Healthy Ocean & Coastal Ecosystem Goal

1. **Address Action 1-1: Data and methods for marine life distribution and abundance**
   - Inventory existing marine life data sources in the Northeast

2. **Address Action 1-2: Assess regional efforts to identify areas of ecological importance or measure the health of the marine ecosystem**
   - Inventory existing marine ecosystem assessment methods, concentrating on those implemented in the Northeast

2. Address Action 1-2: Assess regional efforts to identify areas of ecological importance or measure the health of the marine ecosystem

A. Identification of areas of ecological importance
   i. Species hotspots, biodiversity and/or habitat hotspots
   ii. Ecologically important areas

B. Measuring ocean health
   i. Single-species, single-impact models
   ii. Cumulative impacts
   iii. Ocean Health Index, or other indices

C. Tradeoffs

2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

Inventory existing marine ecosystem assessment methods, concentrating on those implemented in the Northeast

a. Complexity

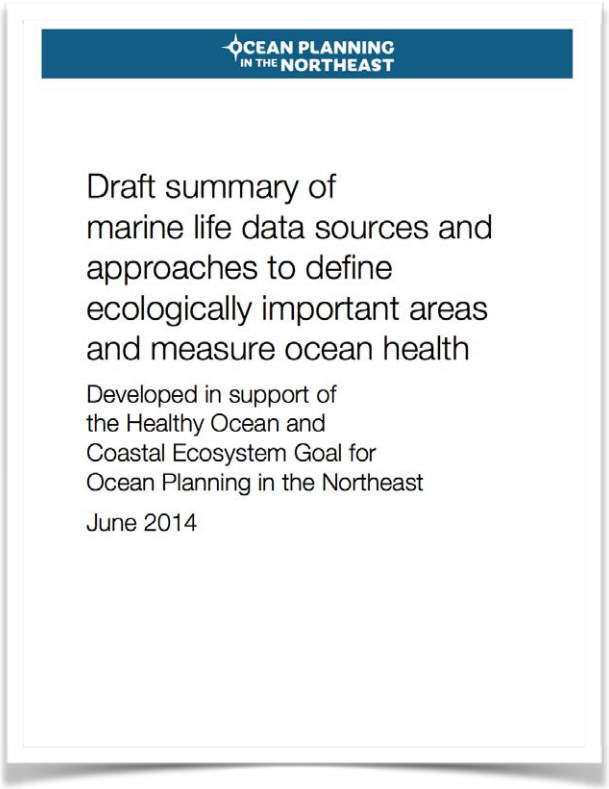
b. Model requirements

c. Data availability

d. NROC / RPB capacity

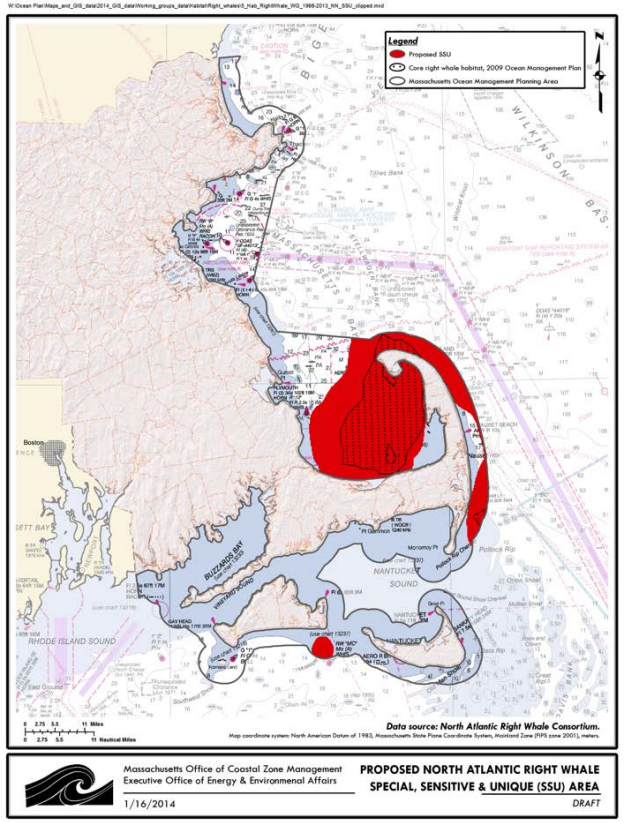
e. Application “in real life” - are they in use?

