

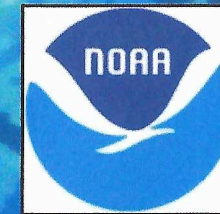
# Marine fish farm siting analysis

Lanzetta, D.<sup>1</sup>, Wickliffe, L.,<sup>2,3</sup> Jossart, J.<sup>2,3</sup>, Morris, Jr, J.A.,<sup>3</sup> and K.J. Rountos<sup>1</sup>

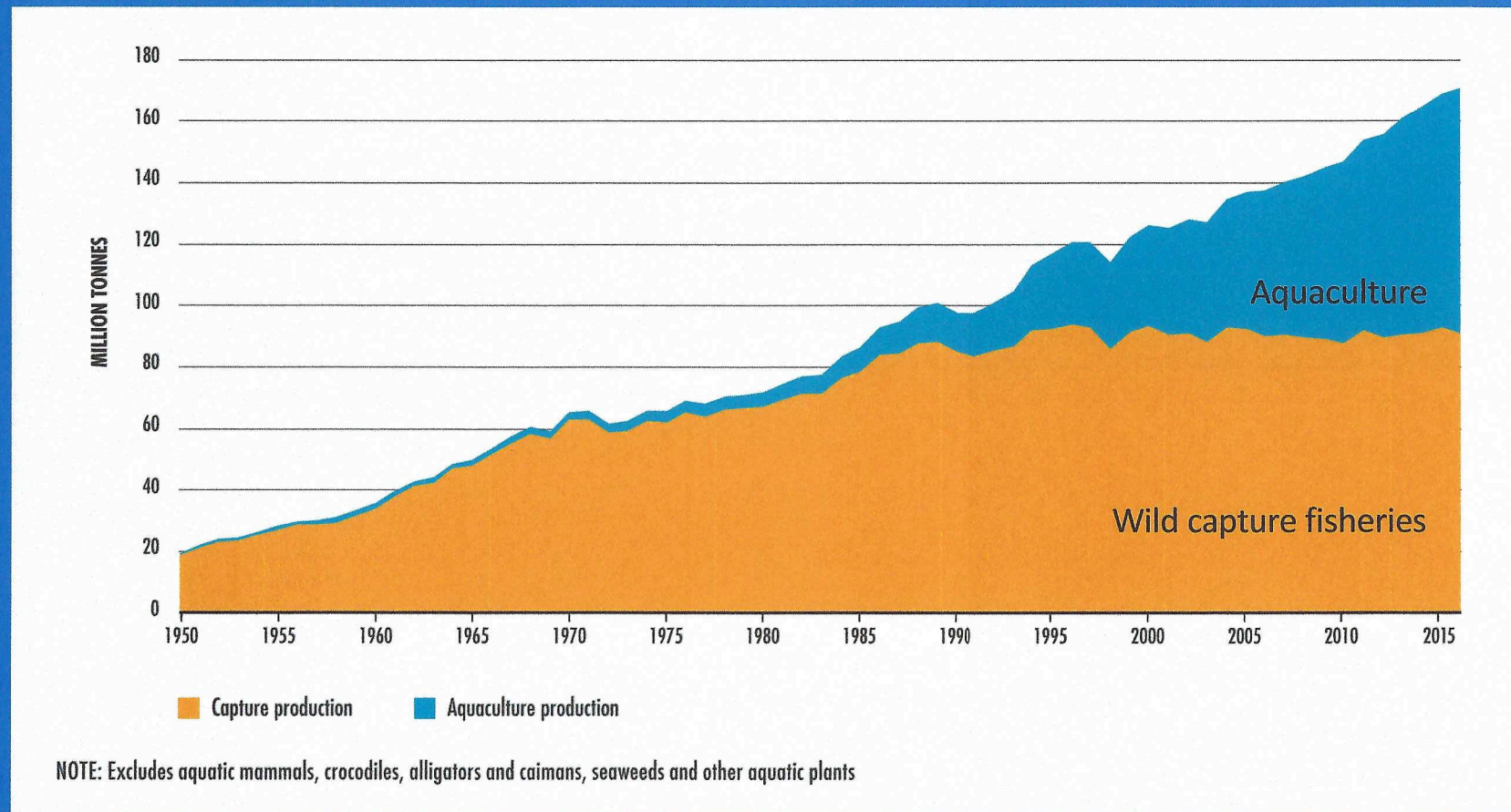
1 Manna Fish Farms, Inc.; 2 CSS, Inc. for NOAA NOS; 3 NOAA NOS NCCOS

