33 million

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



# Spatial Planning Workflow

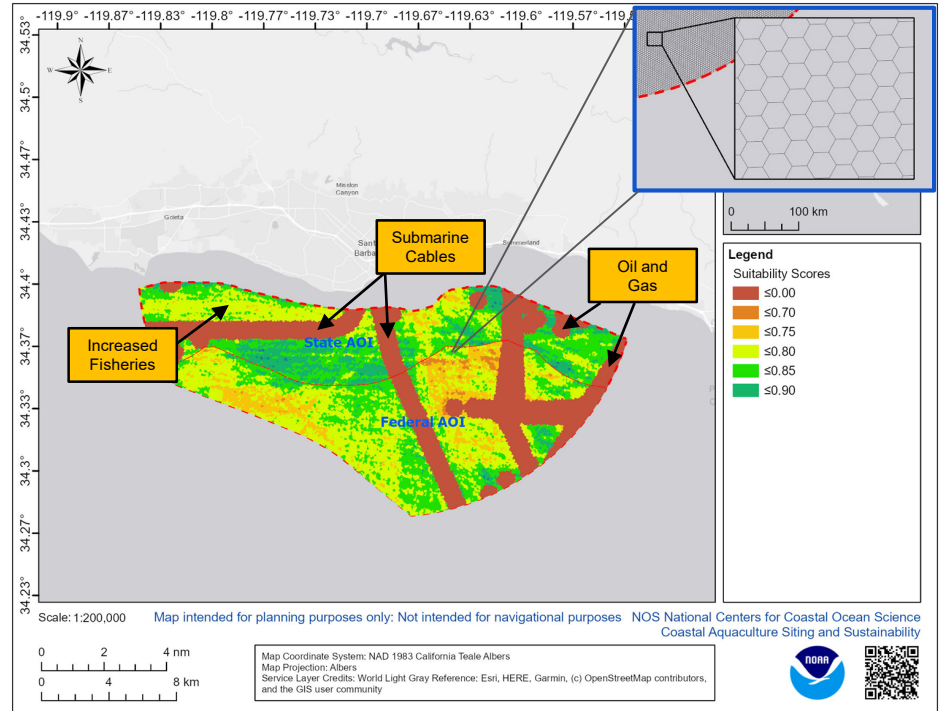




# Suitability model

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 fish.

Data Layer	Score
Hard Bottom Habitat	0
Marine Protected Areas & Preserves	0.5
Habitat Area of Particular Concern	0.5
Halibut Trawling	Continuous
Deep sea corals	0
Offshore Oil and Gas Leases	0
Oil and Gas Pipelines (500 m buffer)	0
Oil and Gas Wells (500 m buffer)	0
Shipwrecks & Obstructions (500 m buffer)	0
AIS Vessel Traffic	Continuous
Submarine Cables (500 m buffer)	0
Unexploded Ordnance FUDS**	0.5
Wastewater Discharge (500 m buffer)	0
...	...

