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GIS as a Tool in Marine Spatial Planning and Ocean Management Decision Making

An Overview of Past and Ongoing Efforts to Spatially Characterize Ocean Uses

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Northeast Arc Users Spring Conference

SeaPlan Overview

SeaPlan is an independent nonprofit ocean science and policy group providing practical solutions to balance development and conservation.

SeaPlan was formed in 2006 to advance the Massachusetts Ocean Plan.

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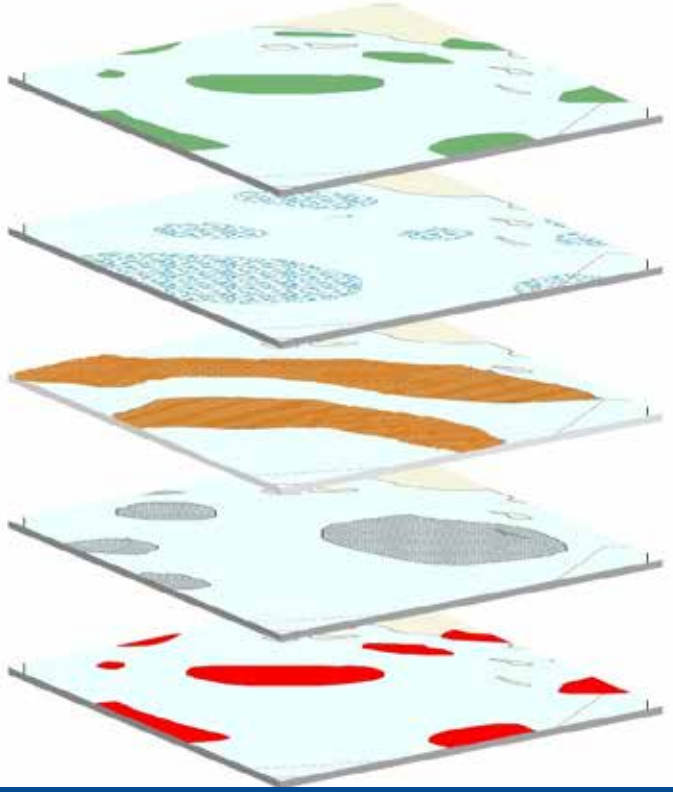
Marine Spatial Planning – What does it mean?

Use-Use Conflicts

Use-Environment Conflicts

Marine Spatial Planning – What does it mean?



Conservation

Energy Uses

Shipping

Recreation

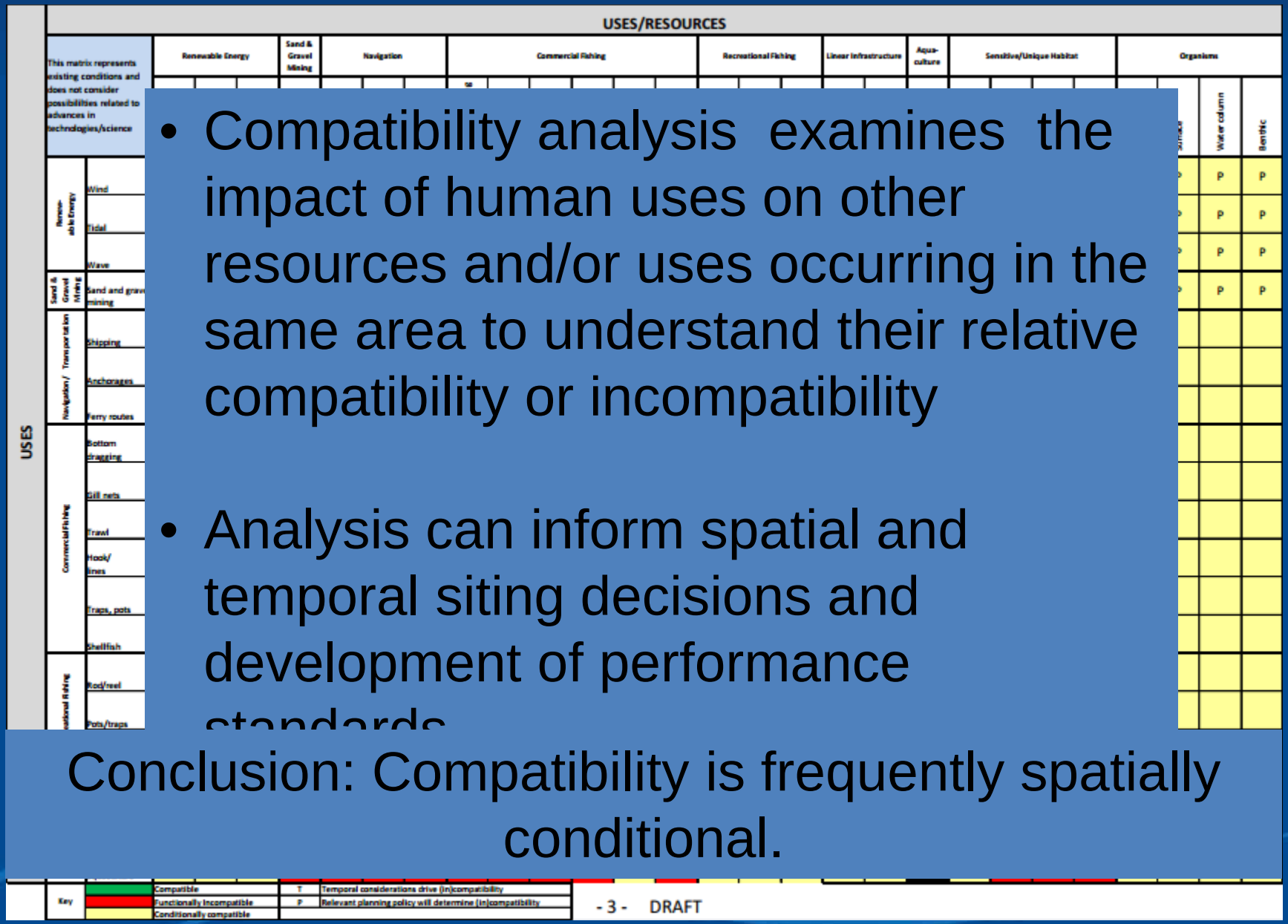
Offshore Aquaculture

Marine Resource Use and Compatibility Analysis

Massachusetts Ocean Plan shall "identify appropriate locations and performance standards for activities, uses, and facilities."