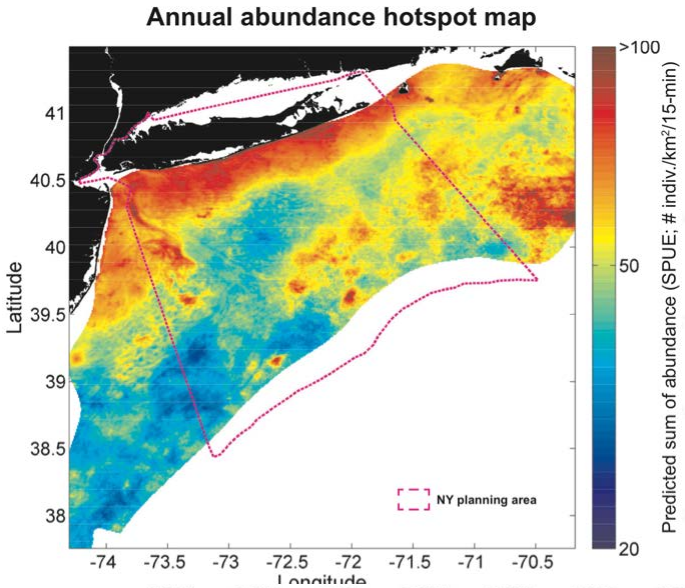
f. Relevance to ocean planning goals



2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

A. Identification of Areas





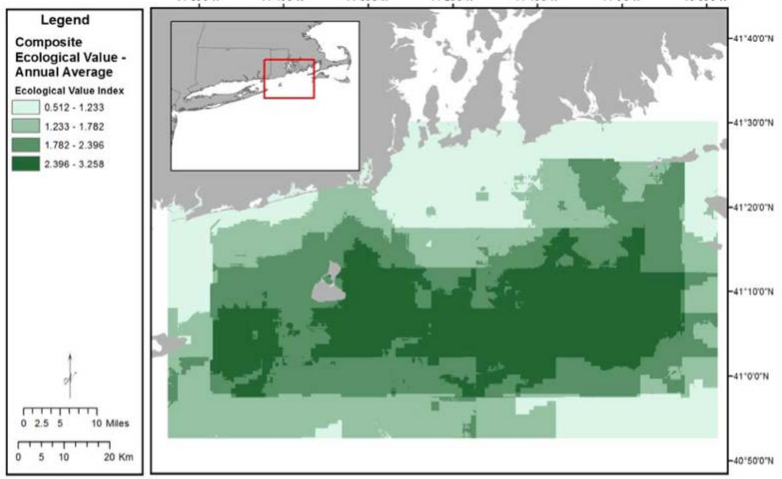


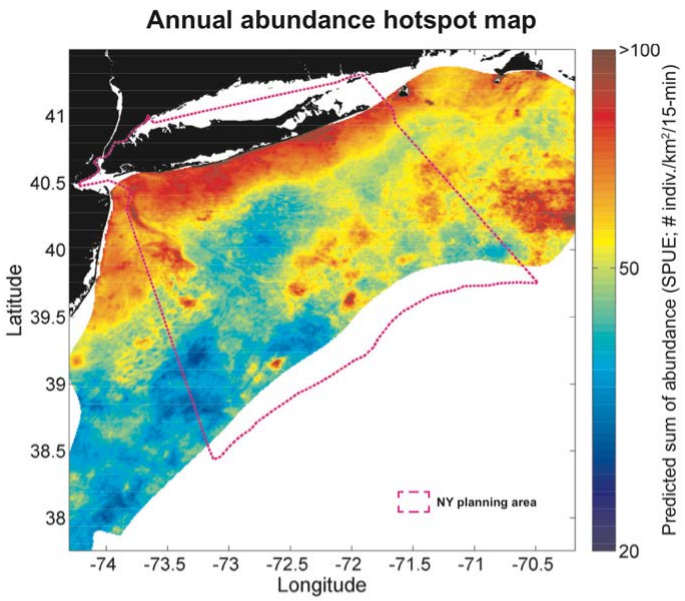
Figure 19. Annual Composite EVI of ecological value for all resources.

