

# *WOODS HOLE OCEANOGRAPHIC INSTITUTE*

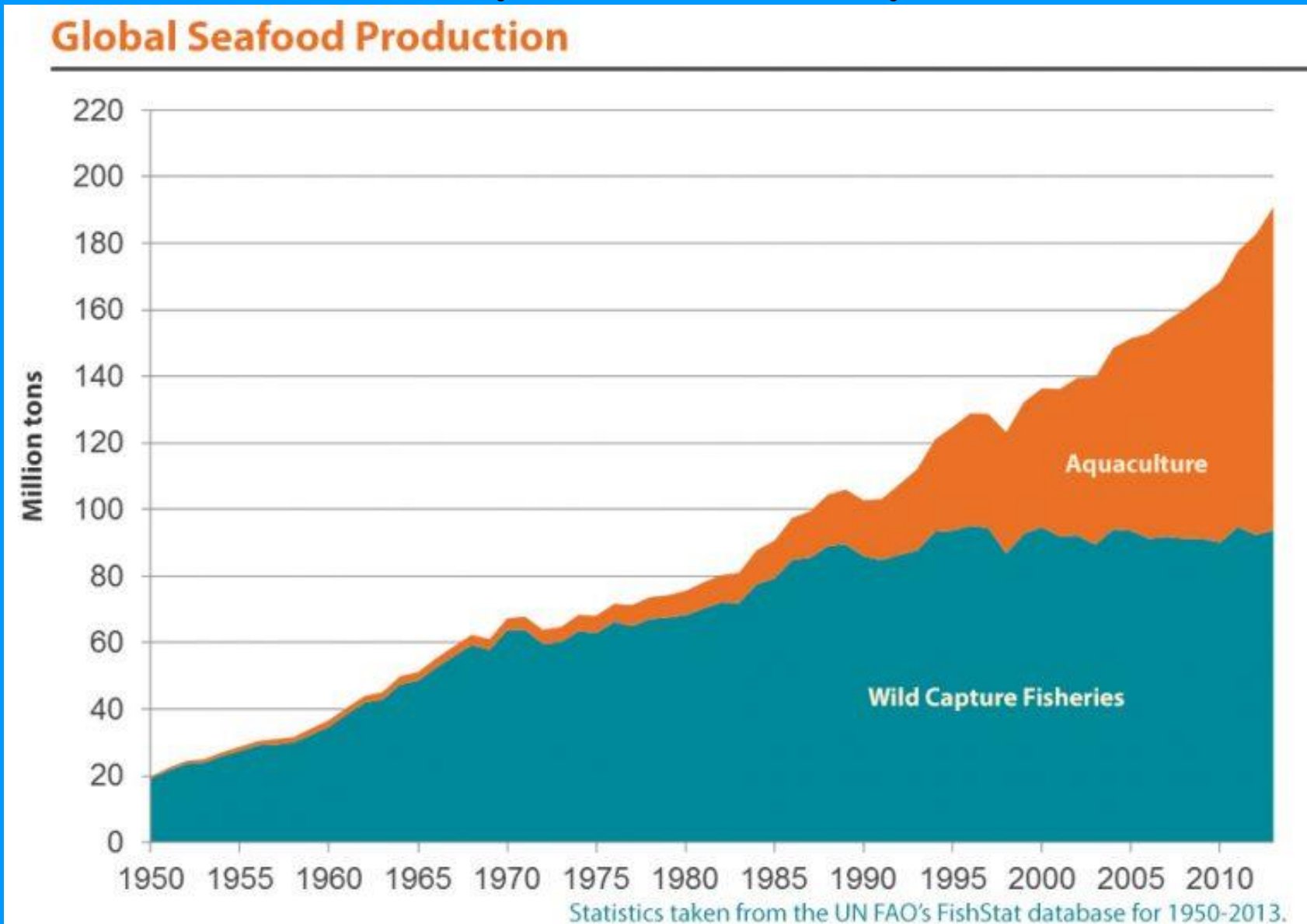
*Center for Marine Robotics – 5<sup>th</sup> Annual CMR Entrepreneur Showcase*