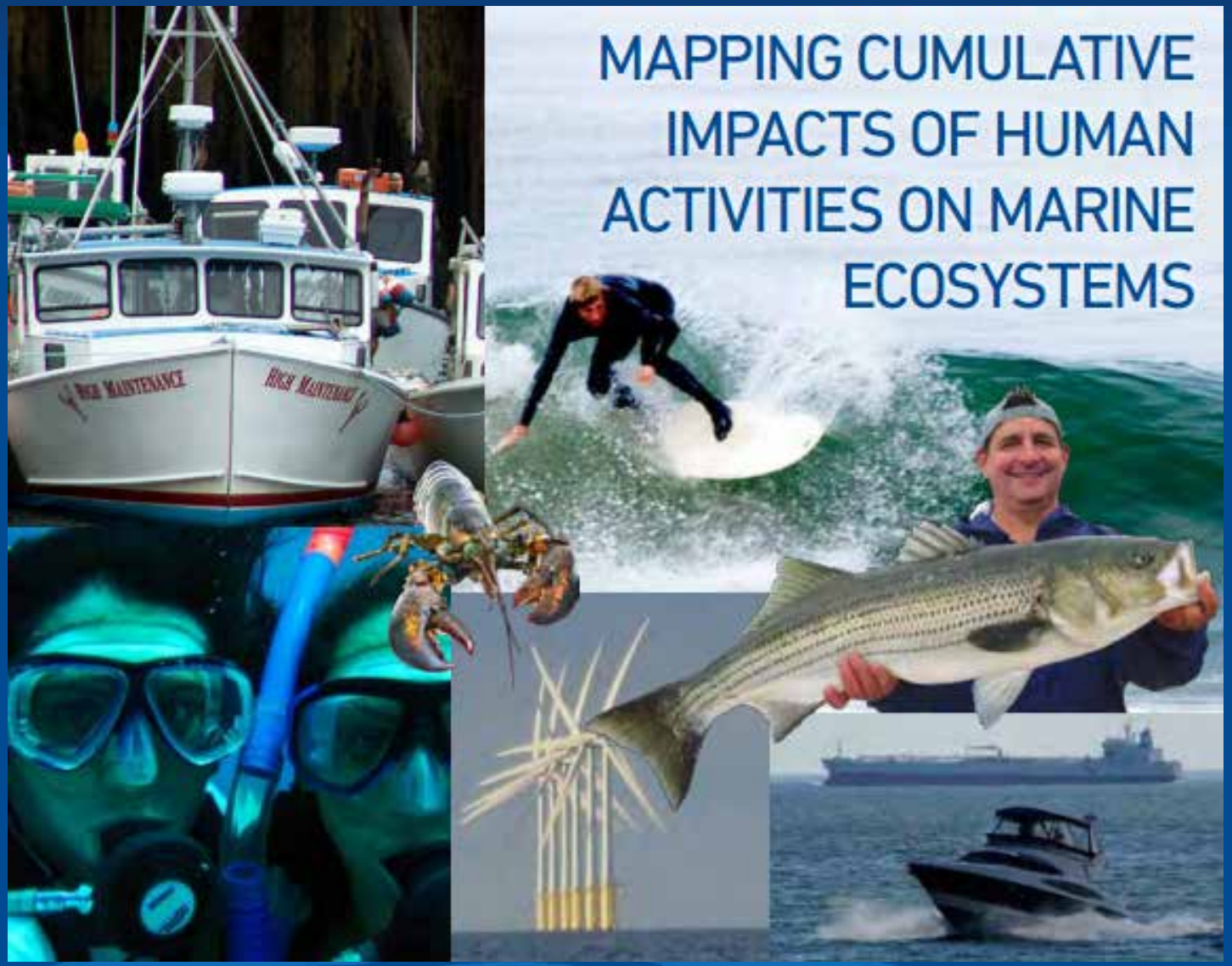
-MA Oceans Act of 2008

Marine Resource Use and Compatibility Analysis



- Compatibility analysis examines the impact of human uses on other resources and/or uses occurring in the same area to understand their relative compatibility or incompatibility
- Analysis can inform spatial and temporal siting decisions and development of performance standards

Conclusion: Compatibility is frequently spatially conditional.