2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

A. Identification of Areas - i. Hotspots

NCCOS avian abundance hotspot analysis

SPATIAL PRODUCT



TREATMENT OF DATA

Sum of observation+habitat layers for each species

USE

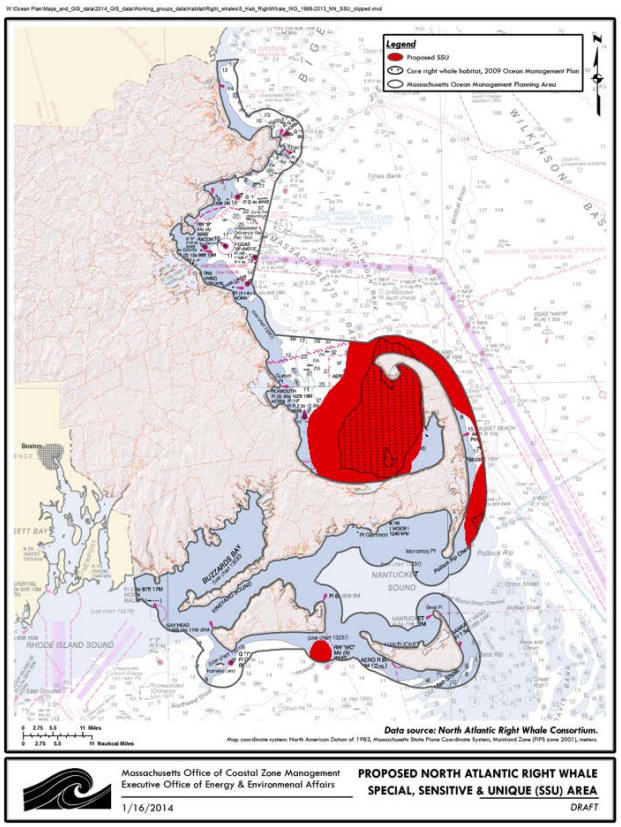
Supports NY offshore planning

2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

A. Identification of Areas - ii. Ecologically Important Areas

MA Coastal Zone Management
North Atlantic Right Whale Special, Sensitive and Unique (SSU) Area

SPATIAL PRODUCT



TREATMENT OF DATA

Classification (top 2 quartiles)/ interpretation of recent observations + expert knowledge

USE

(This map in particular is draft)
In MA Ocean Plan

Used by MA Coastal Zone Management for project review

2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

A. Identification of Areas - ii. Ecologically Important Areas

SPATIAL PRODUCT

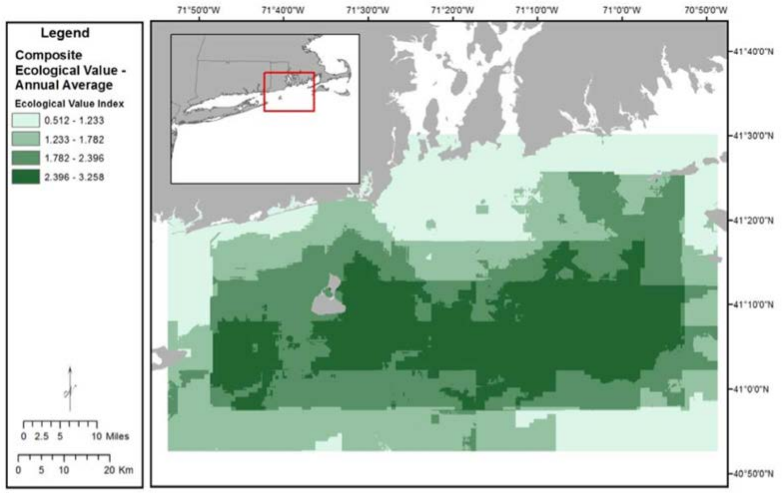


Figure 19. Annual Composite EVI of ecological value for all resources.