**Donna Lanzetta:**

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

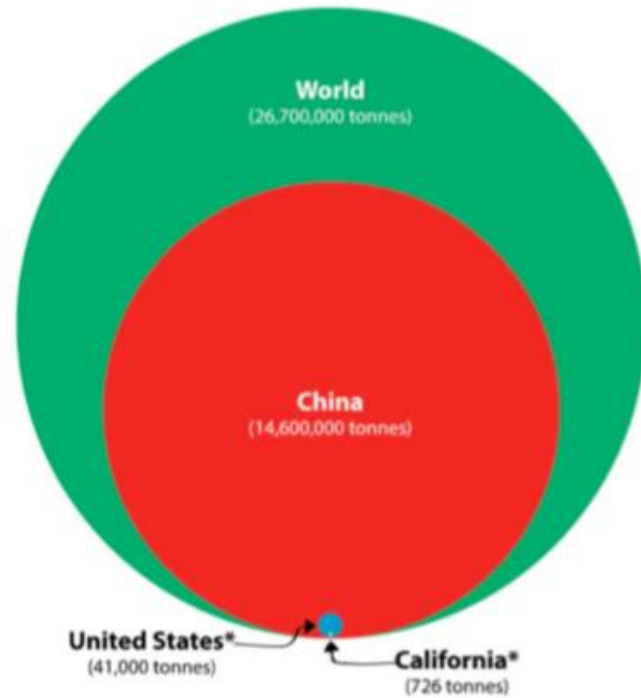


# The United Nations advises: we must Double Aquaculture by 2030!

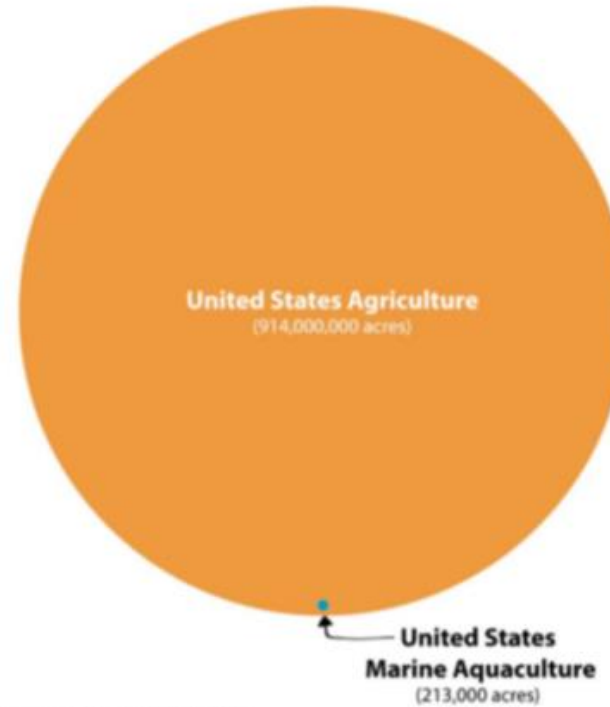