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STONE ENVIRONMENTAL

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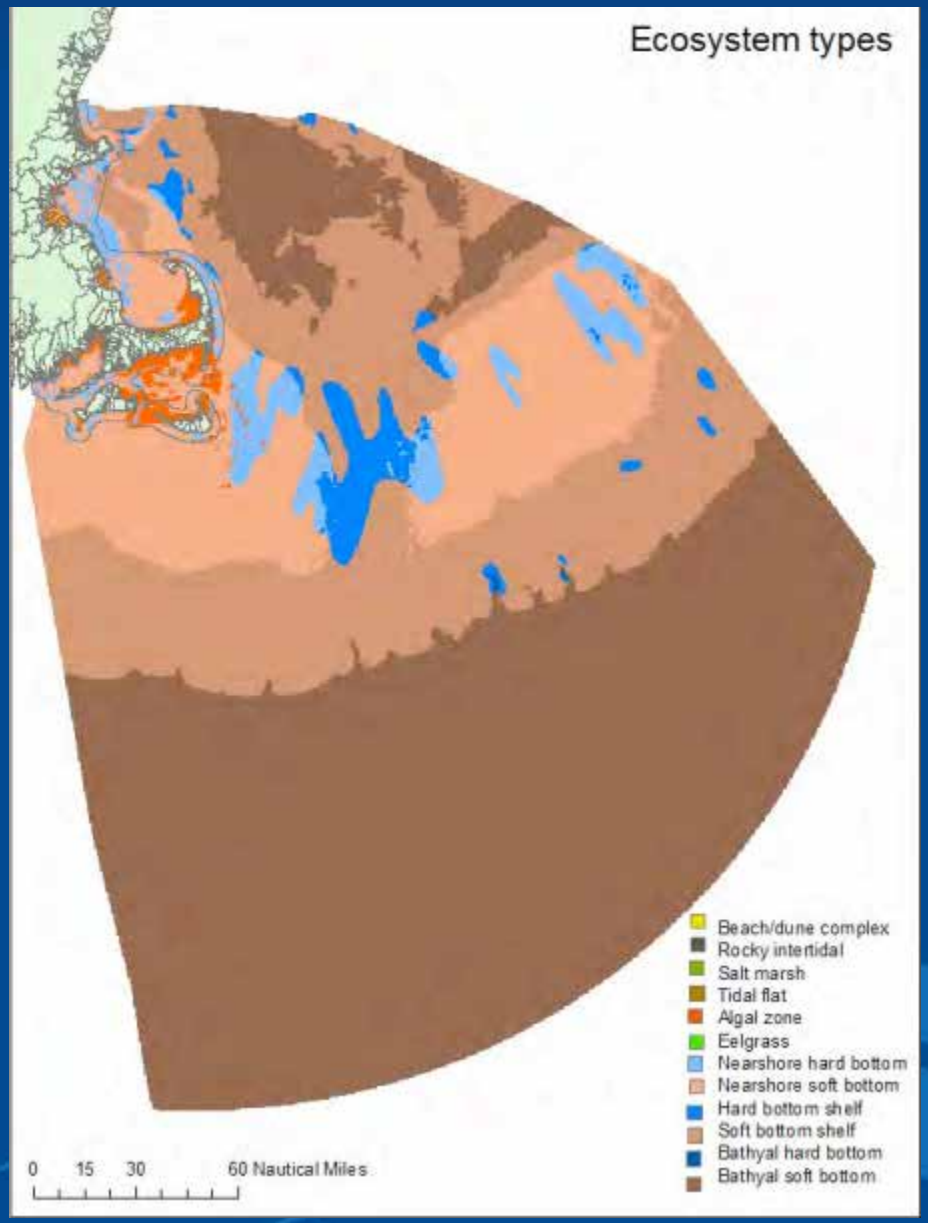
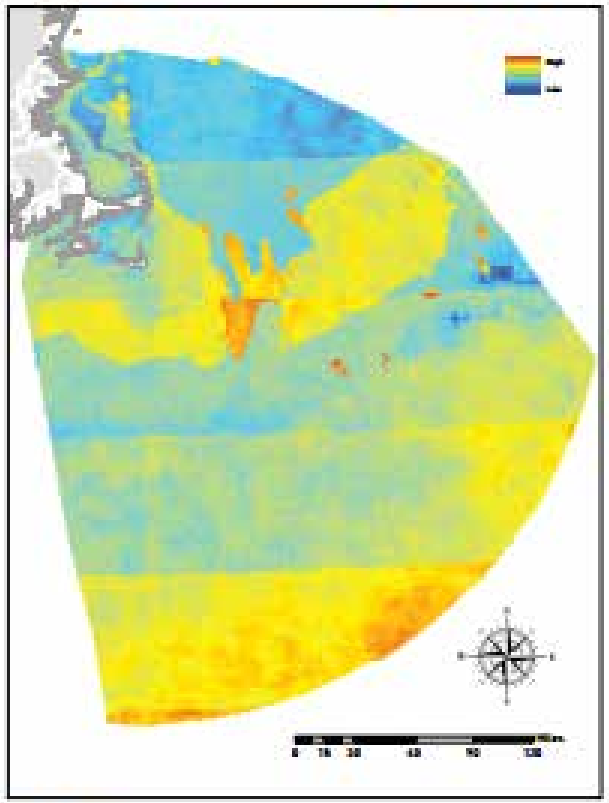
Cumulative Impacts



- Survey of 57 regional ecosystem experts to assess vulnerability of ecosystem types
- 21 Human stressor layers used to create impact maps

