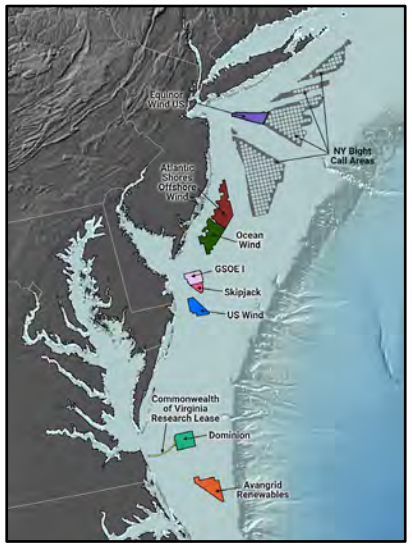

# Using future projections for ocean planning:
# RE-IMAGINING DECISION-MAKING IN THE OCEAN

MARTA RIBERA, PhD
Spatial Ecologist. The Nature Conservancy | May 5th 2022

# TWO YEARS AGO ... OUR CHALLENGE




- Review time for EIS is short, often 30-45 days.
- We live in a data-rich region, but difficult to query all these different pieces of information
- No reference of what to look for in each region

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Virginia Coastal Zone MANAGEMENT PROGRAM



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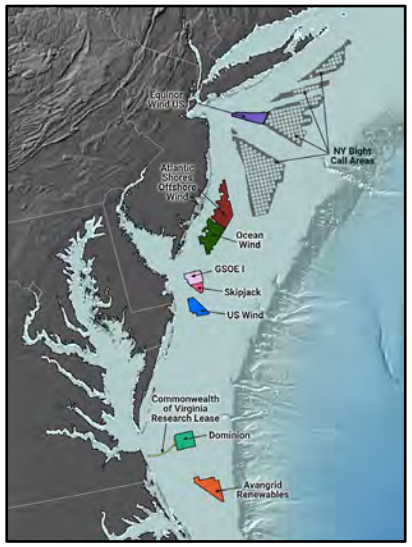


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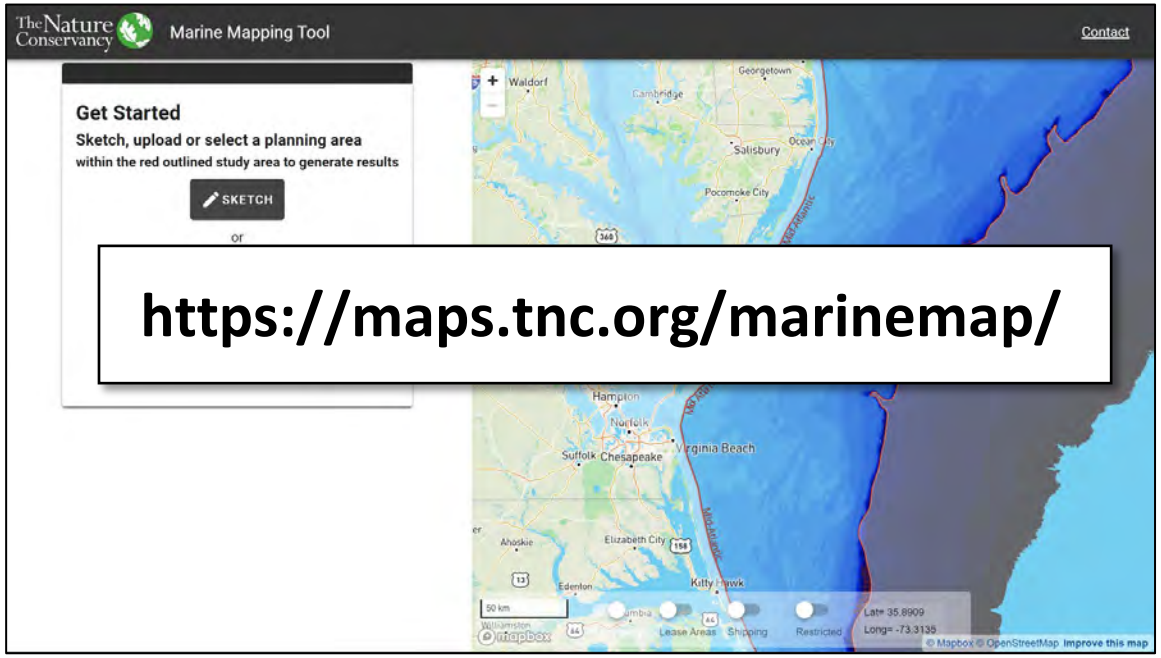
## MARINE MAPPING TOOL




Leverage marine-life and habitat data available to provide guidance related to wind energy development.