TREATMENT OF DATA

Average of observation layers and observation+ habitat layers

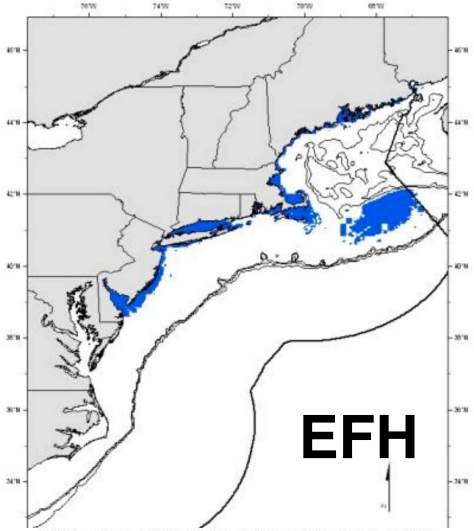
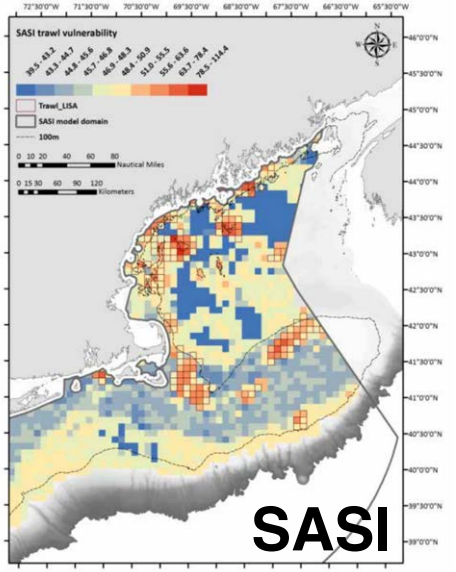
USE

Was not used in RI Ocean Special Area Management Plan and hasn't been used in a regulatory context

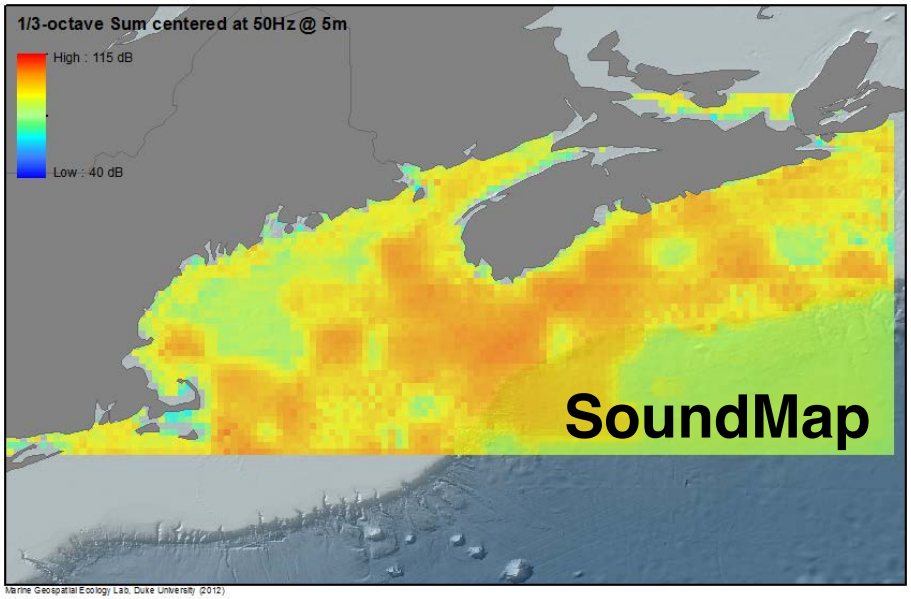
2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