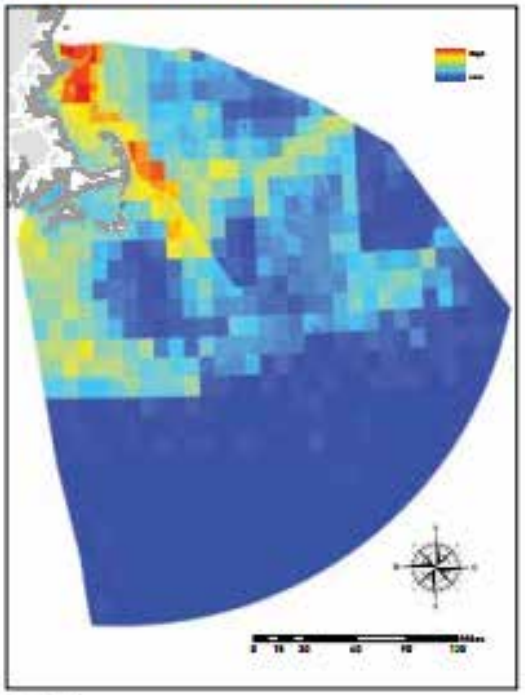
Cumulative Impacts

Average Climate Change Impacts



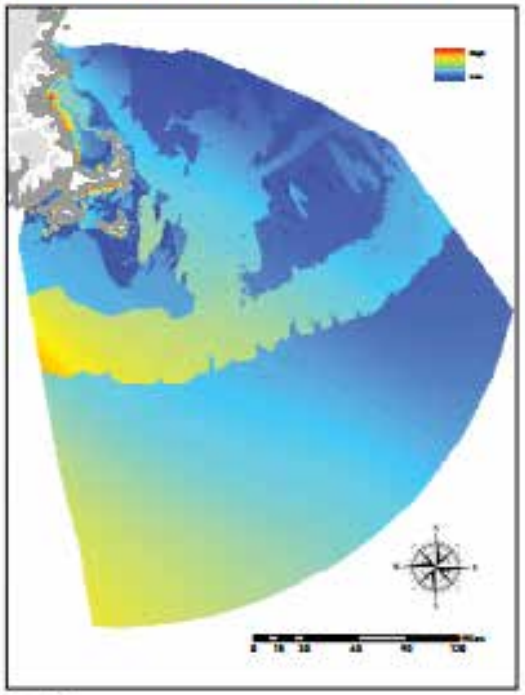
Includes:
UV increase, ocean warming and ocean acidification

Average Fishing Impacts

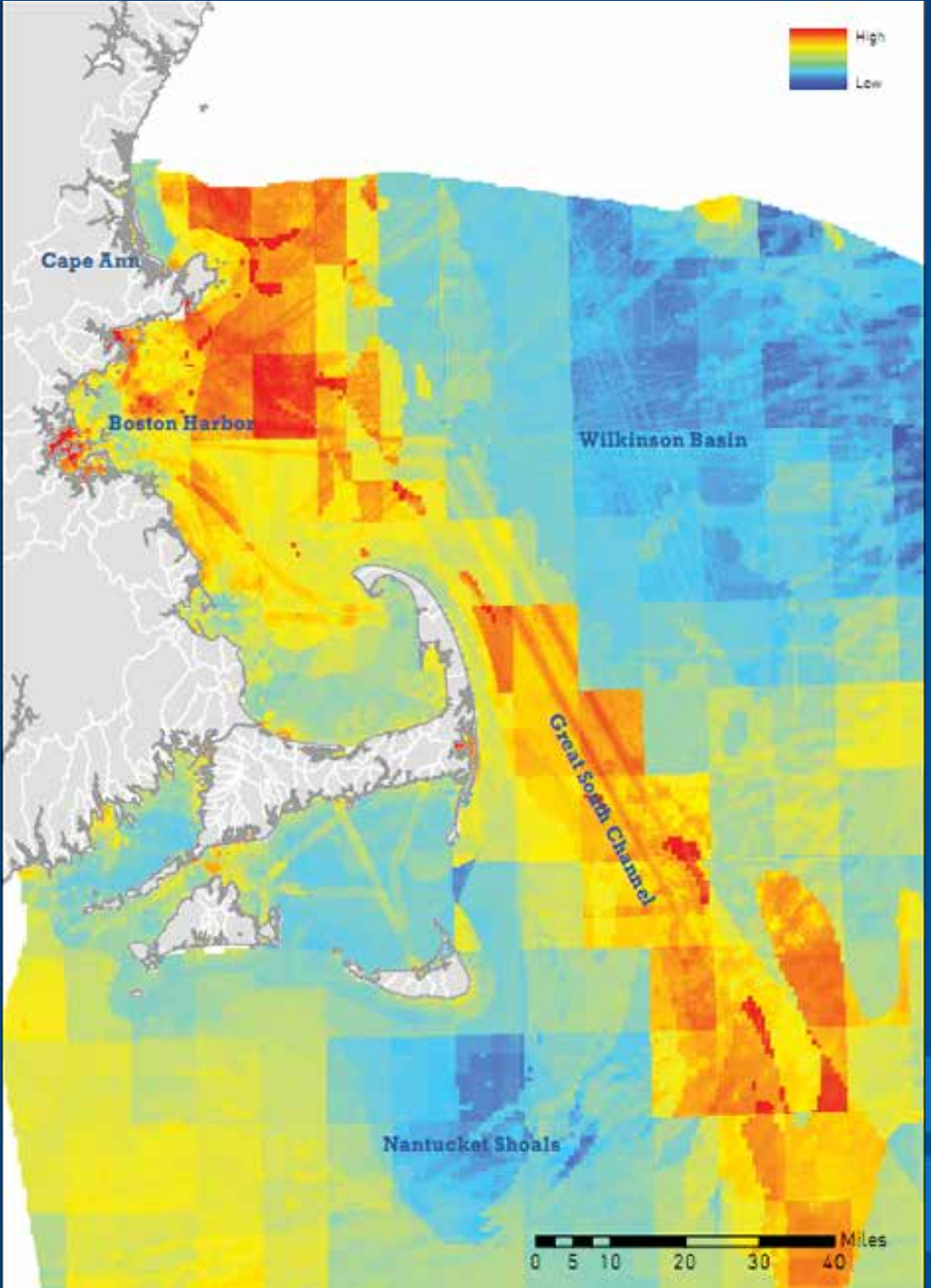


Includes:
fishing: demersal habitat modifying
fishing: demersal non-habitat modifying high bycatch
fishing: demersal non-habitat modifying low bycatch
fishing: pelagic high bycatch
fishing: pelagic low bycatch

Average Land-Based Impacts



Includes:
pollution from nutrient, organic, inorganic, atmospheric and light sources; coastal power plants; and coastal engineering



