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NORTHEAST WIND ENERGY AREA BENTHIC HABITAT INVESTIGATION & HUDSON CANYON HABITATS STUDY

Nysted Offshore Wind Farm, Denmark

WHY A BENTHIC HABITAT STUDY?



BOEM is tasked with coordinating with relevant federal agencies, state, and local governments to ensure that renewable energy development proceeds in a safe and environmentally responsible manner.

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NMFS is responsible for the stewardship of the nation's ocean resources and their habitat, and for ensuring productive sustainable fisheries, for safe sources of seafood, for the recovery and conservation of protected resources, and for healthy ecosystems, backed by sound science and an ecosystem-based approach to management.

NORTHEAST WIND ENERGY AREA BENTHIC HABITAT INVESTIGATION

The goal of this project is to provide the data necessary to establish a contemporary and comprehensive benthic habitat database for the BOEM WEAs in the northeastern region of the United States.

Approach

High resolution mapping as a basis for habitat definition

Characterization of Habitats:

- Topography: various scales
- Sediments
- Oceanography: fronts, stratification, seasonality
- Biota: demersal, epibenthic, benthic infaunal
- Integration including classification via CMECS (Landscape)

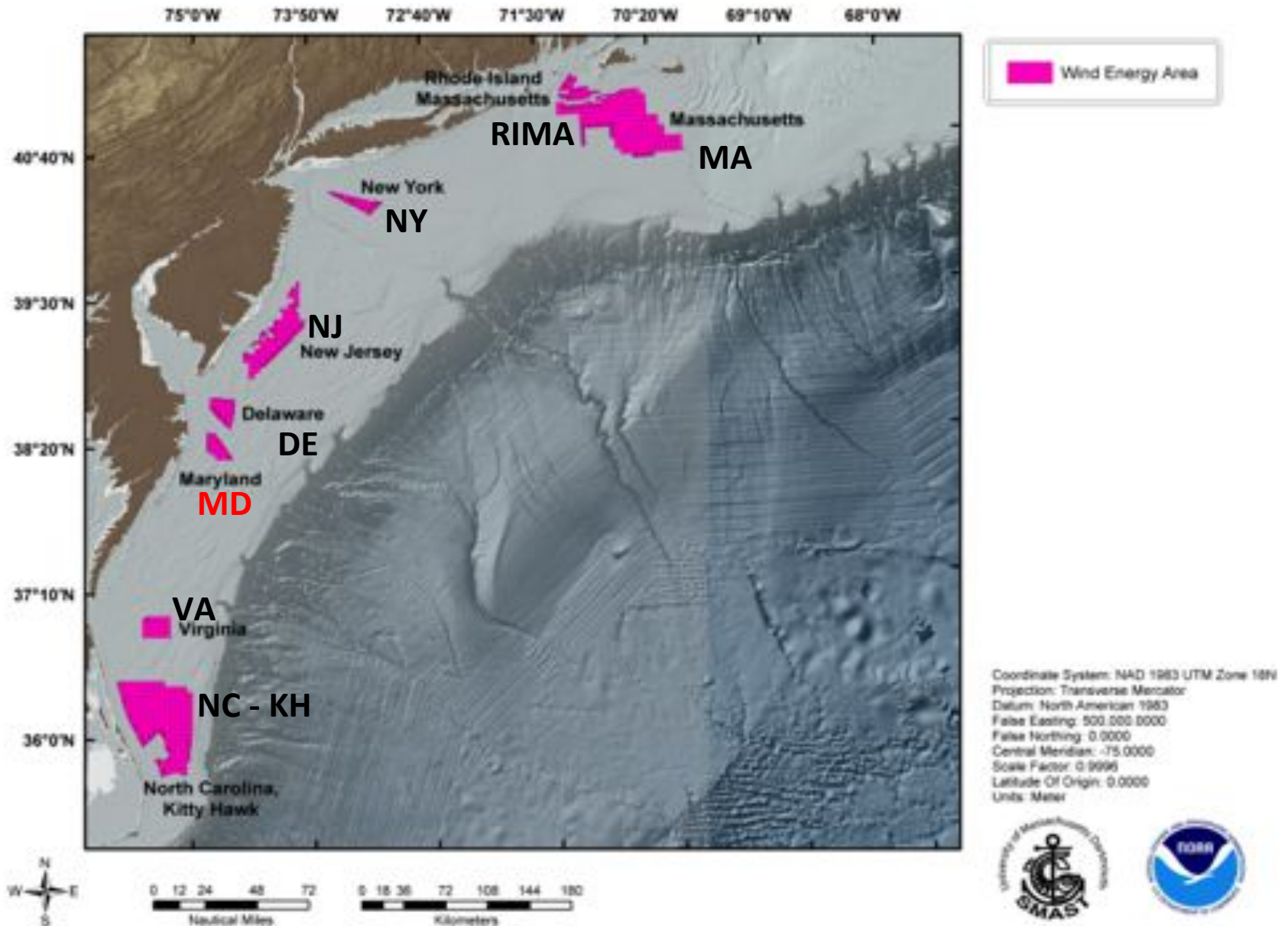


Future (beyond scope of this project)