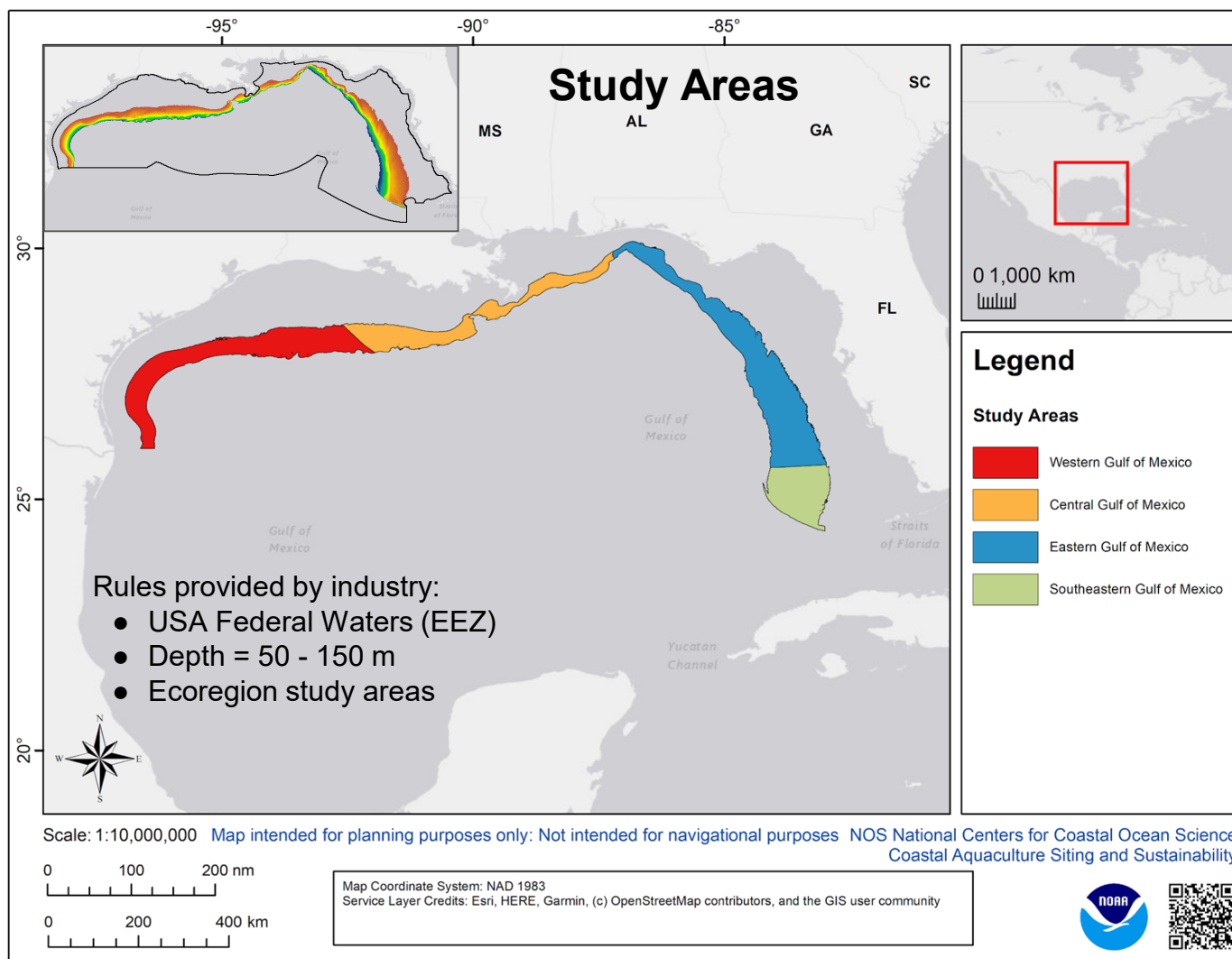


## Data scoring

0 = not compatible

0.5 = may not be compatible

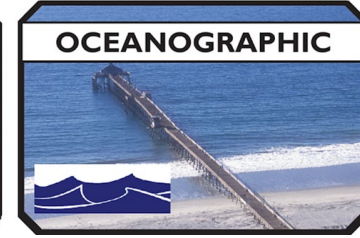




# Data Inventory Results

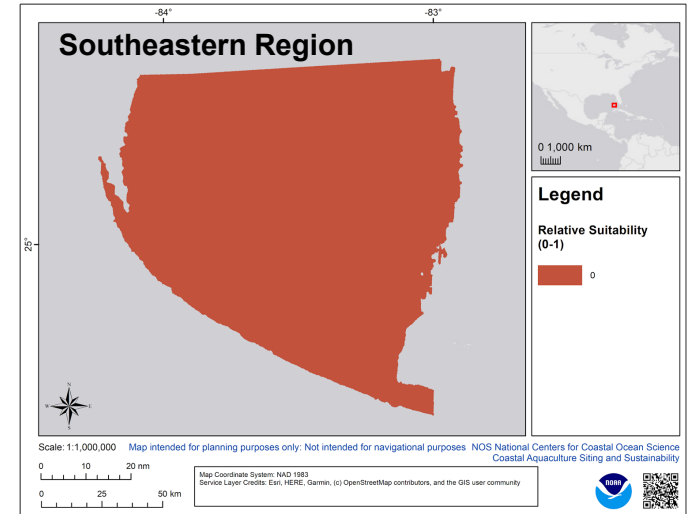
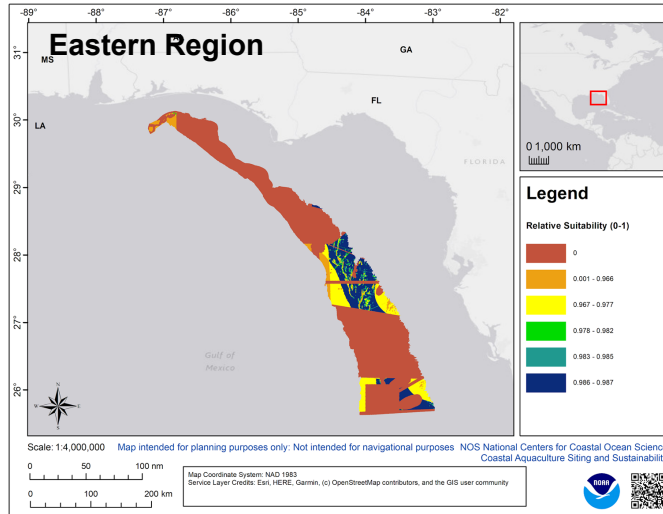
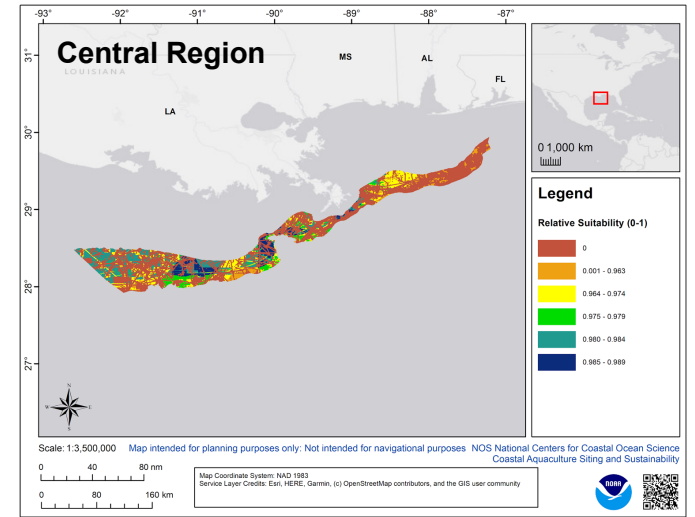