**Donna Lanzetta:**

**Founder and CEO of Manna Fish Farms, Inc.**

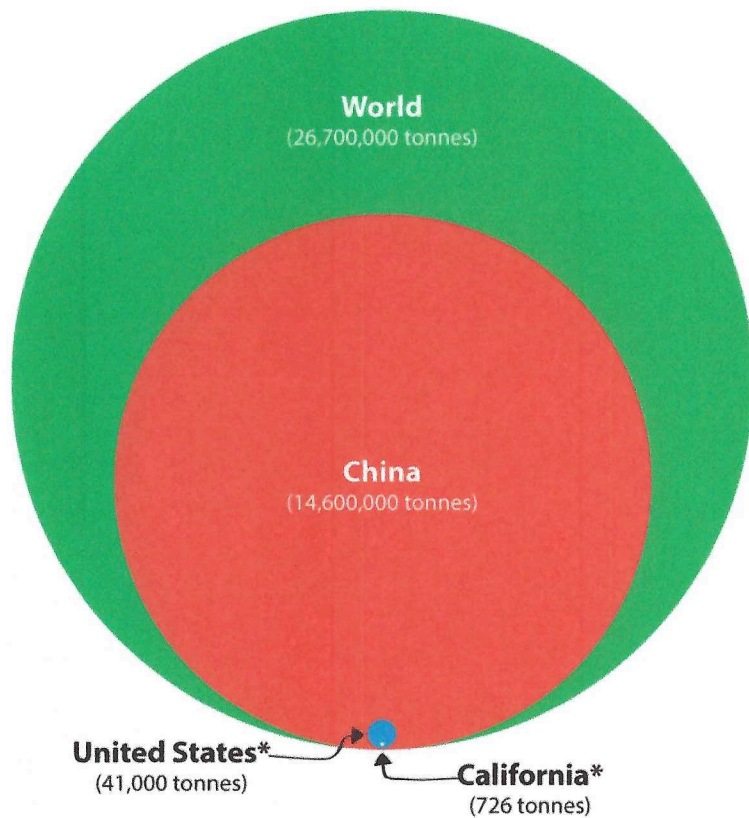


# We must Double Aquaculture by 2030!



FAO 2018, State of World Fisheries and Aquaculture

## Marine Aquaculture Production 2014<sup>1</sup>



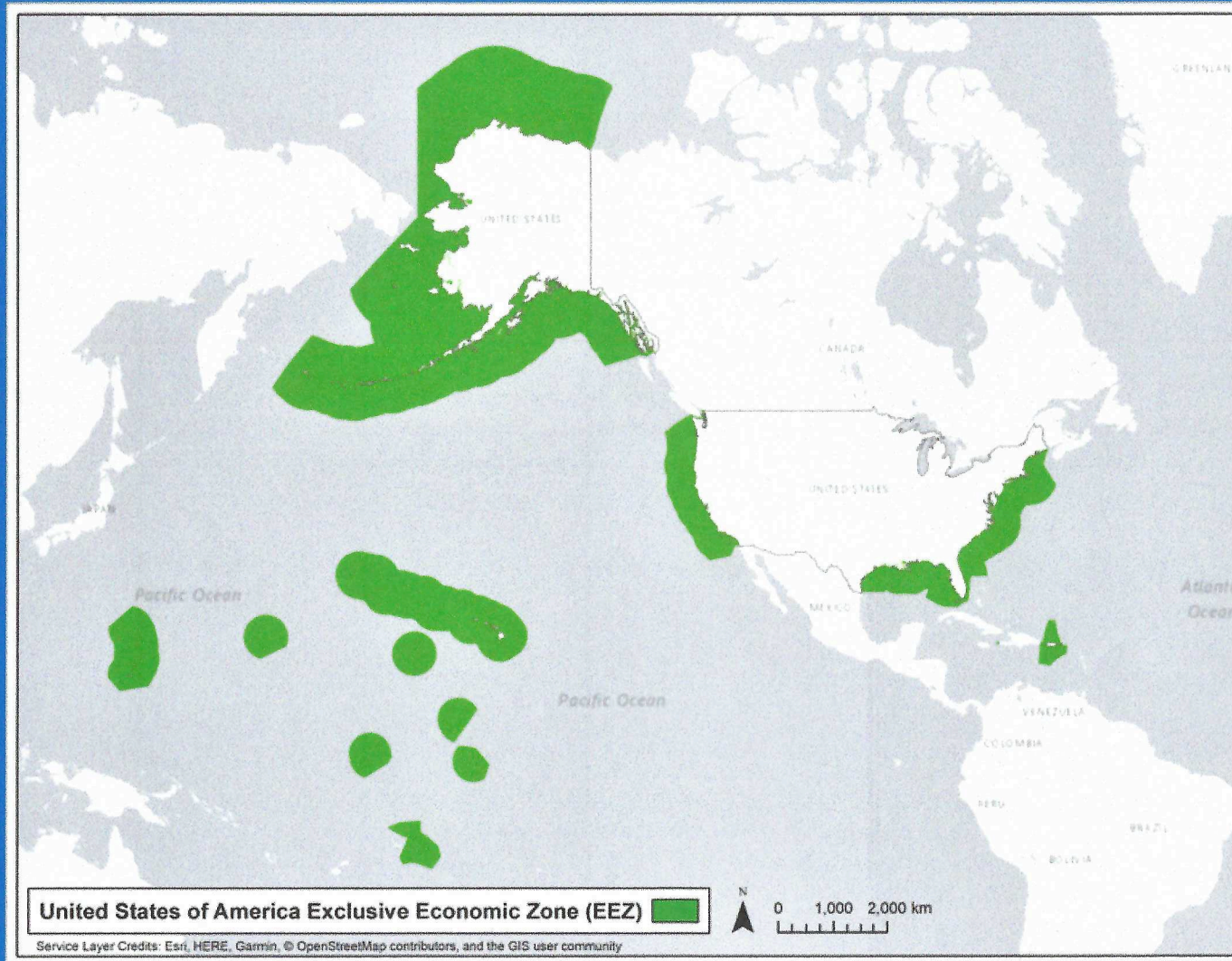
## Acreage Used for Agriculture and Marine Aquaculture 2013<sup>2</sup>



\* Clams, oysters, and mussels are reported as meat weights (excludes shell), while all other species such as finfishes are reported as whole (live) weights.

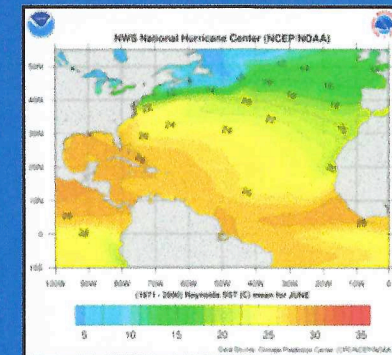
Source: <sup>1</sup> National Marine Fisheries Service (2016) *Fisheries of the United States, 2015*. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2015.; FAO (2016) *The State of World Fisheries and Aquaculture 2016. Contributing to food security and nutrition for all*. Rome. 200 pp.; CDFW (2015) *2014 Marine Bivalve Production*. 5 pp. <sup>2</sup> USDA (2014) *2012 Census of Agriculture. Summary and State Data Volume 1, Geographic Area Series, Part 51*; USDA (2014) *Census of Aquaculture 2013. Volume 3, Special Studies, Part 2*.

# United States of America Exclusive Economic Zone (EEZ)



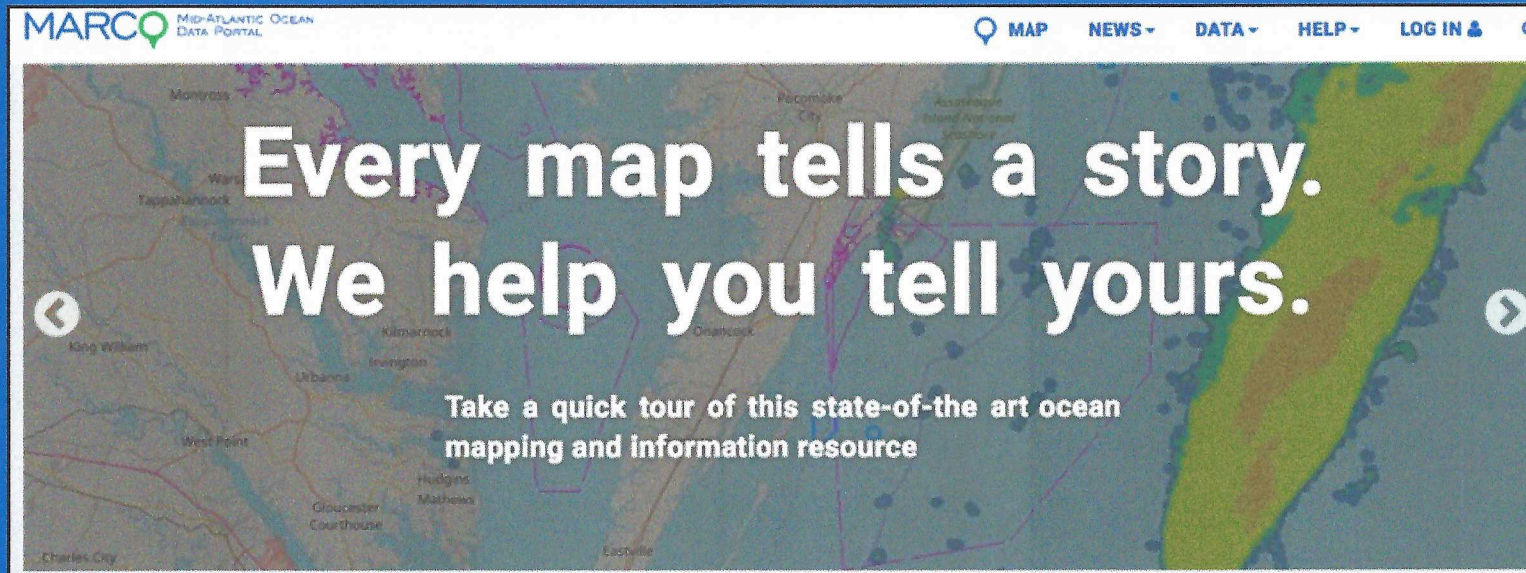
# Major criteria for preliminary site analysis

- Environmental feasibility (i.e. physical and biological)
- Economic and logistical feasibility (e.g. transportation costs, communications, etc.)
- Minimizing stakeholder conflicts (e.g. commercial fisheries, offshore wind, recreational fisheries, tourism, etc.)



# Mid-Atlantic Regional Council on the Oceans (MARCO) Data Portal

Publicly available!



MARCO MID-ATLANTIC OCEAN DATA PORTAL

MAP NEWS DATA HELP LOG IN

Every map tells a story.  
We help you tell yours.

Take a quick tour of this state-of-the-art ocean mapping and information resource

User friendly!

