



Dr. Mark A. Hixon  
Department of Zoology  
Oregon State University  
Corvallis, OR 97331-2914

phone: 541-737-5364	fax: 541-737-0501	e-mail: <a href="mailto:hixonm@science.oregonstate.edu">hixonm@science.oregonstate.edu</a>	<a href="http://oregonstate.edu/~hixonm/index.htm">http://oregonstate.edu/~hixonm/index.htm</a>
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12 December 2008

Dr. William J. Brennan  
Acting Undersecretary of Commerce for Oceans and Atmosphere  
Department of Commerce  
1401 Constitution Avenue, NW, Rm 5804  
Washington, DC 20230

Dr. Kaush Arha  
Deputy Assistant Secretary of the Interior for Fish and Wildlife Parks  
Department of the Interior  
1849 C Street, NW  
Washington, DC 20240

re: recommendations by **Marine Protected Areas Federal Advisory Committee**

Dear Acting Undersecretary Brennan and Deputy Assistant Secretary Arha:

On behalf of the Marine Protected Areas Federal Advisory Committee (MPA FAC), I am pleased to submit for your consideration two sets of recommendations from our meeting in Monterey, California, during 18-20 November 2008. Both documents are relevant to establishing an effective National System of Marine Protected Areas, and I am honored to report that, as is usual for this distinguished and highly engaged panel of 30 ocean experts, both documents passed unanimously.

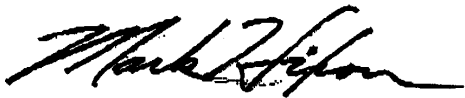
The first set of recommendations, "**Linking Ocean Observing Systems with the National System of Marine Protected Areas**," explains how stronger ties between the U.S. Integrated Ocean Observing System (IOOS) and the new National System of MPAs will greatly enhance the design and adaptive management of the National System, as well as benefit the practical application of ocean observing systems to regional and national ocean mandates. Zdenka Willis (Director of NOAA's IOOS Program Office) and other IOOS experts worked closely with the MPA FAC on drafting these recommendations.

The second set of recommendations, "**Evaluating the National System of Marine Protected Areas**," outlines an effective process for assessing whether the National System of MPAs substantially contributes to the conservation and management of marine areas important to achieve national and regional priority conservation objectives. We anticipate fleshing-out this process in our future recommendations.

I continue to be impressed and inspired by the excellent partnership that exists among members of the MPA FAC, our ex officio members, and the staff of the National MPA Center. I believe that such engaged partnerships are essential for the success of the developing National System of Marine Protected Areas.

The MPA FAC looks forward to your response, and to continuing our work with the Departments of Commerce and the Interior to employ MPAs in ways that serve both present and future generations of Americans. Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Hixon". The signature is fluid and cursive, with a long horizontal stroke at the end.

Mark Hixon  
Helen Thompson Professor of Marine Conservation Biology and  
Chair, Marine Protected Areas Federal Advisory Committee

attachments

cc: Lauren Wenzel, Designated Federal Official, National Marine Protected Areas Center, NOAA

**Marine Protected Areas Federal Advisory Committee  
November 2008**

**LINKING OCEAN OBSERVING SYSTEMS WITH  
THE NATIONAL SYSTEM OF MARINE PROTECTED AREAS**

*Marine protected areas (MPAs) and ocean observing systems are tools to achieve ecosystem-based management in marine waters and Great Lakes of the United States. It is the consensus of the Marine Protected Areas Federal Advisory Committee (MPA FAC) that building strong linkages between the nation's MPAs and ocean observing systems will greatly enhance the design and adaptive management of the National System of MPAs. Linking the two systems will also benefit the practical application of ocean observing systems to regional and national ocean mandates.*

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Marine protected areas, by protecting natural and cultural marine resources, are powerful tools to assess resource changes in response to natural and anthropogenic factors. Ocean observing systems, by defining environmental patterns and their variation over multiple scales, are important tools for a wide variety of conservation and management goals, including MPAs. The relationship between these tools requires clarification regarding how the National System of MPAs should link to observing systems, such as the U.S. Integrated Ocean Observing System (IOOS<sup>®</sup>) and how MPAs can be used as platforms for monitoring to enhance our understanding of the dynamics of marine ecosystems. This document represents the consensus of the MPA FAC on the mutual benefits of linking the National System of MPAs with the IOOS or other observing systems.

