NOAA Fisheries
Aquaculture Opportunity Area Updates

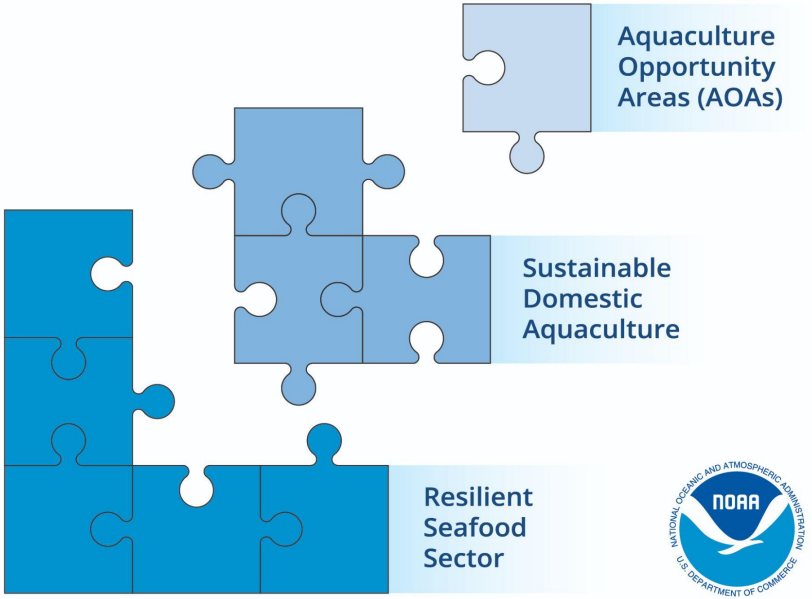
NOAA FISHERIES

Aquaculture Opportunity Areas and Expanding U.S. Seafood

Expanding U.S. Seafood

As a complement to our wild-capture seafood, expanding domestic aquaculture is critical for economic and environmental resilience.

fisheries.noaa.gov/aquaculture



NOAA FISHERIES

What have we done since May 7, 2020?

June 2020

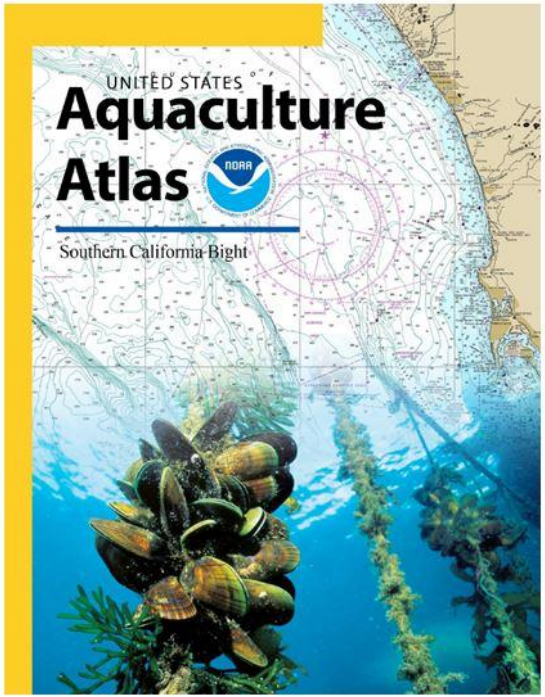
Now: Dec 2021

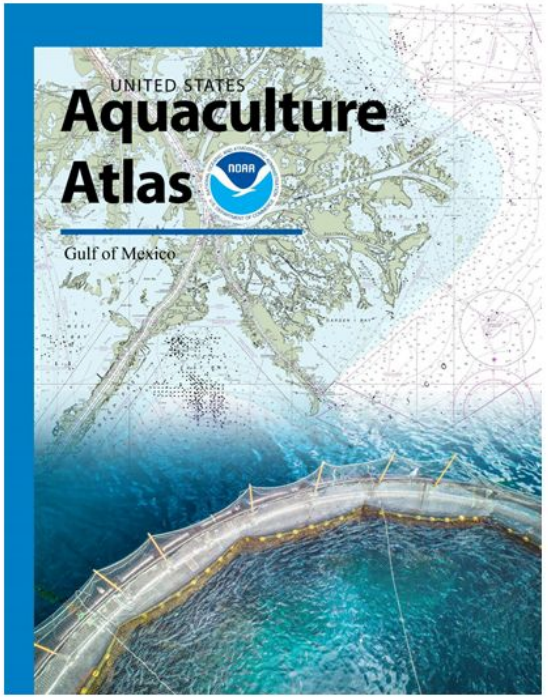
Coming soon!

Task:
Selected Gulf of Mexico and Southern CA as first two regions
Q&A, National and Regional rollouts; presentations & outreach
NCCOS data collection and modeling for siting analysis
RFI in October 2020; 5 listening sessions (3 national, 2 regional)
NCCOS draft Aquaculture Opportunity Atlas; peer review
Gulf of Mexico and Southern CA Atlases published (NEW!)
Consider selection of additional region(s), timing, resources
Combine public input, results of Atlas, and other information to identify NEPA alternatives
NOI to prepare PEIS, with preliminary AOA alternatives to consider
Begin stakeholder outreach and coordination in third region; RFI

NOAA FISHERIES

AOA Atlases - Results and Next Steps





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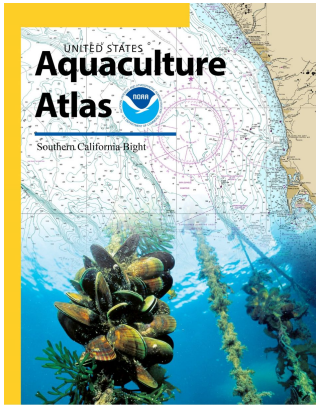
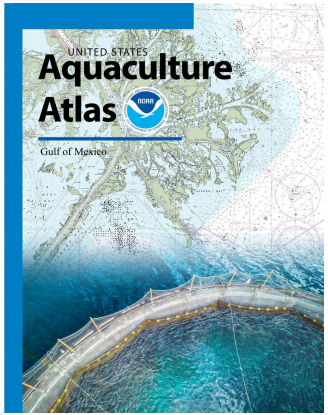
Aquaculture Opportunity Area Atlases: A Comprehensive Regional Marine Spatial Analysis

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





NOAA has built significant national spatial planning infrastructure!

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arpa·e CHANGING WHAT'S POSSIBLE

Marine Spatial Data

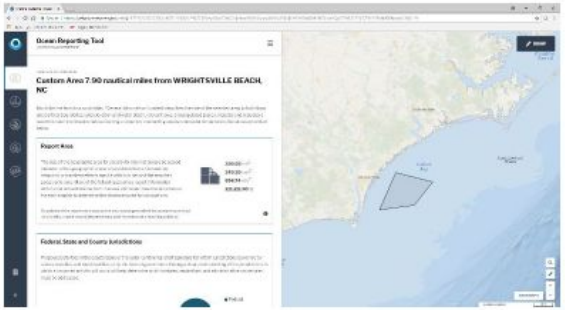
MarineCadastre.gov

An Ocean of Information

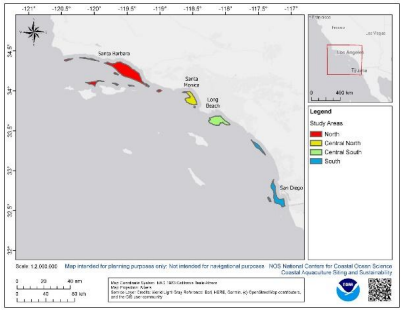
A joint BOEM and NOAA initiative providing authoritative data to meet the needs of the offshore energy and marine planning communities.

OceanReports

A BOEM/NOAA PARTNERSHIP



Aquaculture Areas



All Ocean Pioneers Will Benefit

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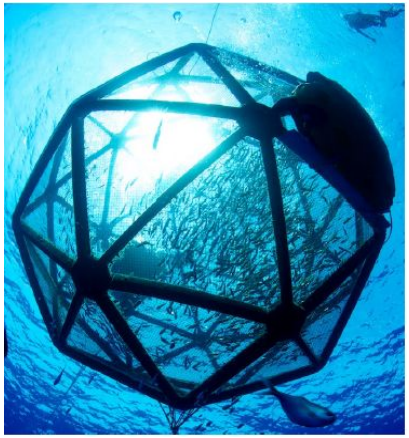
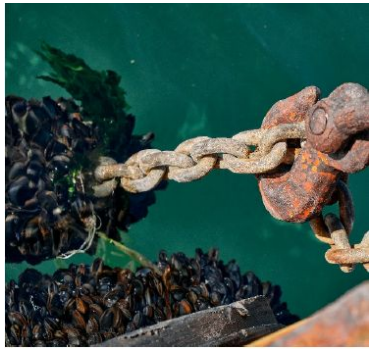
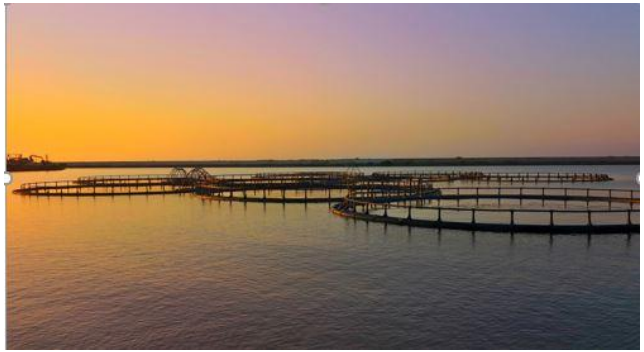
Atlases at a Glance