Facilitate the review of all information from a site or project area

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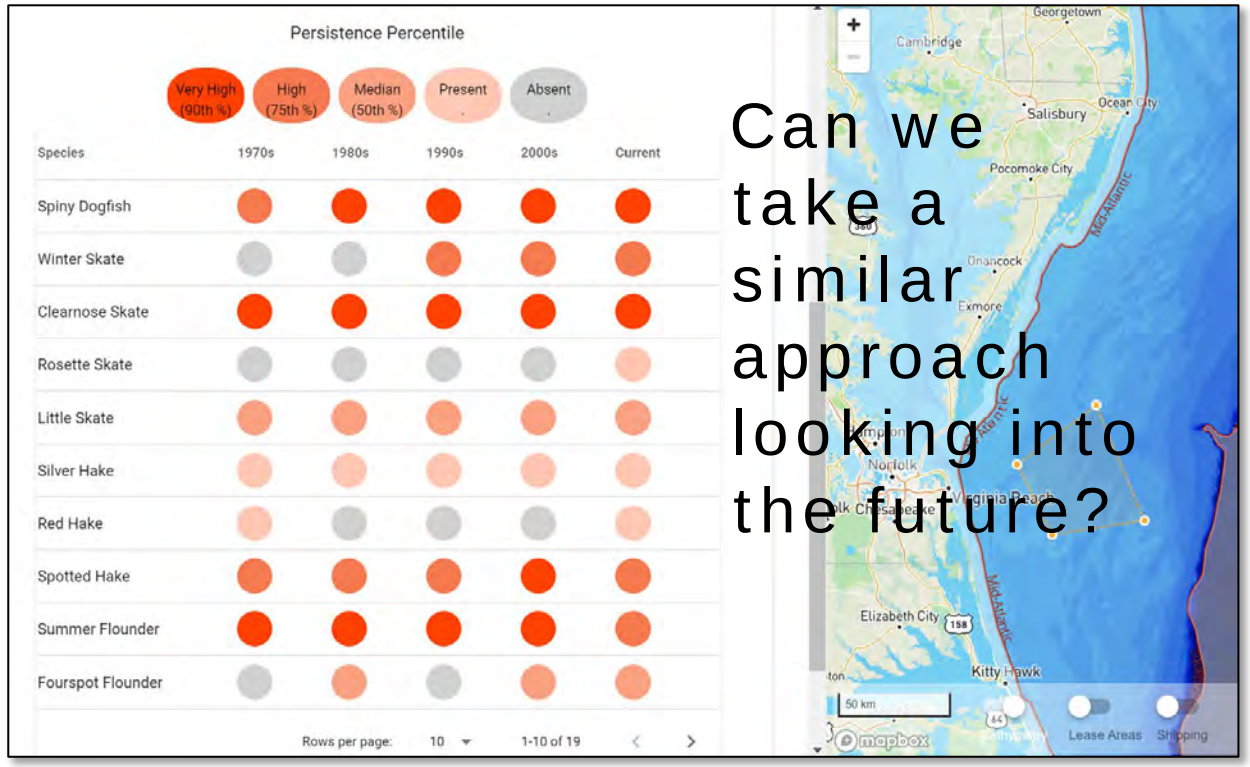
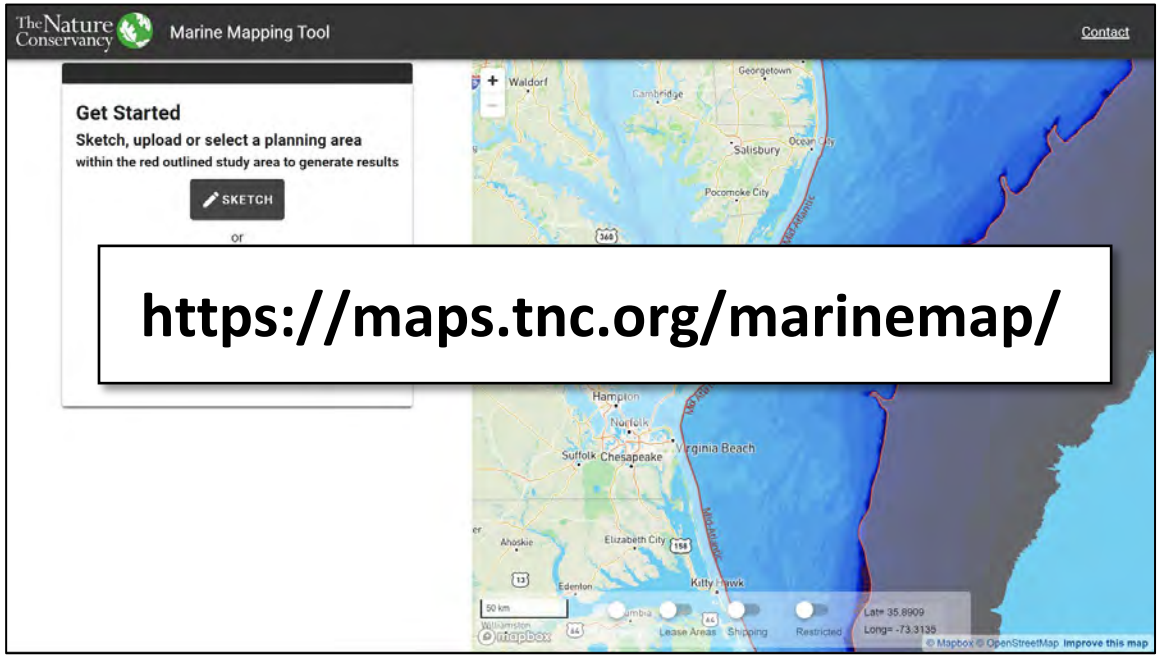



Can we take a similar approach looking into the future?

# MARINE MAPPING TOOL

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The New York Times

# Ocean Heat Waves Are Threatening Marine Life

By Kendra Pierre-Louis and Nadja Popovich

March 4, 2019

When deadly heat waves hit on land, we hear about them. But the oceans can have heat waves, too. They are now happening far more frequently than they did last century and are harming marine life, according to a new study.

Change in the number of **marine heat wave days** compared to the mid-20th century.

The Washington Post
*Democracy Dies in Darkness*

Capital Weather Gang

# Ocean warmth sets record high in 2021 as a result of greenhouse gas emissions

Since the late 1980s, Earth's oceans warmed at a rate eight times faster than in the preceding decades

NEWS BUSINESS OPINION SPORTS A&E FOOD DO THIS

BUSINESS Posted December 17, 2021 | Updated December 17, 2021

# New England shrimp fishery to stay closed as waters warm

The shrimp prefer cold water and their population health is imperiled by the warming of the ocean off New England. The Gulf of Maine, in particular, is warming faster than most of the world's oceans.

BY PATRICK WHITTLE ASSOCIATED PRESS

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# Blue Crab Population Spreading Northward

BY DANA KOBILINSKY

March 19, 2015

A blue crab crawls on land, but also is a "swimmer" crab species, according to researcher David Johnson. In a recent study, Johnson found blue crabs are showing up farther north than their historic range due to climate change.
Image Credit: NOAA

ABOUT US PROGRAMS

MAINE LOBSTERMEN'S COMMUNITY ALLIANCE

*Protecting the Future, Preserving the Past*

# Our Changing Gulf: New Species, New Opportunities?

Posted on March 11, 2020 by MLA Staff in Science

The Gulf of Maine is growing warmer. From 1982 to 2013, the Gulf warmed by an average of 0.05 degrees F per decade. The rate of that increase in temperature took an upturn in 2004. The Gulf is now warming by an average of 0.04 degrees F per year, according to data from the Gulf of Maine Research Institute in Portland. The consequences of a warmer Gulf of Maine are many, ranging from the introduction of new marine species to alterations in the chemistry of the ocean itself.
During the next several months, Landings will explore some of the changes that Maine fishermen are experiencing due to changes in the Gulf's environment and look at what may face them in the near future.