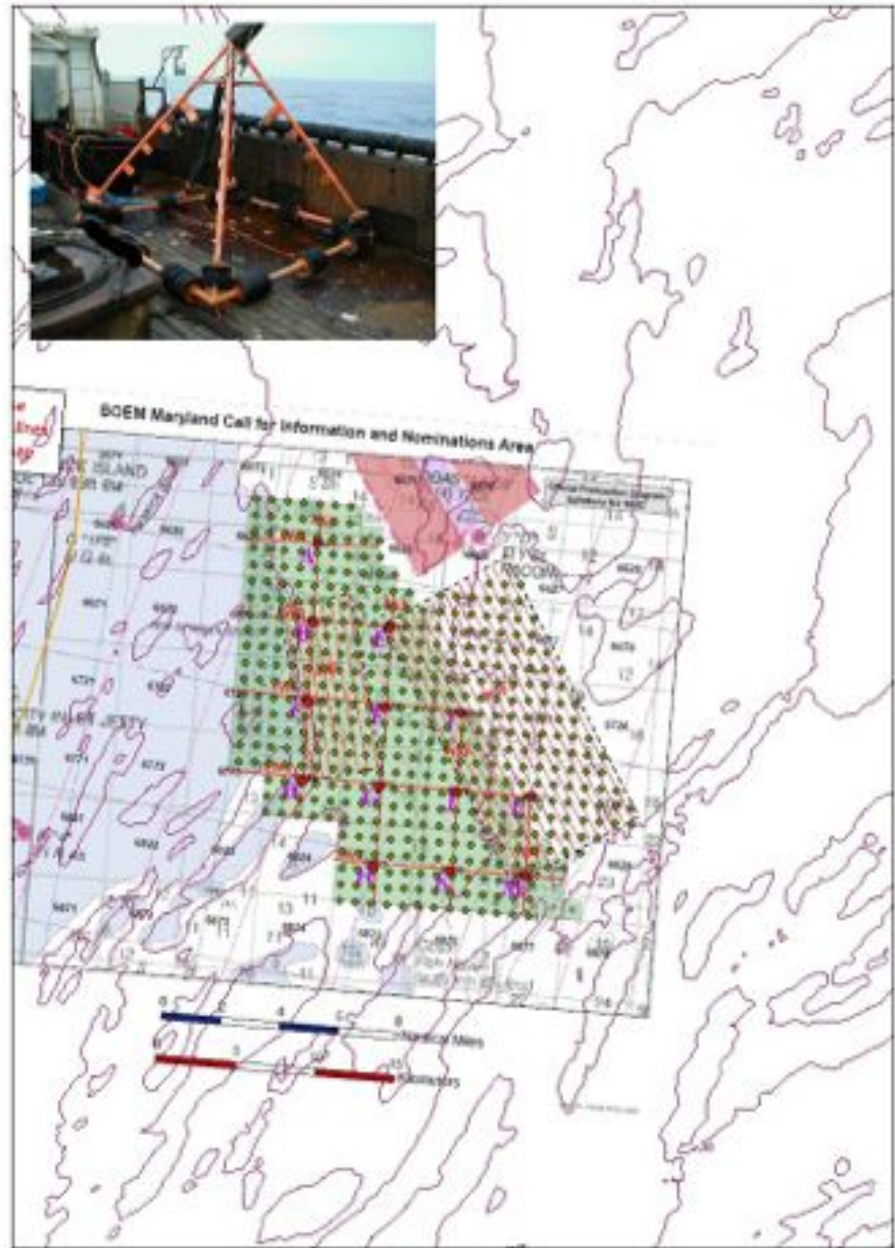
Habitat suitability modeling for fish stocks



8 WIND ENERGY AREAS ~2.6 million acres



UMASS SMAST (Kevin Stokesbury) Camera Pyramid and sampling pattern



Maryland WEA Topography-Based Benthic Habitat Zones Super- imposed upon Benthic Zones

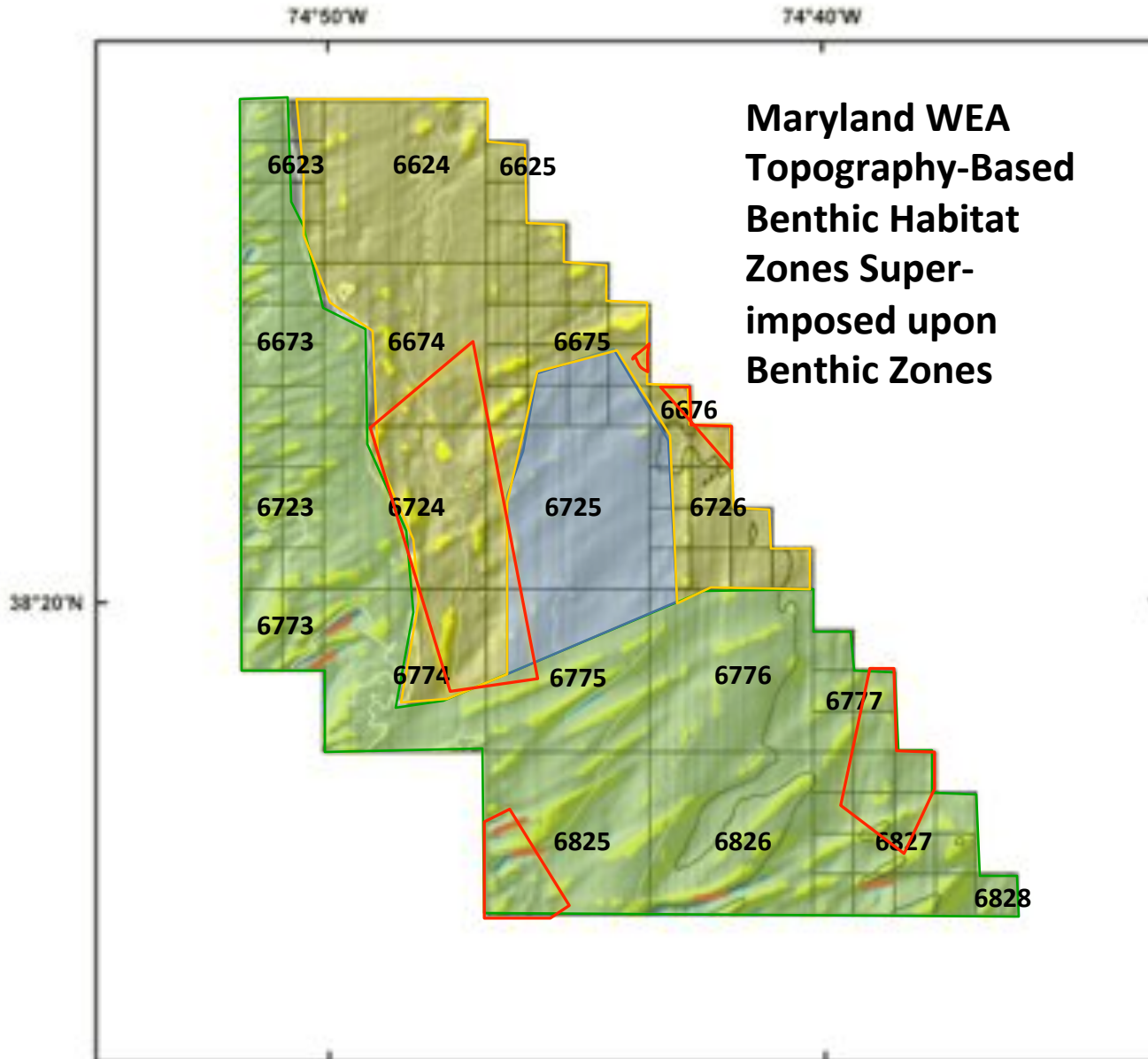
Benthic Zones

-  crest
-  depression
-  flat
-  slope
-  20MLLW
-  25MLLW
-  30MLLW
-  Angler Reef Zones
-  MD Wind Energy Area