- Most comprehensive regional MSP ever conducted for U.S. federal waters
- More than 200 data layers utilized in each atlas
- Over 150 maps in each atlas that describe the ocean in new and unique ways
- Comprehensive stakeholder engagement
- Built new relationships and trust for NOAA science
- Created a framework for future AOAs and other ocean pioneering industries







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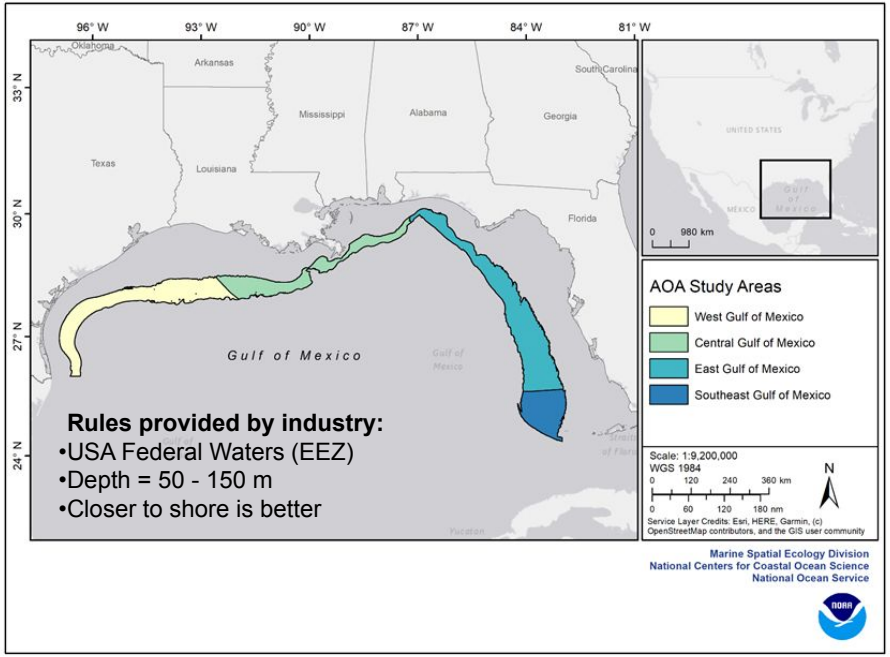
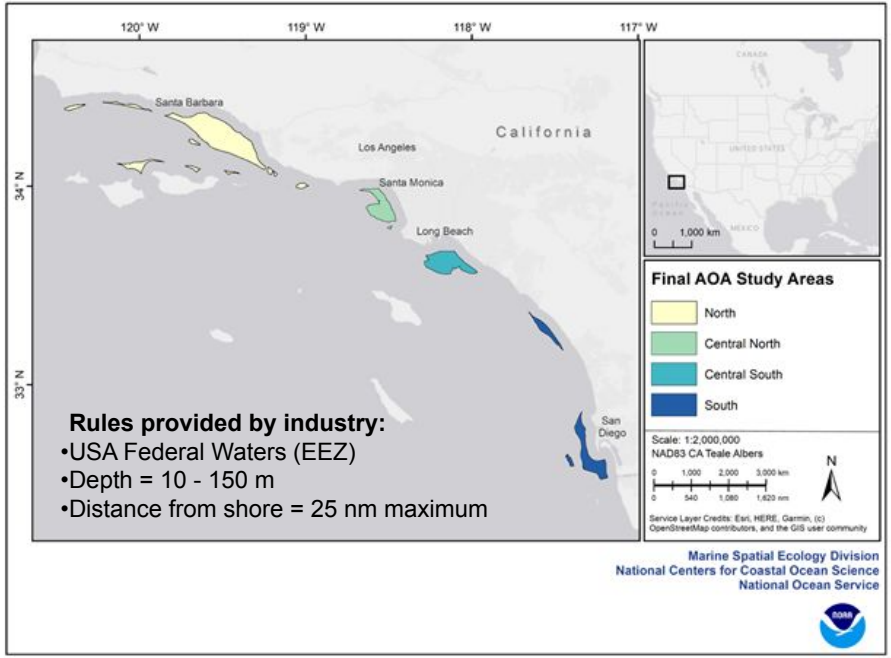
Study Areas

Gulf of Mexico



Southern California



All types of aquaculture including shellfish, finfish, and algae.

Stakeholder Engagement

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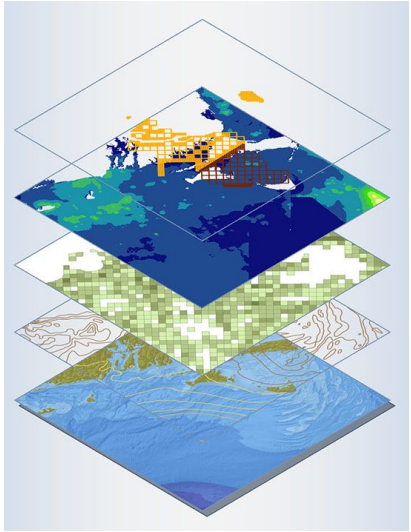
Stakeholder Meetings Gulf of Mexico and Southern California	Number	Attendees
Military	40	161
Natural Resources	157	787
Regional Planning Bodies	24	302
Industries	42	134
Navigation	12	45
Governance & Boundaries	66	256
Social & Cultural	14	50
Research Community	10	19
ENGOs	7	15
Human Health	23	79
Totals	395	1,848
Public Meetings	**Date**	
National AOA public listening session #1	11/5/20	
Southern CA AOA listening session	11/12/20	
Gulf of Mexico listening session	11/17/20	
National AOA public listening session #2	11/19/20	
Gulf of Mexico listening session (fishing stakeholders)	12/3/20	

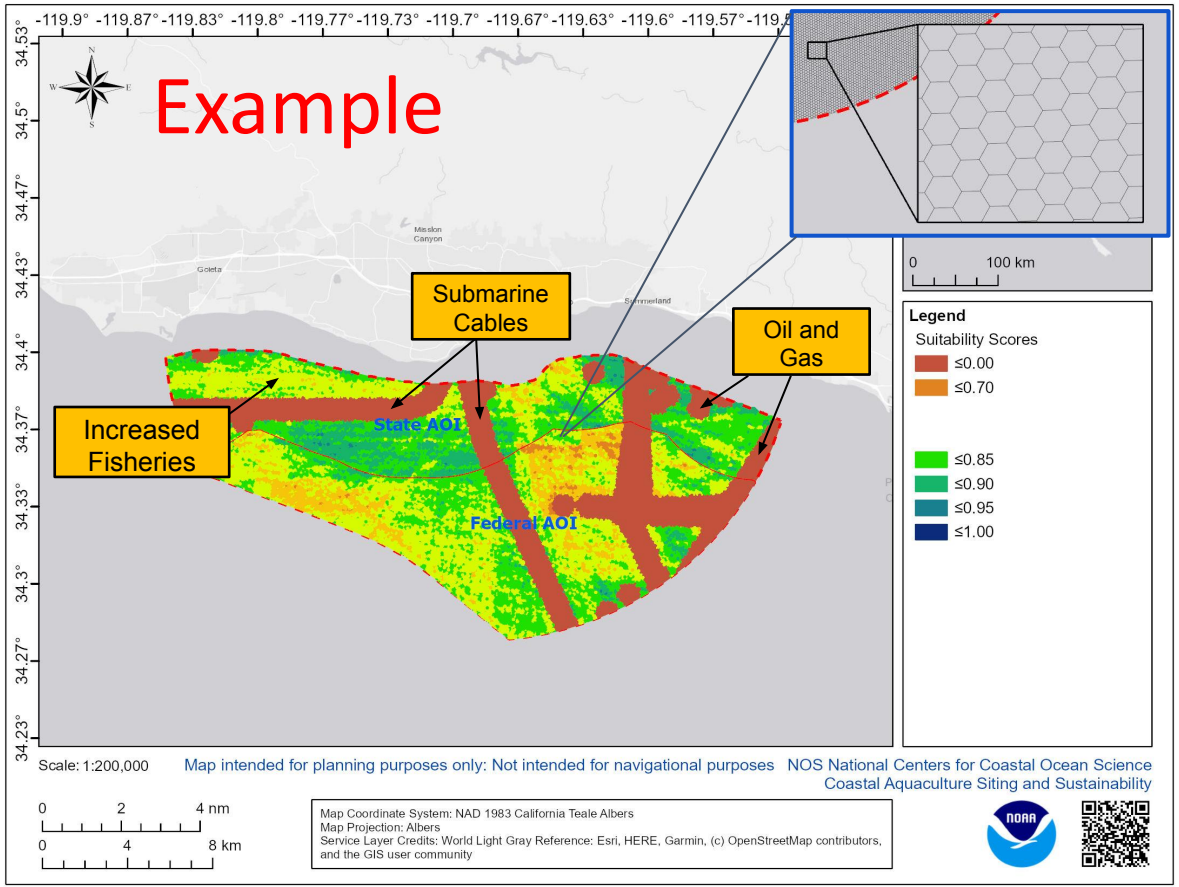
Data Inventory Results

Data Layers	SoCal	GoMex
National Security	35	54
Natural Resources	77	92
Industry, Navigation, and Transportation	42	60
Fishing and Aquaculture	50	14
Total Layers	**204**	**220**