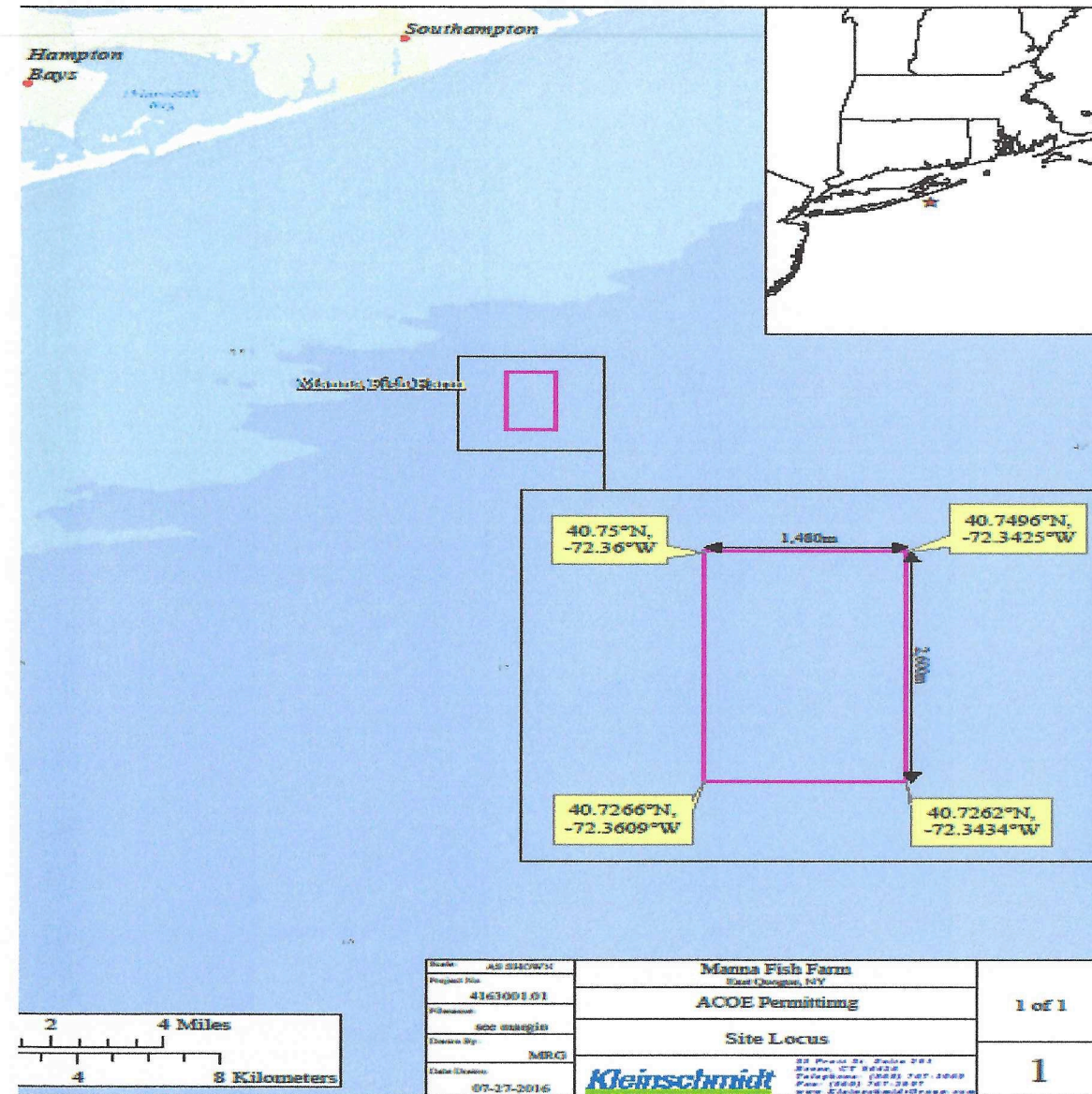
## Brief summary of available data types:

- Administrative
- Fishing
- Marine Life
- Maritime
- Oceanography
- Recreation
- Renewable Energy
- Security
- Socioeconomic
- Human Use Data Synthesis

# Proposed Location

The Offshore Marine Aquaculture Facility is proposed for 14.8 km (8 nm) off the coast of eastern Long Island (Shinnecock Inlet)

3.88 km<sup>2</sup> (15 mi<sup>2</sup>)



# Alternative Site Selection Analysis

## Methodology:

### Relative suitability for discrete grids of ocean space

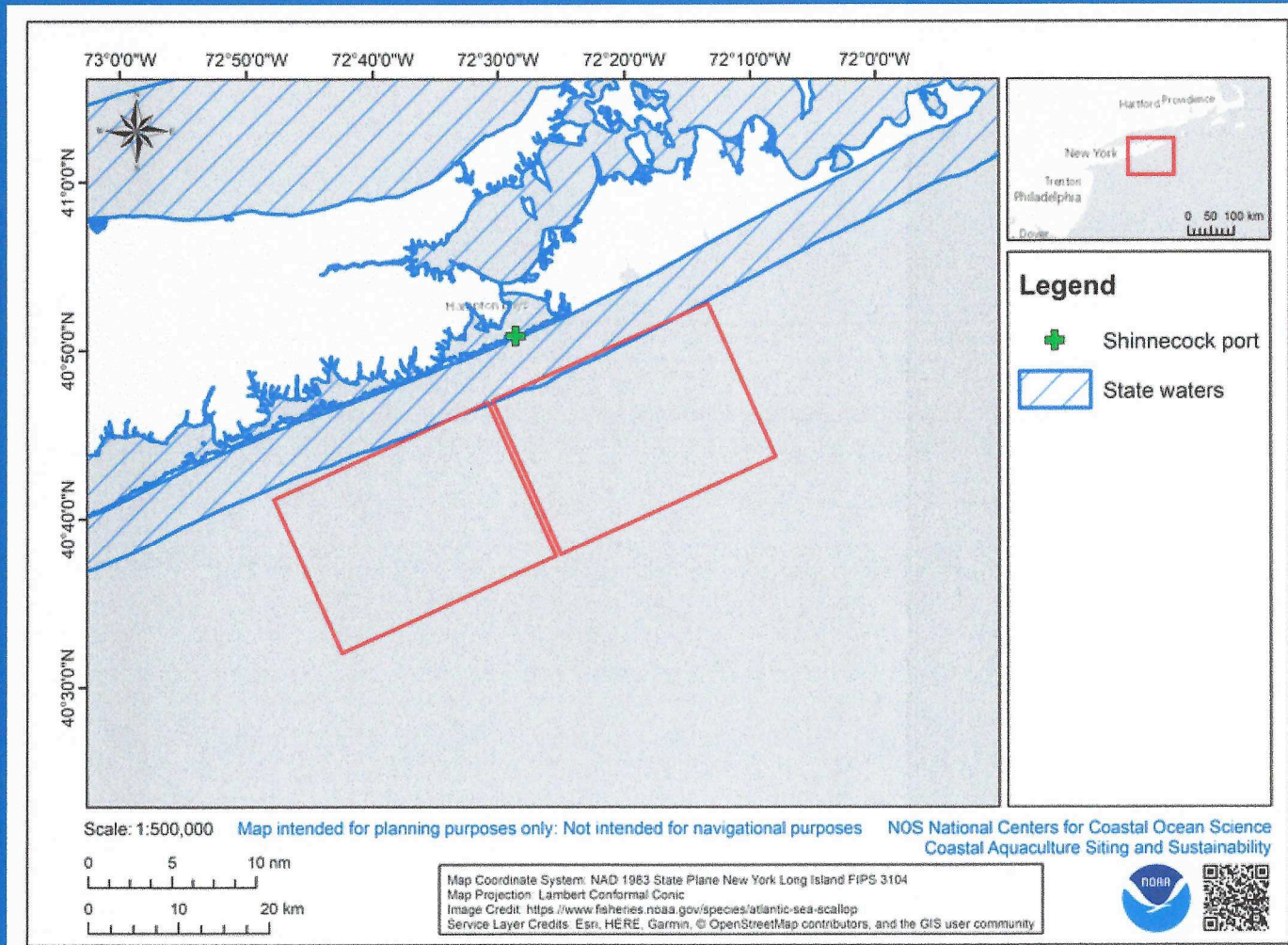
1. Acquired relevant data (~100 types of data)
2. Developed a weighted scoring approach
3. Calculated a suitability score for each cell
4. Grouped layers by theme for analysis
5. Summarized scores divided by layers
6. Highly suitable cells examined for constraints

Layer	Depth (m)	Score	Rationale
Depth	30-40	1	Reduced wave action, investor defined
	10-30	0.5	Increased wave action, human comfort
	<10 OR >40	0	Too shallow, economically infeasible



