

Time for a New Approach: Regional and Marine Spatial Planning for the Mid-Atlantic

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In the hot days of late summer, a soft haze settles over the fishing boats floating on the distant horizon. The ocean and beach beckon as a cool alternative to the pavement of the cities and a respite from our work-a-day world and the crush of the New Jersey Turnpike and Long Island Expressway. While the shimmering and seemingly vast ocean provides numerous opportunities for relaxation, recreation and comfort to millions every day, the romantic ideal of the ocean as the last untroubled frontier is an illusion. Despite its shimmering surface, the U.S. Commission on Ocean Policy (USCOP)² and many other recent reports have documented the serious threats to the health and productivity of our ocean. The threats include fisheries decline and the loss of biodiversity; pollution from both land-based and marine sources; proliferation of non-native and invasive species; and sea level rise, ocean acidification and other potential impacts of climate change.

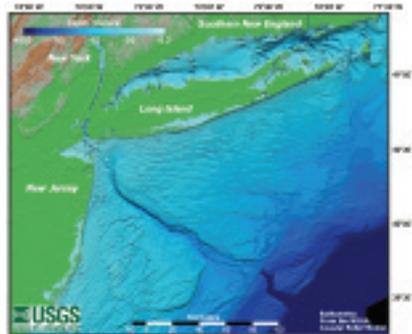
At the same time, it is widely recognized that the coastal zone and oceans generate substantial societal and economic benefits. The demand is increasing for use of ocean resources to support critical services such as maritime navigation and commerce, recreation and tourism, fisheries and aquaculture, telecommunications and offshore energy from traditional oil and gas, as well as alternative sources such wind and wave energy.³ So, how can society reconcile these diverse demands on the ocean, satisfy the individual's need for a day at the beach, address current and emerging threats to ocean health, and maximize the social and economic return from ocean resources?

The following sections discuss the need for a new approach to managing coasts and oceans; how emerging concepts of ecosystem-based management and ecosystem services provide an

important new way of thinking about ocean management and the public benefits generated by ocean resources; and how these new approaches can be implemented by enabling, encouraging and supporting regional and marine spatial planning at appropriate scales.

The Need for New Approach

The USCOP concluded there is a need for comprehensive and, in some cases, radical reform. Our governance and management frameworks are fragmented and largely focused on single-sector concerns such as fisheries management, clean water, offshore oil and gas, harbor dredging and navigation. The report of the Pew Ocean Commission, *America's Living Ocean*, observed that "U.S. Ocean Policy is a hodgepodge of individual laws that has grown by accretion over the years, often in response to crisis."⁴ There are over 20 federal agencies implementing more than 140 federal laws that impact ocean management. There is no national ocean policy, no comprehensive management regime for the US Territorial Sea or Exclusive Economic Zone that extends 200 miles offshore, and no single agency charged with leadership on coastal and ocean affairs.



Add to that an overlay of state laws, and it is not surprising the current approach has been criticized as dysfunctional, inefficient, unpredictable, and ill-equipped to resolve emerging demands to use ocean resources and conflicts

across sectors.⁵

Current ocean governance has its roots in a long tradition of open oceans, freedom of seas, presumed abundance of resources, and the heroic individualism memorialized in books like *The Perfect Storm*. Numerous marine commentators have cited the caution of historian Frederick Jackson Turner who, over 100 years ago, observed that "the democracy born of free land, strong in its selfishness and individualism, intolerant of administrative experience and education, and pressing individual liberty beyond its proper bounds, has danger as well as benefits."⁶ This astute observation portends the current ocean policy debates about the proper allocation of public and private rights, the role of science in guiding public policy, and the role and limits of government in fashioning solutions.

It is important to keep in mind that the ocean is generally a publicly owned, shared and common resource. The various private rights, privileges and benefits generated from the ocean are the responsibility of the state to be managed as a public trust resource for the benefit of the public.⁷ Given the historical bias in favor of encouraging exploration and enterprise, there is a concern that many current permit-by-permit and sectoral specific legal approaches include a hidden bias in favor of facilitating protection of private property rights and exploitation of public resources, and frustrate consideration of cumulative, secondary and synergistic impacts on the ecosystem.