# Current US Aquaculture

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

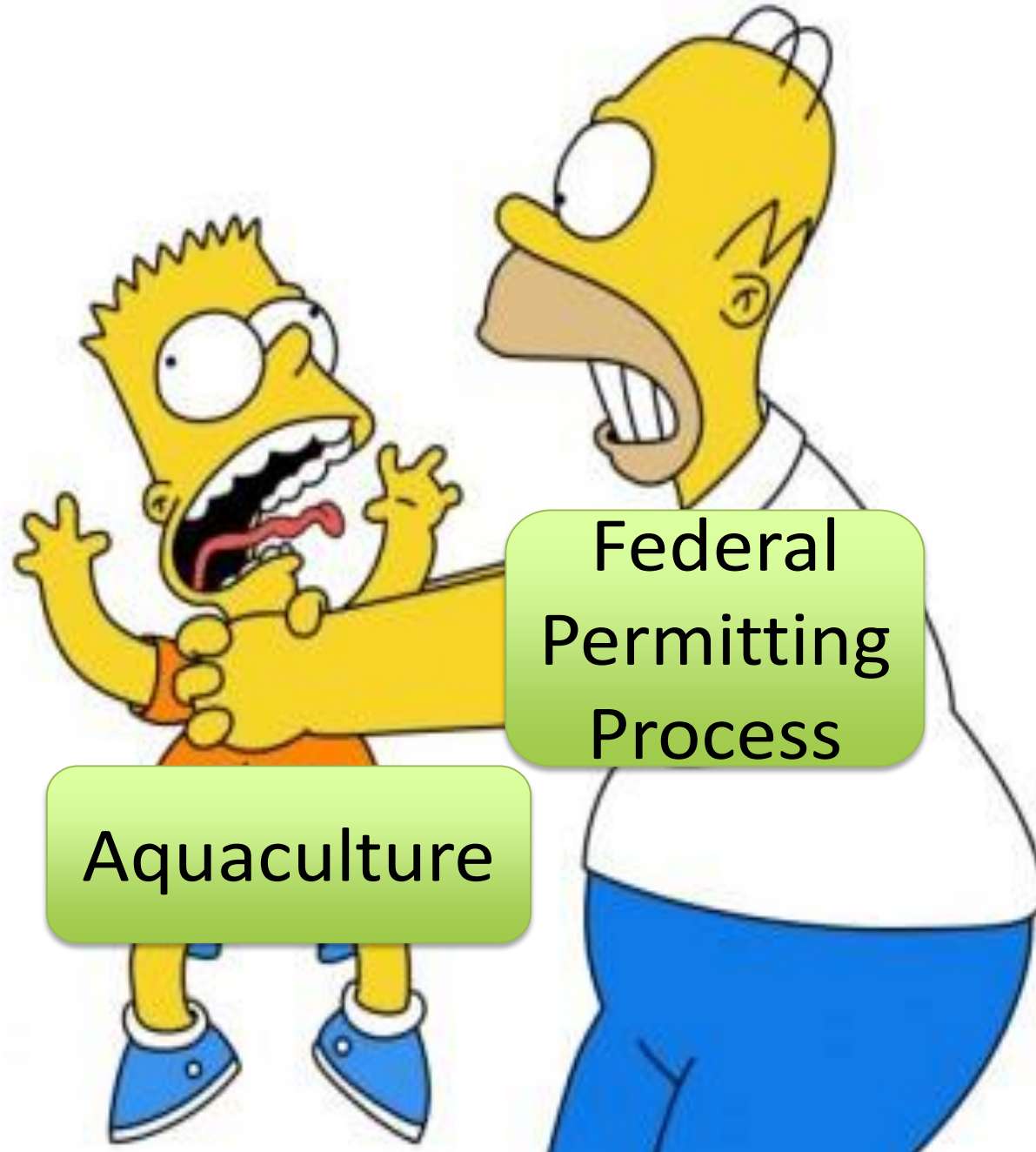


## Acreage Used for Agriculture and Marine Aquaculture 2013<sup>2</sup>



\* 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.