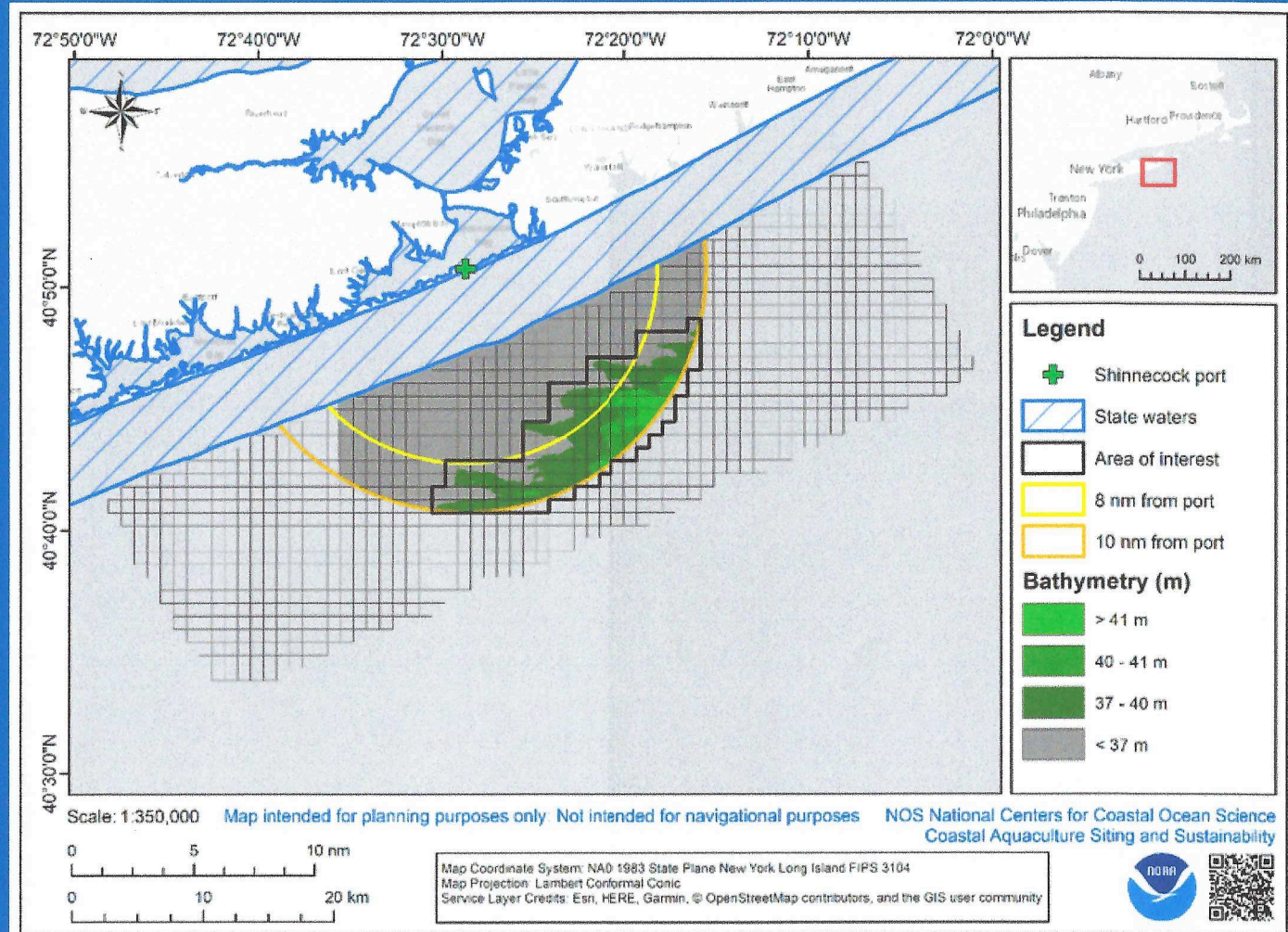
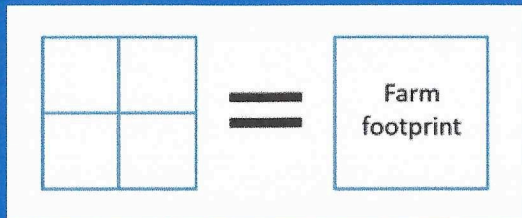