REUTERS

World Business Legal Markets More

Commodities

# Analysis: Weak winds worsened Europe's power crunch; utilities need better storage

By Nora Buli and Stine Jacobsen

WPRI.COM 12 NEWS WEATHER COVID WATCH TARGET 12 SPORTS LOCAL PROGRAMS

# As lobsters shift north due to rising temps, RI fishing industry changes their catch

Climate change impact on the fishery industry
3 minutes left

Posted: Sep 27, 2019 / 07:44 PM EDT / Updated: Sep 27, 2019 / 07:50 PM EDT



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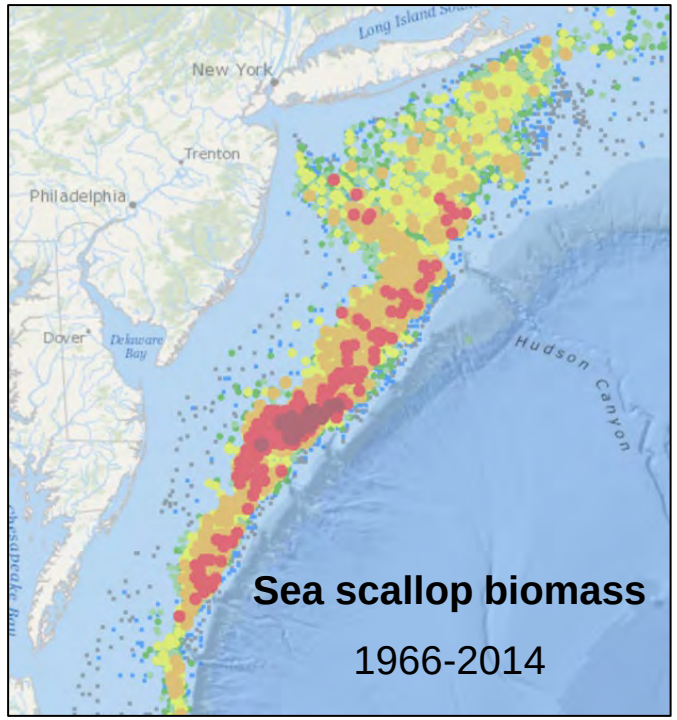
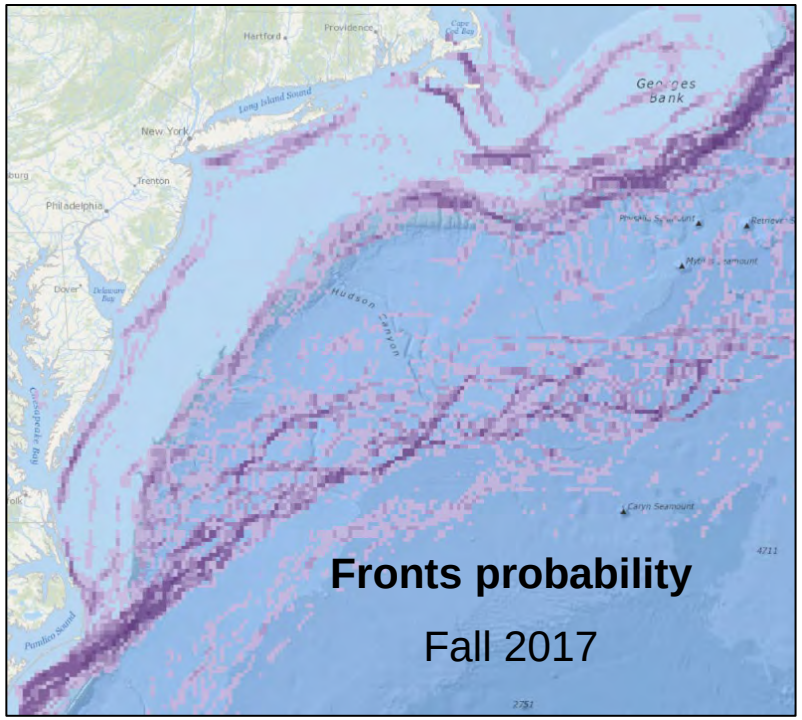
# Current decisions are made with a snapshot of what the system looked like **several years ago**