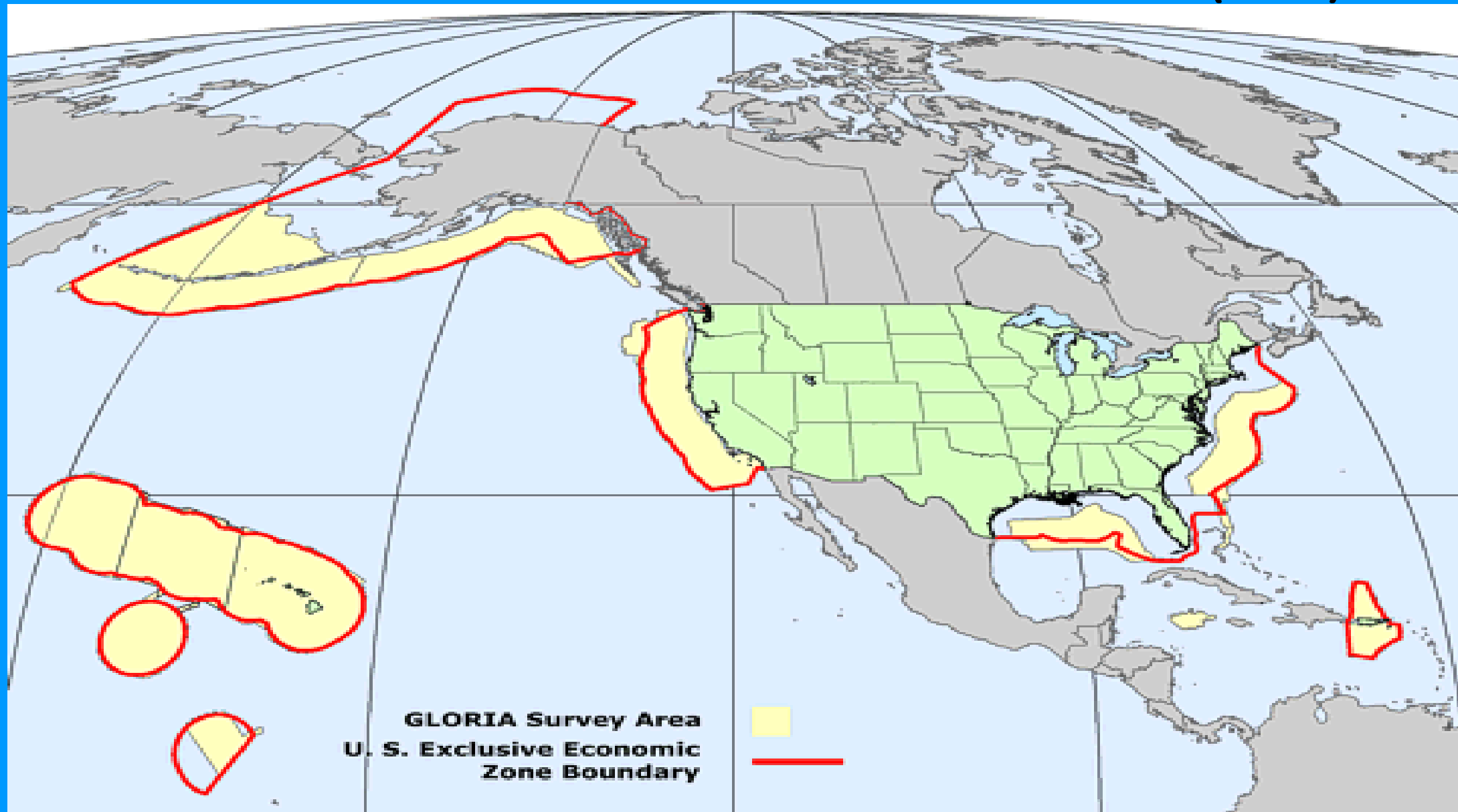




Aquaculture

Federal  
Permitting  
Process

# United State Exclusive Economic Zone (EEZ)

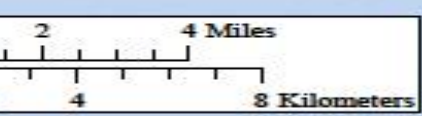
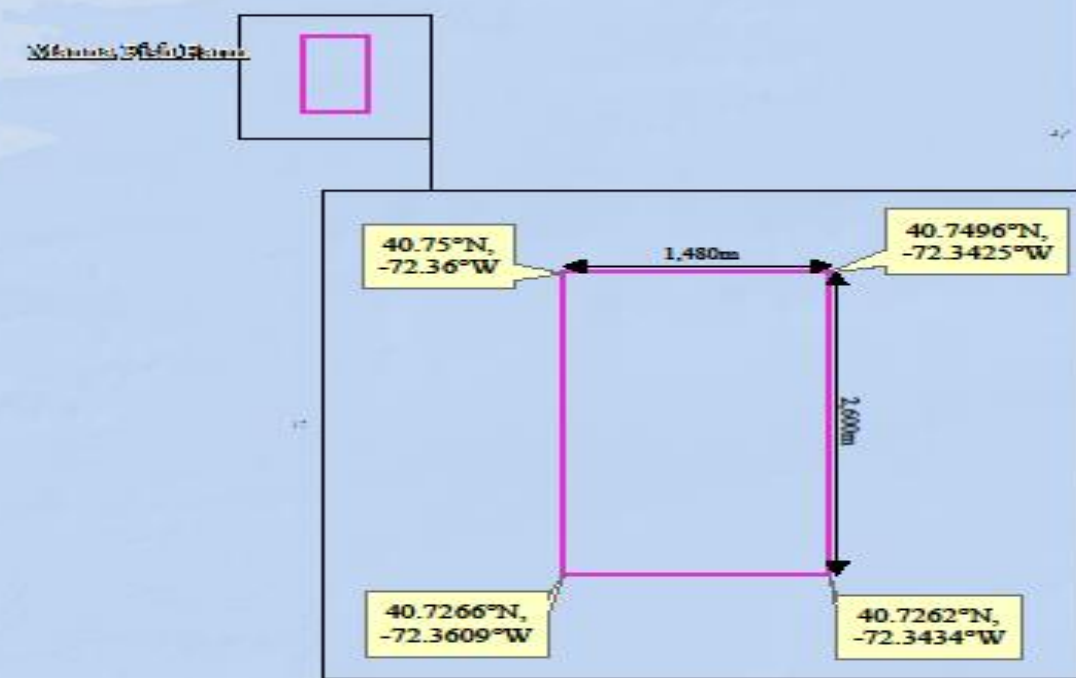