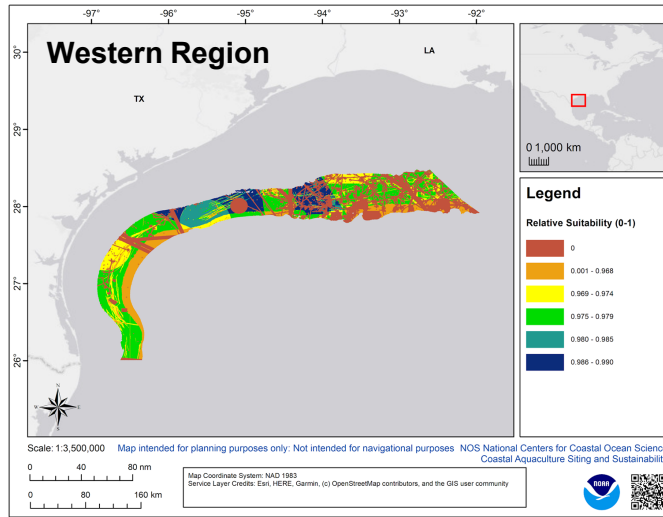
## Gulf of Mexico

Submodels	Model	Characterization	Total
National Security	41	12	53
Natural Resources	19	54	73
Industry, Navigation, and Transportation	23	35	58
Commercial Fishing and Aquaculture	7	4	11
<b>Total layers</b>	<b>90</b>	<b>105</b>	<b>195</b>