Suitability Modeling

*We identify areas of **highest opportunity** for aquaculture. Areas that provide highest conservation and lowest conflict with other users.*





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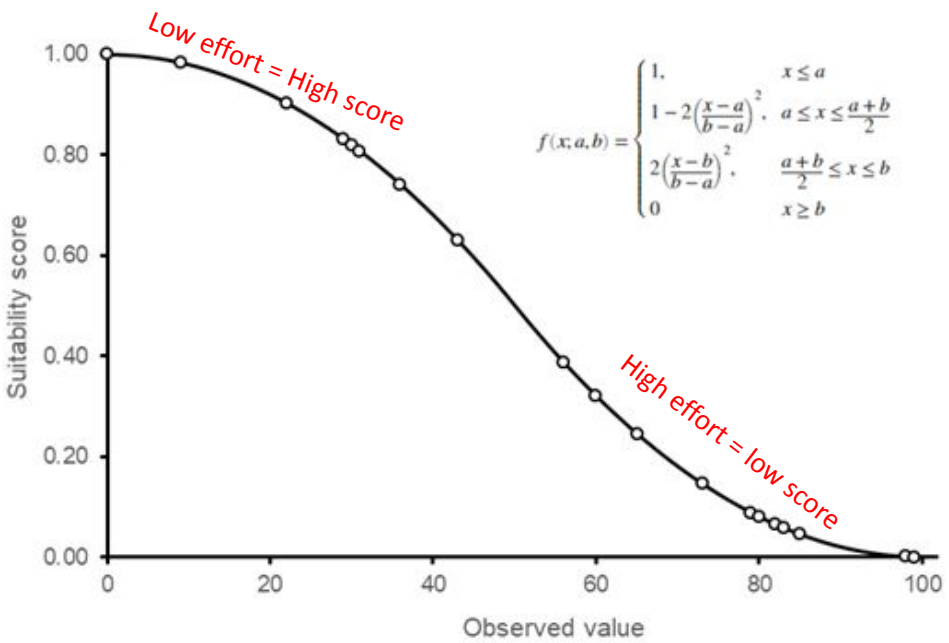
Categorical Data

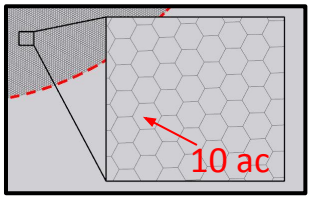
Data (Example)	Score
Hard Bottom Habitat	0
Marine Protected Areas & Preserves	0.5
Habitat Area of Particular Concern	0.5
Deep Sea Corals	0
Oil and Gas Pipelines (500 m buffer)	0
Oil and Gas Wells (500 m buffer)	0
Shipwrecks (500 m buffer)	0
Unexploded Ordnance	0.5
Wastewater Discharge (500 m buffer)	0

Continuous Data

E.g., Fishing data, Vessel traffic, Wave climate

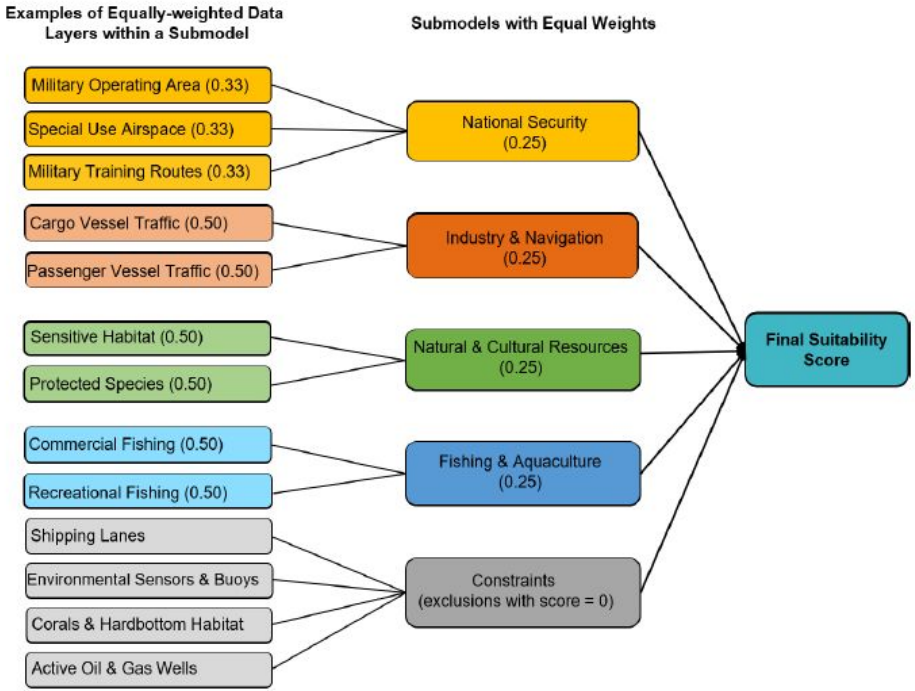


Cell scoring
Layer = not compatible = 0
Layer = may not be compatible = 0.5
No layer = 1

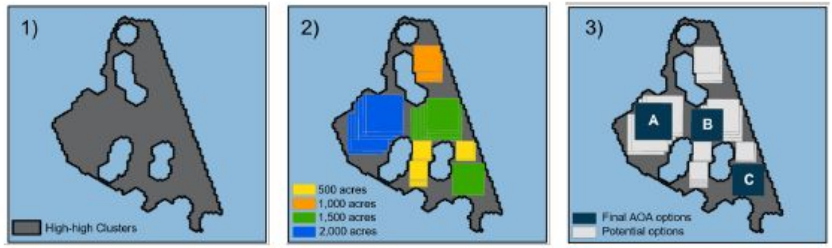


Modeling Process

Suitability Model



Cluster Analysis and Precision Siting Model



High scoring cluster | Max options | Top scoring options

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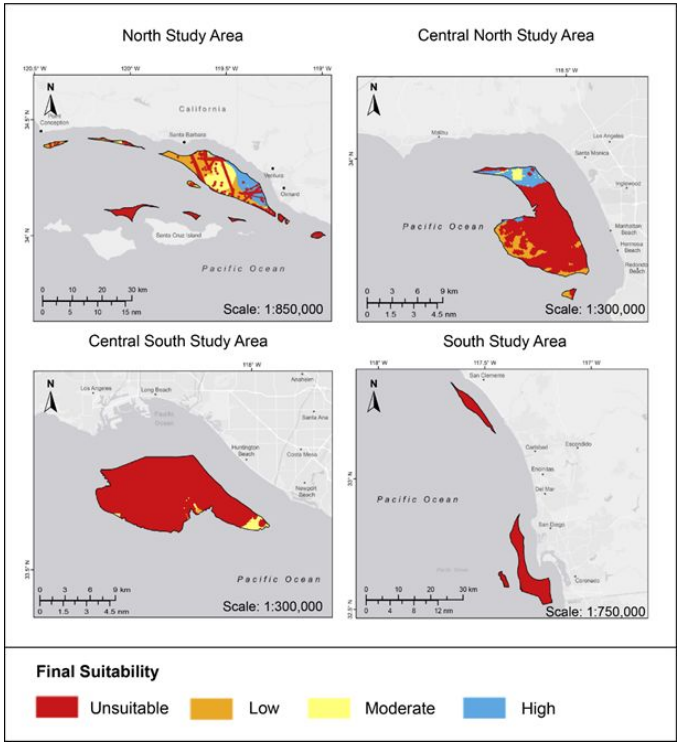
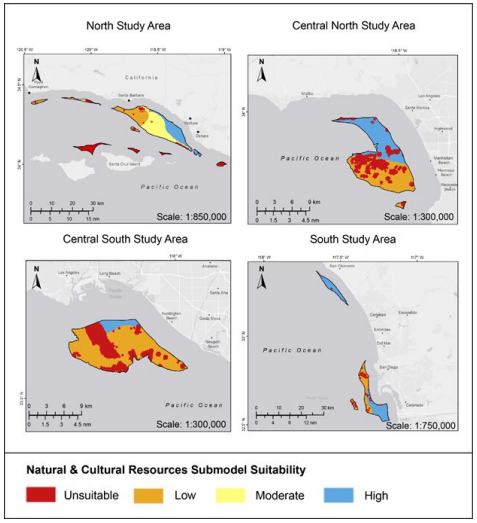
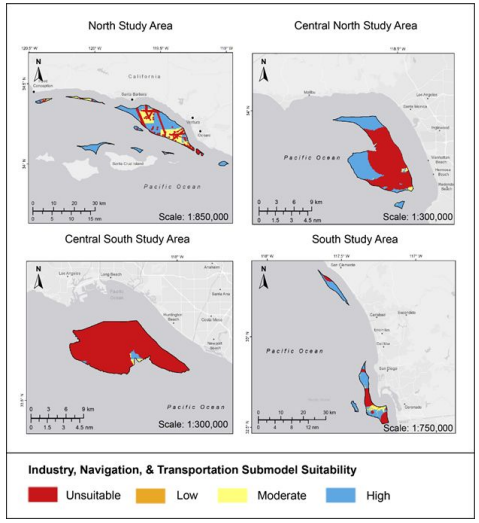
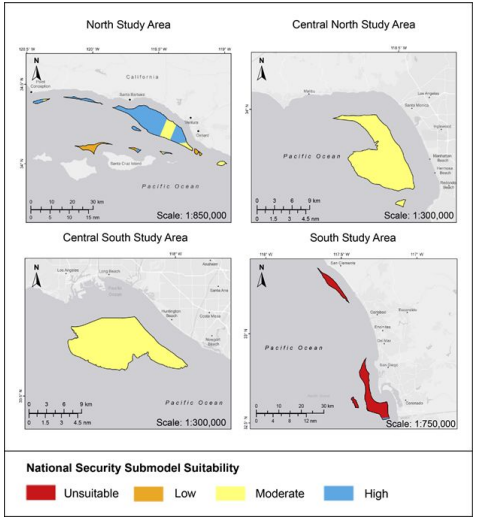
Southern California