# US Army Corps Defined Area



# Grid Created and Area Refined

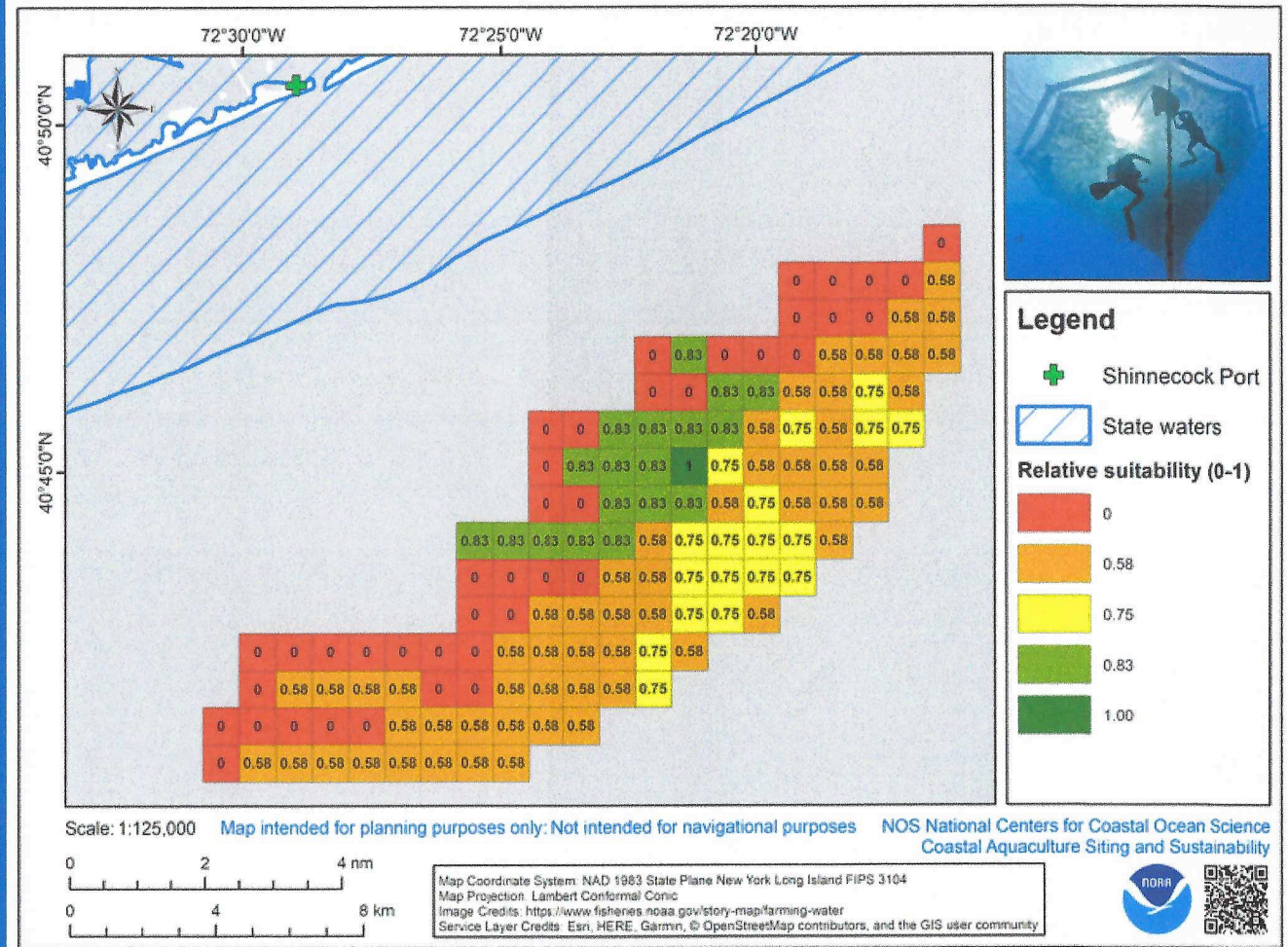
Four grid cells equal  
one farm site



# Farm Requirement Suitability Scores

## Weighted Parameters

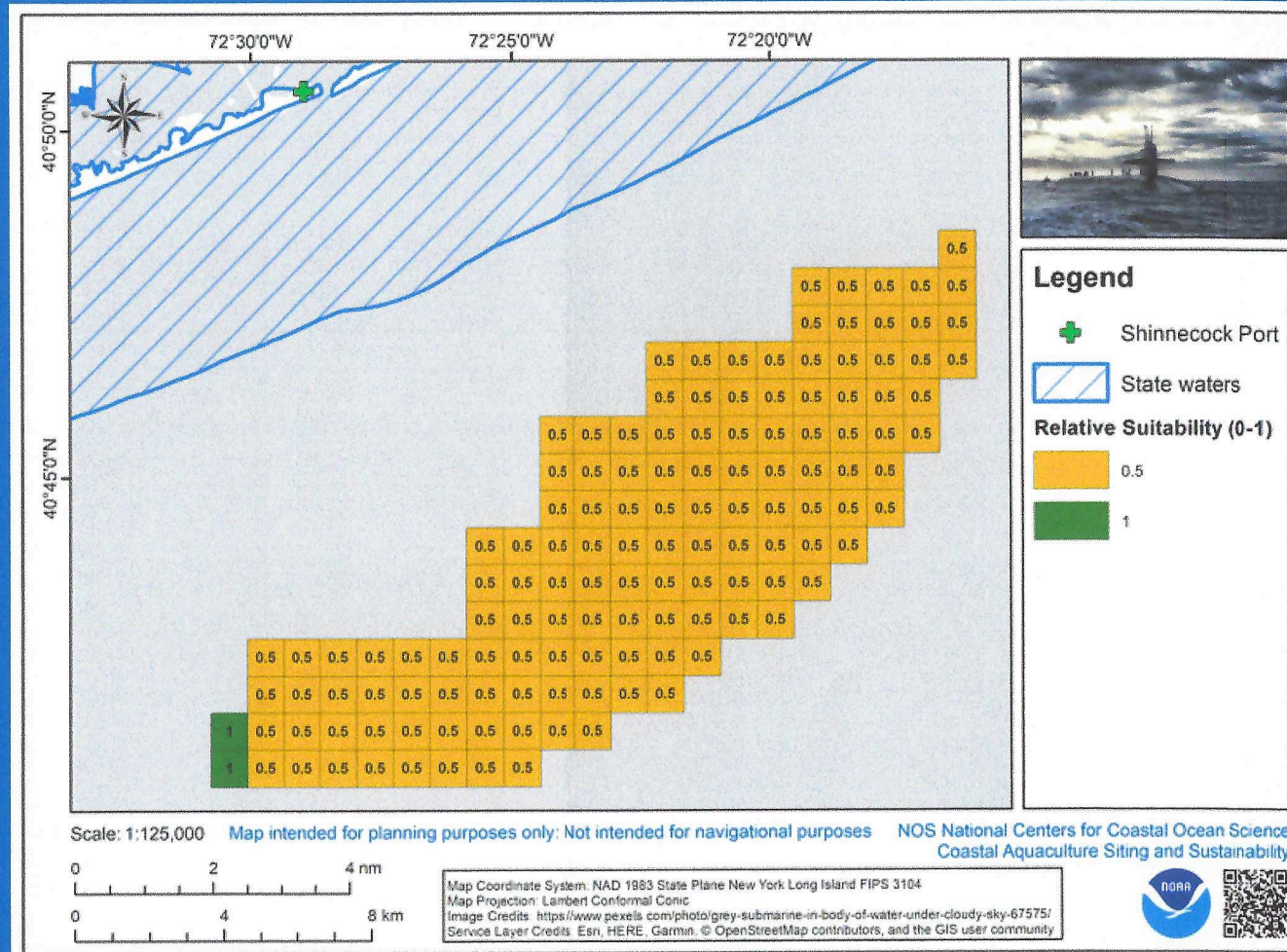
- Depth
- Distance from Port
- Substrate



# Military Suitability Scores

## Weighted Parameters

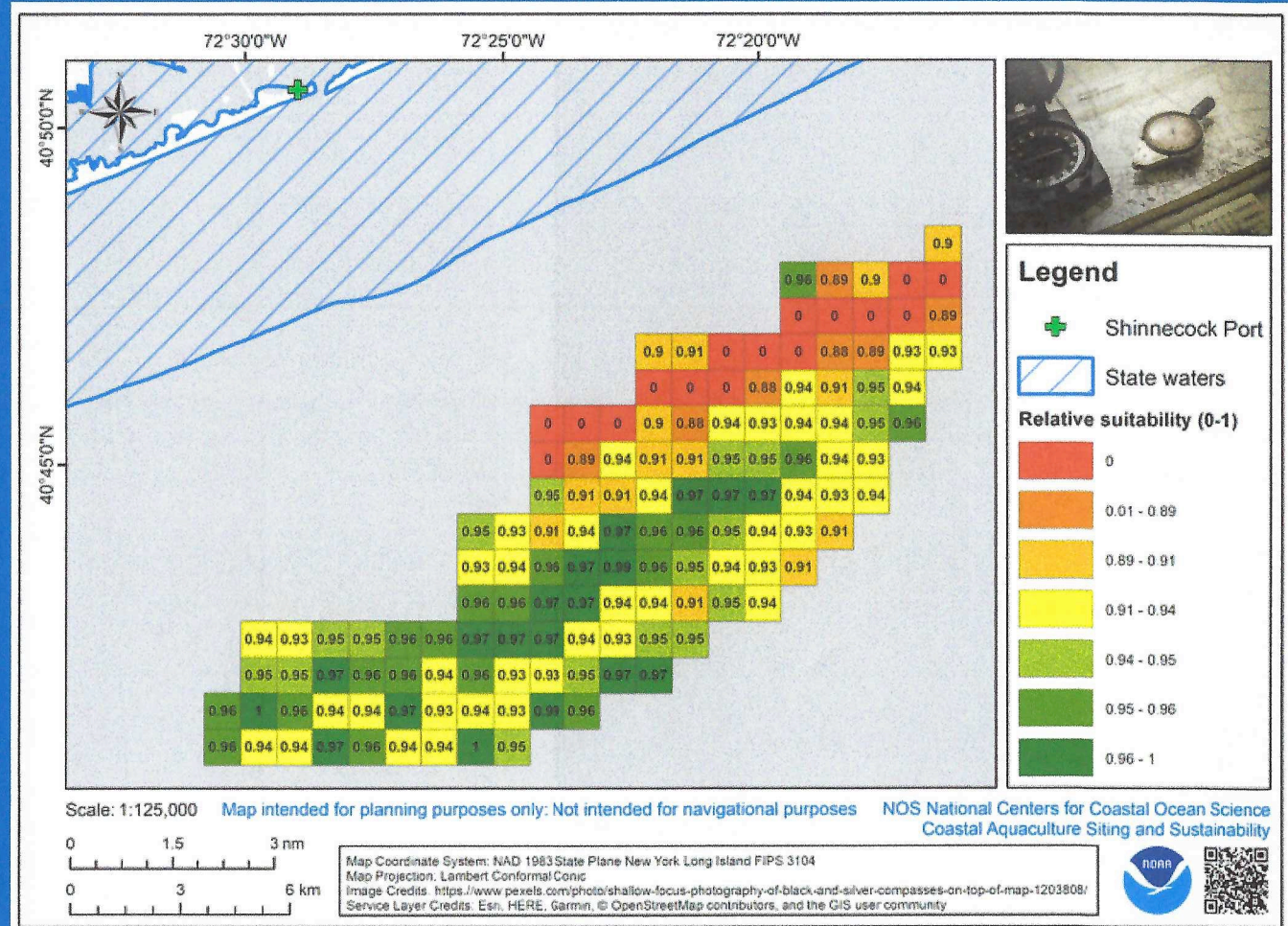
- Military Operating Area



# Navigation Suitability Scores

## Weighted Parameters

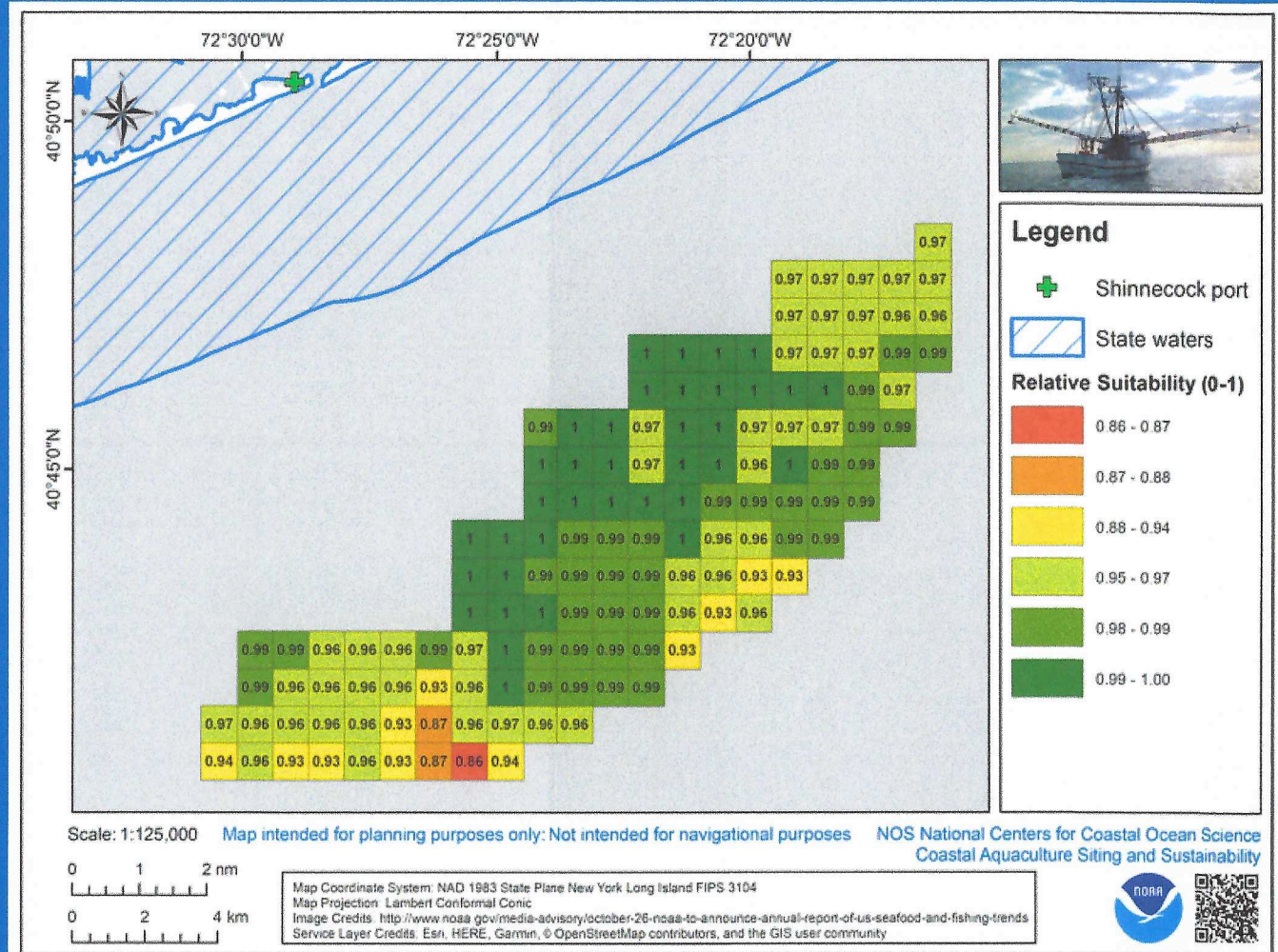
- AIS Vessel Tracks
- Submarine Cables
- Other Navigational Layers (e.g. shipping lanes)