The focus of environmental law and policy has shifted from controlling specific sources of pollution such as smokestacks, sewage and discharge pipes to recognition of the interconnectedness of environmental and human systems and loss of biodiversity, habitat and ecosystem function. This also reflects a fundamental shift from preventing "nuisance" caused by discrete private actors on others or the public, to the public responsibility for joint

¹ The Urban Coast Institute was founded in 2005 to support the development and implementation of good coastal and ocean policy based on the best available science. www.monmouth.edu

² The U.S. Commission on Ocean Policy: *An Ocean Blueprint for the 21st Century*, (2004)

³ See J. Kildow and C. Colgan, National Ocean Economics Program; <http://noep.mbari.org>

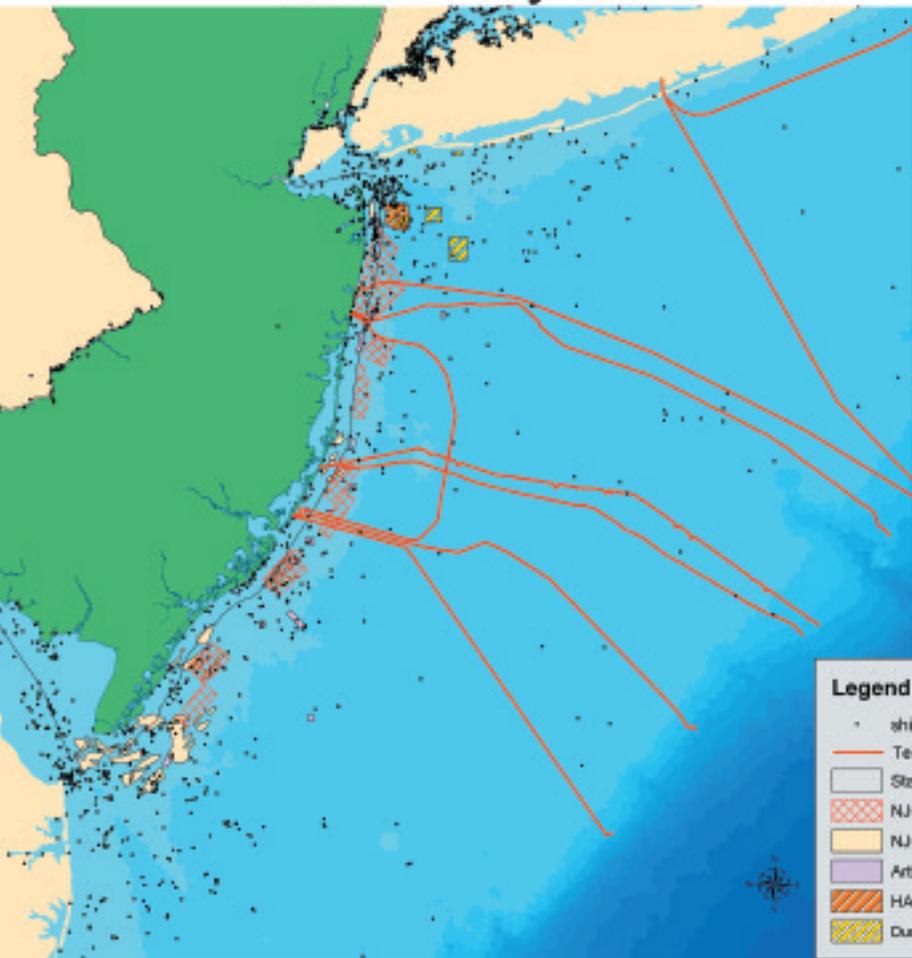
⁴ Pew Ocean Commission; *America's Living Ocean: Charting a Course for Sea Change*, (2003); <http://www.pewtrusts.org>

⁵ See e.g. B. Cicin-Sain and R.W. Knecht; *The Future of U.S. Ocean Policy: Choices for the New Century*, (2004)

⁶ F.J. Turner; *The Significance of the Frontier in American History* (1893). See, E. Norse; *A Zoning Approach to Managing Marine Ecosystems*. Workshop Proceedings, Improving Ocean Governance in the U.S., Univ. of Delaware, Center for the Study of Marine Policy (2002)

⁷ G. Osherenko; *New Discourse on Ocean Rights, the Public Trust and Ocean Governance*. Journal of Environmental Law and Litigation (2006)

New Jersey Ocean Atlas



The New Jersey Ocean Atlas is intended to be a data tool that will be updated by the Coastal Management Program as additional data layers are created or as new data relevant to ocean resource management becomes available. The Ocean Atlas is designed to be a current, comprehensive source of information for spatial ocean resources data. New Jersey's Ocean Atlas will strengthen the Coastal Management Program's ability to make informed decisions based on readily accessible data and also serve as a planning tool for stakeholders. Boundaries and locations may not be exact, this map is intended to be used only as general reference.