Average cumulative impacts of multiple human stressors on marine ecosystems

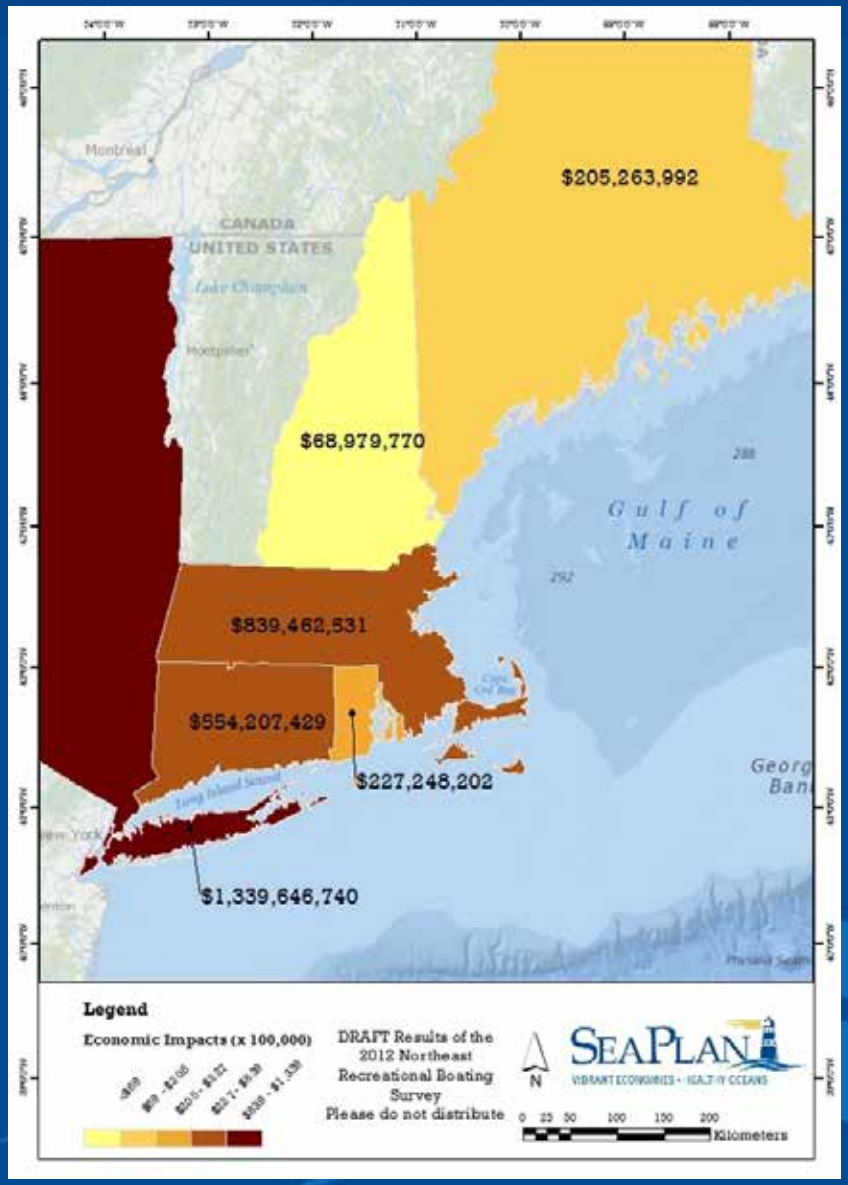
2012 Recreational Boating Survey

Methodology

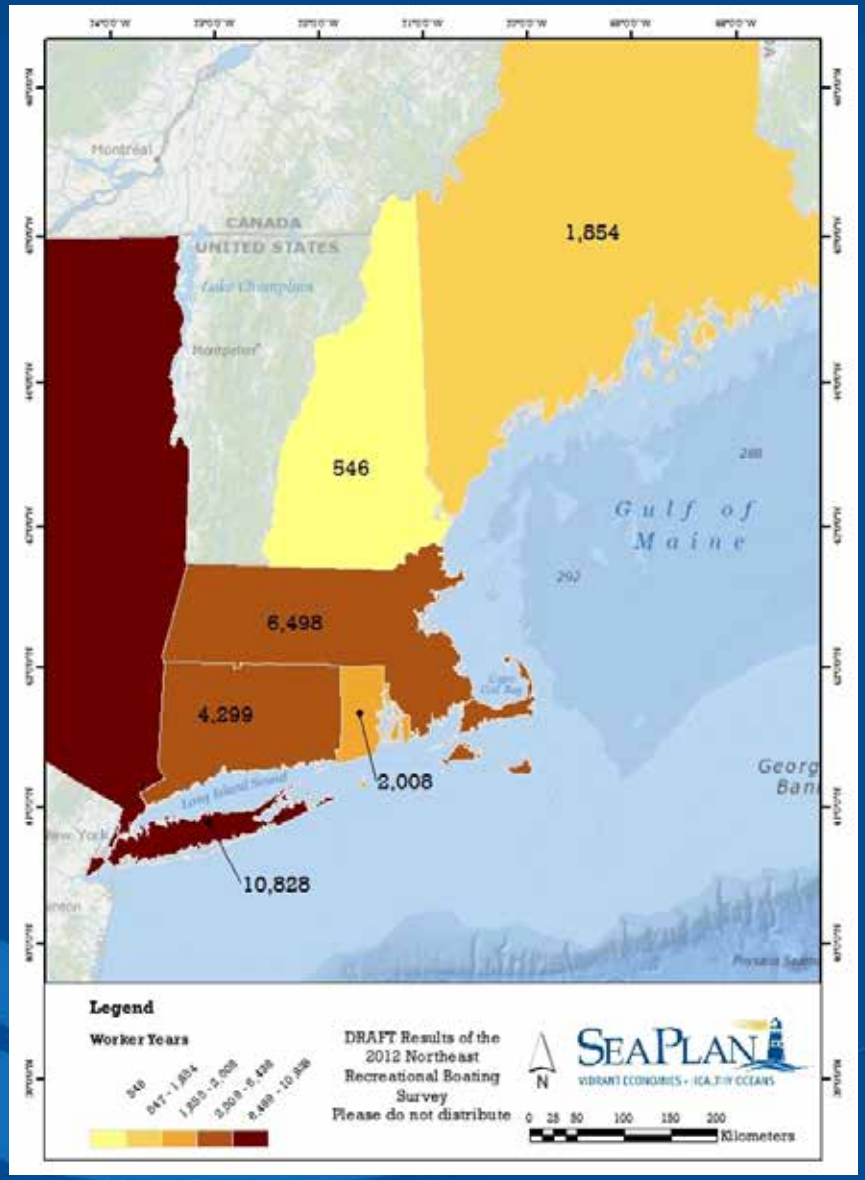
- Boaters responded monthly survey between May and October 2012
- Boaters mapped routes using a mapping application developed by Ecotrust
- IMPLAN Modeling used to measure economic impacts and job creation