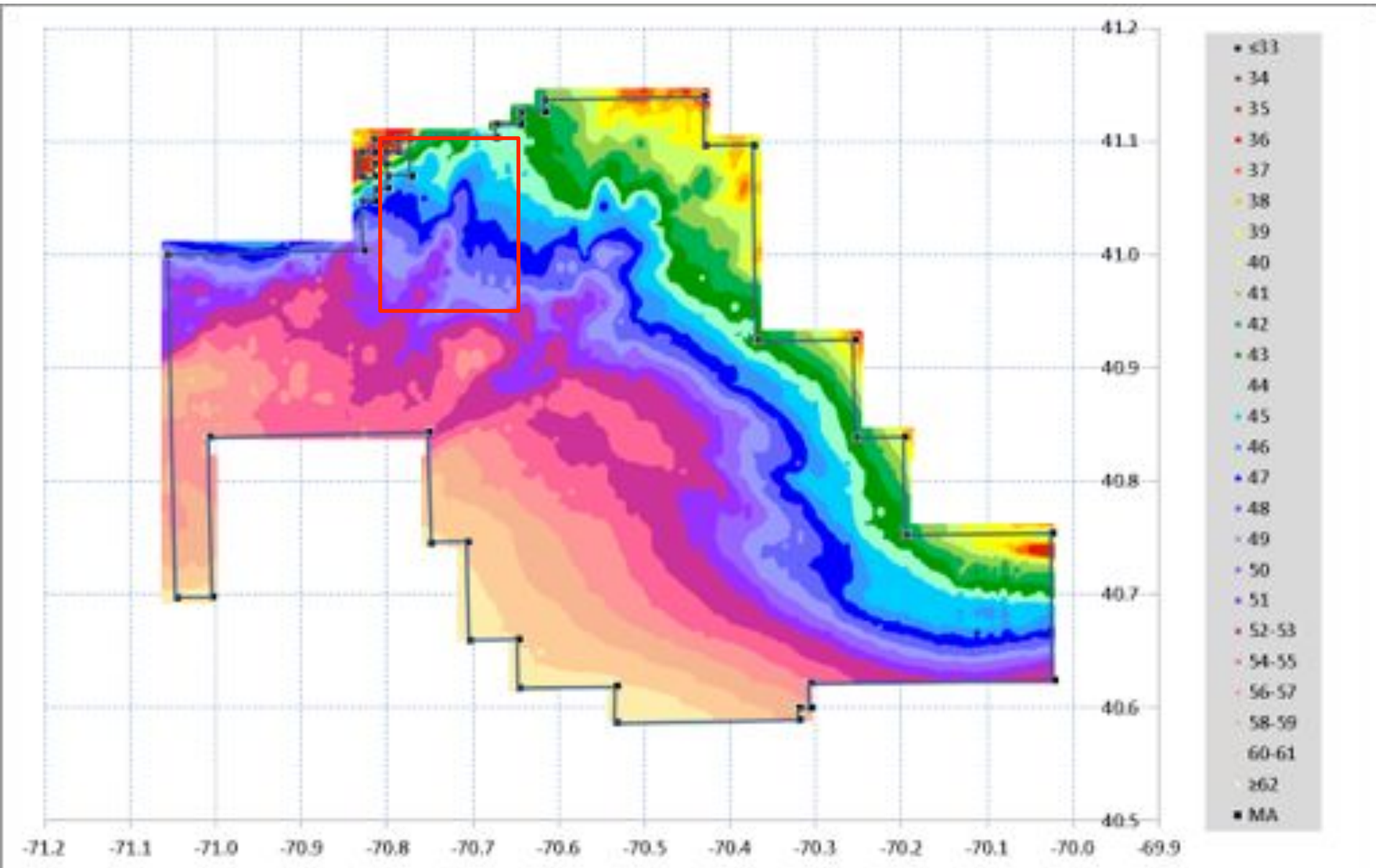
Topography-Based Benthic Habitat Zones

-  Irregular
-  Sand Ridge & Swale
-  Flat

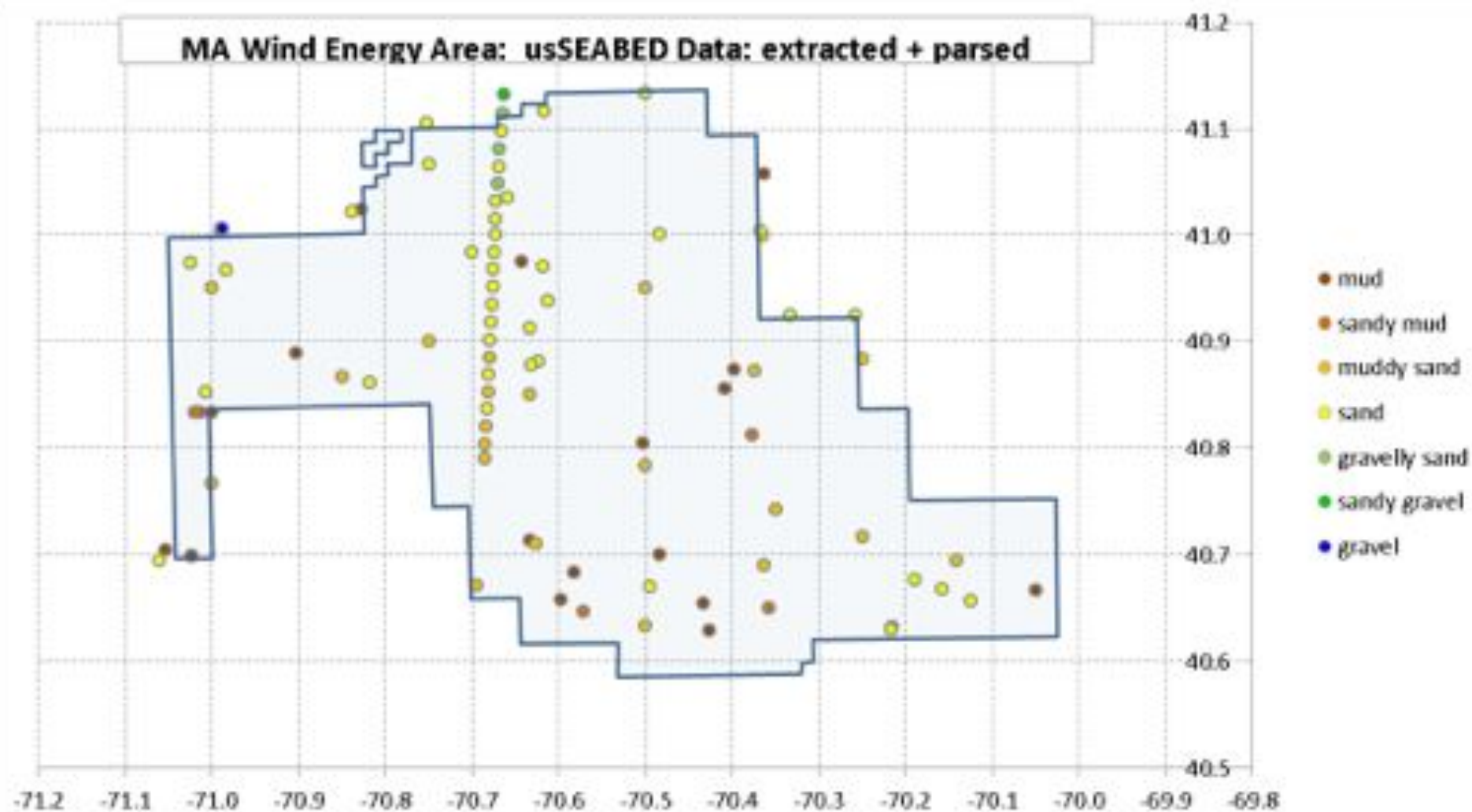
Coordinate System: NAD 1983 UTM Zone 18N