A. Identification of Areas - ii. Ecologically Important Areas

New England Fishery Management Council: Essential Fish Habitat & SASI model

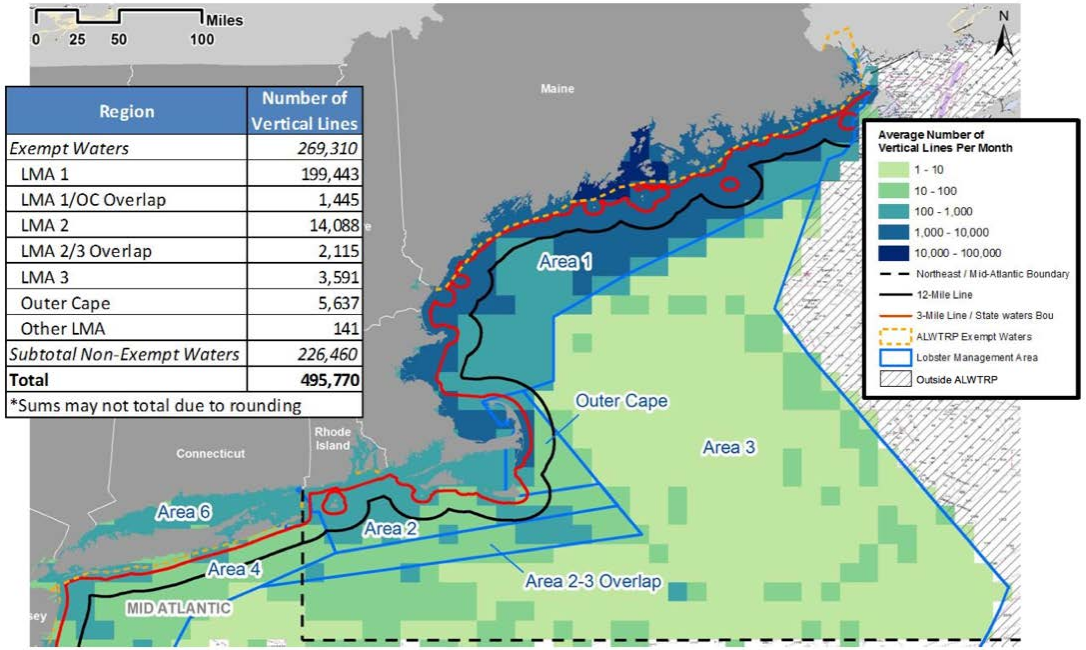
SPATIAL PRODUCT	TREATMENT OF DATA	USE
	Classification/ interpretation of observations + environmental features + expert knowledge	External-used by regulatory agencies during permitting
	Environmental features + estimates of vulnerability	Internal-identify candidate habitat management areas; evaluate impacts of shifts in magnitude and/or location of fishing effort on seabed habitats

B. Measuring Ocean Health - i. Single impacts



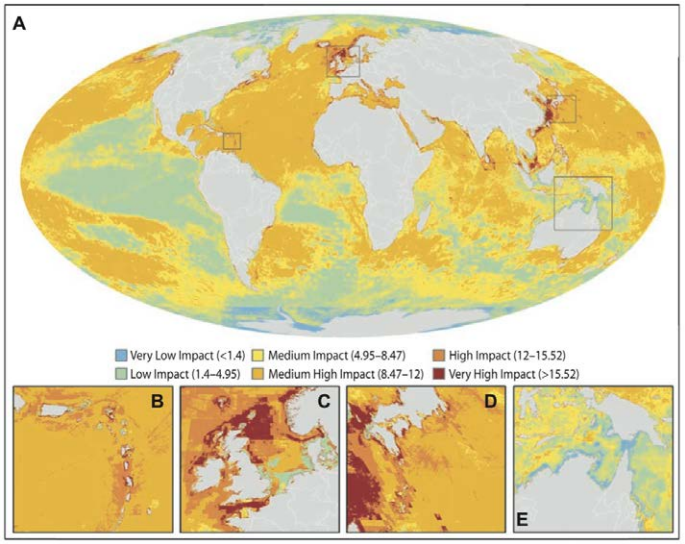
2010/2011 Northeast Baseline (Monthly Average)
Estimated Number of Vertical Lines ~ All Fisheries