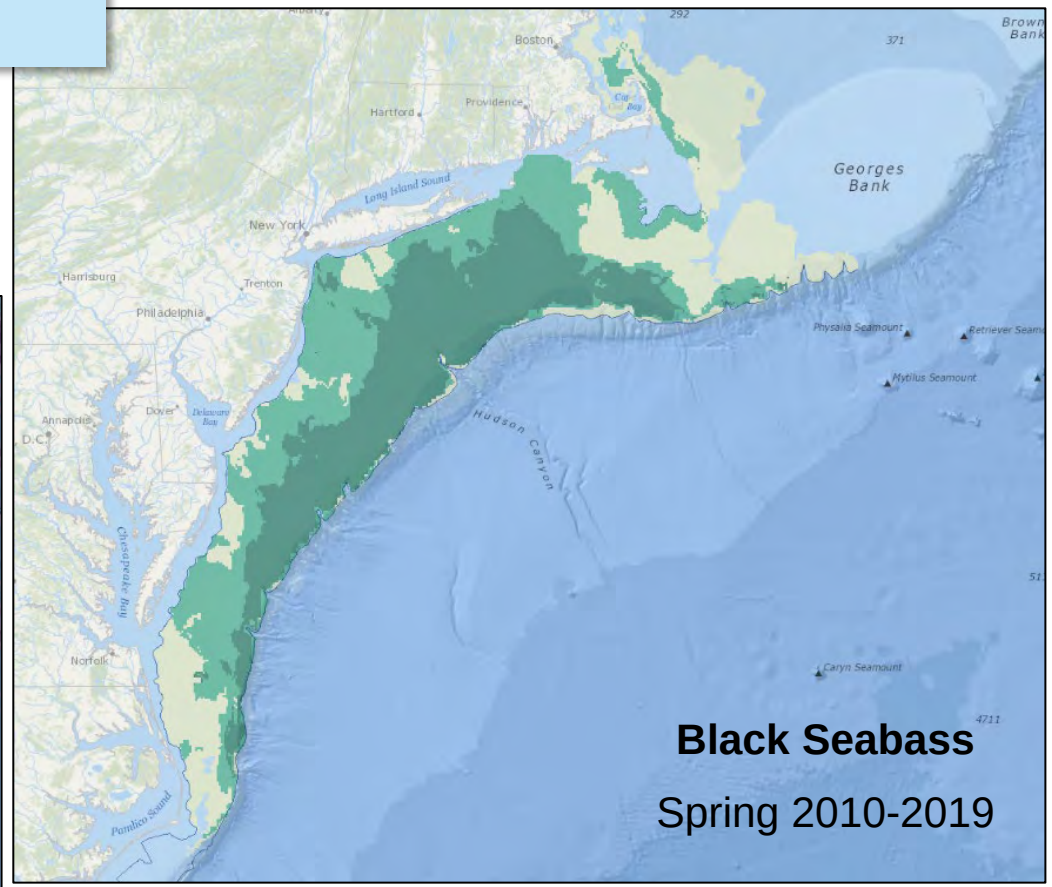

**Sea scallop biomass**

1966-2014




**Fronts probability**

Fall 2017




**Black Seabass**

Spring 2010-2019



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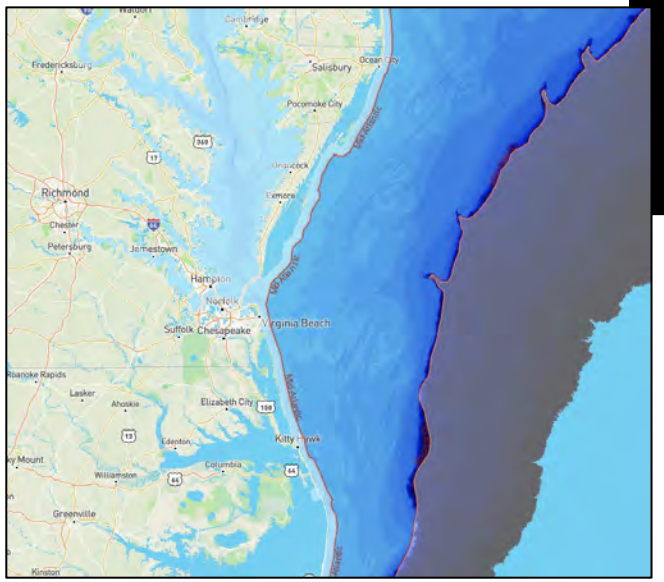
Current decisions are made with a snapshot of what the system looked like **several years ago**

Scale of our data doesn't match the **scale of decision-making**

When we do species projections, we look at things this scale …

when we should be looking at what happens at this scale …



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Current decisions are made with a snapshot of what the system looked like **several years ago**

Scale of our data doesn't match the **scale of decision-making**

Data are often **only accessible** to a select group of people

Information not accessible to people that directly depend on the ocean and are impacted by decisions on the ocean.



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# How do we make better decisions in the ocean ?

NSF's Convergence Accelerator

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FutureBlue

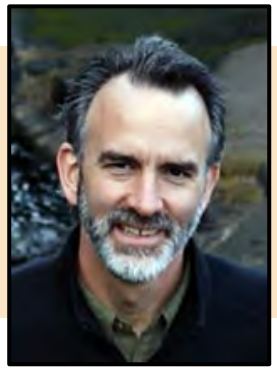
NSF's Convergence Accelerator

Malin Pinsky

Lyndie Hice-Dunton

Sam Siedlecki

Marta Ribera



Kevin St. Martin

RUTGERS ROSA UCONN The Nature Conservancy NOAA WISCONSIN UNIVERSITY OF WISCONSIN-MADISON



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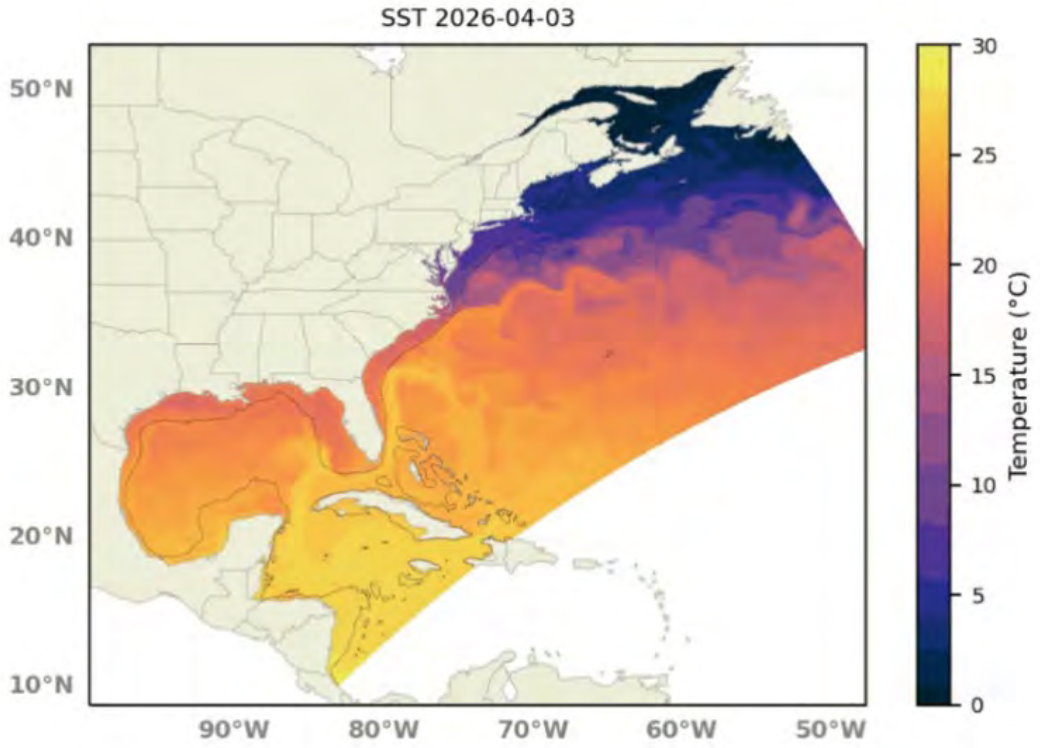
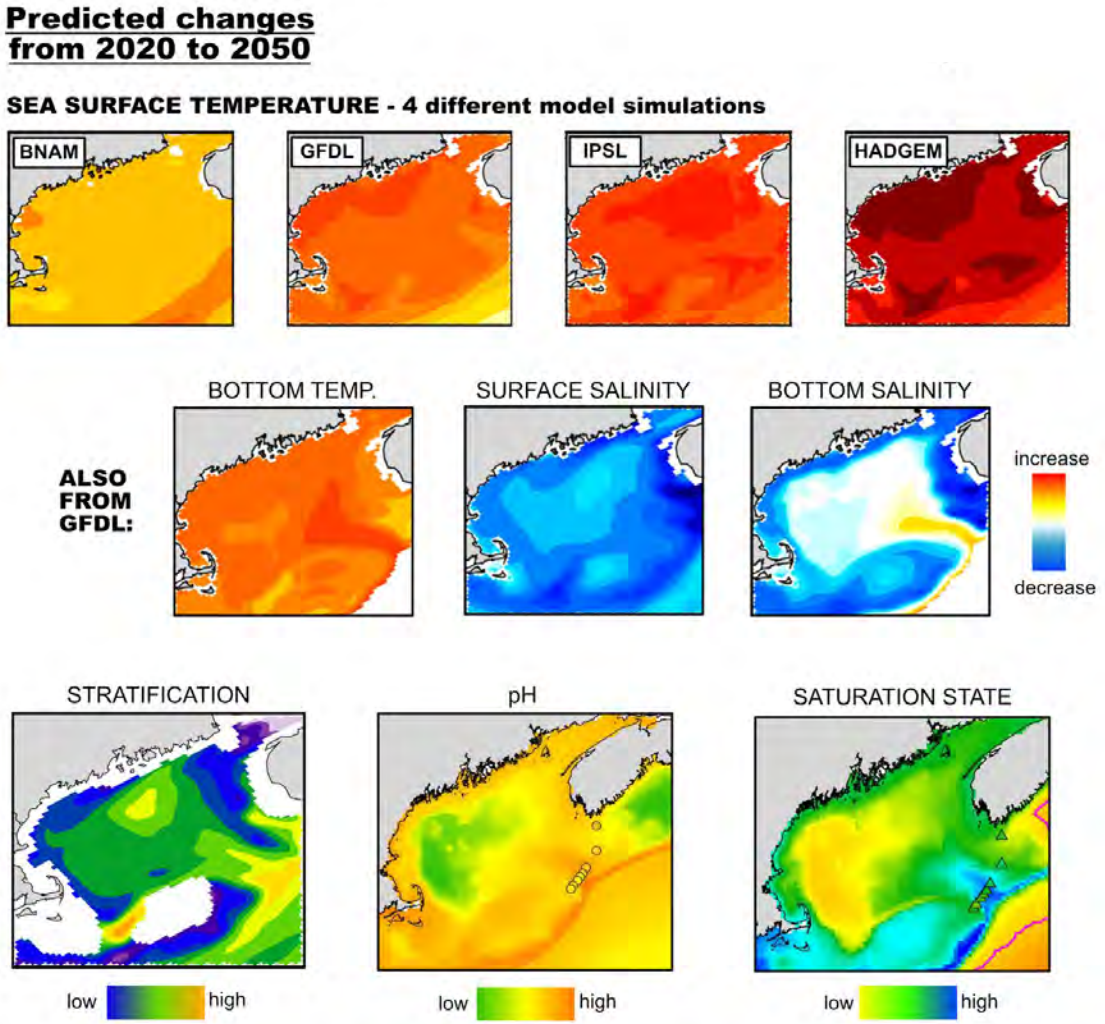
# We are ...