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 500 000 0000
False Northing: 0 0000
Central Meridian: -75 0000
Scale Factor: 0 9996
Latitude Of Origin: 0 0000
Units: Meter



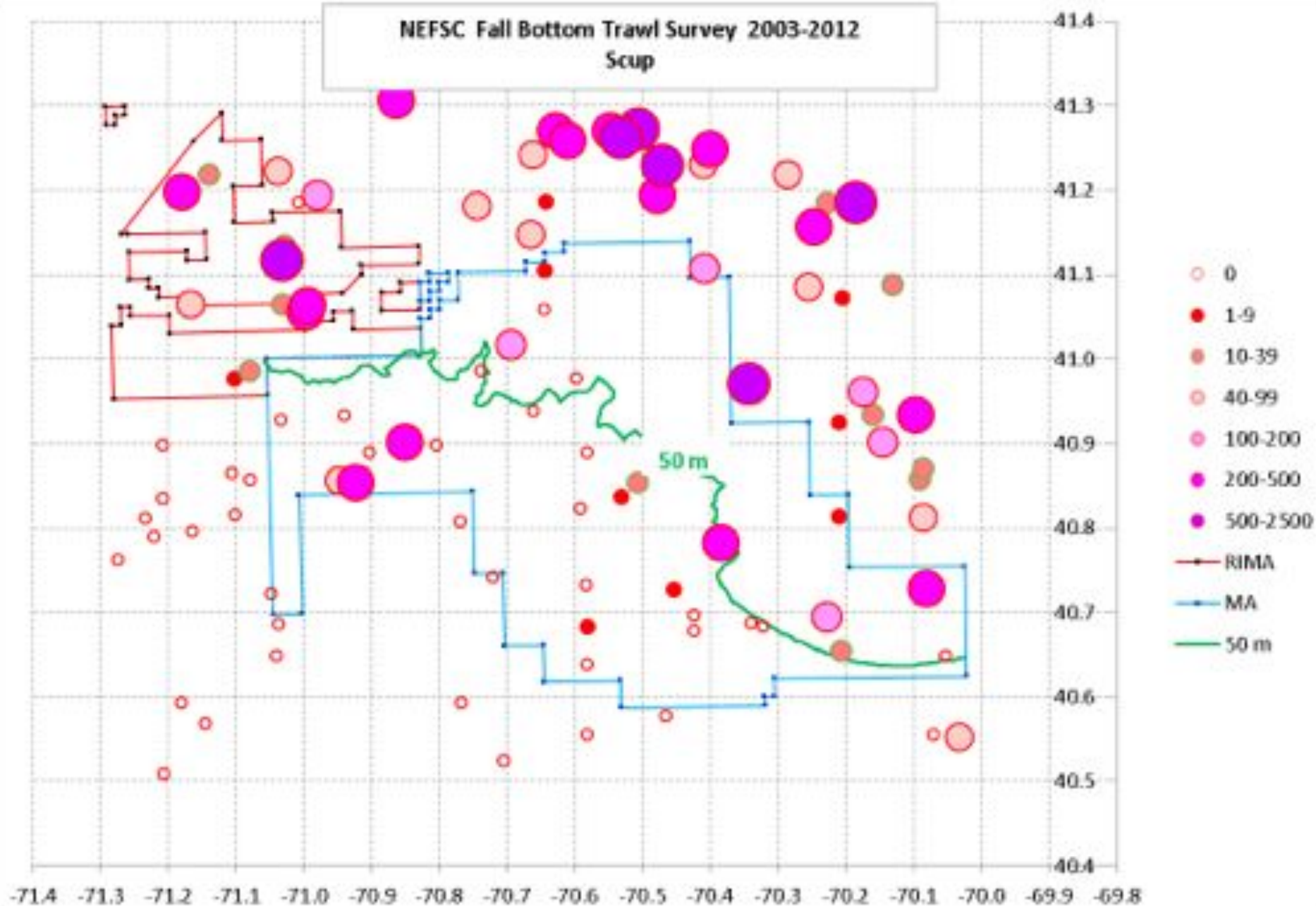
MA WEA Low Resolution (3 sec) Bathymetry