**Additional data will be included: boundaries, oceanography, weather, and social and cultural resources.**

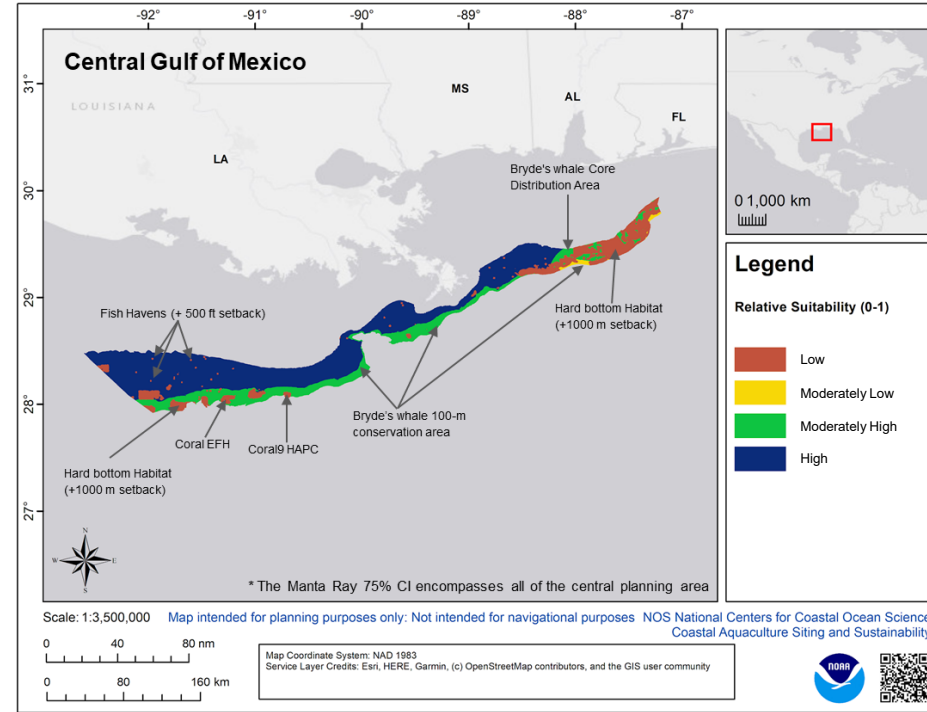
# Overall suitability (90 data layers)



# Natural Resources Submodel

## Central Gulf of Mexico

Dataset	#cells	Area in AOI (ac)	Percentage
Manta Ray Core Distribution Area	436,647	4,366,470	100
Bryde's Whale 100-m depth conservation area	97,586	975,860	22
Bryde's Whale Core Distribution Area	56,411	564,110	13
Hard bottom and coral reef predictive model (with 1000-m buffer)	56,686	566,860	13
Fish Havens (with 500-ft buffer)	15,540	155,400	4
Coral EFH	13,978	139,780	3
BOEM (No Activity Zone, 1000-m buffer)	3,285	32,850	1
Coral 9 HAPC Regulated areas	2,836	28,360	1
Coral 9 HAPC	2,521	25,210	1
Deep Sea Coral Observations (1985 - present)	1,995	19,950	< 1
Artificial reefs (with 500-ft buffer)	994	9,940	< 1

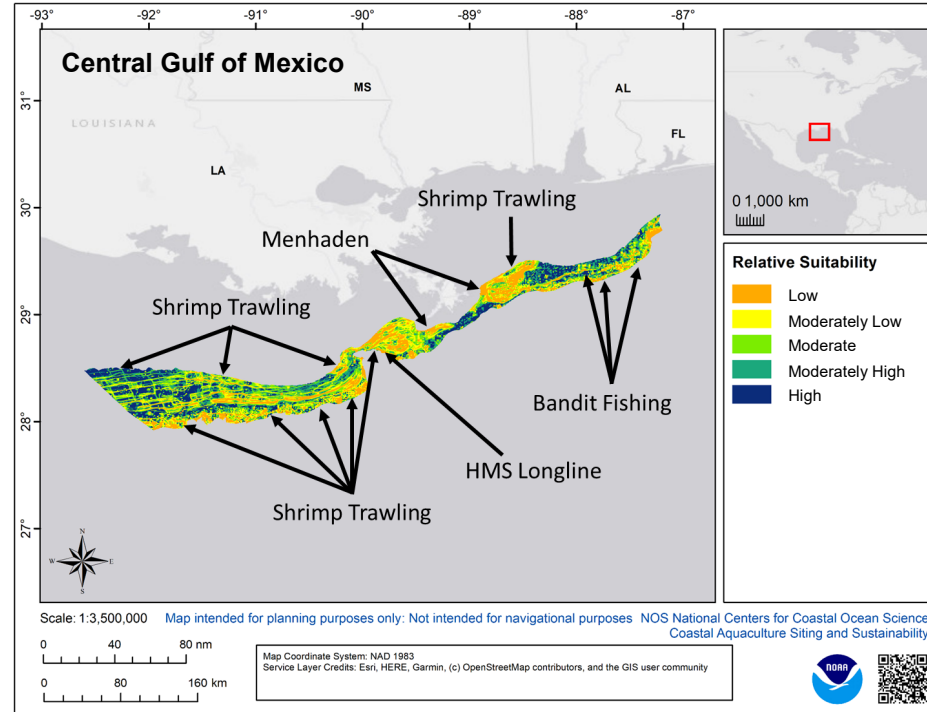


Total # of cells for Central Area = 436,647 (1,767,049 ha or 4,366,470 ac)