1 **Developing downscaled projections**, that are near-term and focused on local resources



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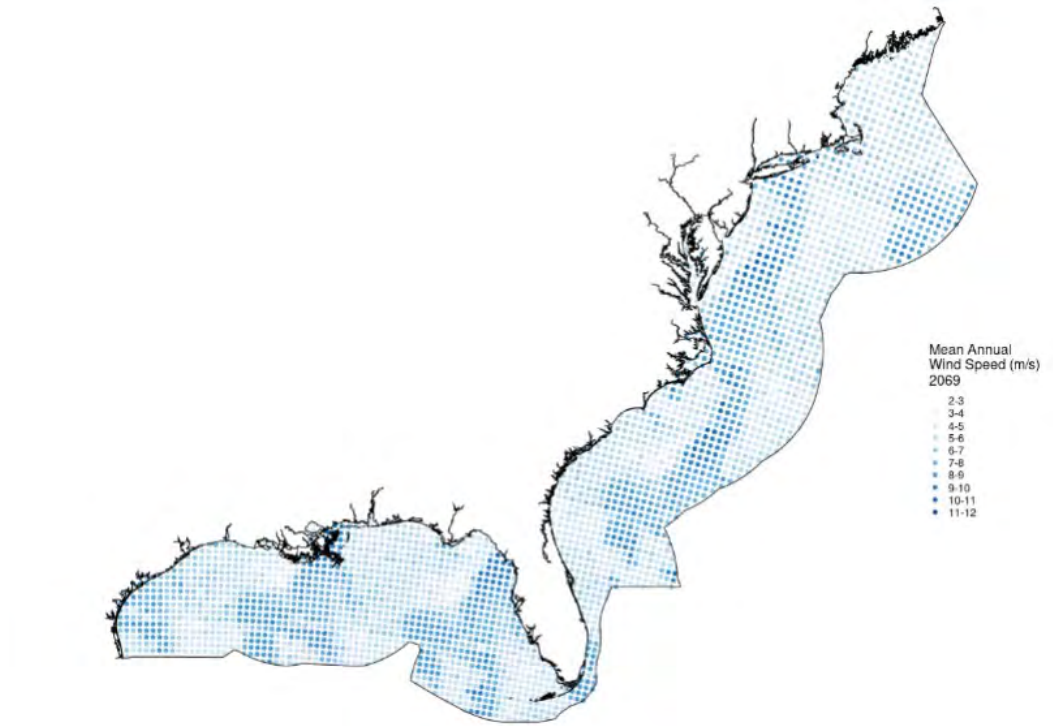