**The National System of Marine Protected Areas.** The Marine Protected Areas Center (MPA Center) of the National Oceanic and Atmospheric Administration (NOAA) is responsible for developing and implementing a science-based, comprehensive, and effective National System of MPAs. The National System of MPAs will consist of MPA sites, networks and systems established and managed by federal, state, tribal and/or local governments that collectively enhance conservation of the nation's natural and cultural marine heritage and represent diverse ecosystems and resources. National System MPAs will work together at the regional and national levels to achieve common objectives for conserving the nation's important natural and cultural resources. To most effectively meet these objectives, it will be essential to understand and evaluate regional and national trends in ecosystem conditions, as well as the effectiveness of MPA sites and networks of the National System.

**The Integrated Ocean Observing System (IOOS<sup>®</sup>).** Although there are many ocean observing programs with various authorities, we recommend a focus on the IOOS as the ocean observing system relevant to the Departments of Commerce and Interior (DOC/DOI). The IOOS is a system of systems that routinely and continuously provides quality-controlled data and information on current and future states of the oceans and Great Lakes from the global scale of ocean basins to the local scale of coastal ecosystems, including estuaries. It is a multidisciplinary system designed to provide data

in forms and at rates required by decision makers to address the seven Societal Goals of the IOOS (see <http://usnfra.org/ioos.html>). The IOOS Societal Goals most pertinent to the National System of MPAs are:

1. to protect and restore healthy coastal ecosystems more effectively;
2. to enable the sustained use of ocean and coastal resources; and
3. to improve predictions of climate change and weather and their effects on coastal communities and the nation.

The IOOS incorporates eleven Regional Associations, aligned with the National System's regional approach. The Regional Associations are legal entities representing the interests of groups that use, depend on, manage, monitor and study marine systems in their respective regions. The IOOS is composed of three subsystems: (1) observations (remote and in situ observations and data telemetry); (2) data management and communications; and (3) modeling and analysis. There are also two cross cutting threads: (a) research and development, and (b) education and training. Using these components, the IOOS procures, archives and distributes measurements of physical, biological, chemical and geological parameters vital to the health of the marine ecosystems and resources being protected by MPAs.

**Value of the IOOS<sup>®</sup> to the National System of MPAs.** Enhanced coordination with the information and data linkages of the IOOS is important to achieve the mission of the MPA Center. A strong national IOOS program, which is a partnership between federal agencies coupled with an effective network of Regional Associations, provides a valuable oceanographic context for the National System of MPAs. The IOOS program will be a key resource for MPA design, gap analyses for the National System, and the monitoring and assessment of MPAs. To this end, the MPA FAC identifies four fundamental questions:

(1) *What are the information requirements for MPA managers, including data management and monitoring functions?* The information needs of MPA managers depend on the type of MPA and the reason for its establishment. Managers of natural heritage MPAs need, for example, specific information on those environmental changes that affect biodiversity. For sustainable production MPAs, managers may need information on ecosystem characteristics that support fish populations, including when and where environmental changes occur and how environmental perturbations affect fishery resources. Managers of cultural heritage MPAs need information on environmental conditions that might affect the protected resource, such as storms that could damage underwater shipwrecks or changing ocean chemistry that could alter corrosion rates. Although the information needs of MPA managers differ, realizing the potential to separate changes driven by "natural" oceanographic variation from those resulting from anthropogenic influences (e.g., sedimentation, contaminants, fishing) will be critical in setting and adapting environmental management that will enhance resource sustainability and conservation.

(2) *What is needed to strengthen the IOOS and the National System of MPAs?* The IOOS presently does not catalog many key biological parameters necessary to evaluate the efficacy of the National System. Expanding the range of biological parameters monitored within the IOOS and other ocean observing systems will greatly benefit both systems. Increased and stabilized funding for the IOOS will enable consistent and regular oceanographic observations that are relevant to MPAs, including such crucial measures as:

- ocean ecosystem productivity;
- seawater quality (pollutants, harmful algal blooms, etc.);
- fish movements; and
- larval dispersal (e.g., population connectivity via ocean currents).

Increased funding for the National MPA Center will be necessary to integrate such data into the evaluation of the National System of MPAs at multiple scales, from individual MPAs to regional networks or systems of MPAs.