MA Wind Energy Area: usSEABED Data: extracted + parsed

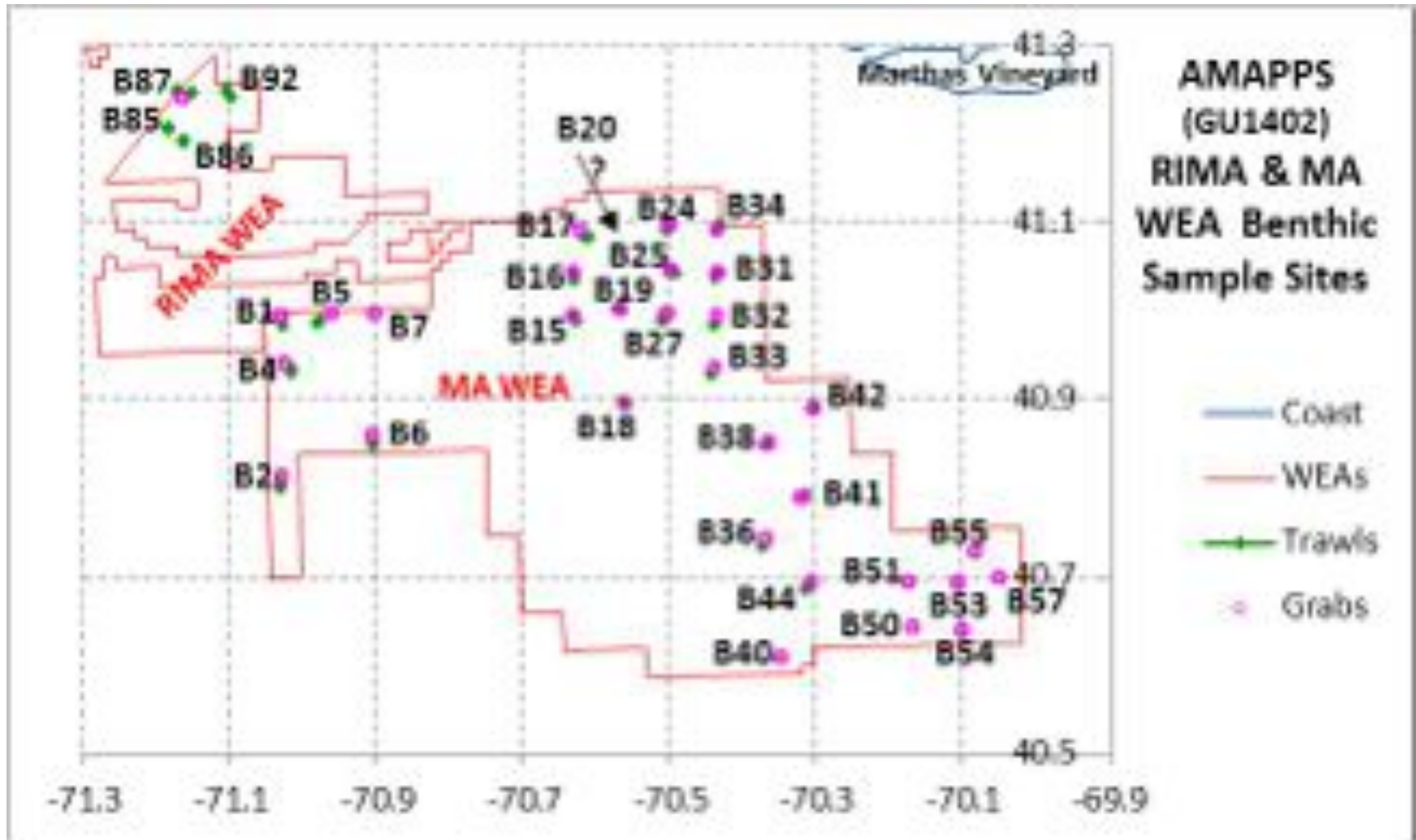


NEFSC Fall Bottom Trawl Survey 2003-2012
Scup



AMAPPS CRUISE 2014 - Benthic Sampling

Regime MA & RIMA: 990,991 acres



**SANDY HOOK IMAGE
& MODELING
ANALYSIS GROUP
(IMAG)
LABORATORY**



5 14
0 21
7 28

**SANDY HOOK IMAGE
& MODELING
ANALYSIS GROUP
(IMAG)
LABORATORY**



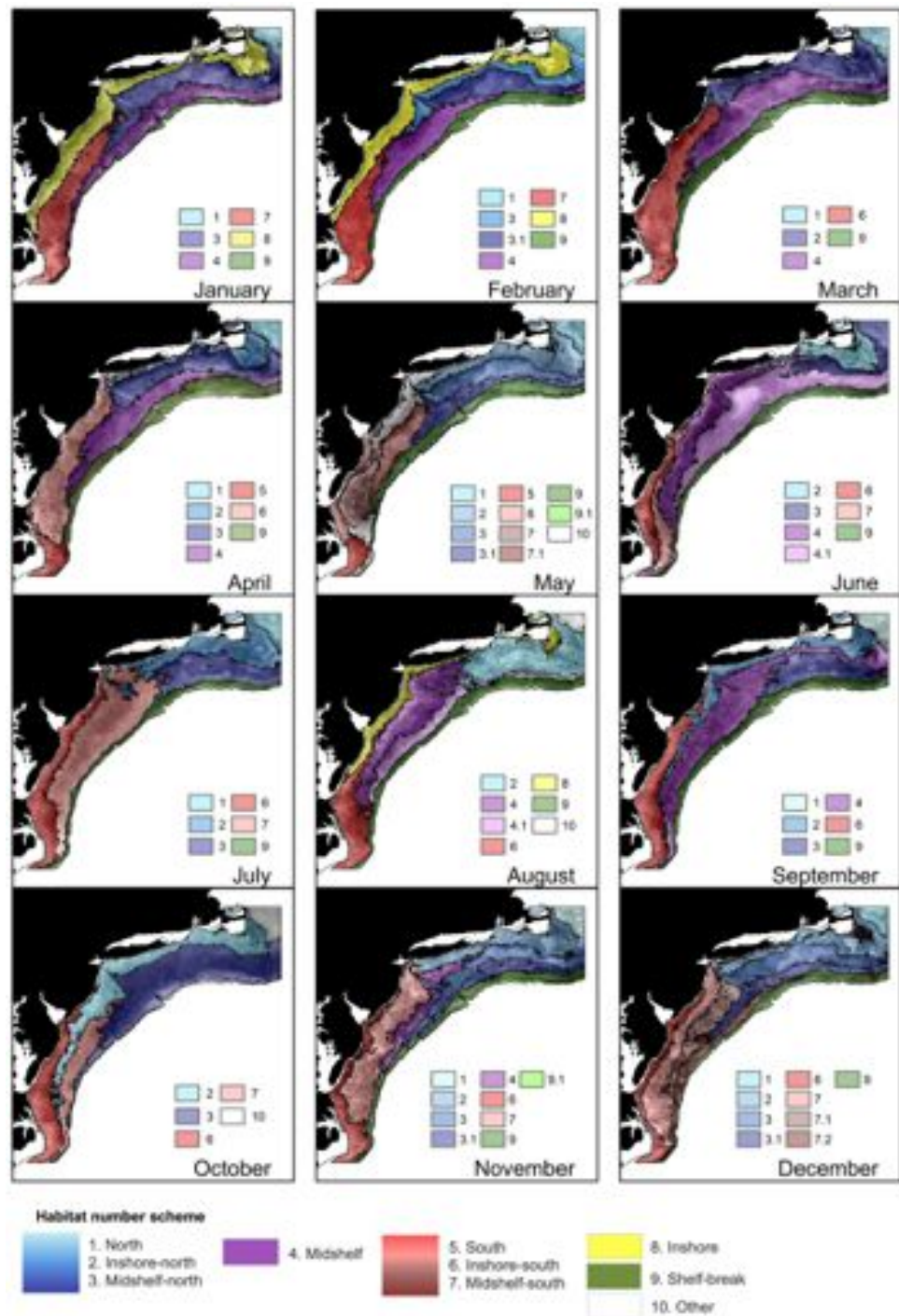
**JENN McHENRY & HEATHER WELCH
ABOARD HABITAT CRUISE ON *HENRY
B. BIGELOW*: AUGUST, 2015**