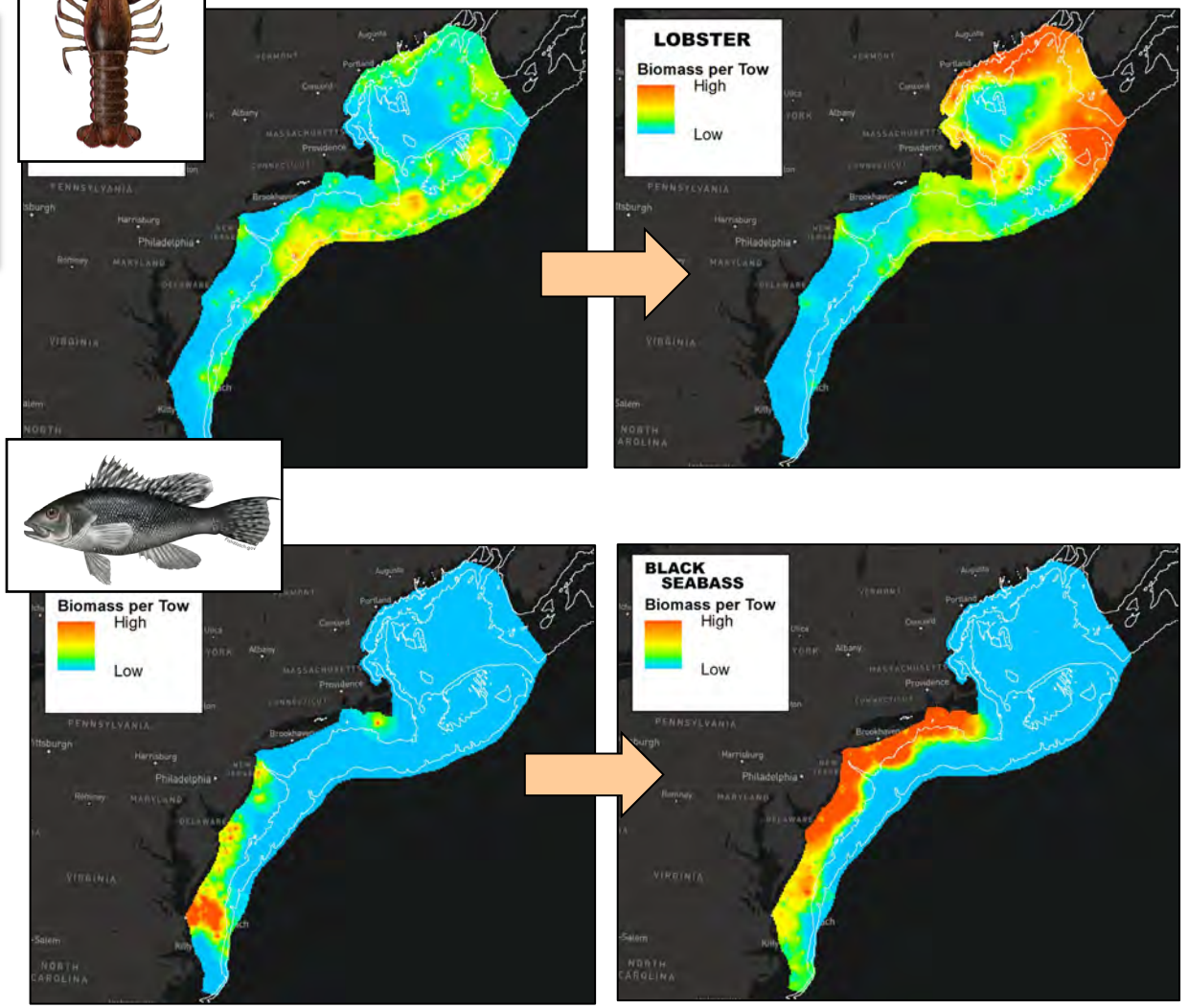




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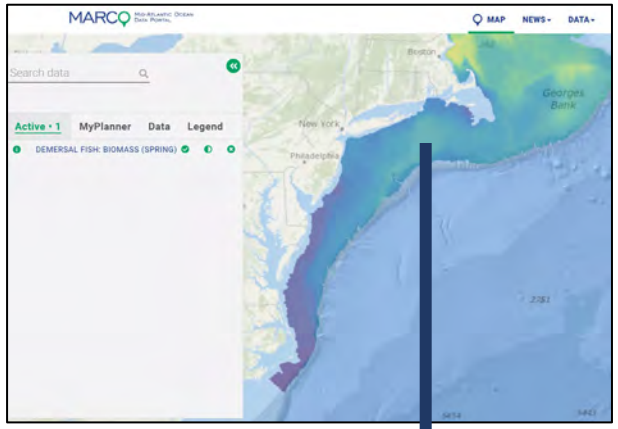
# We are ...

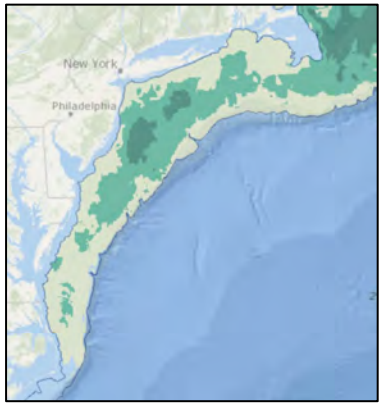
**1.** Downscaling projections

## 2 Choosing **metrics** that answer questions people have



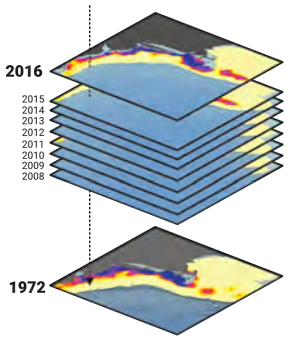

"In this location, demersal fish have a combined biomass of 100".

### WITHIN A REGION




Does this location have a higher number of species than the whole region?

### ACROSS TIME




Is this location known to aggregate species persistently over time? Is it expected to change?

### WITHIN A COMMUNITY

Will my community have increased fishing opportunities in the future?