(3) *What is the value of integrating the National System of MPAs and the IOOS?* The National System and the IOOS share the common goals of making their services and products broadly available in a standardized manner to facilitate protection, understanding and monitoring of marine ecosystems. As a result, there are shared benefits from coordinating and integrating data collection and use between the two systems. Most observing systems and MPAs have been developed under a variety of programs with site- or region-specific approaches to data collection and management. The Regional Associations are working with NOAA IOOS to develop the Data Integration Framework, which includes data standards for ocean parameters. Coordinating these efforts with the National System is essential to enable MPA managers to address their needs, while avoiding the duplication of effort or the lack of comparability and compatibility among data sets from ecologically related sites. Such integration will allow more timely detection of ocean changes important to society and more effective management responses. Data integration also allows progress to be made on critical issues that span multiple scales and disciplines, such as:

- evaluating the effectiveness of MPAs;
- predicting annual fluctuations in fish stocks to enhance sustainability;
- detecting changes in the spatial extent and condition of essential fish habitat;
- measuring the effects of fishing on habitats and biodiversity; and
- monitoring the effects of ocean warming and acidification on marine ecosystems.

(4) *What are the desired products of IOOS-MPA integration?* Key data, information and decision support products are required to facilitate management at all levels, educate the public about marine resources and leverage the resources of the IOOS and the National System of MPAs. Collectively these products will better inform choices concerning the establishment, monitoring and management of MPAs.

**Value of the National System of MPAs to Other IOOS<sup>®</sup> Clients.** The value of the IOOS at regional and national scales will be enhanced greatly by using MPAs in the National System (including the National Marine Sanctuary System and the National

Estuarine Research Reserve System) as reference sites to help separate the effects of general environmental variation from local human activities. Environmental variation affects resources both inside and outside MPAs, whereas human activities can be restricted inside MPAs. This arrangement allows an objective assessment of human impacts in the ocean. In addition, monitoring data collected at selected MPAs will also be useful to the IOOS enterprise. Thus, the evaluation and assessment of the National System should take into account its contribution to clients of the IOOS. The specific process of delineating MPAs should involve the IOOS constituents. Managers of MPAs should be cognizant of key stakeholder questions regarding MPA successes and impacts and develop appropriate monitoring to provide answers.

Given the mutual benefits of coordination, DOC/DOI should establish an interagency working group to investigate how cooperation can be enhanced and sustained among the National System of MPAs and IOOS partners.

**Conclusions.** The National System of MPAs and the IOOS have a unique opportunity to benefit from one another in the early stages of National System development and implementation. For the National System, the IOOS data sets are important for the design, monitoring and assessment of the National System of MPAs. For the IOOS, MPAs can serve as highly managed areas and potential safe zones for operation of monitoring equipment, as well as potential reference sites for assessing anthropogenic ocean change. Through their coordination, the National System of MPAs and the IOOS can each benefit from increased standardization of data and improved dissemination of information to the public and decision makers. This integration will promote the effective assessment and evaluation of trends in the status and condition of the nation's MPAs, and will enhance an ecosystem-based approach to the management of marine resources.

**Recommendations:**

- Establish a strong linkage between the National System of Marine Protected Areas (MPAs) and the Integrated Ocean Observing System (IOOS) by:
  - determining the information requirements of MPA managers;
  - promoting the development of biological observing technology to meet the needs of MPAs;
  - enhancing data integration, standardization and accessibility;
  - integrating MPAs as reference sites into the IOOS; and
  - developing and disseminating key data, information and decision support products to ensure effective MPA management and enhance stakeholder education.
- Create an interagency working group to enhance cooperation between the National System of MPAs and the IOOS.
- Increase and stabilize funding for integrated monitoring by the IOOS and the National System of MPAs.

**Marine Protected Areas Federal Advisory Committee  
November 2008**

**EVALUATING THE NATIONAL SYSTEM OF MARINE PROTECTED AREAS**

The National Marine Protected Areas Center (MPA Center) of the National Oceanic and Atmospheric Administration (NOAA) is responsible for developing and supporting a science-based, comprehensive, and effective national system of marine protected areas (MPAs). The National System of MPAs will be founded on a regional approach as described in the *Framework for the National System of Marine Protected Areas of the United States of America* (November 2008). The National System will consist of MPA sites, networks, and systems established and managed by federal, state, tribal, and/or local governments that collectively enhance conservation of the nation's natural and cultural marine heritage and represent diverse ecosystems and resources. The National System of MPAs will function at the regional and national levels to achieve common objectives for conserving the nation's important natural and cultural resources.

The Marine Protected Areas Federal Advisory Committee (MPA FAC) recommends that the National System of MPAs undergo periodic evaluations to assess its effectiveness, identify areas for improvement, and guide future actions, taking into account the following:

**Define the Scope of the Evaluation**

Evaluation of the National System should address the following question: *Does the National System of MPAs effectively contribute to the conservation and management of marine areas important to achieve national and regional priority conservation objectives?* In order to effectively guide the National System, key terms in this question must be defined and measured.