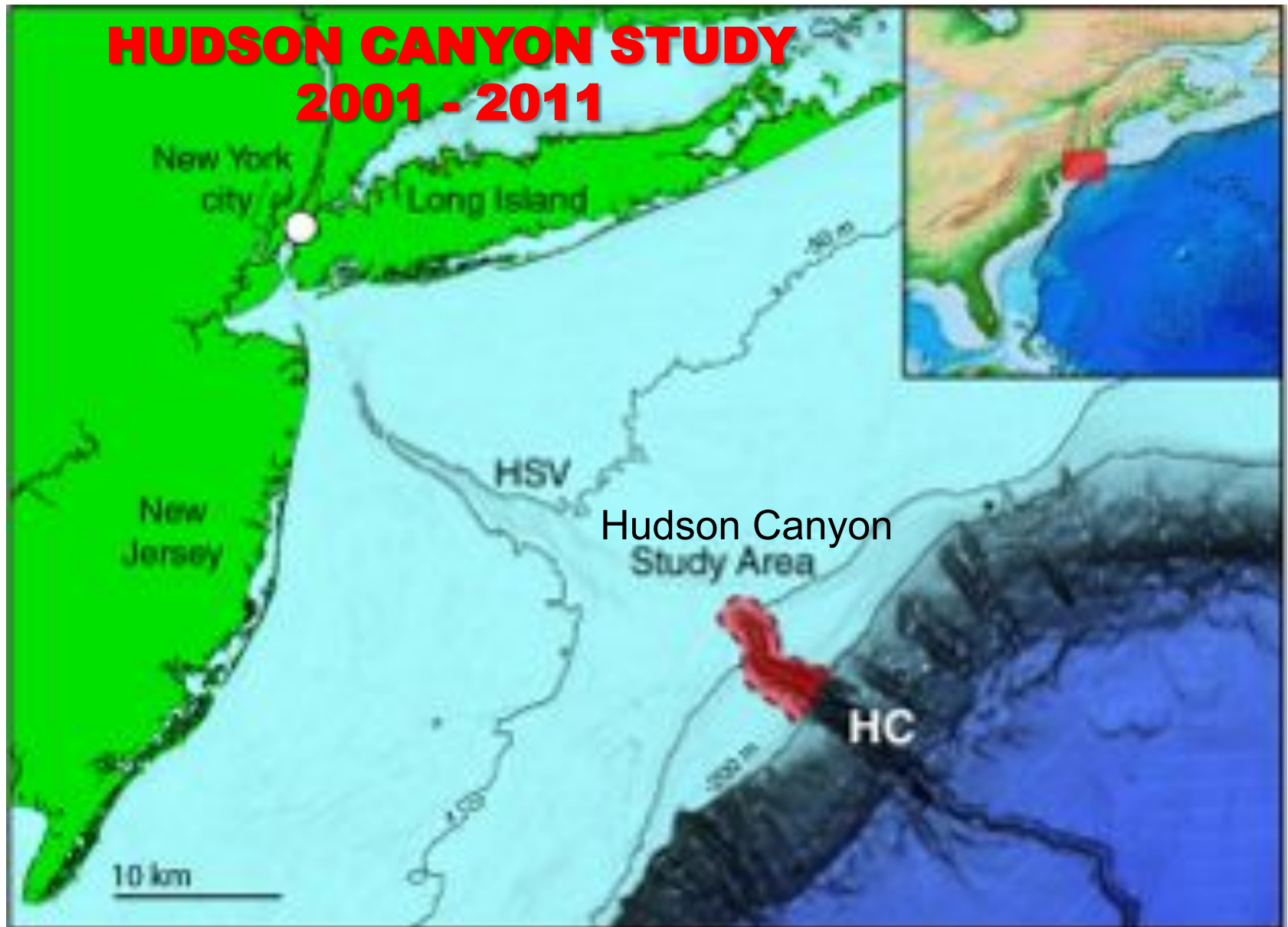
RESULTS

Monthly Assemblage Maps: Connecting Individual Species Habitat Suitability with Ecosystem Fisheries Patterns