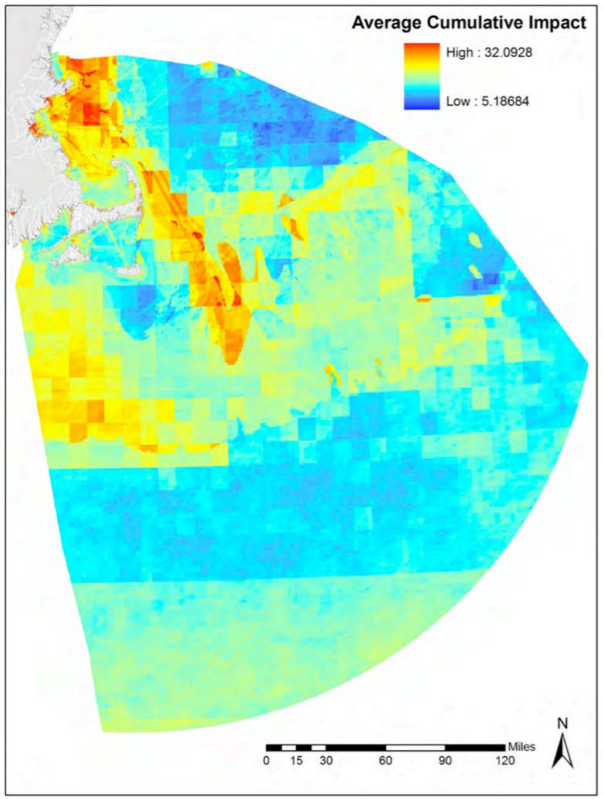
Region	Number of Vertical Lines
Exempt Waters	*269,310*
LMA 1	199,443
LMA 1/OC Overlap	1,445
LMA 2	14,088
LMA 2/3 Overlap	2,115
LMA 3	3,591
Outer Cape	5,637
Other LMA	141
Subtotal Non-Exempt Waters	*226,460*
Total	**495,770**
*Sums may not total due to rounding	