# Fishing and Aquaculture Submodel

## Central Gulf of Mexico

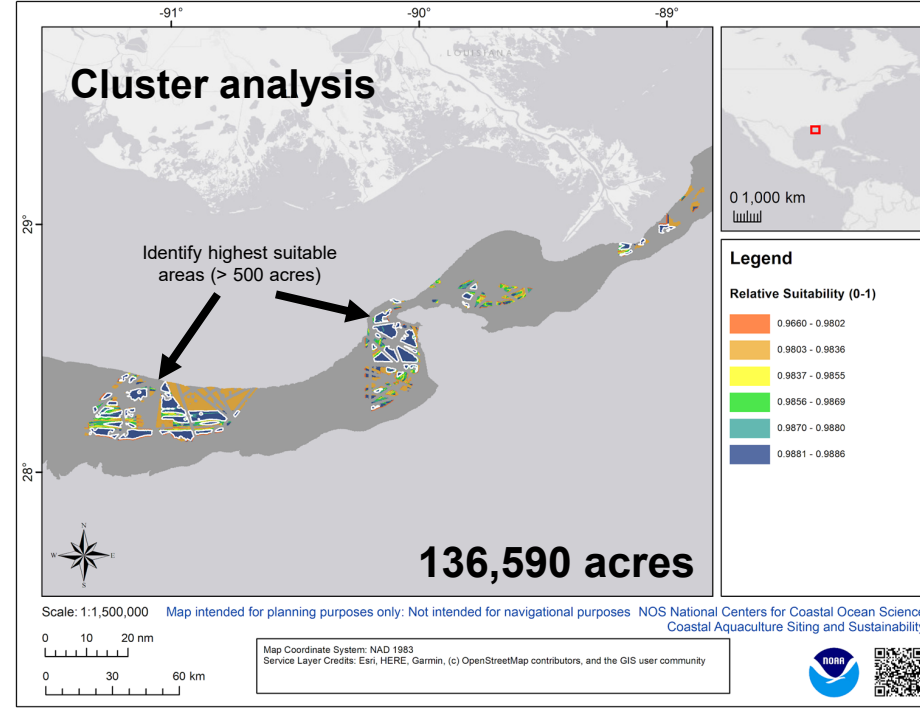
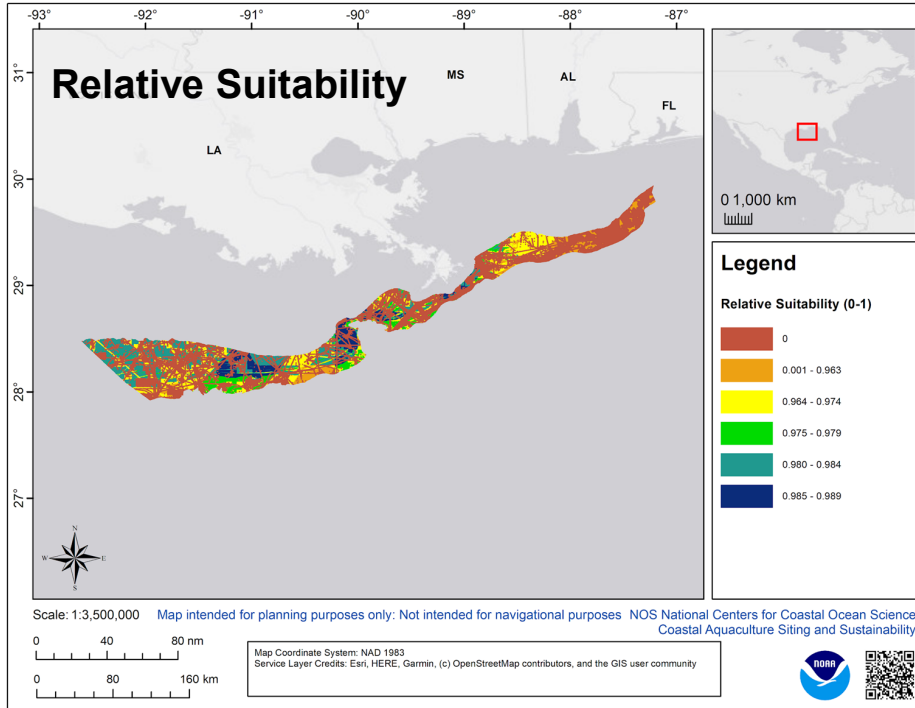
Dataset	#cells	Area in AOI (ac)	Percentage
Shrimp Trawling Electronic Logbook (2004 - 2019)	340,349	3,403,490	78
Bandit Reef Fish (2007 - 2019)	282,046	2,820,460	65
Longline Reef Fish Point Data (2007 - 2019)	134,037	1,340,370	31
SE Region Headboat Survey (2014 - 2020)	30,451	304,510	7
Menhaden Catch Records (2000 - 2016)	4,773	47,730	1
Highly Migratory Species Longline (1993 - 2019)	900	9,000	< 1