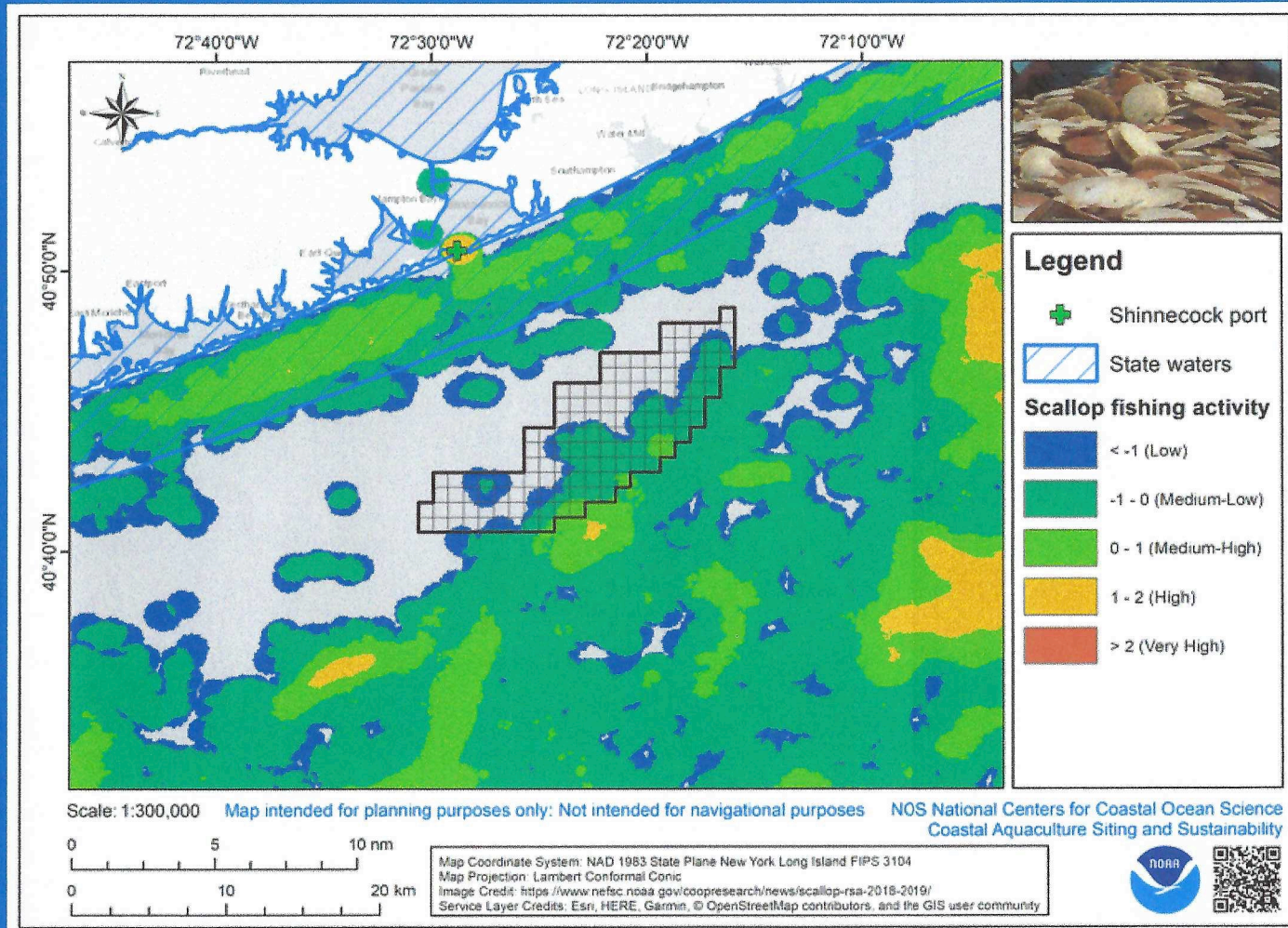
# Industry Suitability Scores

## Weighted Parameters

- Commercial Fishing Effort
- Whale Watching
- Recreational Diving



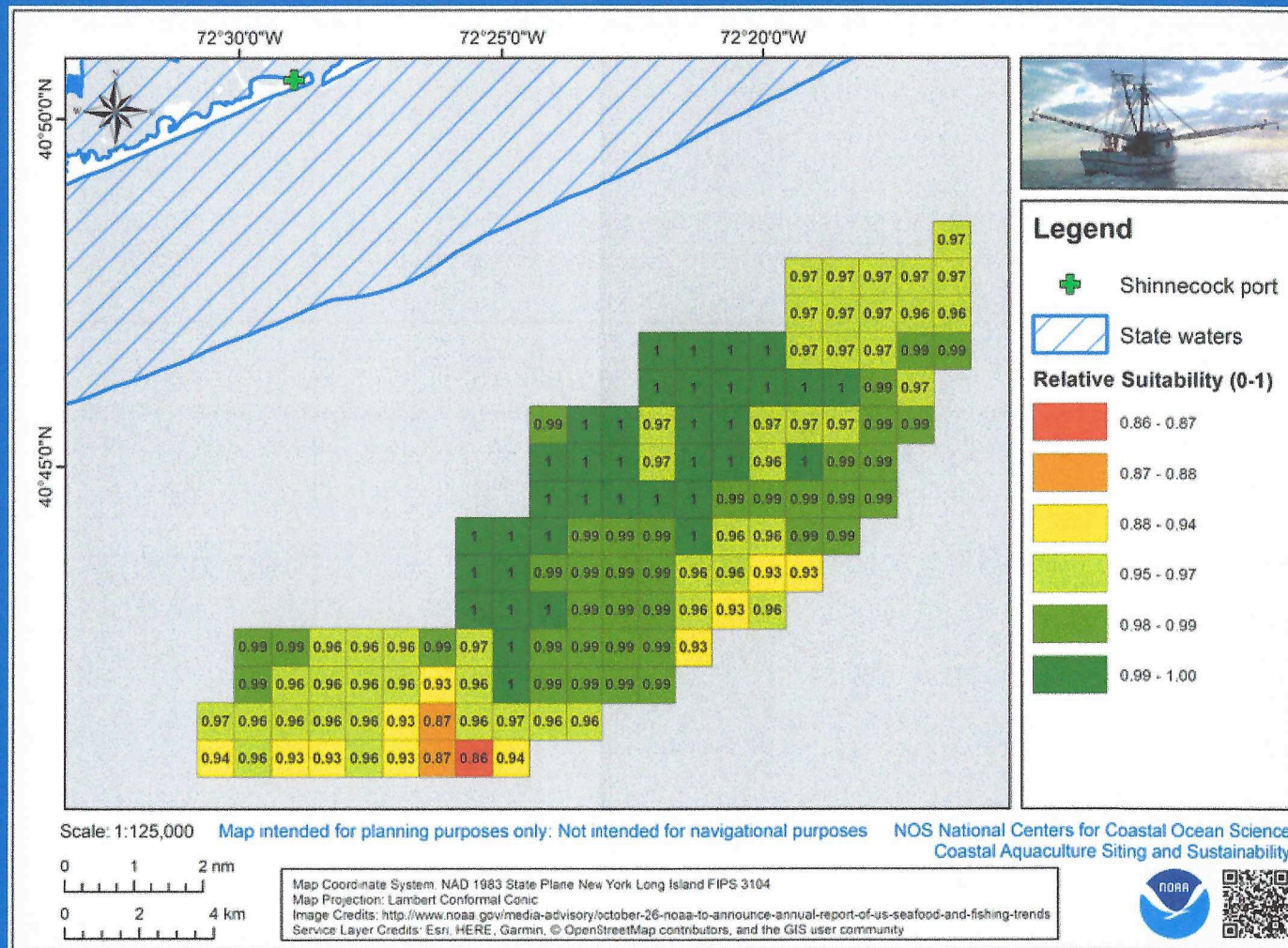
# Example: Scallop Commercial Fishing Activity