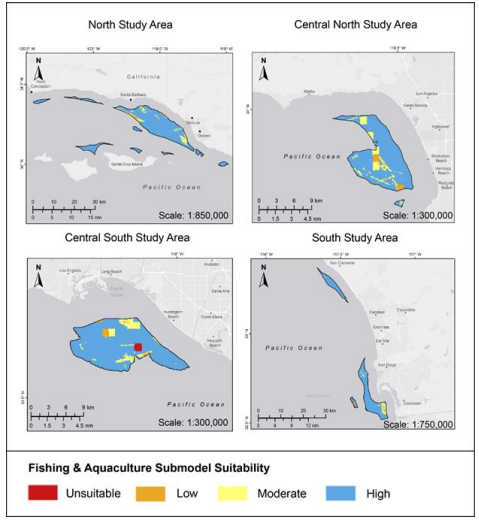
Final Suitability



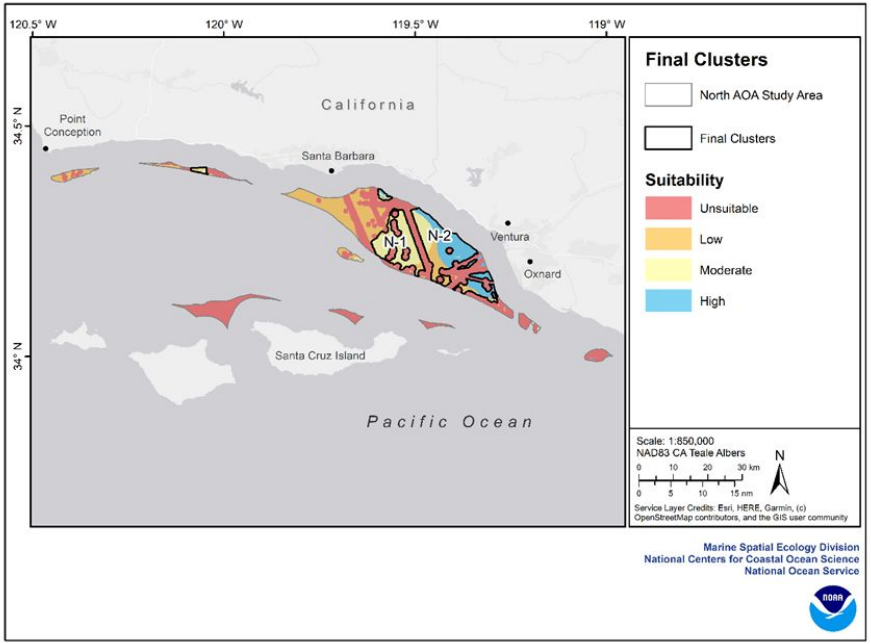


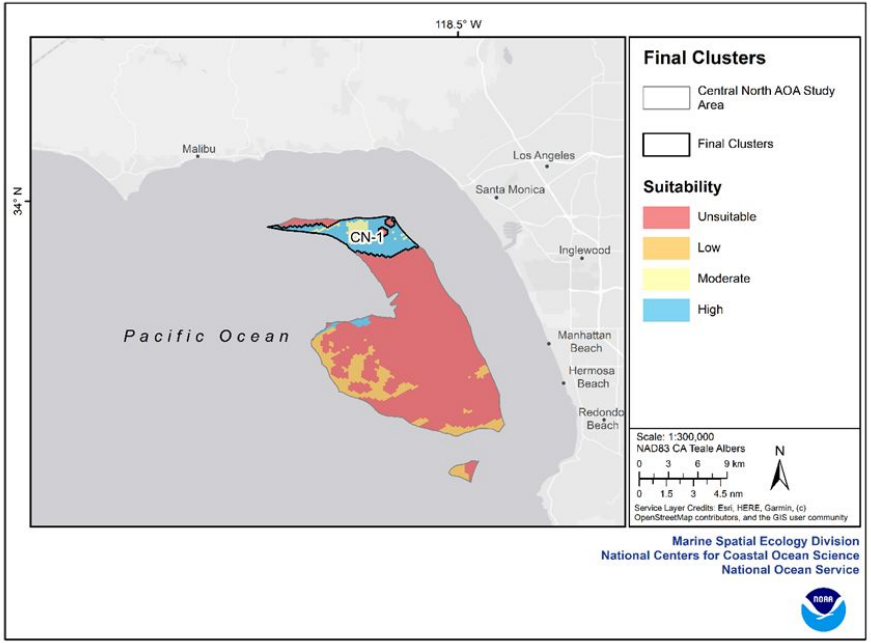






Cluster Analysis

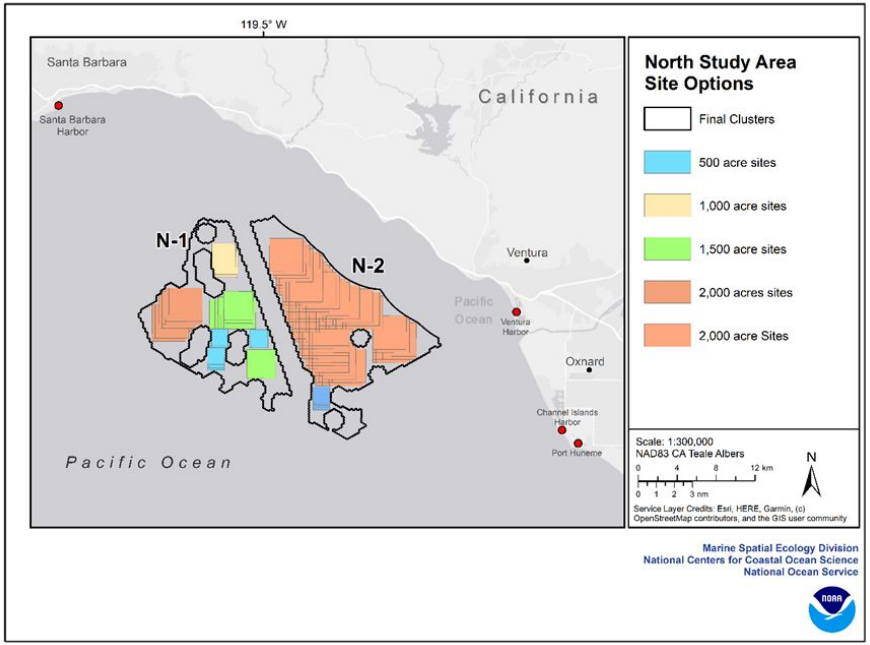


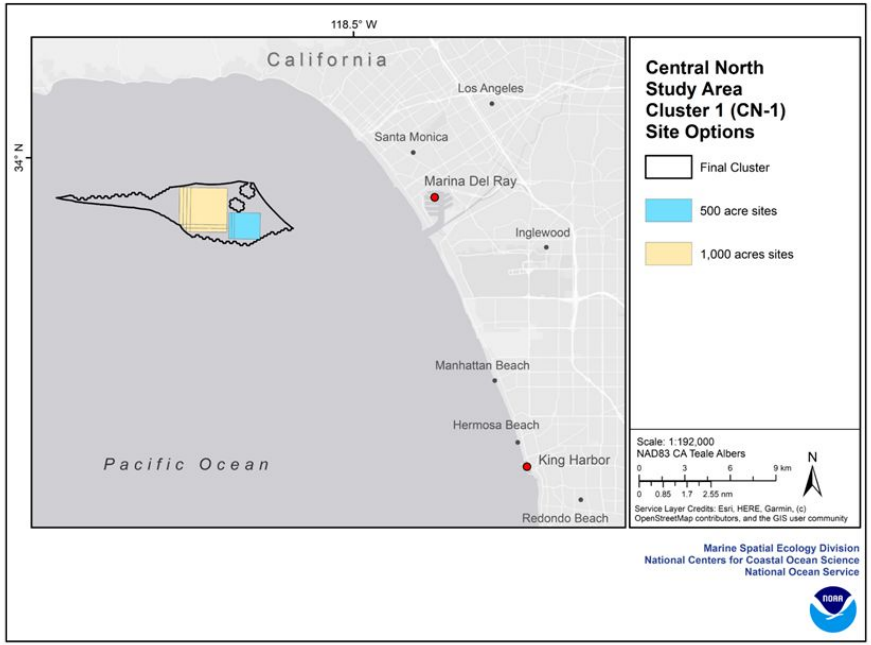


7 clusters totally 60,347 acres
Only 2 clusters large enough for AOAs

1 cluster totally 4,665 acres

Precision Siting Model



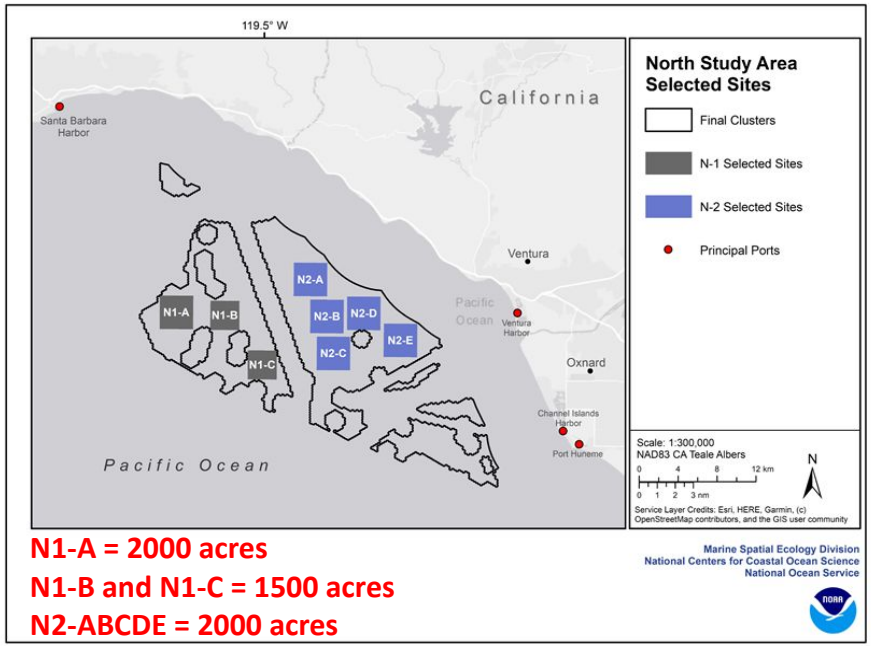


N-1 cluster is 21,173 acres = 38 AOA options
N-2 cluster is 11,679 acres = 246 AOA options

CN-1 cluster is 4,665 acres = 12 AOA options

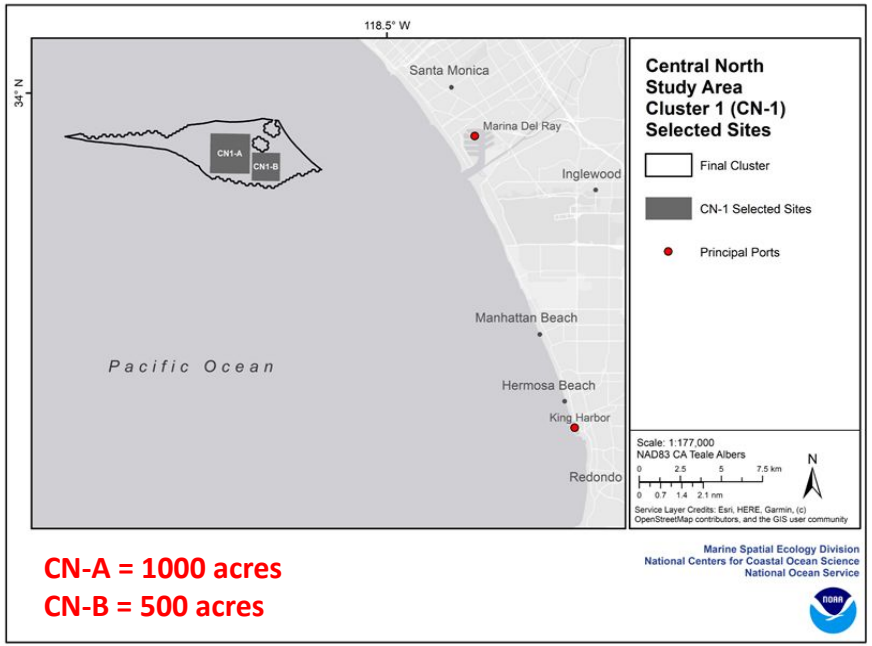
296 total AOA options evaluated!

Top 10 Ranked AOA Options



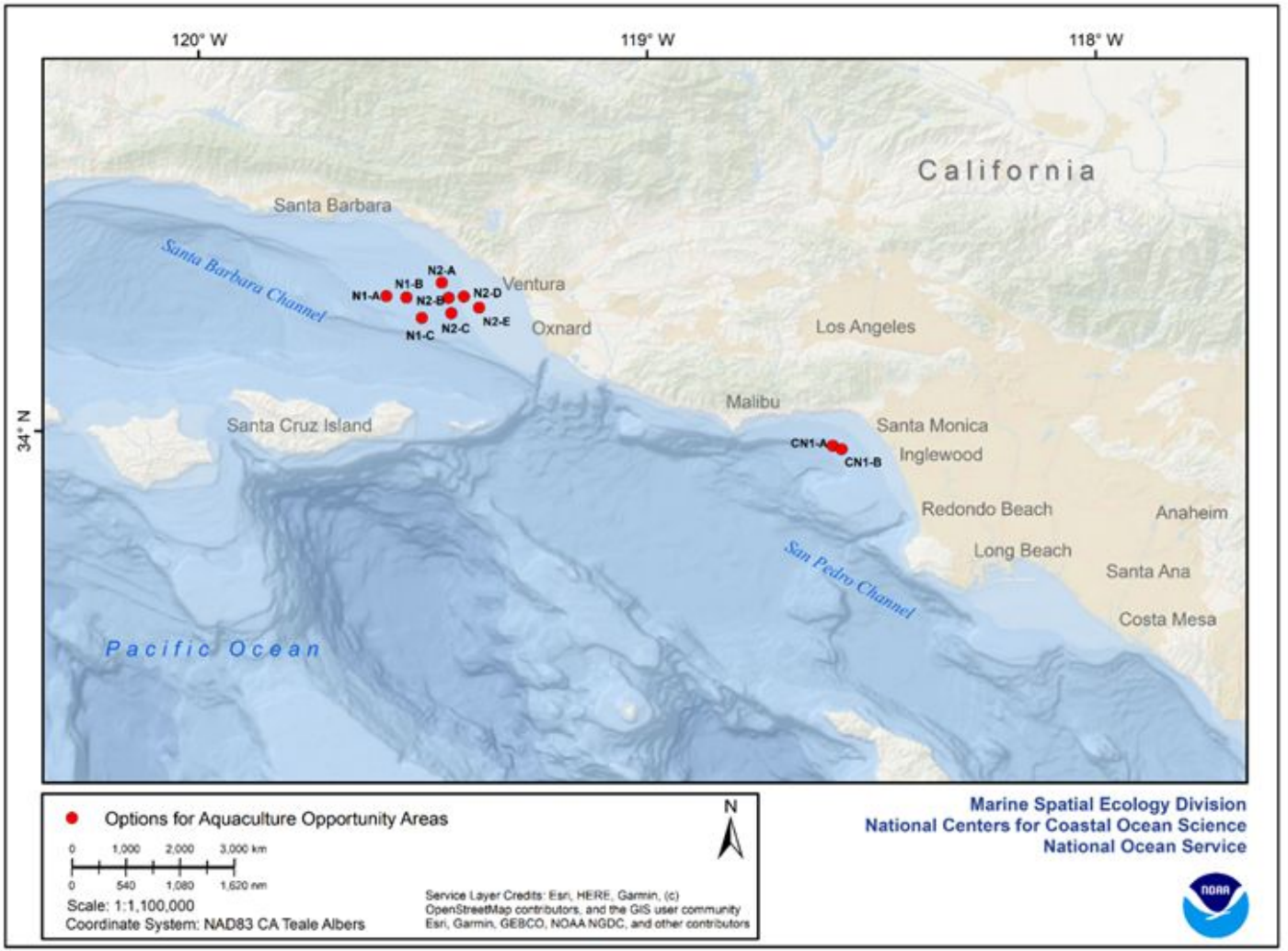
N1-A = 2000 acres
N1-B and N1-C = 1500 acres
N2-ABCDE = 2000 acres

4.6 - 19 nm from nearest harbors
Ventura Harbor, Santa Barbara Harbor, Oxnard



CN-A = 1000 acres
CN-B = 500 acres

5.3 - 11.3 nm from nearest harbors
Marina del Rey, King Harbor


120° W
119° W
118° W
34° N
California
Santa Barbara
Santa Barbara Channel
N2-A
N1-B
N1-A
N2-B
N2-D
N2-C
N2-E
N1-C
Ventura
Oxnard
Los Angeles
Malibu
Santa Cruz Island
Santa Monica
CN1-A
CN1-B
Inglewood
Redondo Beach
Anaheim
Long Beach
San Pedro Channel
Santa Ana
Costa Mesa
Pacific Ocean
Options for Aquaculture Opportunity Areas
0 1,000 2,000 3,000 km
0 540 1,080 1,620 nm
Scale: 1:1,100,000
Coordinate System: NAD83 CA Teale Albers
N
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
Marine Spatial Ecology Division
National Centers for Coastal Ocean Science
National Ocean Service
NOAA