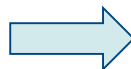
Total # of cells for Central Area = 436,647 (1,767,049 ha or 4,366,470 ac)



# Next Steps: Locate alternative locations

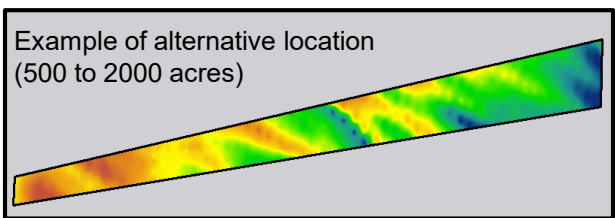


# Next Steps: Characterize alternative locations



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	1.66	2.31	1.90	2.84
AIS 2017 Tug/Tow vessel transits per 1 ha	0.24	0.11	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**



# Next Steps: Develop the atlas



## Additional Steps:

- Model vetting with stakeholders
- DOD Mission Compatibility Assessment
- Precision siting analysis
- Characterization of alternatives
- Atlas review and revision
- Atlas publication

# Thanks!



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# Request for Information

- Questions to inform the identification of the first two AOAs
  - Gulf of Mexico
  - Southern California
- Questions to inform locations for future AOAs, nationally
- **RFI can be found at [regulations.gov](https://www.regulations.gov) by searching for NOAA-NMFS-2020-0118**
- **5<sup>th</sup> Listening Session on Dec 3<sup>rd</sup> from 12-2pm eastern time**
  - Google: Aquaculture Opportunity Areas 5<sup>th</sup> Listening Session



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# Gulf of Mexico and Southern California

- In the Gulf of Mexico, we are looking at areas that:
  - Are within the depth range of 50 to 150 meters.
  - Do not have a specified maximum distance from shore.
- In Southern California, we are looking at areas that:
  - Are within the depth range of 10 to 150 meters.
  - Are a maximum distance of 25 nautical miles from shore.

Are there types of aquaculture that these areas may or may not support, or are there other water depths and maximum distances from shore that should be considered, and why?



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# Gulf of Mexico and Southern California

- Are there specific locations or habitats within Federal waters of the Gulf of Mexico or Southern California
  - that should be considered for AOAs? Are there specific locations that should be avoided?
  - where the presence of aquaculture gear may overlap with areas utilized by protected species (*e.g.*, large whales, sea turtles, dolphins, *etc.*)?
  - that should be avoided because of concerns about harmful algal blooms or impaired water quality?
- Is there ongoing environmental, economic, or social science research that would assist in the identification and implementation of AOAs in Federal waters of the Gulf of Mexico or Southern California?