# Commercial Fishing Suitability Scores

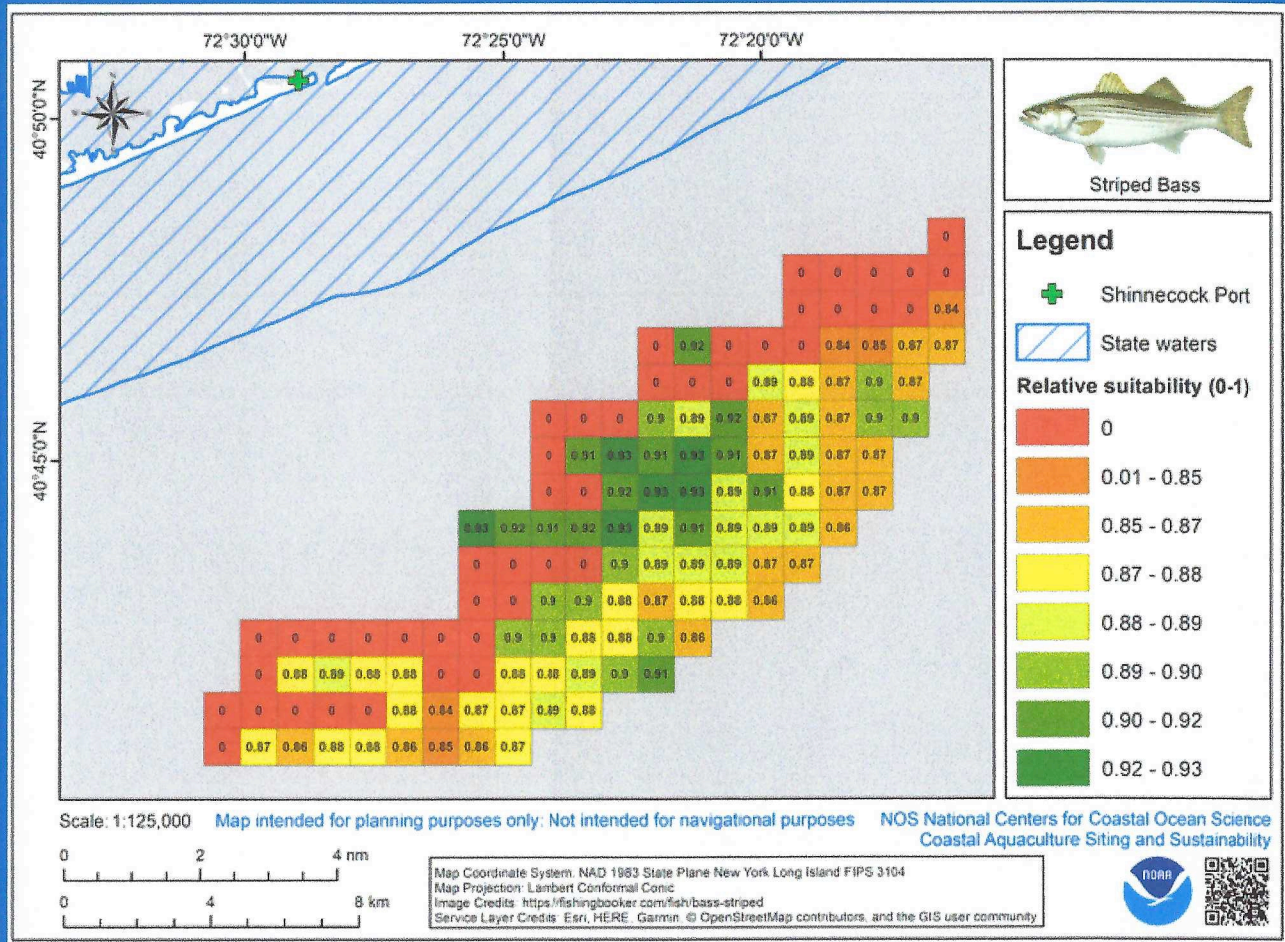
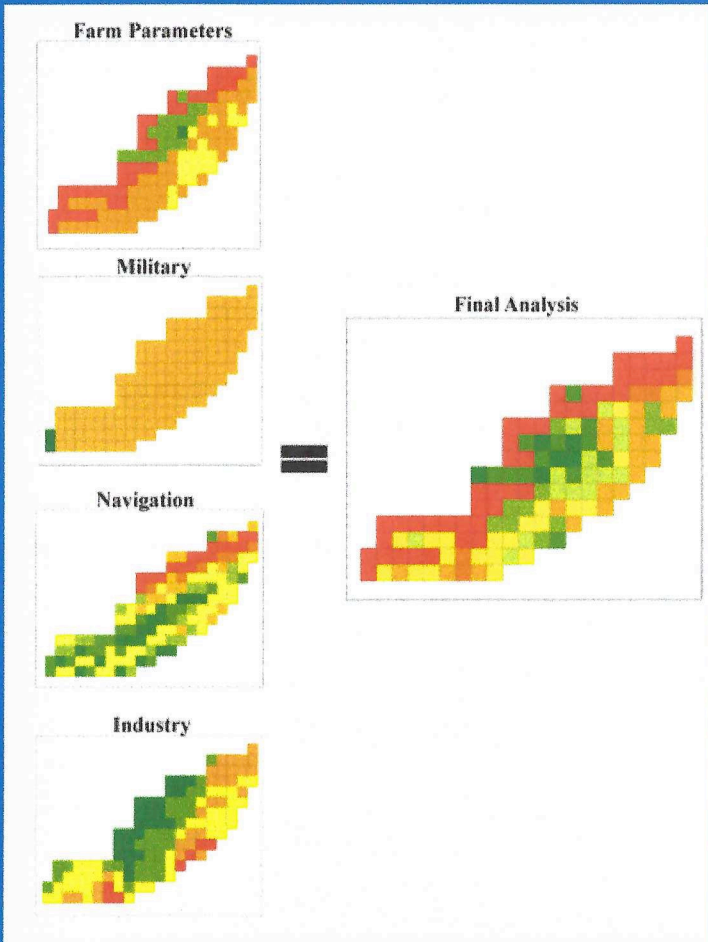
## Commercial Fishing:

- Scallop
- Herring
- Monkfish
- Surf clam/quahog
- Squid
- Pelagic (e.g. Herring, Mackerel, etc.)