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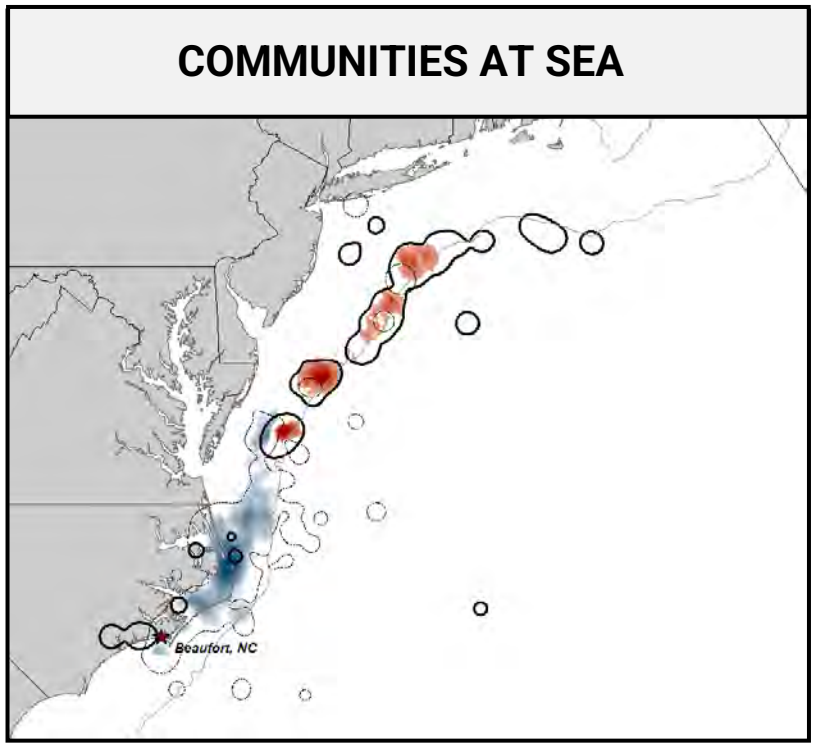
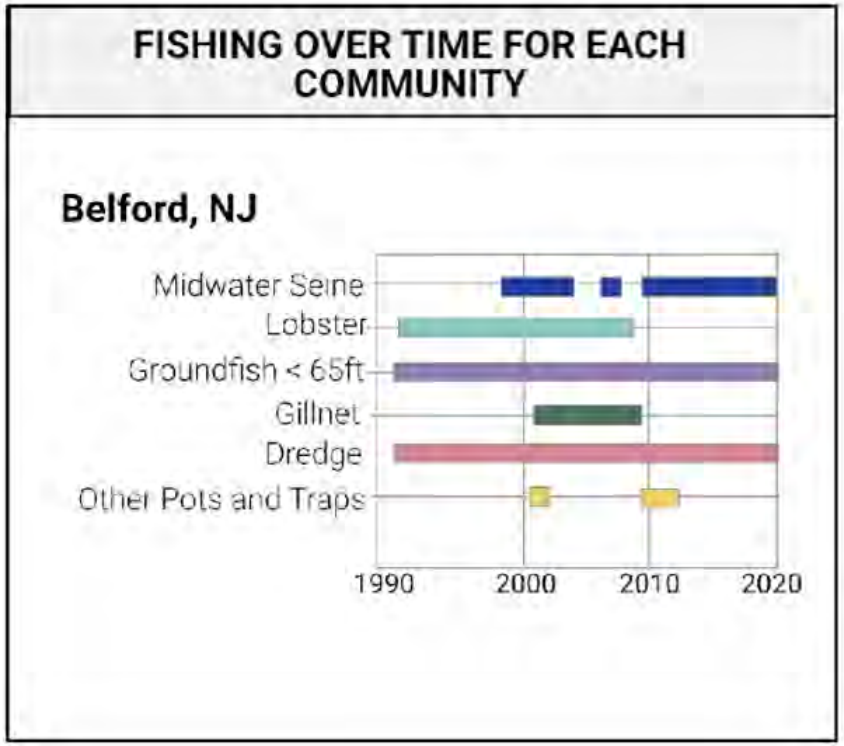
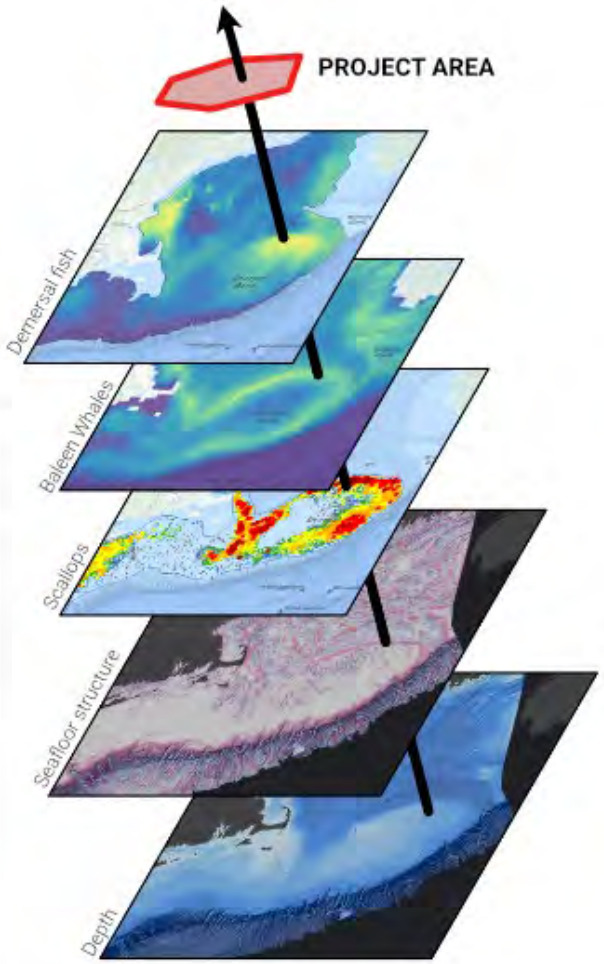
# We are ...

**1.** Downscaling projections

## 2 Choosing **metrics** that answer questions people have



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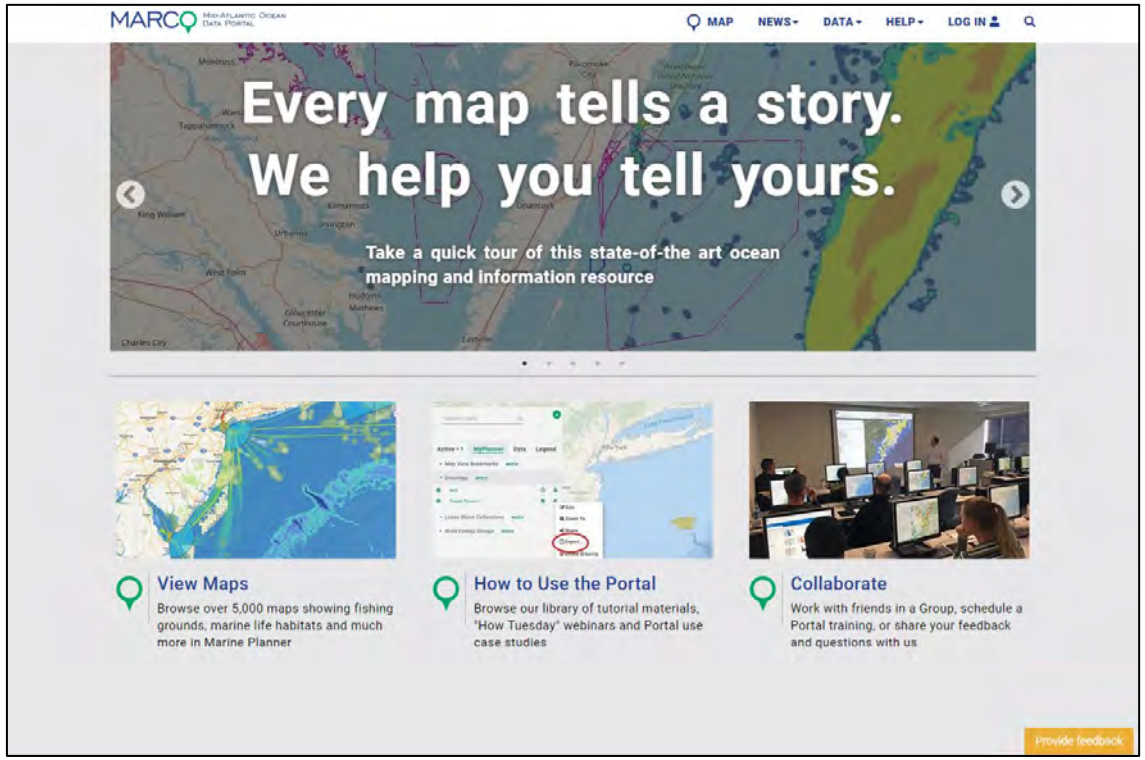
# We are ...