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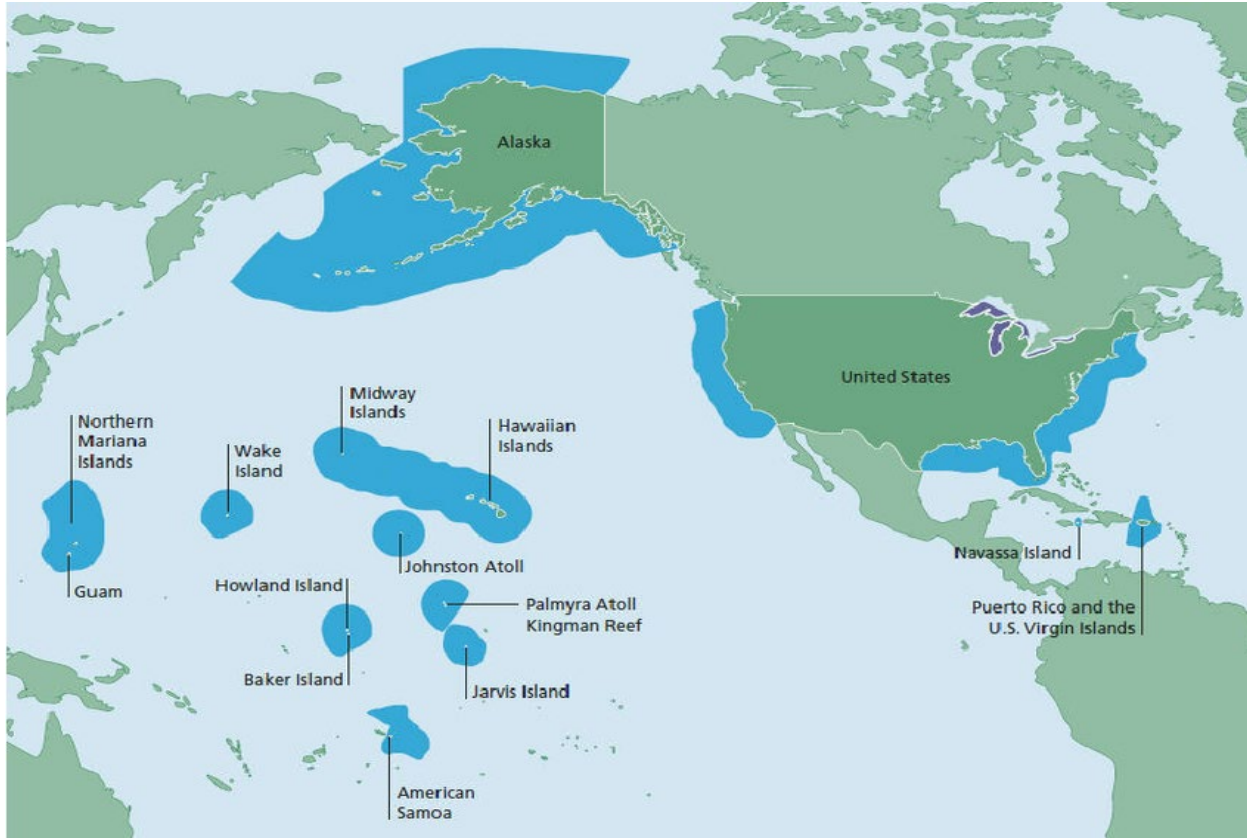
# Gulf of Mexico and Southern California

- Is there information that may be useful for AOA planning processes in Federal waters of the Gulf of Mexico and Southern California? This includes spatial data or GIS layers representing environmental and socioeconomic considerations, for:
  - Biophysical/oceanographic (wave climate, currents, bathymetry)
  - Natural resources (minerals, energy resources, fishes and aquatic organisms, protected species and habitats, coral reefs, biodiversity)
  - Social and cultural resources
  - Government boundaries
  - Industry (fishing, energy production, transportation, communication cables)
  - Military
  - Navigation



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# Regions for Future AOA's?



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# National: Future AOAs

- Are there specific locations within those regions that should be considered for future AOAs?
- What resource use conflicts should we consider as we identify future AOAs?
- Is there ongoing environmental, economic, or social science research that would assist in the identification and implementation of future AOAs?



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# National: Future AOAs

- Please provide information on siting requirements for aquaculture operations to inform spatial analysis for future AOAs:
  - Minimum and maximum depth needed to operate aquaculture farms.
  - Minimum and maximum current conditions that could impact farm operation.
  - Minimum and maximum wave climate that could impact farm operation.
  - Proximity to shore.
- If states express interest, should we also consider state waters as areas for future AOAs?



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# What's Next?

- Public comment ends December 22, 2020
- 5<sup>th</sup> Listening Session on Dec 3<sup>rd</sup> from 12-2pm eastern time
  - Google: Aquaculture Opportunity Areas 5<sup>th</sup> Listening Session
- Provide written comments at:
  - [regulations.gov](https://www.regulations.gov)
  - Search for NOAA-NMFS-2020-0118
  - Click the “Comment Now!” icon
  - Complete the required fields and enter or attach your comments



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