Legend

- shipwrecks
- telecommunication cables
- State Waters (3 nautical miles)
- ▨ NJGS Sand Resource Study Areas
- ▨ NJGS Shoals Sand Resource
- ▨ Artificial Reefs
- ▨ HARS
- ▨ Dump Sites

the goal of the healthy ecosystems with support for human value and needs. A recent Scientific Consensus Statement defines the goal of ecosystem-based management for the oceans as follows:

Ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition *so that it can provide the services humans want and need.*⁹ (emphasis added.)

Most of the attention to date has focused on engaging the question of how to further ecosystem health, and the science of understanding ecosystems and natural phenomena. Much less attention has been given to how those environmental and ecosystem concerns relate to and support human resource value and needs.¹⁰ It is essential that we

break down the barrier of this duality to integrate ecological, social, economic, and institutional perspectives, recognizing their strong interdependences in a way that does not treat human influence simply as an external stressor impacting the ecosystem.¹¹

protection of shared resources. While substantial progress has been made under traditional approaches in quality of waters at our beaches, limiting discharges of pollutants, and reversing declines of some fisheries, this progress is measured against a low standard of unregulated dumping, discharge and over-exploitation. The majority of coastal estuaries measured in the Mid-Atlantic region are rated in poor condition. A recent assessment of eutrophication concluded that "Mid-Atlantic estuaries were the most impacted nationally; the majority of estuaries recorded a moderate high or high overall eutrophic condition rating, with more than one third of the estuaries worsened since the early 1990's."⁸

The current patchwork of laws was simply not designed to address the complex and dynamic challenges that often defy identification of specific cause and effect, cross sectors and defy geopolitical boundaries. These challenges include high-tech

international factory and bottom trawling of fisheries; the exponential increase of international trade moving on cargo ships needing harbor depths of over 50 feet; the cumulative impact of years of pollution carried down the Mississippi and other river systems resulting in dead zones and contaminated sediments; and the complicated and potentially dramatic changes in ocean system phenomena that are being caused by changes in climate and weather patterns.

Ecosystem-based Management and Ecosystem Services: Integrating the Human Dimension into Ocean Management

Many scientists and environmental groups advocate adoption of an ecosystem-based approach to management as a way to bridge the limits of current sector-specific approaches, and encourage a system-based approach that links

break down the barrier of this duality to integrate ecological, social, economic, and institutional perspectives, recognizing their strong interdependences in a way that does not treat human influence simply as an external stressor impacting the ecosystem.¹¹

It is generally recognized that a comprehensive ecosystem-based approach to management (EBM) is:

- based on scientific knowledge about the importance of marine ecosystems, and the impacts and benefits of alternative uses;
- retains the capability of ecosystems to function within "acceptable" ranges of variability and to produce "desired" goods and services;
- aims to maximize net societal benefits;
- strives to balance diverse societal objectives and values; and
- informed by a public that understands fundamentals of marine ecosystems, and partici-

⁸ National Coastal Condition Report II, US Environmental Protection Agency, EPA-620/R-03/002. (2004). S. Bricker et al; *Effects of Nutrient Enrichment in the Nation's Estuaries: A Decade of Change*, NOAA Coastal Ocean Program Decision Analysis Series No. 26 (2007)

⁹ K.L. McLeod et al; *Scientific Consensus Statement on Marine Ecosystem-based Management*, COMPASS (2005)

¹⁰ See e.g. The Mid-Atlantic Coastal Ocean Observing Regional Association (MACOORA), D. Fluharty et al, *Evolving an Ecosystem Approach to Science and Management Throughout NOAA and its Partners*, A report to the NOAA Science Advisory Board (2006)

¹¹ M. Weinstein et al; *Managing Coastal Resources in the 21st Century*, *Frontiers in Ecology and the Environment*, ESA, Vol 5, Iss. 1 (2007).

pates in shaping policies and stewardship decisions.¹²

These principles and approaches all share a common provenance in Integrated Coastal Zone Management (ICZM) which has a long history, although eclipsed over the past 30 years by attention to the sectoral focus of traditional environmental laws.¹³

Legislation has been introduced in Con-



gress. H.R. 21, *The Ocean Conservation, Education and National Strategy for the 21st Century Act*, or “Oceans21” for short¹⁴ that would provide a national framework for ecosystem-based management, as well as for implementation of other recommendations of the USCOP. However, the legislation’s current focus on establishing new enforceable standards for ecosystem health, rather than a more flexible framework that encourages the full range of ecosystem considerations and coordination with existing laws is controversial. The legislation is not likely to move forward with-

out revisions.