- 85 distinct species
- Internal variation in suitability



HUDSON CANYON STUDY 2001 - 2011



PAGE VALENTINE WITH USGS SEABOSS CAMERA VEHICLE





National Institute for
Undersea Science & Technology

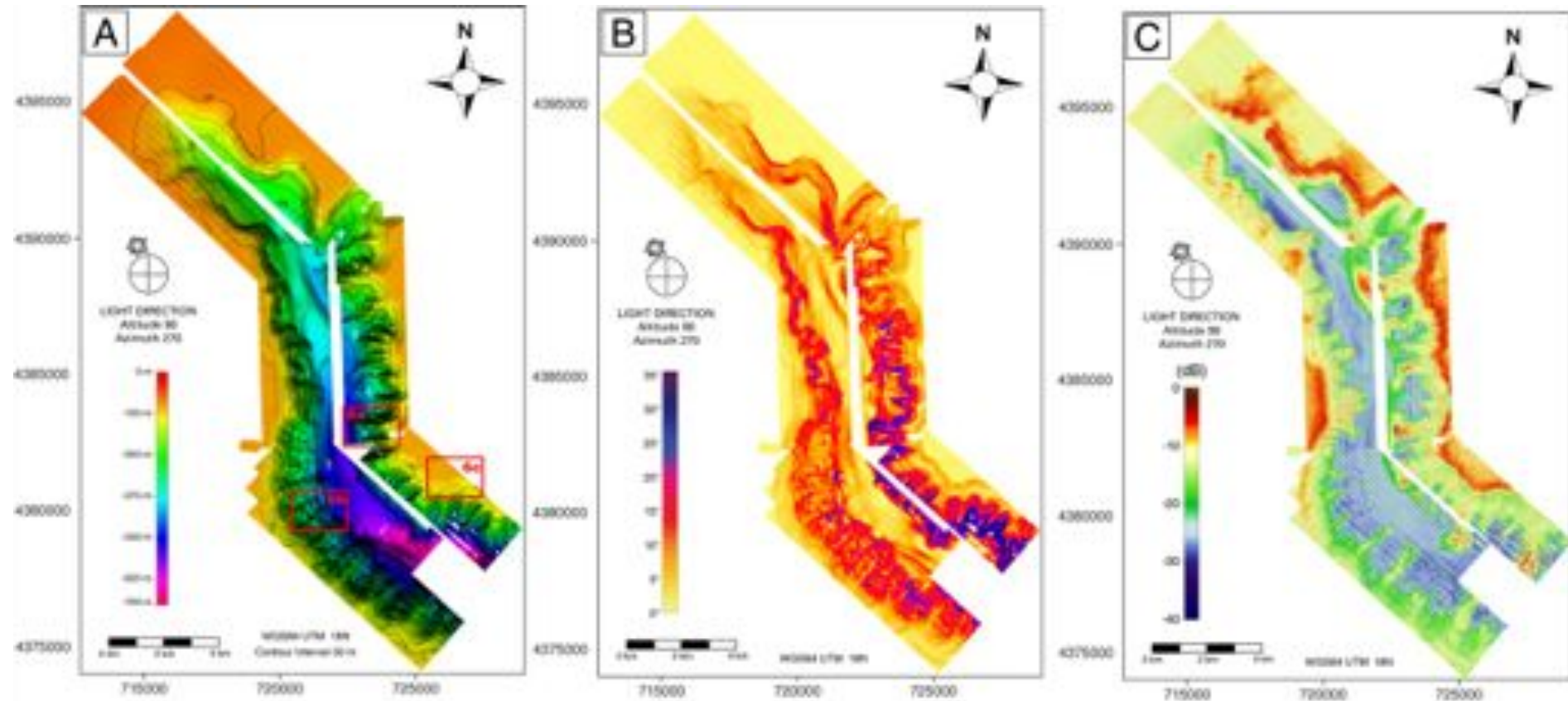
NIUST Eagle Ray mapping AUV and crew



Bathymetry

Slope

Backscatter

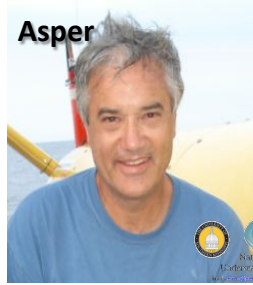


Ultra High Resolution (~2 m horizontal) Multibeam Sonar Mapping

Hudson Canyon Expert Academic Team