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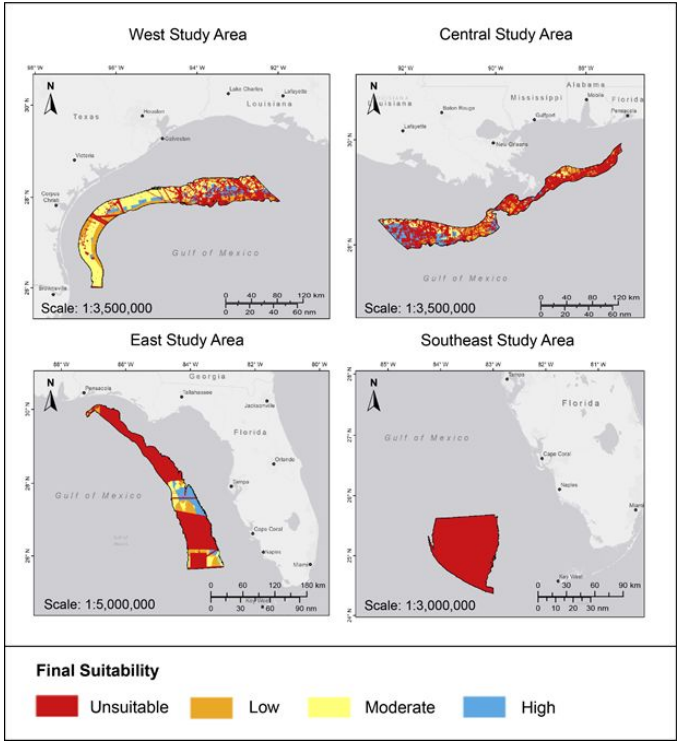
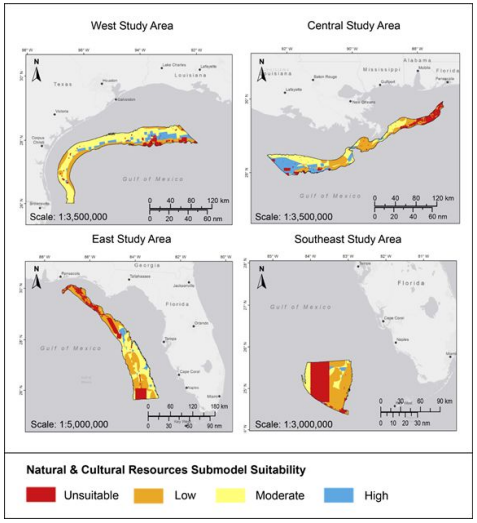
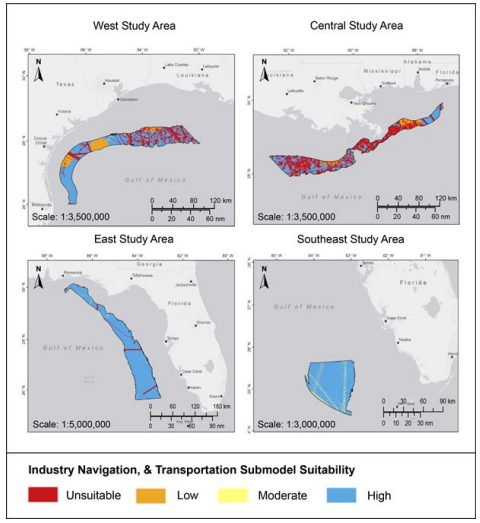
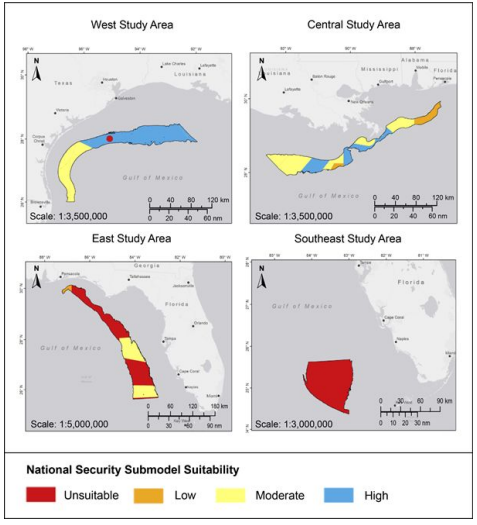
Gulf of Mexico

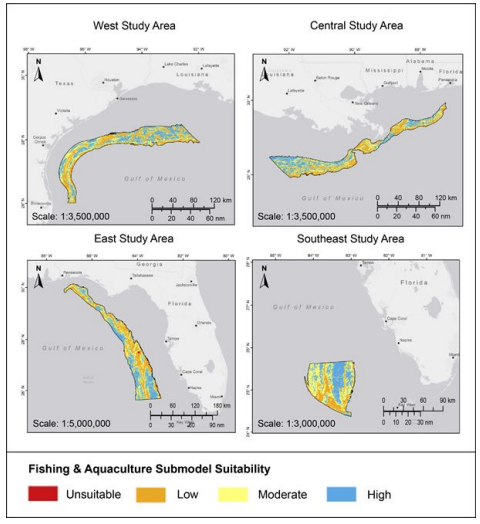
Final Suitability











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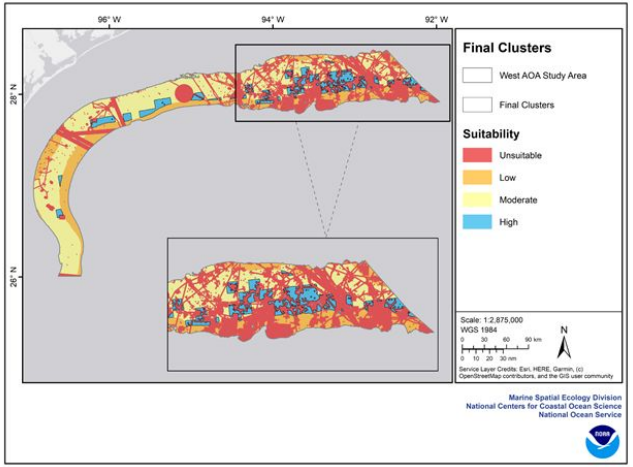
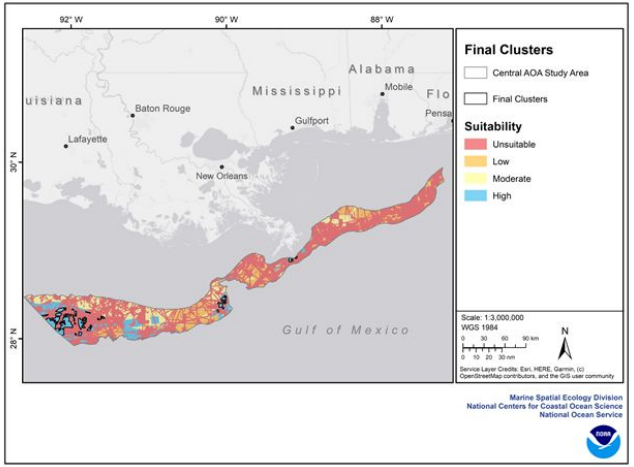
Cluster Analysis

West Region



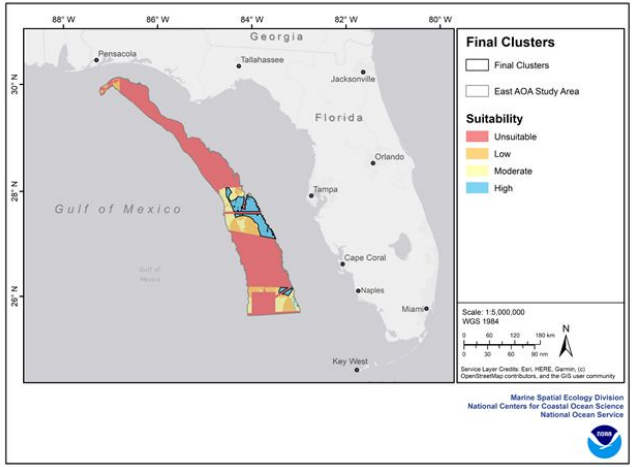
43 clusters
5,033 AOA options
339,755 acres

Central Region



13 clusters
1,056 AOA options
93,220 acres

East Region



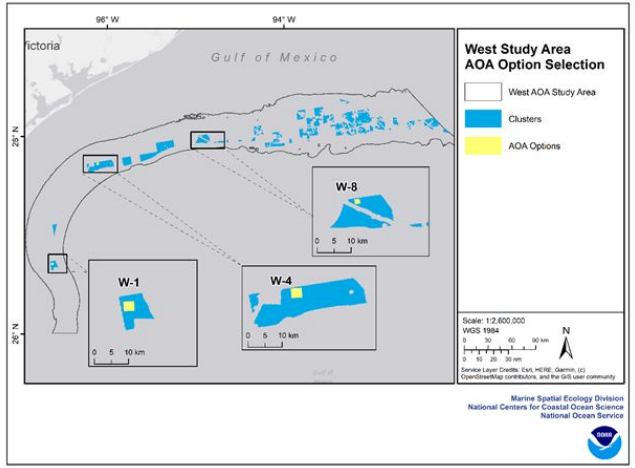
4 clusters
23,750 AOA options
722,900 acres