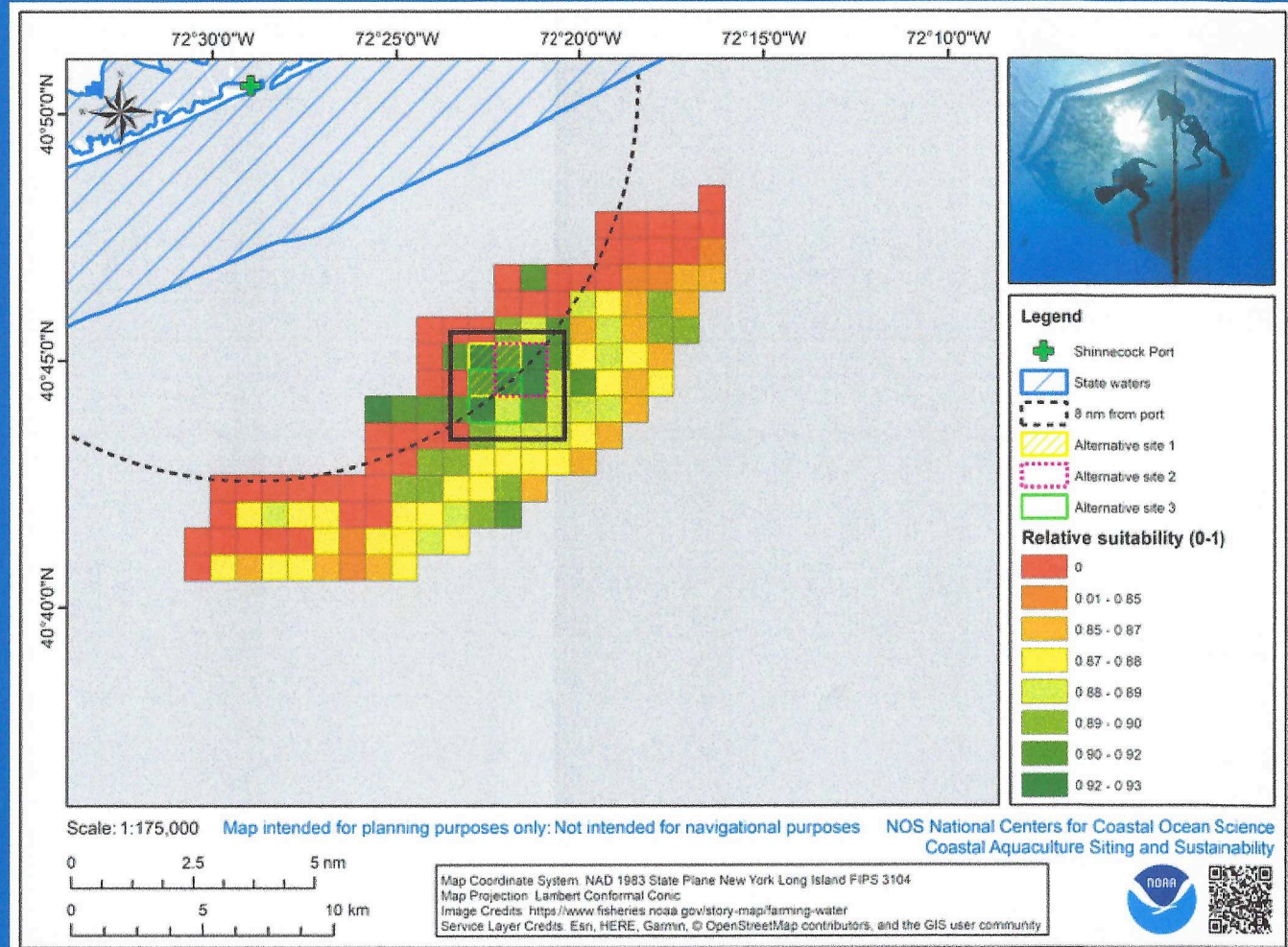
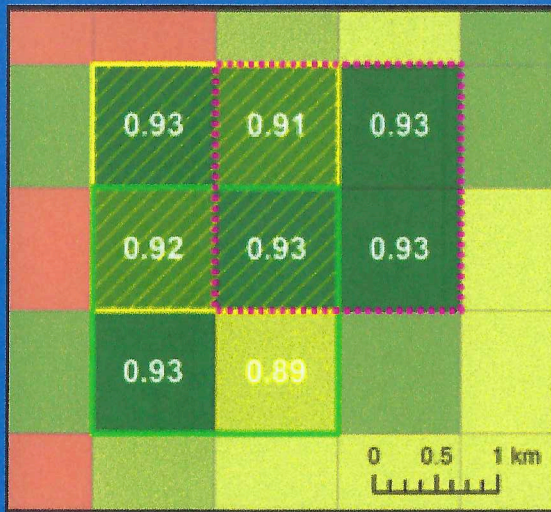


# Combined Suitability Scores

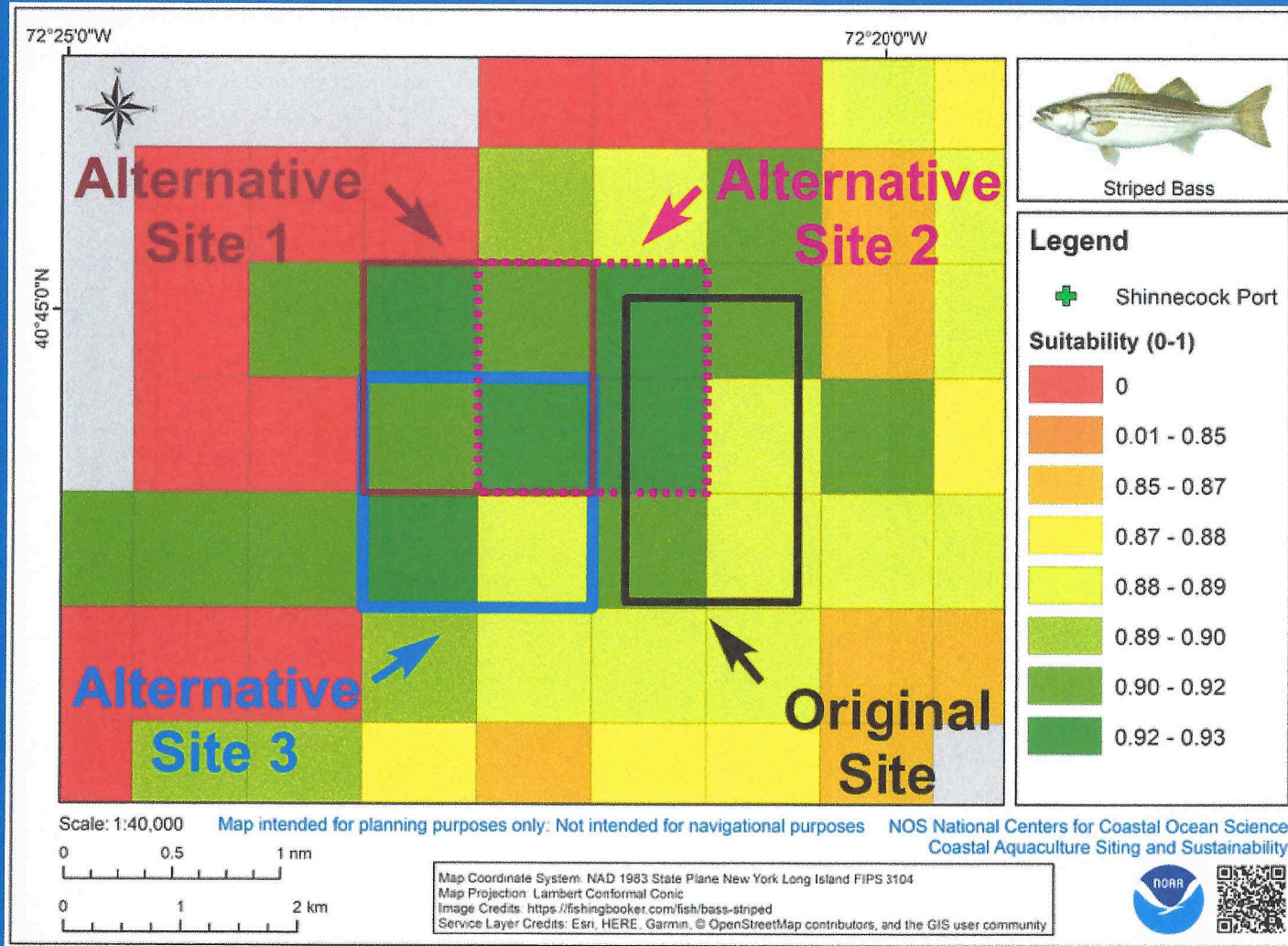


# Alternative Sites Identified

Highest mean of four connecting grid cells used to identify Alternative sites



# Final Results



## Next Steps

- Development of shore-based infrastructure
- Policy steps for Striped Bass marine culture
- Collecting information and cost of the baseline environmental survey

# Acknowledgements

- NOAA NOS NCCOS CASS team
- Stony Brook University (Christopher Gobler, PhD)
- University of New Hampshire (Mike Chambers, PhD)
- U.S. Department of Defense
- New York State Department of Conservation
- NOAA Office for Coastal Management
- NOAA NMFS Office of Aquaculture
- NOAA NMFS Protected Resources Division
- Greater Atlantic Regional Fisheries Office (GARFO)
- MARCO and Northeast Ocean Data map viewers and data portals
- Marine-life Data Analysis Team (MDAT)



Thank you for your attention!



*Questions?*