Rona
Geologist
Oceanographer



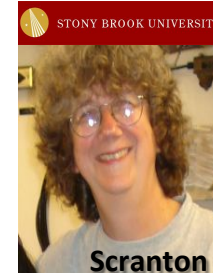
Asper
Engineer



Diercks
Engineer



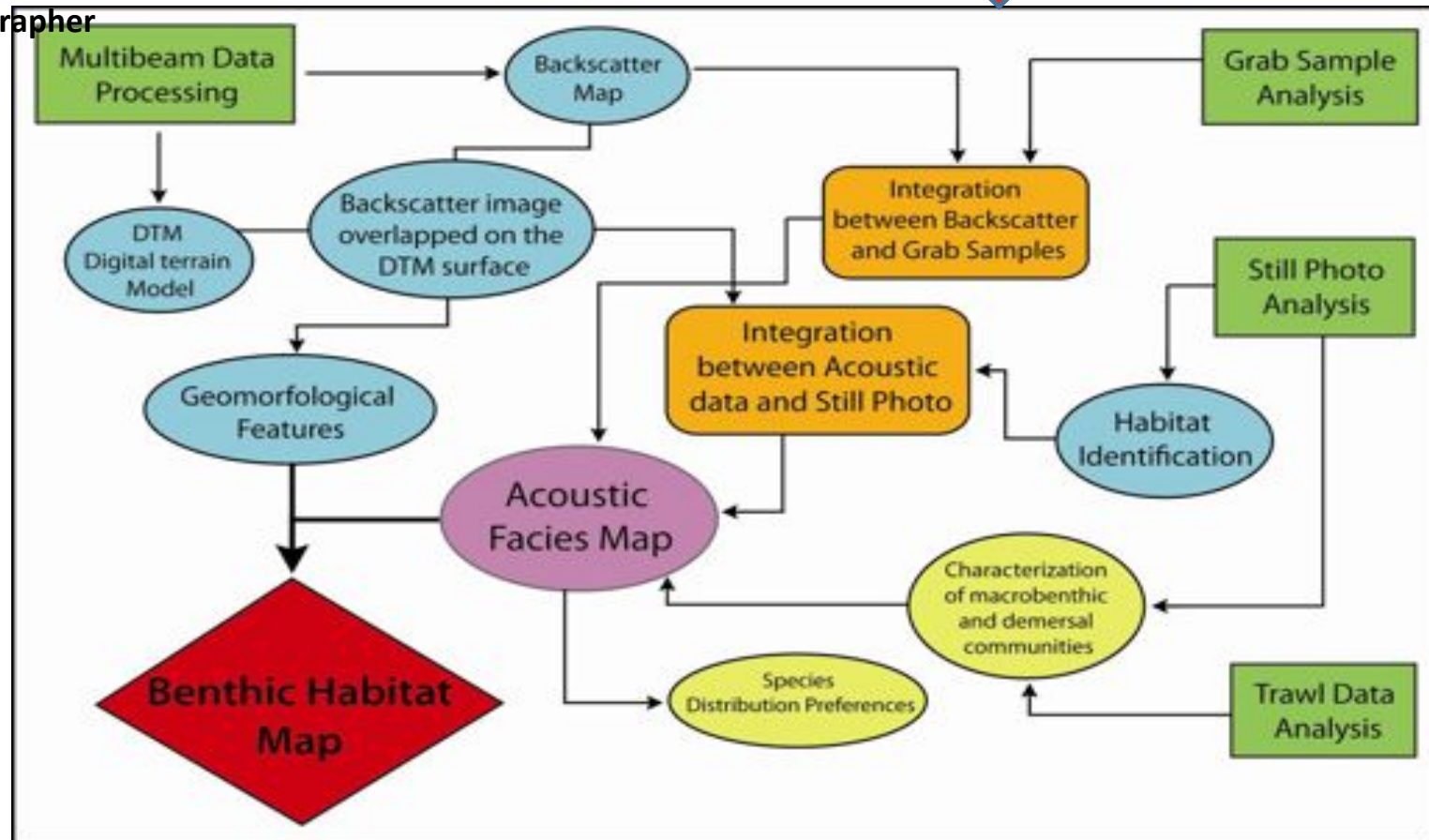
Macelloni
Hydrographer



Scranton
Mar. Chemist



Gong



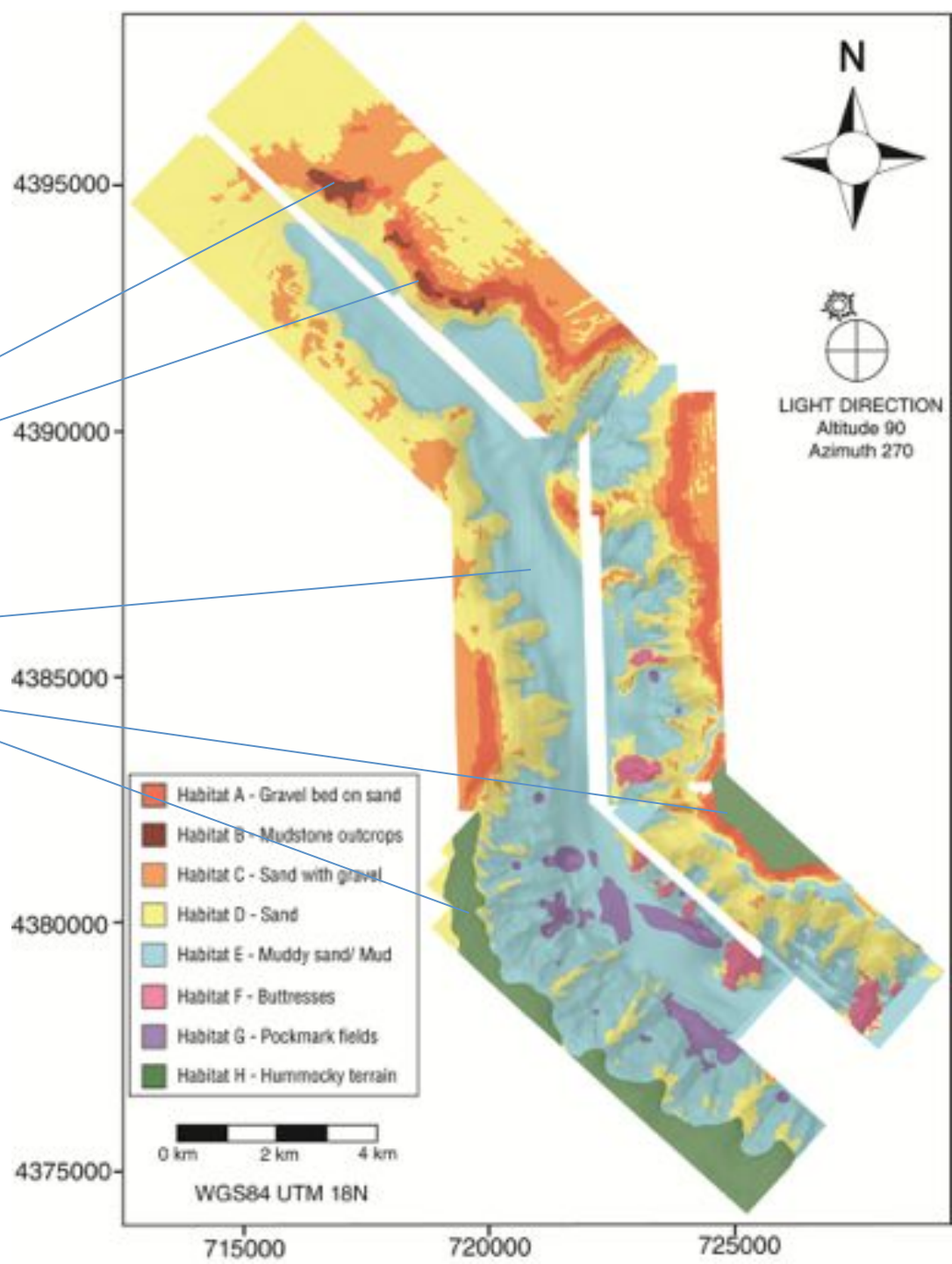
HUDSON CANYON HABITATS

Amer. Lobster

Deep Sea Red Crab

Golden Tilefish

from Pierdomenico et al. 2015



THE KEY TO OBTAINING HIGH QUALITY COLLABORATORS

Henry B. Bigelow



QUESTIONS?