60 clusters
29,839 AOA Options Considered

Precision Siting Model

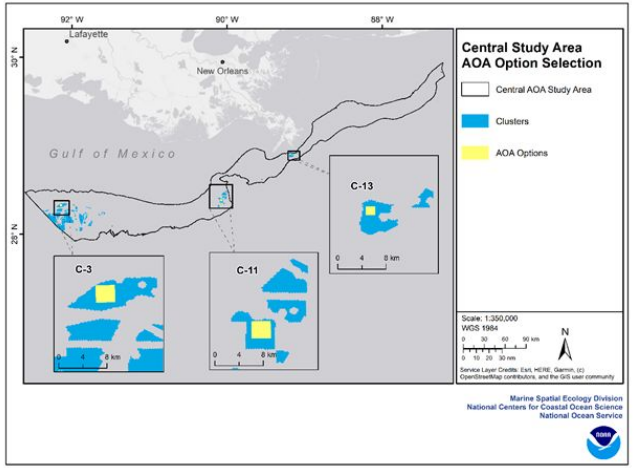
Top 9 AOA options identified
A 30-nm dispersion rule applied to avoid overlap
13,500 acres

West Region



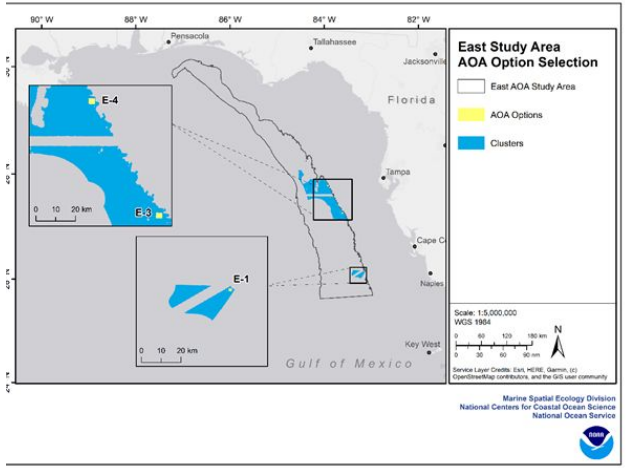
Site	Size (acres)	Depth Average (m)	Closest Inlet (nm)
W-1	2,000	91	35
W-4	2,000	84	42
W-8	500	81	58

Central Region

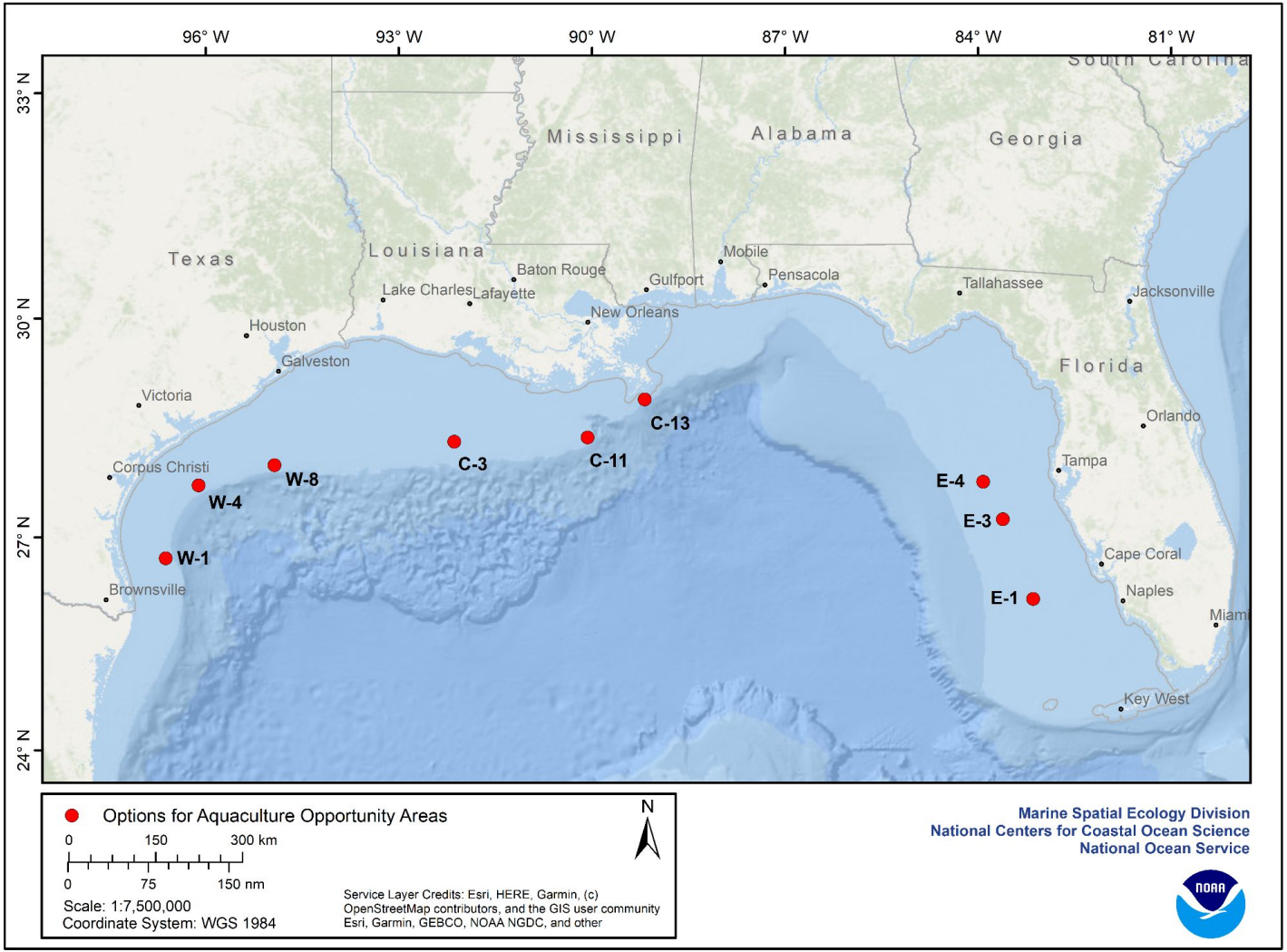


Site	Size (acres)	Depth Average (m)	Closest Inlet (nm)
C-3	2,000	61	72
C-11	2,000	82	41
C-13	500	62	5

East Region



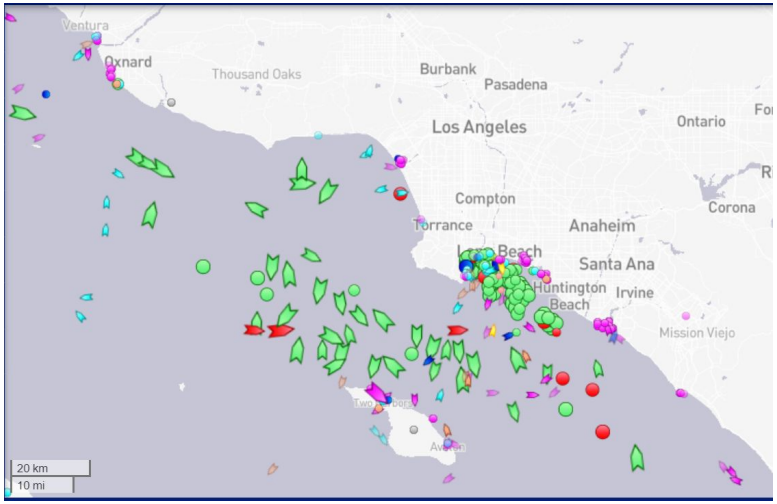
Site	Size (acres)	Depth Average (m)	Closest Inlet (nm)
E-4	2,000	51	58
E-3	2,000	51	48
E-1	500	51	56


96° W
93° W
90° W
87° W
84° W
81° W
33° N
30° N
27° N
24° N
Mississippi
Alabama
Georgia
South Carolina
Texas
Louisiana
Florida
Mobile
Baton Rouge
Gulfport
Pensacola
Tallahassee
Jacksonville
Lake Charles
Lafayette
New Orleans
Houston
Galveston
Victoria
Corpus Christi
Brownsville
Orlando
Tampa
Cape Coral
Naples
Miami
Key West
C-13
C-3
C-11
W-8
W-4
W-1
E-4
E-3
E-1
Options for Aquaculture Opportunity Areas
0 150 300 km
0 75 150 nm
Scale: 1:7,500,000
Coordinate System: WGS 1984
N
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Esri, Garmin, GEBCO, NOAA NGDC, and other
Marine Spatial Ecology Division
National Centers for Coastal Ocean Science
National Ocean Service
NOAA

Atlas Story - Ship Parking Lots

A record number of cargo ships are stuck outside LA. What's happening?

Port complex of Los Angeles and Long Beach, already the busiest in the US, has seen major traffic this week as imports boom



What we learned….