# Proposed Location

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

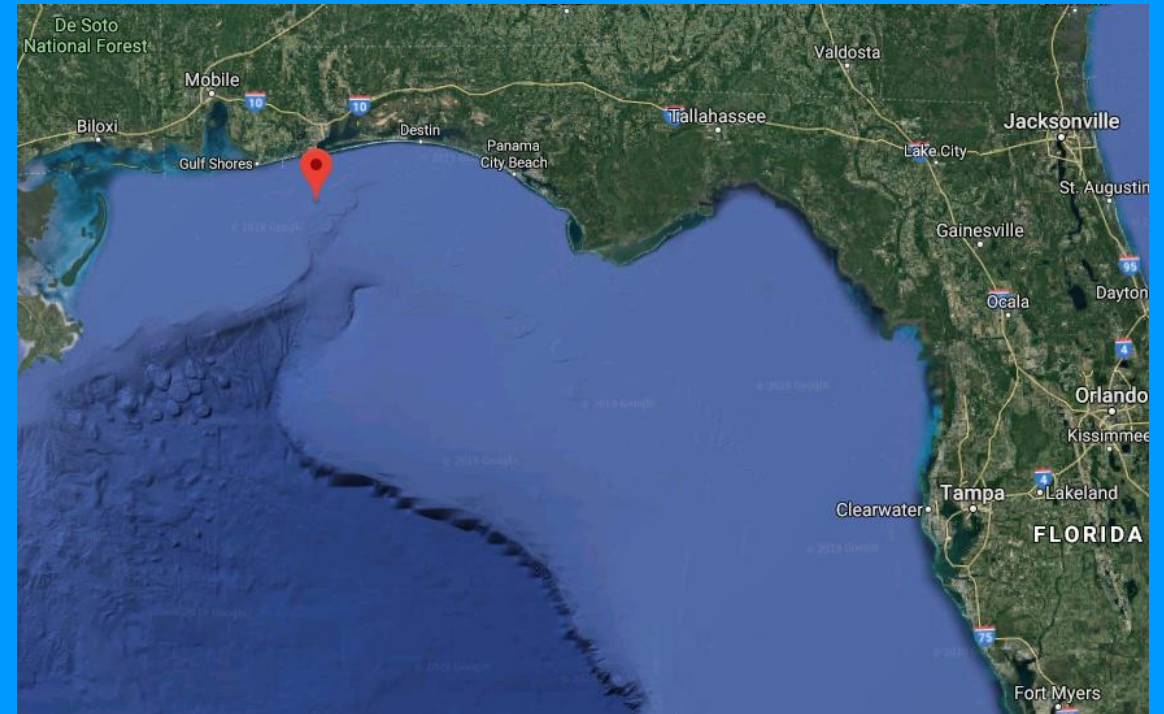
1.5 square miles



Scale: AS SHOWN	<b>Manna Fish Farm</b> East Quogue, NY	1 of 1
Project No: 4163001.01	ACOE Permitting	
File name: ac margin	Site Locus	1
Drawn By: MRG		
Date Drawn: 07-27-2016	<b>Kleinschmidt</b> 33 Pratt St., Suite 201 Branford, CT 06428 Telephone: (860) 767-2669 Fax: (860) 767-2897 www.KleinschmidtGroup.com	