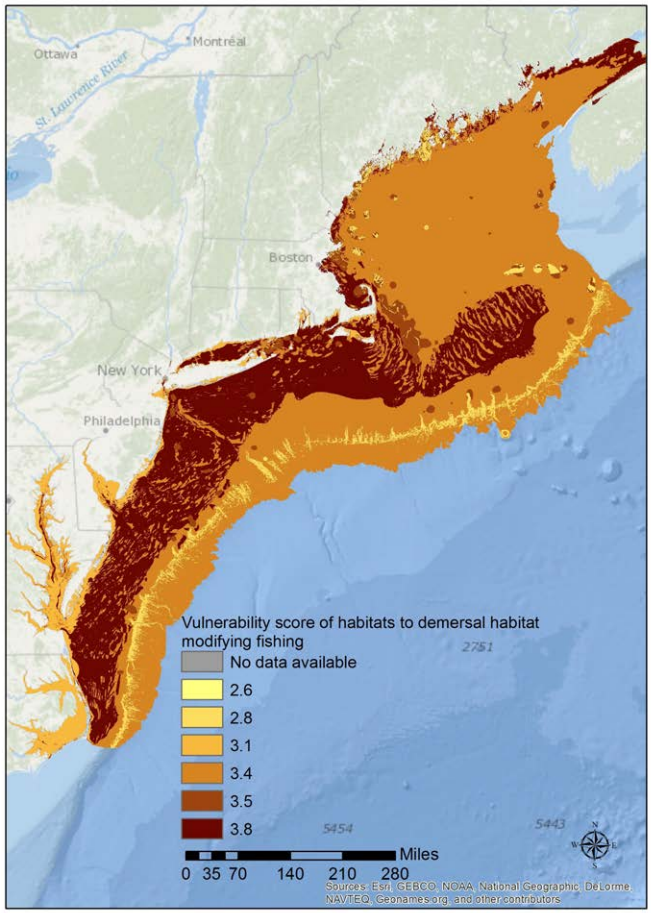


2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

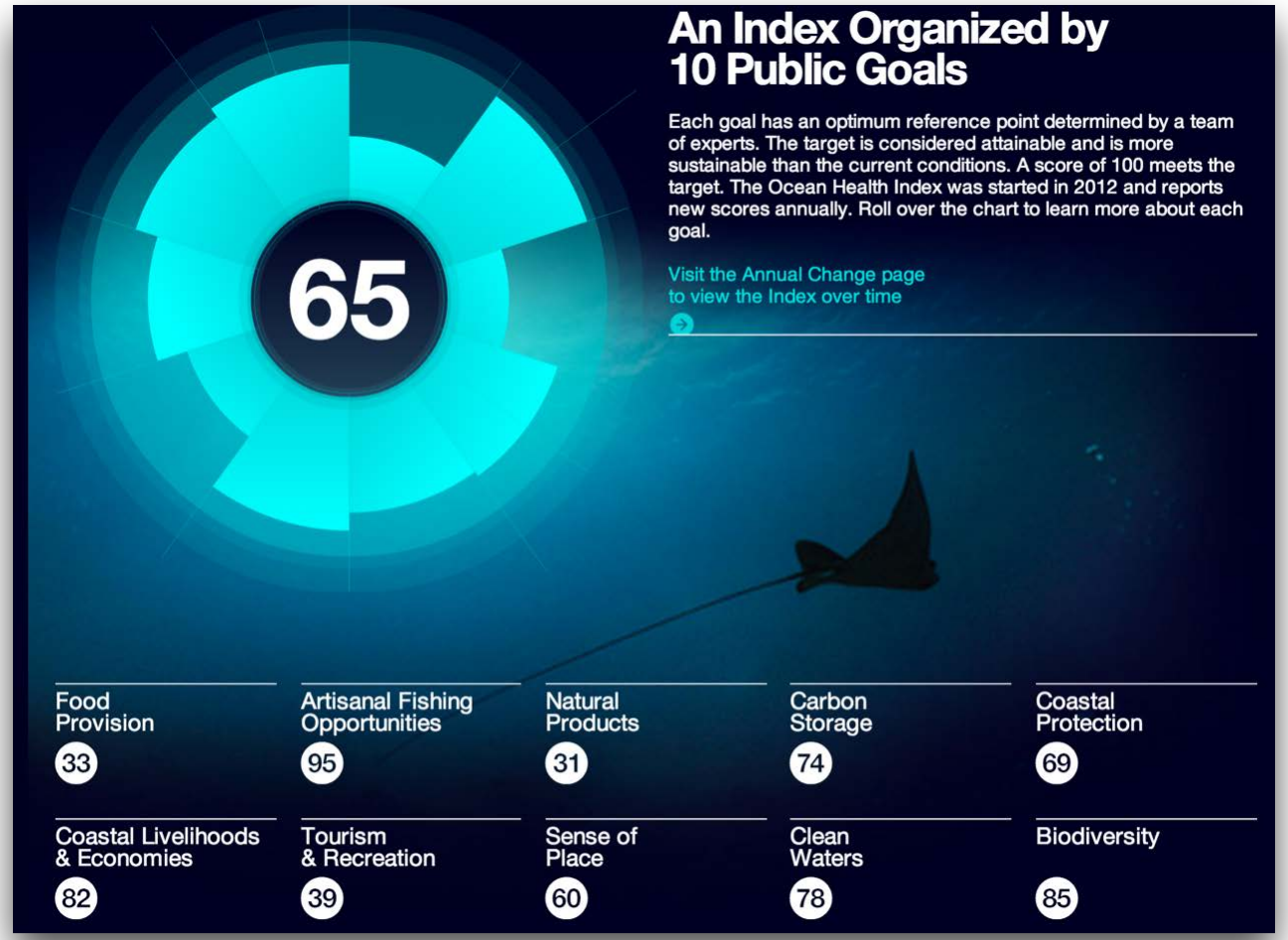
B. Measuring Ocean Health - ii. Cumulative impacts