- Overflow parking lots for ships may not be charted!
- Covid related supply chain backup issues
- Worked with NOAA Office of Coast Survey to chart
- Incorporated buffer areas in AOA analyses

Atlas Story - Fishing Data

- Deep collaboration with NMFS Sustainable Fisheries, Highly Migratory Species, Fishery Management Councils, State Agencies, Industry
- Assessed relative suitability based on fishing effort
- California model included 23 fisheries; 3 aquaculture operations
- Gulf of Mexico model included 6 fisheries; 1 aquaculture operation

"...we found that the analytical approach to spatial planning applied by the National Ocean Service (NOS) in that AOA initiative to be the most useful tool for supporting this critical decision-making." - SSA

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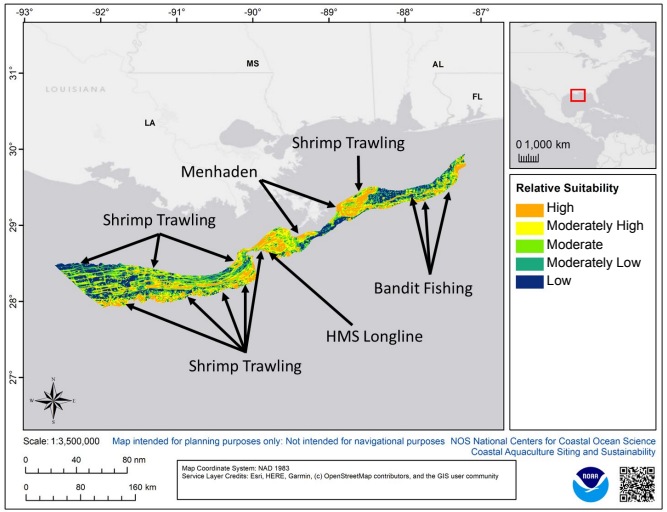
727-934-5090 Fax 727-934-5362

September 28, 2021

The Honorable Richard W. Spinrad
Administrator
National Oceanic and Atmospheric Administration
1401 Constitution Avenue, NW
Washington, D.C. 20230

Dear Administrator Spinrad,

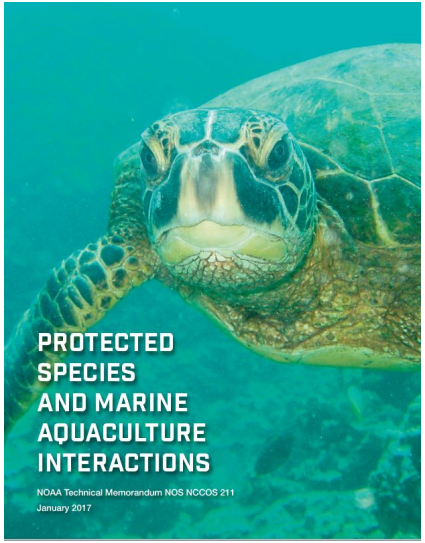
The Southern Shrimp Alliance (SSA) would like to draw your attention to what we believe is the critical role the National Oceanic and Atmospheric Administration (NOAA) must play in the development of offshore wind energy in the Gulf of Mexico (GOM) as part of the Biden Administration's commitment to advancing clean, renewable energy in the United States.

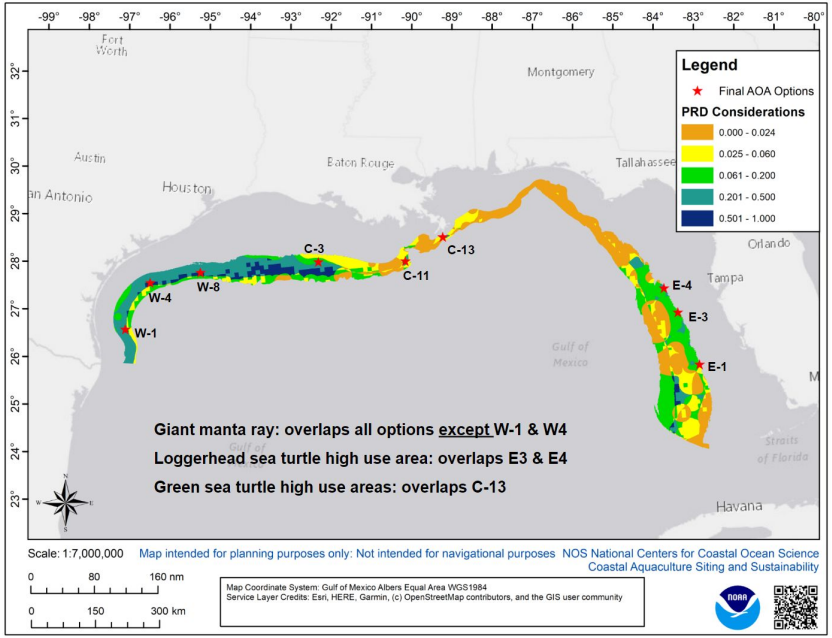


SEAFOOD HARVESTERS OF AMERICA

Atlas Story - Protected Resources

- Developed novel scoring approach based on status and trends
- California model included 3 large whale species
- Gulf of Mexico included 8 species (whales, turtles, fish)





Status	Trend	Score	Converted scores for model
Endangered	declining, small population[2] or both	9	0.10
Endangered	stable or unknown	8	0.20
Endangered	increasing	7	0.30
Threatened	Declining or unknown	6	0.40
Threatened	stable or increasing	5	0.50
Strategic MMPA Stock	declining or unknown	3	0.60
MMPA Stock	small population	2	0.70
MMPA Stock	large population	1	0.80

Thanks!


NOAA OCEAN SERVICE
National Centers for Coastal Ocean Science
Our Aquaculture Science
• Coastal planning
• Environmental interact
• Ecosystem services
Ask us about:
• OceanReports
• National AquaMapper
• Spatial analyses
• Environmental modeling
• Wave modeling
• Entanglement simulators
• Coastal Planning Portal
National Centers for Coastal Ocean Science
National Ocean Service
NOAA AQUACULTURE
Science, Service, and Stewardship
National Marine Fisheries Service
National Ocean Service
Sea Grant

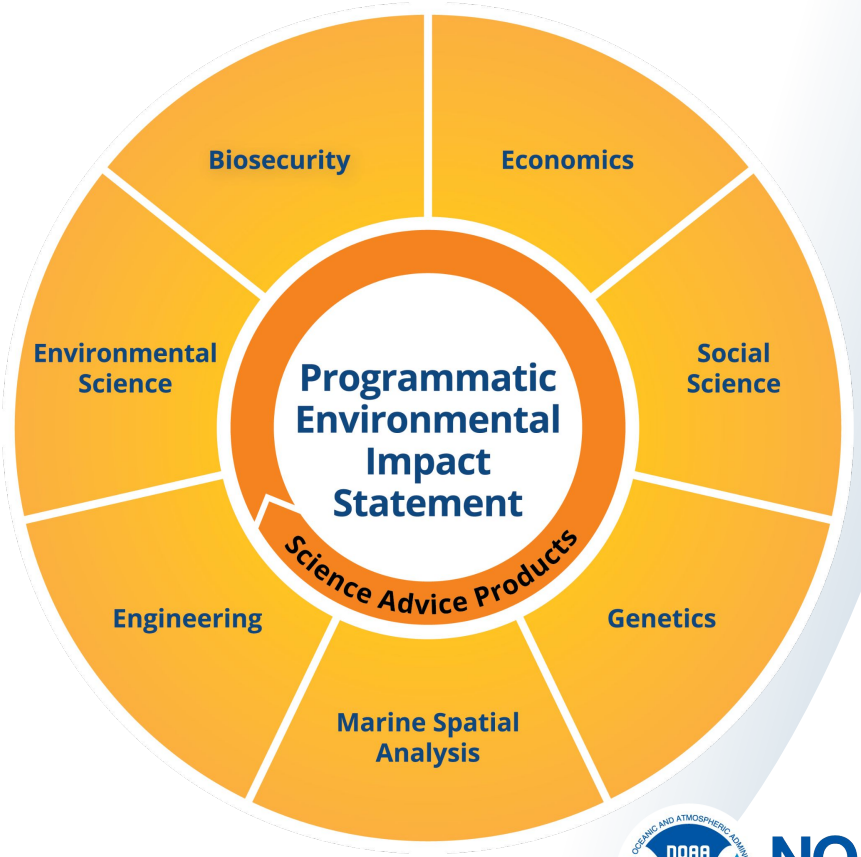
Round 1 Next Step:
AOA Programmatic Environmental Impact Assessment (PEIS)

- Goal: Facilitate permitting efficiency through upfront environmental review
- Regionally led, HQ coordinated
- Areas that will be considered in the PEIS will be based on sources including:
  - NCCOS Atlas
  - Protected Resources, Sustainable Fisheries, and Habitat Conservation coordination
  - Public, stakeholder, agency input
- Input opportunities: scoping and public comment period

NOAA FISHERIES

Multidisciplinary NEPA PEIS

Use the best available science in areas including those in our "NEPA flower," public and stakeholder input, and relevant regulations, laws, policies, to evaluate the beneficial and adverse impacts of siting aquaculture in a given area.



NOAA FISHERIES

Round 2:
Selecting AOA Region(s)

Interest in four areas:

- Western Pacific/Guam
- USVI and Puerto Rico
- Florida
- Alaska for shellfish and seaweed aquaculture (state and federal waters); Governor support and invitation into state waters

NOAA FISHERIES

Round 2:
Next Steps

- Determine resource availability, next steps, timeline
- Announce next region
- Begin stakeholder outreach and coordination
- Begin NCCOS data collection
- Work to prepare RFI for Round 2
- Plan for public comment period

nmfs.aquaculture.info@noaa.gov

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