CHAPTER

14

Next Steps

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Introduction

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This assessment focused on gaining a better understanding the ecology and physical processes of the marine environment and the interacting life histories of its inhabitants. Our aim was to comprehend, and make explicit, many of the spatial elements needed for the conservation of biodiversity. The assessment products provide a new context for marine spatial planning and other approaches needed to achieve better alignment of human activities with the places to sustain biodiversity and ecosystem services throughout the region. The next step in the assessment process (Phase Two) is the creation of a narrative report that describes the priority places and strategies for consideration within the Northwest Atlantic region, based on analysis by teams of experts, of information gathered in Phase One.

Ecosystem-Based Management and Marine Spatial Planning

New approaches are urgently needed because the current and future human demands and dependence on this region's ocean resources are substantial. Offshore energy production, aquaculture, commercial and recreational fishing, sand and gravel extraction, tourism, and shipping contribute immensely to the nation's economy, but place intense demands on ocean ecosystems. For the most part, ocean spaces are regulated on a sector-by-sector, case-by-case basis without sufficient consideration for tradeoffs between sectors, ecosystem interactions and the effects of human activities on marine biodiversity. The unintended and undesirable result of status quo ocean resource management is no longer news — the ocean is in trouble, suffering from the cumulative impacts of diverse human activities that severely damage marine habitats and threaten living marine resources.

In 2009, the Council on Environmental Quality responded to a Presidential Memorandum by forming the Interagency Ocean Policy Task Force. The task force engaged the nation's ocean stakeholders to develop new national policy for adoption of *"ecosystem-based management as a foundational principle for the comprehensive management of the ocean, our coasts, and the Great Lakes"* to *"protect, maintain, and restore the health and biological diversity of ocean, coastal, and Great Lakes ecosystems and resources"*. The task force also used a public process to develop a new national framework to *"implement comprehensive, integrated, ecosystem-based coastal and marine spatial planning and management in the United States"* (OPTF 2009).

Using the Data to support Marine Spatial Planning

We would like to emphasize that marine spatial planning is not a panacea for effectively addressing all marine conservation issues. For some species, spatial prioritization may not be a practical or realistic conservation approach, and many conservation challenges require new policy development to develop solutions that are not explicitly place-based.

Our long term goal is to ensure protection of representative, resilient, and redundant areas encompassing the full range of diversity within the regions at large scales while allowing sustainable use of marine resources.

Marine spatial planning, when informed by science, can provide the foundation for marine ecosystem based management to help meet goals for marine biodiversity conservation and sustainable marine resource use. The information and spatial data contained in this assessment provides a solid initial foundation for examining the regional implications of local decisions, but additional customization and refinement to enhance its utility for supporting marine spatial planning processes is needed.

Addressing Data Gaps

The assessment team spent many months searching for, discovering, and analyzing diverse spatial data layers. Subsequently, we identified several large data gaps. While substantial progress can still be made in the absence of these data, filling these gaps will allow for a more comprehensive and effective marine spatial planning process. There were several types of gaps identified: lack of access to existing data, lack of adequate sampling density or geographic extent for existing data, lack of confidence in data due to inadequate metadata and finally, instances where critical data has not yet been collected at all. The following specific data needs were highlighted:

- Additional sediment sampling data to improve resolution in poorly sampled areas.
- High resolution benthic mapping data (e.g., acoustic surveys).
- Spatial data on the distribution and abundance of oysters, bay scallops, hard clams, and other shellfish.
- Fishery-independent survey data on the distribution and abundance of coastal and marine pelagic species (e.g., Atlantic menhaden, Atlantic herring, bluefin tuna, and sandbar shark).
- Pelagic habitat models based on oceanographic features and species distribution.
- LiDAR survey data to support sea level rise adaptation planning in areas where current coverage is lacking.
- Integration of nearshore trawl survey data with NMFS groundfish surveys (e.g., state trawl surveys, Atlantic State Marine Fisheries Commission's NEAMAP survey)
- Data on seasonal migratory routes for whales, dolphins, large pelagic fish, sea turtles, sea birds, and shorebirds.
- Human use data (e.g. higher resolution data on recreational and commercial fishing, vessel traffic, coastal sand and gravel mining, and other coastal and marine resource uses).

Developing Interactive Decision Support and Advancing Data Analyses

The data products created in this assessment can be used "off the shelf" to support individual project decisions, conservation plans, or more comprehensive marine spatial planning efforts. Moreover, the Phase Two report includes preliminary identification of priority conservation areas selected in consideration of all of the areas identified in chapters 2-11 of this report, and additional details on specific next steps for improving and using assessment data products.

One of the more important challenges for marine spatial planning is to explicitly consider multiple management objectives (e.g., energy production, environmental conservation, fishery production, transportation). Consideration of explicit trade-offs among multiple objectives and examination of alternative scenarios for meeting them are the newest and most rapidly developing areas of marine spatial planning (Beck et al. 2009). Although our Phase Two report focuses on identifying high priority marine conservation areas, we recognize that decision makers will need to consider trade-offs as they seek spatial management solutions that meet multiple objectives. We plan to work with partners to develop decision support systems for marine spatial planning - robust systems that enable diverse stakeholders and decision makers to visualize and explore spatial data to create their own preferred marine area management scenarios. We anticipate that these decision support systems will include tools for comparing scenario alternatives with respect to their ability to meet specific stakeholder group and management objectives, including marine biodiversity conservation.

The frontier for marine spatial planning is in interactive decision support systems which provide transparency and engage a diverse array of people in the planning process. Interactive systems can capture, share, and compare many people's ideas about planning options, help people understand the real world implications of different management regimes and environmental conditions, and reveal trade-offs between biodiversity impacts and potential economic gains associated with various management scenarios. Further development of the NAM ERA web mapping application with agency and stakeholder partners could help provide a model for the next generation of interactive decision systems needed to support effective marine spatial planning processes.

Over the course of the project, we also identified additional data processing and analysis steps to increase the utility of the assessment for supporting marine spatial planning. Analysis of trawl survey data to produce a new benthic habitat model based on the distribution of fish communities is underway and a high priority for completion. This model will complement and enhance the ecological marine unit and benthic habitat model presented in Chapter 3. Another high priority focus is further analysis to produce higher resolution spatial data on priority conservation areas, and information on the sensitivity and resilience of those areas to specific human activities. We anticipate working with partners to develop new maps illustrating which human uses are most ecologically compatible with specific places, seasonally or year-round. These maps should also include information on the estimated cumulative ecological impacts of multiple uses over time.

Taking Action to Achieve Tangible, Lasting Marine Conservation Results

Around the Nation, states have been organizing themselves into regional ocean partnerships to identify shared solutions for shared ocean management challenges. In the Northwest Atlantic region the Northeast Regional Ocean Council (NROC) and the Mid-Atlantic Regional Council on the ocean (MARCO) have emerged as new institutions that are now well positioned to implement coastal and marine spatial planning (CMSP) pursuant to the new national framework. Additionally, several states in the region have CMSP initiatives that are well underway.

The Conservancy looks forward to playing a helpful role in the success of these new institutions and their member states through collaborative engagement with agency, academic, and resource user partners. This engagement can include contributions of data, tools, and policy advice; we are mindful that our contributions must be considered in the context of many others, and we are hopeful that this assessment will be critically reviewed and used as appropriate to inform decisions.

Finally, we would like to emphasize that this assessment, built from the generous contributions of many other scientists, merely adds another layer to the foundation for future efforts to better understand the ecological structure and functions of Northwest Atlantic coastal and marine systems. We look forward to that work, in service of finding management solutions that work for people and nature.

Literature Cited

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