Economic Data

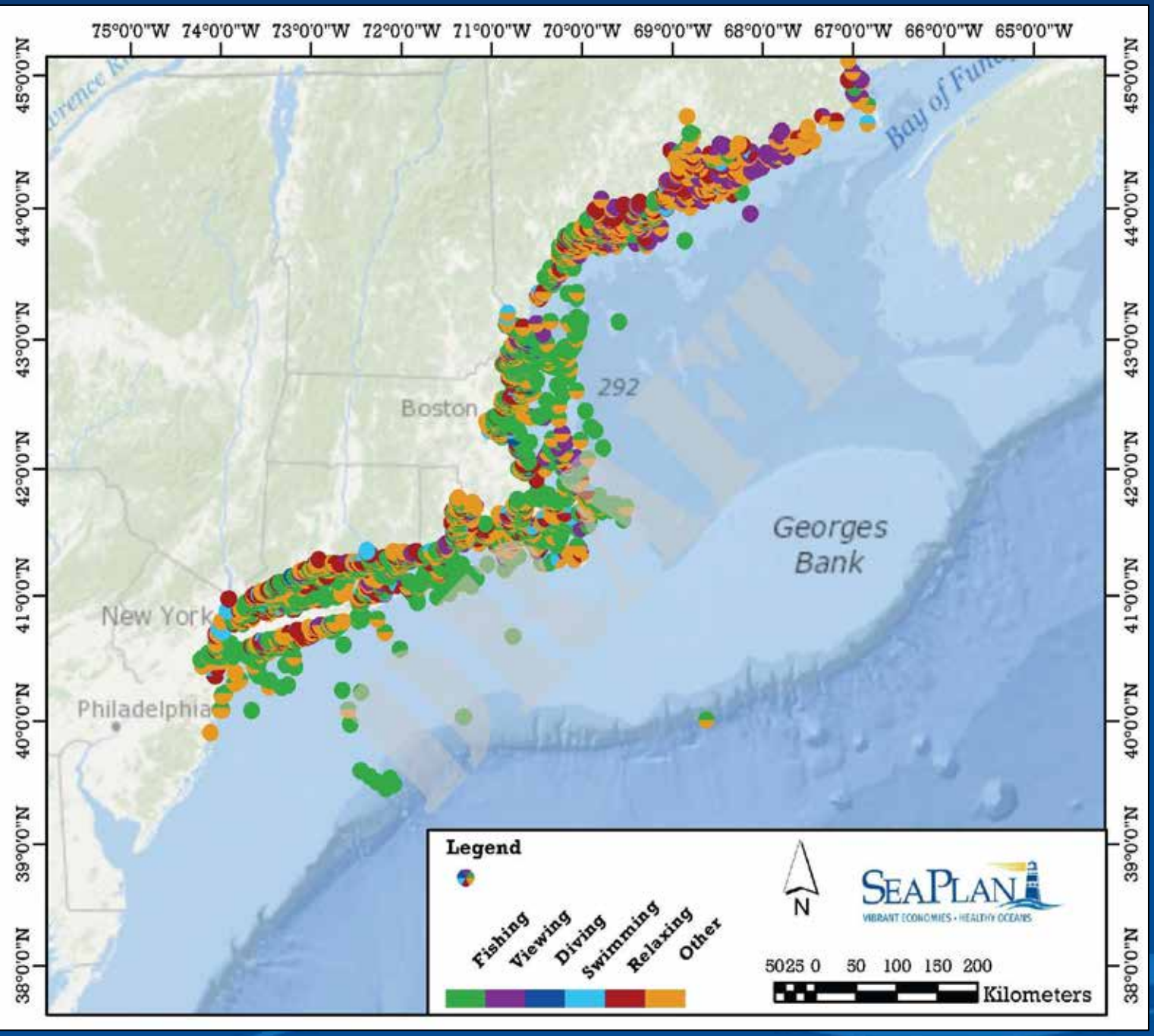
Economic Impact



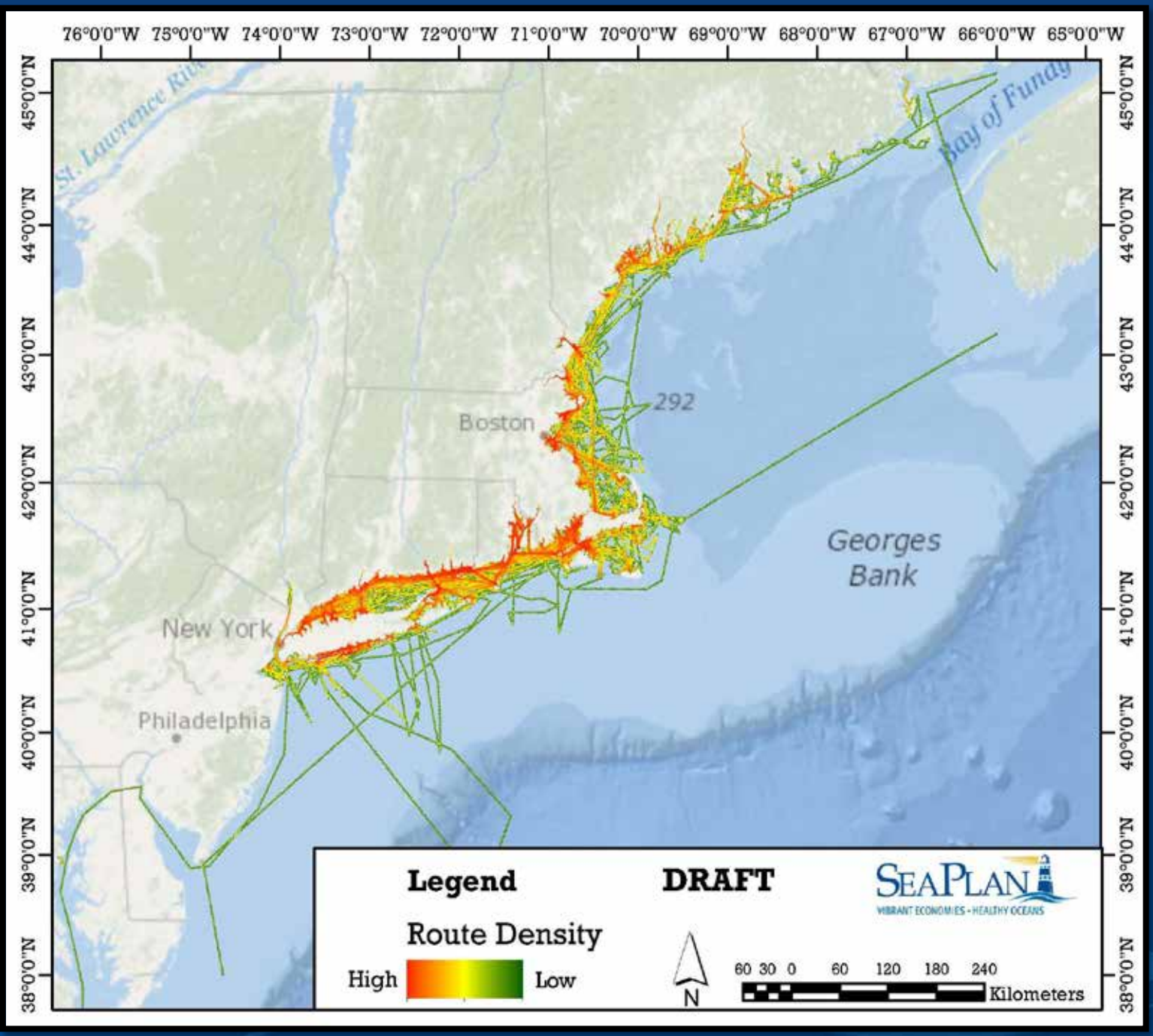
Worker Years



2012 Activity Points



2012 Route Density



NORTHEAST OCEAN DATA

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Coming soon:
COMMERCIAL FISHING

Northeast Ocean Data provides maps and data for ocean planning in the northeastern U.S.

Easy-to-use interactive maps provide information on selected topics.

The Data Viewer and Data pages provide more types of data and downloadable data files.