New York State has taken a more incremental approach passing the *New York Ocean and Great Lakes Ecosystem Conservation Act*,¹⁵ establishing a state policy “to protect, maintain and restore coastal ecosystems”, and establishing an interagency Ecosystem Conservation Council to advance ecosystem management and integrate it with existing laws. The Council has also been directed to facilitate regional coordination; although there no formal interstate or regional efforts focusing on the Mid-Atlantic have been initiated to date. New Jersey does not have a comparable state policy or mandate to work at the regional level; however, the coastal management rules do encourage ecosystem-based management and, recently, the NJ Department of Environmental Protection proposed to revise the Coastal Management Program goals and policies to align with USCOP recommendations and program changes over the years, including a more prominent focus on the goal of healthy coastal ecosystems among its other objectives.¹⁶

Two emerging legal and environmental principles that have potential to provide a foundation for truly integrated EBM, include the public trust doctrine (PTD) and improved understanding of “ecosystem services.” As far back as 1970, Professor Joseph Sax argued that the PTD, which provides that coastal resources are held in trust by the states for the benefit of the public for traditional uses of fishing, fouling, navigation and such additional purposes recognized by state law, might be “useful as a tool for general application for citizens seeking to develop a comprehensive legal approach to resource management problems.”¹⁷ New Jersey courts have supported an evolving and expansive interpretation of the PTD to include public rights of recreation and access on private property along the coast and tidal waters. In addition, several courts across the country have cited the PTD as a basis for broader resource protection including wetland, groundwater and fisheries.¹⁸ The broad evolution of the PTD as a foundation for resource management, although promising in principle, has been limited by several factors. First, PTD is a creature of state law whose interpretations, not surprisingly, reflects the unique history, physical charter and facts underlying its application in

each state. Several states, notably Maine and Massachusetts have been reluctant to expand the application of the PTD. Second, PTD is based primarily on property law and the reservation to the government of certain public rights and responsibilities relative to adjacent private property owners in the coastal zone. It is still an open question whether in the context of the broader considerations of ecosystem-based ocean management the PTD can or will break out this limited role to take on the promise envisioned by Professor Sax.

More recently, Professor J.B. Ruhl and other commentators have argued for a public law of ecosystem management based on the economic value humans derive from ecosystem functions – commonly referred to as ecosystem services. As observed by Professor Ruhl:

Through enhanced understanding of ecosystem service values associated with natural resources, the case for ecosystem management took on a previously unnoticed economic dimension. Given the relation between intact ecosystems and the delivery of these economically important services, it seemed to me and a few other lawyers at the time that the law ought to pay more attention to whether ecosystems are properly managed to enhance overall social wealth.¹⁹

Arcane legal analysis notwithstanding, it is not difficult to see how expanding our understanding of ecosystem values provided by things like coastal wetlands (think Katrina); beaches and dunes (think Nor’easters), and fisheries habitat (think fisheries decline and collapse) can provide critical missing information to address the “human use and value” side of the EBM equation set out earlier in the Scientific Consensus Statement. Ecosystem services also provide a way to tip the balance from current approaches that primarily focus on healthy ecosystems for the sake of ecosystem itself, to broader consideration of the value of protecting and restoring ecosystem functions to support human needs.

The New Jersey DEP recently released an assessment of the economic value of the state’s natural resources concluding that freshwater wetlands and marine ecosystems have the high-

¹² *Report on Delineation of Regional Ecosystems*, NOAA Workshop, South Carolina (2004)

¹³ See Coastal Zone Management Act of 1972 as amended, 16 U.S.C. 1451-1456; 1992 United Nations Conference on the Environment, Agenda 21, Chapter 17.

¹⁴ H.R. 21, 110th Congress, Jan. 4, 2007.