# Offshore Farm: Gulf of Mexico

- 23 miles off Pensacola, FL
- Depths of 150 ft.
- Intended species: Red Drum, Tripletail, or Almaco Jack
- 123 acres
- Permitting in collaboration with Dr. Kelly Lucas of the University of Southern Mississippi- Ocean Springs



# FEED CONVERSION RATIO

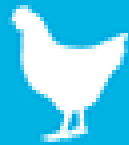
Estimated feed required to gain one pound of body mass.<sup>5</sup>

FARM-RAISED FISH



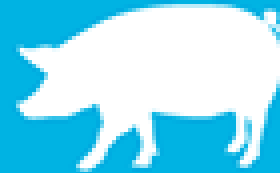
**1.1**  
POUNDS

BROILER CHICKENS



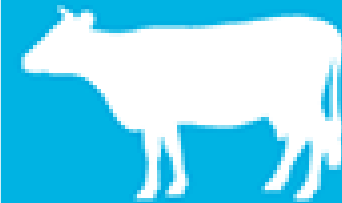
**1.7**  
POUNDS

HOGS



**2.9**  
POUNDS

CATTLE

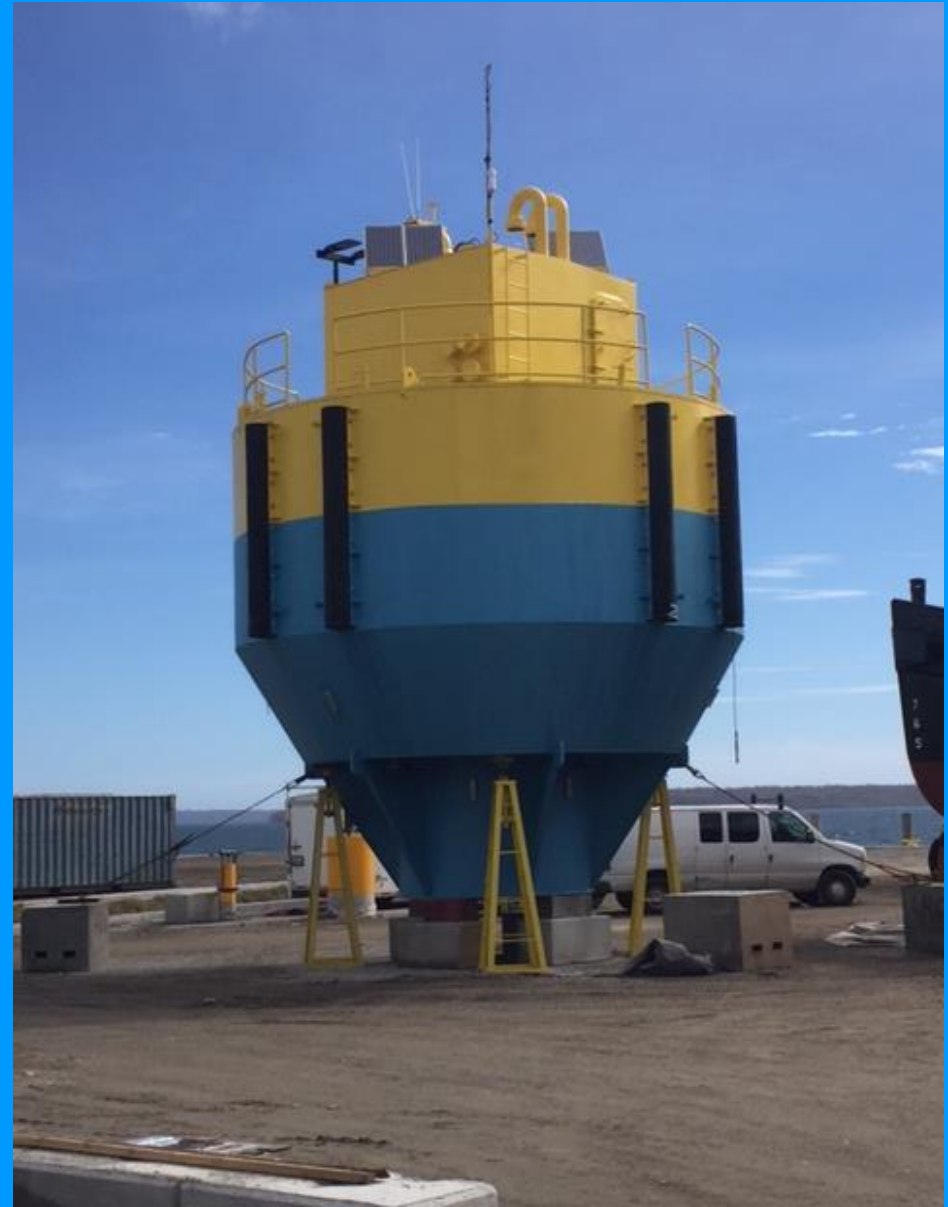
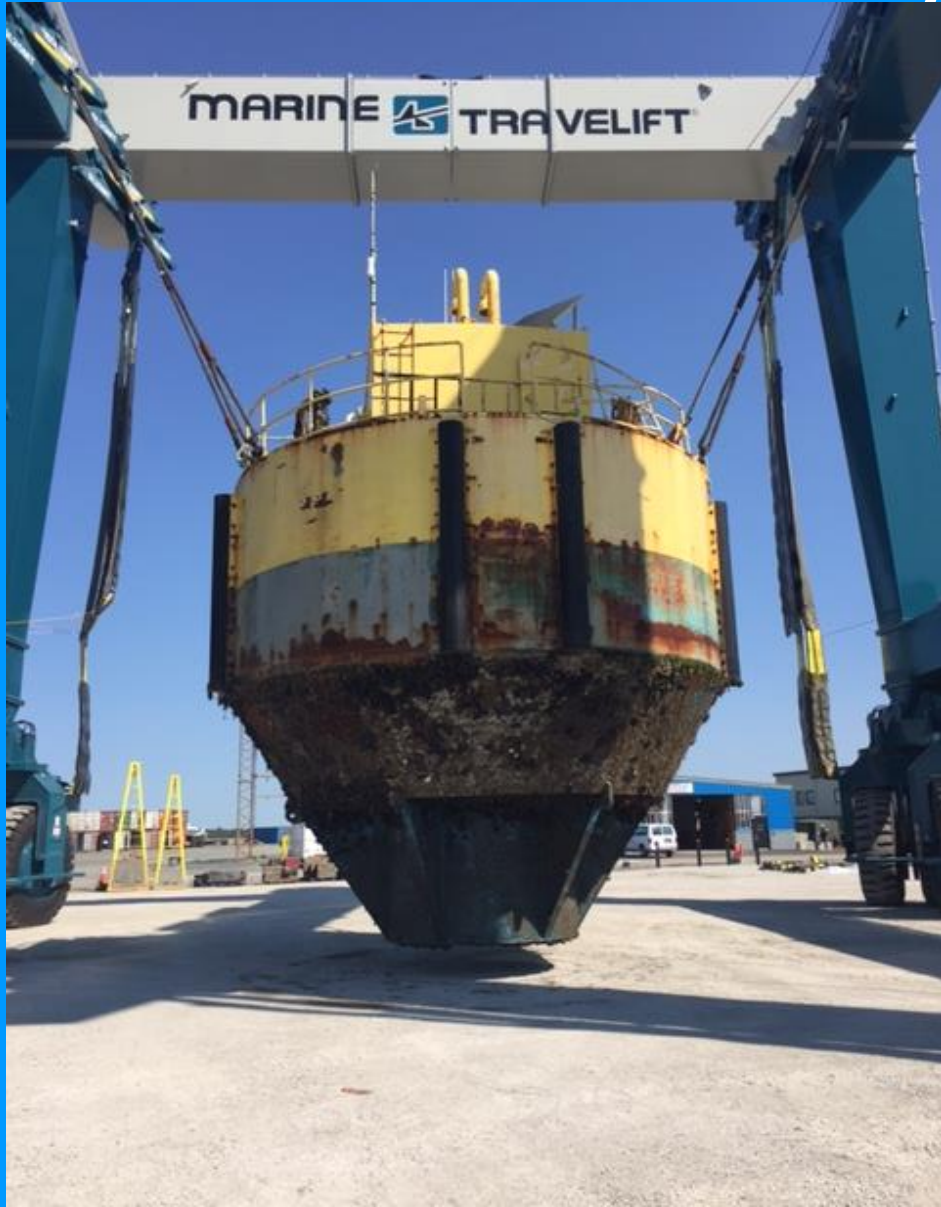