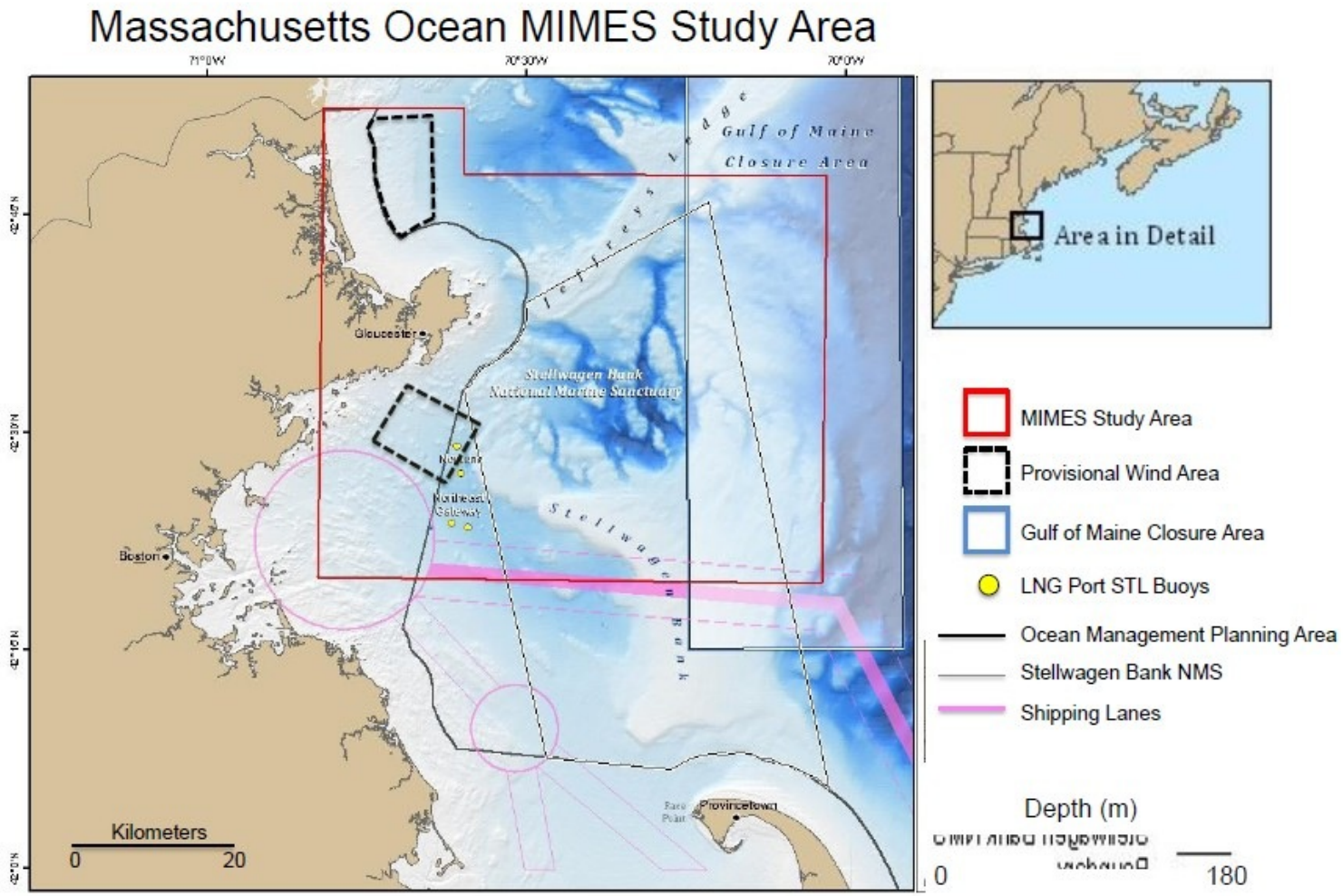


B. Measuring Ocean Health - iii. Indices



2. Action 1-2: Efforts to identify areas of ecological importance and measure ecosystem health.

$ C. Tradeoffs - Ecosystem Services



1. Action 1-1: Data and methods for marine life distribution and abundance

How should we represent data on maps?

CROSS-CUTTING ISSUES	OPTIONS
DATA	• Sources • Geographic scope • How to integrate survey methods? • How to integrate expert/traditional knowledge?
TEMPORAL	• How many decades to include? • Monthly, seasonal, annual summaries
TREATMENT	• Summarize by species, guild, functional groups • Incorporate migration routes? • Which environmental covariates?
PRODUCTS	• Tier I spatial products (observations) • Tier II spatial products (observations + habitat)
USES	• As supporting information • For environmental impact assessment and/or permitting decisions by state or federal regulatory agencies • Assessing compatibility with other uses

A Progression…

1. Data and methods for marine life distribution and abundance

- Tier I: observations
- Tier II: observations + habitat

2A. Identify areas of ecological importance

i. Species hotspots, biodiversity and/or habitat hotspots

ii. Ecologically important areas

2B. Measure ocean health

i. Single-species, single-impact models

ii. Cumulative impacts

iii. Ocean Health Index, or other indices

2C. Tradeoffs