¹⁵ N.Y. Environmental Conserv. Law, Sections 14-0109-0122 (2006)

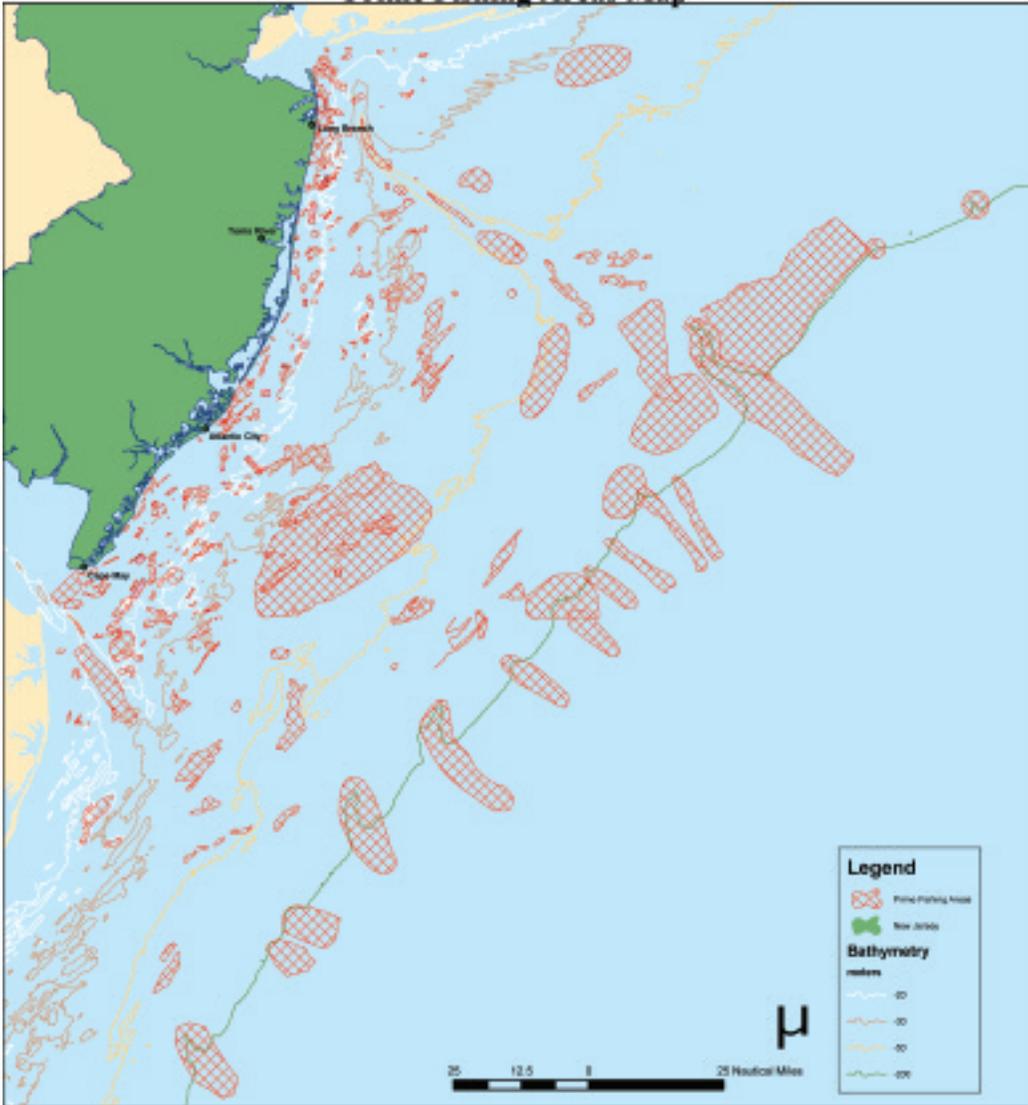
¹⁶ See <http://www.state.nj.us/dep/rules/proposals/030507a.pdf>

¹⁷ J. Sax; *The Public Trust Doctrine in Natural Law: Effective Judicial Intervention*, 68 Michigan Law Review 471 (1970)

¹⁸ *Raleigh Ave. Beach Assoc. v. Atlantic Beach Club*, 185 N.J. 40 (2005); *Just v. Marinette Cnty.*, 201 N.W.2d 761 (Wisc. 1972); See, Arthur Lum, *How Goes the Public Trust Doctrine: is the Common Law Shaping Environmental Policy?*, Natural Resources and Env. (Fall 2003).