**6.8**  
POUNDS

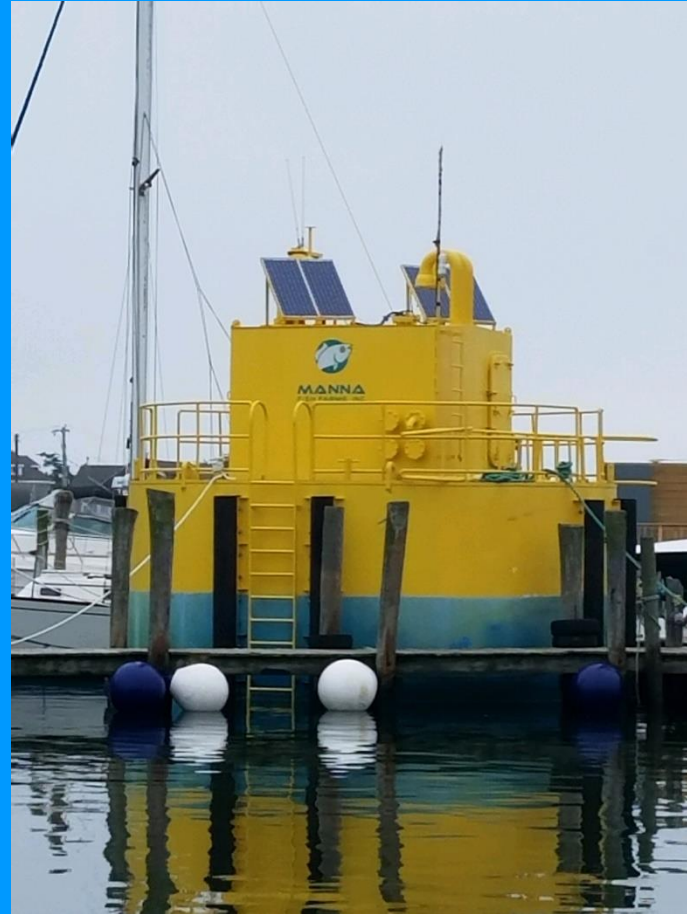
As per [aquacultureassociation.org](http://aquacultureassociation.org)



# Automated Feed System – Before and After



# Getting ready to go off shore



# Submersible Cage Technology: StormSafe





# Scallop farming methods





# EDIBLE LONG ISLAND – INNOVATION





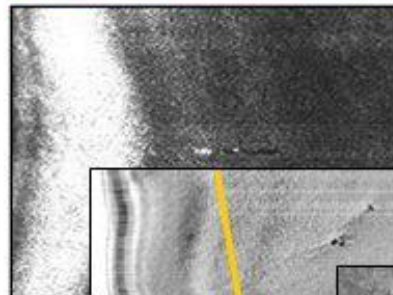


# Autonomous Underwater Vehicles (AUVs)



Deep Water

Surf Zone



## Capabilities

- Side Scan Sonar
- Sub-Bottom Profiler
- Camera
- CTD
- ADCP
- GPS
- Iridium, Freewave, & Acoustic Comms

**Over a Decade of Full Ocean Depth AUV Expertise**

New technology available to support the sustainable production of seafood



# Research and Education



MANNA OCEAN  
FOUNDATION



Thank you for your attention!



*Charting the course to operate the first open ocean finfish farm on the East Coast of the United States!*