DATA VIEWER

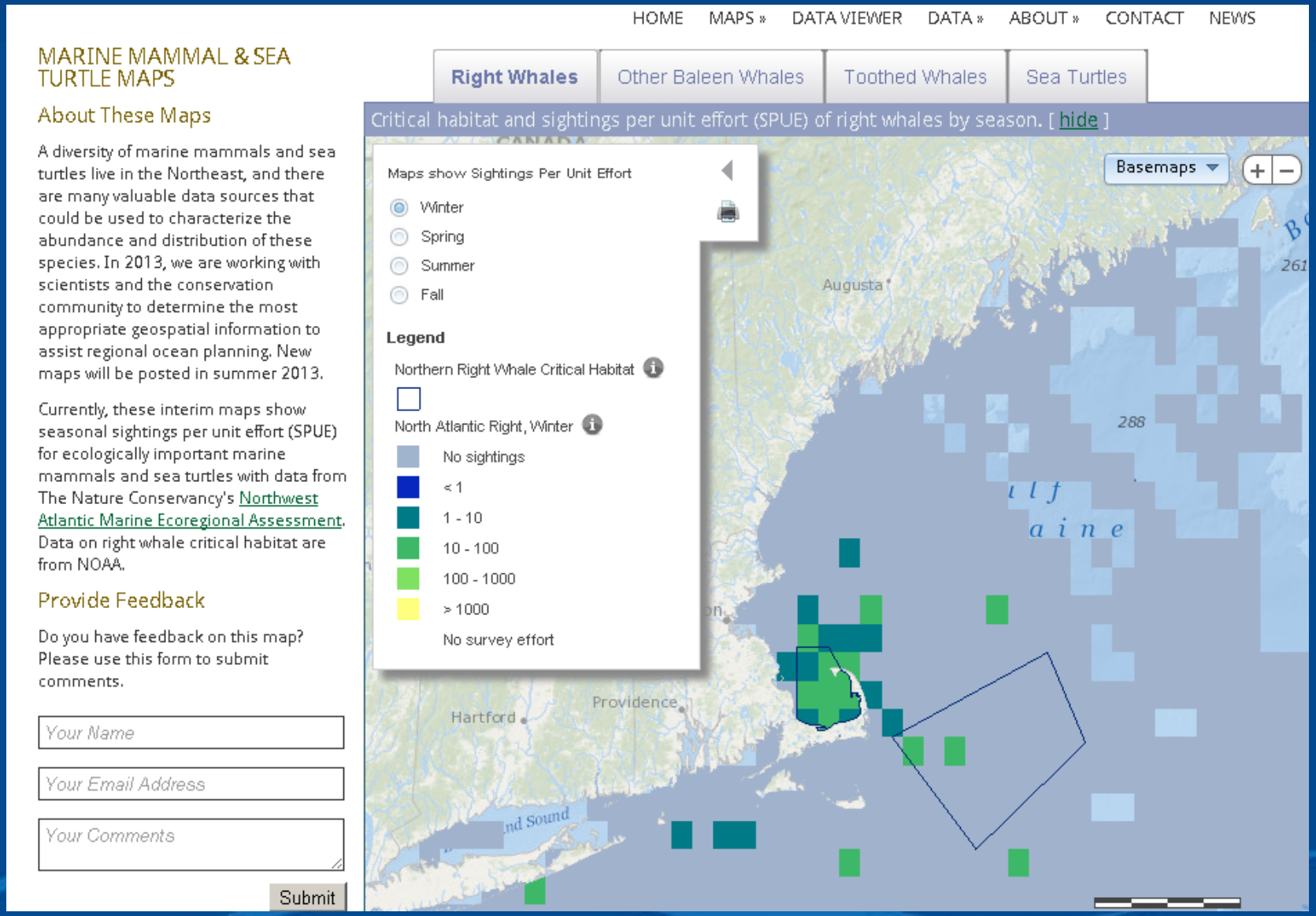
Launch >

www.northeastoceandata.org

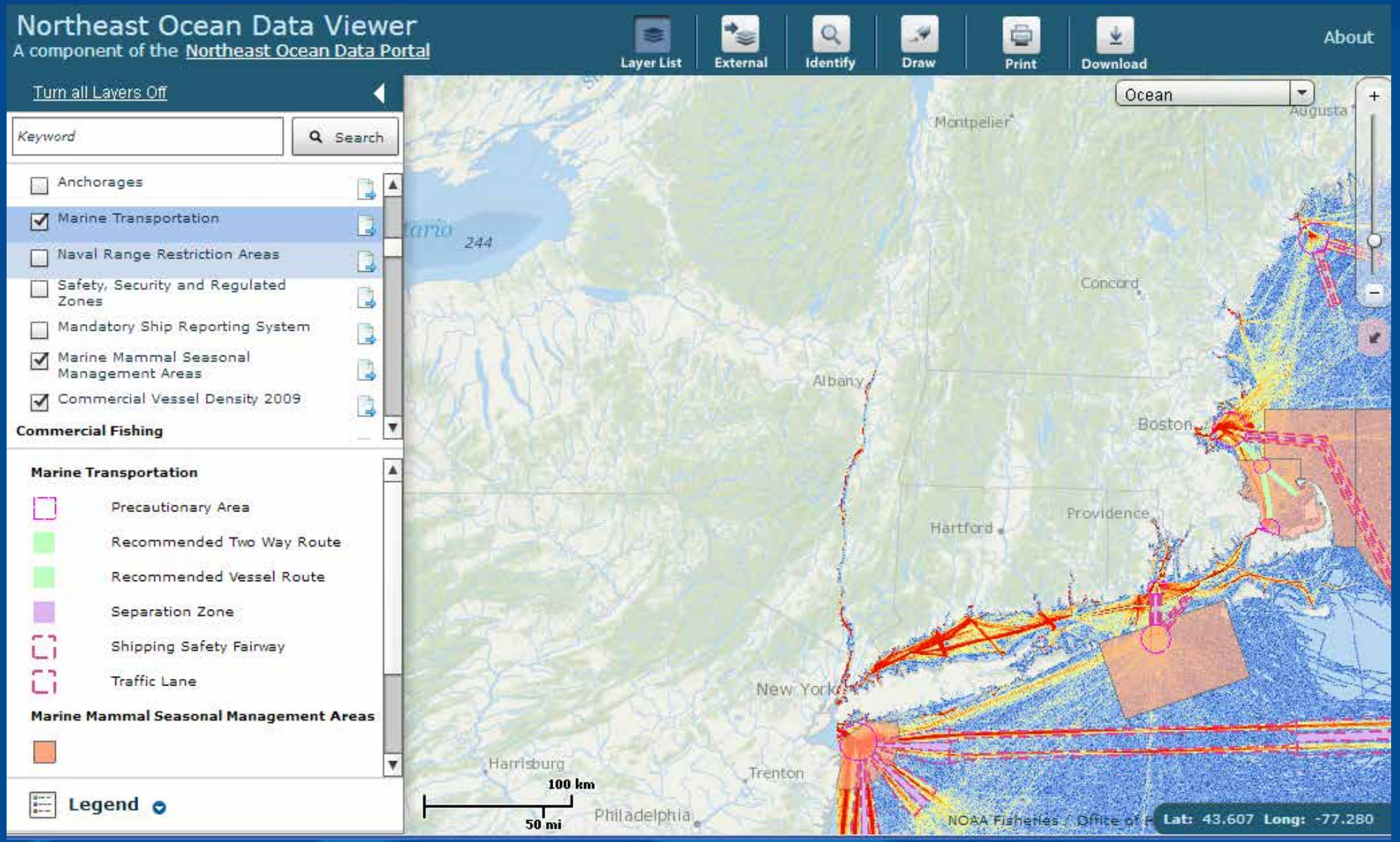
SeaPlan NERACOOS The Nature Conservancy Protecting nature. Preserving life. Gulf of Maine Research Institute

Northeast Regional Ocean Council asa NOAA

Northeast Ocean Data Portal: Thematic Maps



Northeast Ocean Data Portal: Data Viewer



Conclusions

- Evaluating use compatibility will vary over space and time
- Proactive ocean planning requires robust spatial data
- GIS is an integral tool for the analysis and display of spatial information for ocean management purposes

Questions?

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www.seaplan.org