¹⁹ J.B. Ruhl, *Toward a Common Law of Ecosystem Services*, 18 St Thomas Law Rev. 1 (Fall, 2005)

Prime Fishing Areas Map



est ecosystem services value.²⁰ The values presented in the report include the annual value of services and certain goods provided in 2004 dollars. The report takes a conservative approach that understates the true total value of environments resources – it does not include the value of secondary activity related to given ecosystems such as coastal tourism and real estate, or the more inchoate aesthetic and personal values that attract so many people to live in coastal areas. The value generated by wetlands for services including buffering from storms and flood, water filtration and treatment is estimated at \$9.4 million for freshwater wetlands and \$1.9 billion for saltwater wetlands. Marine ecosystems provided the second-largest dollar amount of ecosystem services, including \$5.3 million for estuaries and tidal bays and

\$390 million for other coastal waters. In addition to the service, the report adds another total direct economic value of \$750 million from commercial fisheries and \$207 million from recreational fisheries. This is a new way of thinking about resources, and it will take a concerted effort to educate the public and the public policy apparatus to incorporate the type of analysis to evaluate tradeoffs between environment and the services they support, and development and other considerations of ecosystem-based management.

Applying Regional and Marine Spatial Planning Approaches

While encouraging a move toward ecosystem-based management the UCSOP also recognized that the “government should have the

institutional capacity to respond to ocean and coastal issues in a coordinated fashion across jurisdictional boundaries.” To support this approach, the Commission recognized that the “dissemination of regionally significant research and information is imperative...to support ecosystem-based decisions” and “voluntary establishment of regional ocean councils...would facilitate development of regional goals and priorities” and response to issues at an appropriate ecosystem scale.²¹ This regional approach reflects the recognition that as we await more comprehensive federal legislation, reorganization and reform (the USCOP includes over 220 recommendations for action!), we can make significant progress by building on efforts at the state and regional level. Support for regional approaches would encourage a more integrated, placed-based approach. This placed-based approach can, in turn, build upon the growing experience of marine spatial planning efforts that focus on core places, rather than artificial boundaries, and which fosters recognition of natural systems and relationship to human uses.²²

Many states and regions, some with federal agency support, have already begun taking significant action on implementing regional approaches. Noteworthy examples include (i) the Great Lakes Regional Collaboration; (ii) the Gulf of Mexico Alliance; (iii) the Northeast Regional Ocean Council, Gulf of Maine Council and the Massachusetts Ocean Management Task Force in New England; and, (iv) the West Coast Governor Collaboration to Address Ocean Health and California Ocean Protection Council.²³ No comparable regional ecosystem-based management efforts have taken root in the Mid-Atlantic although, as previously noted, New York does have legislation authorizing regional coordination. However, it is clear that each of these efforts provides a forum and new analytical framework that encourages consideration of shared and transboundary issues from a systems, rather than sectoral, perspective, and includes consideration of protection of critical

²⁰ *Valuing New Jersey's Natural Capital*; NJDEP, April 2007.

²¹ The U.S. Commission on Ocean Policy: *An Ocean Blueprint for the 21st Century*, (2004)

²² C. Ehler and F. Douvère, *Final Report of the First International Workshop on Marine Spatial Planning*, UNESCO (Nov. 2006)

²³ See www.gulfofmaine.org; <http://www.gulfofmexicoalliance.org/>

ecosystem area.²⁴

A recent article published by the Working Group on Ocean Ecosystem Management at the National Center for Ecological Analysis and Synthesis at the University of California, Santa Barbara sets out a framework for marine spatial planning as a “practical way” to implement ecosystem-based management, which can begin implementation now at the state and regional level.²⁵ Defining places at the regional and subregional level has the advantage of identifying areas at a scale that is understandable by the public, users and managers. This provides an opportunity both to engage in a truly collaborative way and to develop the integrated social networks that will be needed to support difficult decisions and maintain accountability to shared goals.