**1.** Downscaling projections

**2.** Choose relevant **metrics and information**

## 3 Using **current platforms** that people trust



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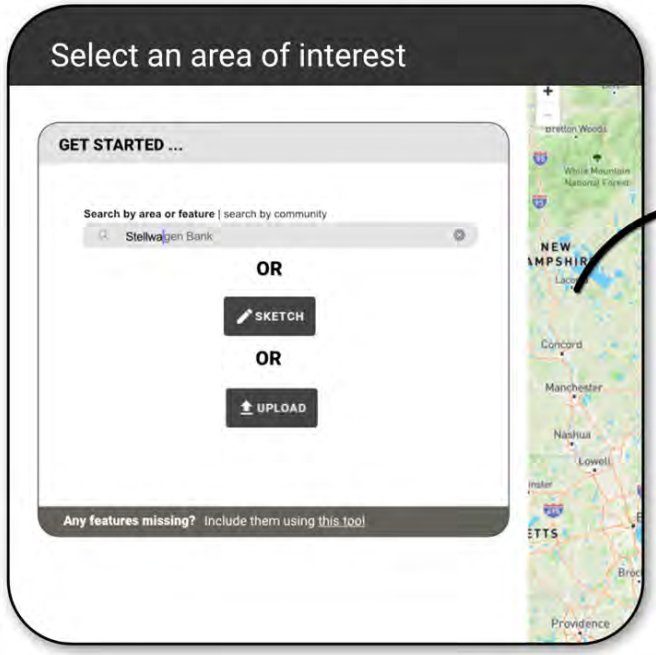
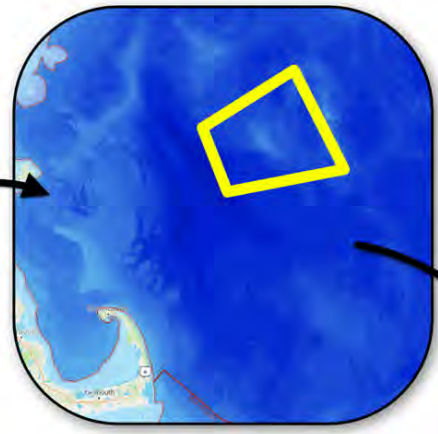
# We are ...

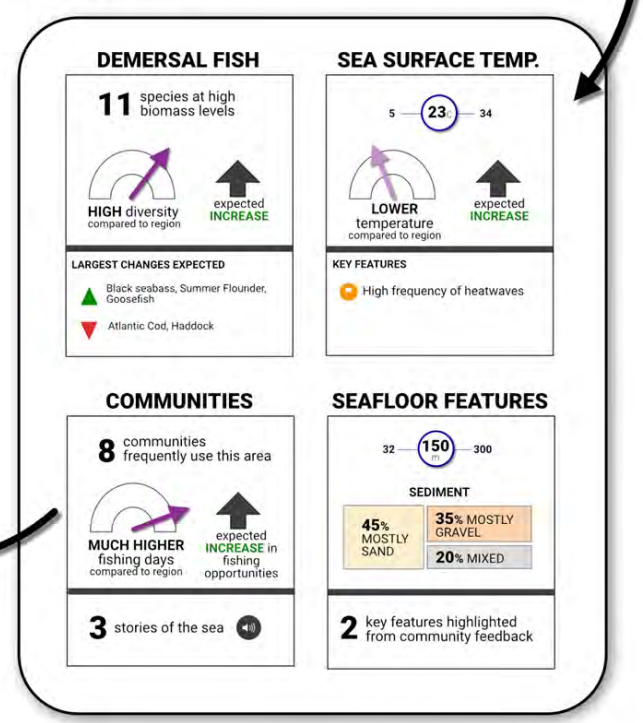
1. Downscaling projections
2. Choosing relevant metrics and information
3. Using current distribution channels

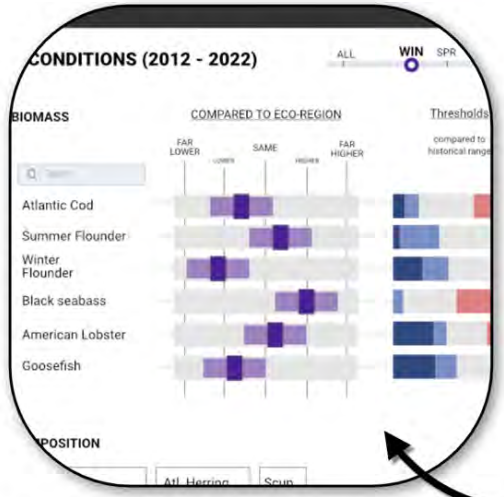
**4** Developing a **tool** that facilitates use and discovery of information about a site



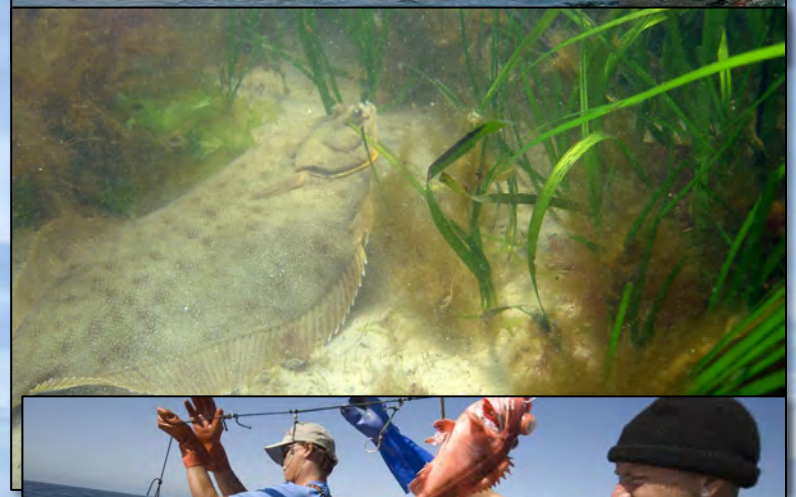



Get an overview of the characteristics, features, species, and communities found in the area, and how these are likely to change in the future.




Dig deeper into each piece of information to see species data, historical information, and the different scenarios and models that predict future conditions.



# Why Now?

NSF's Convergence Accelerator

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# Questions?