Marine spatial planning is often confused with ocean zoning. A marine spatial planning approach (like EBM) is a *process* that starts from a recognition of integrated consideration of natural systems and their relation to human uses and values, similar to comprehensive planning on land, and employs a focus on key places and relationships occurring in spatially demarcated areas. A spatial approach that takes into account biophysical, socioeconomic and jurisdictional considerations can help both to clarify relations among ecological components and identify conflicts between ecological and human elements. By contrast, ocean zoning is a *means* of spatial planning relative to specific places. While the mere suggestion of ocean zoning can raise opposition because of the assumption that it will necessarily be exclusionary and establish rigid boundaries, a marine spatial planning process is by definition inclusive and multidisciplinary. In reality, extensive *de facto* ocean zoning already exists as sector-specific laws have set aside and designated special areas such as navigation channels; prime fishing areas, temporal fishing restriction, national defense zones, sand borrow sites, and demarcated areas for many other uses. These sector area delineations occur without comprehensive consideration of vulnerable ecosystems, net benefits or potential for conflict with human uses.

As noted, the Working Group on Ocean Ecosystem Management set out numerous

considerations to guide how a region can improve EBM implementation using marine spatial planning, including the following:

- In identifying places, focus on smaller systems at a level congruent with the issue being addressed nested within larger areas, but pay attention to connections to larger systems.
- Marine areas have unique three-dimensional elements which defy traditional lines on governance maps, which have little to do with spatial structure, biophysical or human dimensions.
- An important first step is to map biophysical conditions, human uses and political and legal arrangements.
- Advances in science and technology, including satellite remote sensing, sensors, GPS, and geospatial assessment have substantially enhanced our ability to identify and categorize places and uses.
- Economic studies of coastal economies, including environmental services can greatly assist in analyzing tradeoff and engaging the human dimensions.
- Monitoring, measuring progress to provide feedback is an essential component of any plan, and should be supported by an information technology and data management plan. Provide for transparency and web-based public access to appropriate information for feedback.
- Explore innovative public-private partnerships, foundation and other support for innovative collaboration.
- Employ specific management tools including permits, site planning, public education, and codes of practice where needed. Identify whether zoning by broad objective (as opposed to activity) for example general use, habitat protection, scientific use, preservation) would can help in implementing marine spatial plans.
- Look to other regional governance models, and well known examples of marine spatial planning for lessons learned (e.g. Great Barrier Reef Marine Park and Florida Keys National Marine Sanctuaries.)
- Remember the core principles of placed-based management:
 - Fit - create arrangements that avoid or minimize spatial or temporal mismatches that are responsive to local conditions but mindful of large scale processes or sudden changes.

- Multiple-use – develop a process that can mediate among different uses and establish priorities when conflicts are unavoidable.
- Stakeholder involvement – consumptive users, interested parties, and environmental groups must all be at the table and have a voice.
- Adaptive management – promote adaptation and social learning as knowledge and information develops and changes.

Conclusions and Next Steps

The need for new approaches and the immediate and long-term threats to the health, productivity and resilience of the Mid-Atlantic region have been well documented. Other states and regions have stepped out and up to the challenge of improved ocean governance and ecosystem-based management. There are ever-improving tools and techniques that to are available to assess the state of our oceans, and to improve understanding of coastal and ocean phenomena. There is a need to develop a comprehensive and integrated approach to ecosystem-based management that addresses both ecosystem health and human values. We can take advantage and seek to apply recent developments in science and technology regarding the understating and governance of ecosystems, including the services they support and provide.

Leaders in the public and private sector in the NY/NJ Bight and Mid-Atlantic Region should take steps to build on current efforts and encourage the development of formal partnerships, collaboration and governance mechanisms both vertically and horizontally across levels of government, and with public and private actors to manage marine areas at the regional level. Initially, the effort could focus on regional issues of concern including, but not limited to coastal hazards, sea level rise and adaptation strategies, offshore energy, fisheries productivity and biodiversity; and marine commerce and navigation. There is no need to wait for comprehensive action. Coastal managers, elected officials, users and other interested parties should encourage and participate in incorporation of ecosystem, regional and marine spatial planning approaches now consistent with existing authority; continue and expand support for coastal monitoring, ocean observation, mapping and assessments that are critical to understanding coastal and ocean ecosystems and the anthropogenic impacts; and begin efforts now to educate and engage an ocean literate public who are aware of the essential role oceans to our environment and our economy. 

²⁴ The relation of regional EBM initiatives to Regional Fisheries Management and Interstate Fisheries Commission, presents an important set of questions that go beyond the scope of this paper.

²⁵ O Young et al, *Solving the Crisis of Ocean Governance: Placed-based Management of Marine Ecosystems*, Environment, Vol 48, No. 4 (May 2007)