The National System evaluation should address how well a regionally-based approach has been developed, including an improved process for planning and coordination among management entities to promote the following:

- prioritization and identification how national goals and objectives will apply at the regional level;
- development of appropriate baseline<sup>1</sup> information to help inform future evaluation of the MPA system within the region (including physical, biological, cultural, social, economic and governance information);
- an effective stakeholder involvement process;
- facilitation of the nomination process; and
- an effective scientific and enforcement program at the site/regional level.

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<sup>1</sup> *Baseline*, as used in these recommendations, means a characterization of the physical, biological, social, cultural, economic and governance conditions of MPA sites and/or regional MPA networks, where possible taking into account time series data and data regarding environmental variability. These characterizations would serve as reference data to help evaluate the National System over time. Caution must be used when comparing baseline data with similar data from future points in time, as the ocean is a dynamic environment that naturally changes over time.

### **Define the Approach**

Evaluation of the National System is intended to complement each MPA program's evaluation of its own MPAs by focusing on the system as a whole. Resources will be needed to conduct effective, regular evaluations of the National System. The MPA Center should adopt a strategic, cost-effective approach to build on existing efforts without placing undue burden on MPA programs. Evaluation of the National System should be transparent and incorporate standardized evaluation processes.

### **Develop Baseline Information**

Developing baseline information is critical for evaluating the progress of the National System. This information should be established as soon as possible and should consist of a series of regional baselines that together can aid in assessing the overall National System. A baseline should draw on the information in the National MPA Inventory and be further informed by the gap analysis. The definitions used in defining and measuring variables in the baseline analysis should be standardized and transparent.

### **Include Appropriate Spatial Scales**

National System performance data will include national and regional information, as well as information contributed by individual MPA programs.

At the national level:

- Evaluation of the National System should include standardized performance measures at the national level that have been scaled-up from the site and regional levels, as appropriate. Given the diversity of MPA programs and the current lack of agreed-upon, standardized measures, NOAA and the Department of Interior (DOI) should begin a process to establish such measures.

At the regional level:

- NOAA and DOI should develop more specificity about what is included in each priority conservation objective on a regional basis, as appropriate. This is necessary to effectively target and then evaluate the National System. This effort should include the identification of species, habitats, or sites (e.g., key biogenic habitats) within each region that represent the priority conservation objectives (e.g., protecting key biogenic habitats in each region). These will be used to develop regionally relevant performance measures and corresponding baselines (e.g., for each biogenic habitat protected, the level of protection provided).
  - The National System evaluation should include natural and cultural resource indicators to be tracked as part of the overall evaluation of the system.
  - These indicators will vary by region, and should be identified collaboratively with MPA managers, scientists and other stakeholders in each region.



At the site level:

- The National System should draw on relevant information developed at individual MPAs that collectively describe the performance of the National System. The system should work collaboratively with MPA programs at all levels of government to ensure that gathering and providing this information is not a burden to managers of individual sites and programs.

### **Develop Indicators**

Outcome indicators, which describe the ultimate impacts of the effort, are the best measures of the performance of the national system (e.g., how did fish populations change?). Such indicators must be directly tied to the purposes and scale of the component MPAs of the National System. It will take time to develop, realize and measure these outcomes. Output indicators, which describe products or activities to support desired outcomes, should be developed in the interim to describe the performance of the system (e.g., what is number and composition of member MPA sites in the National System?). These indicators should be developed as part of establishing a baseline.

The MPA FAC recommends that the primary focus for the first several years should be on National System structure, process, and engagement of member MPA programs and stakeholders. Adaptive management would then be used to make mid-course corrections for improving the National System.

### **Consider External Factors**

The MPA FAC recognizes that factors beyond the scope and influence of the National System may affect its performance (e.g., climate change). The evaluation process should include an assessment of factors that enhance and/or limit the effectiveness of the National System and how these might be addressed. For example, climate change is caused by complex factors outside the scope of the National System, but the evaluation can provide information to assist in anticipating and responding to such impacts.

The MPA FAC also recognizes that evaluation of the National System must be carried out on a regional and national basis with consideration of the full complement of conservation and management measures in place. The National System should also be evaluated based on whether it contributes added value to conservation goals.

### **Conclusions**

The MPA FAC recognizes that the development of the National System of MPAs will evolve over time, and its evaluation should take this fact into account. The goal of the National System evaluation process should be to identify weaknesses as well as successes and provide information to NOAA and DOI, regional and local managers, and stakeholders needed to build upon the program's strengths and promote adaptive management.

**Contacts:**

Dr. Mark Hixon  
Chair  
Marine Protected Areas Federal Advisory Committee  
and  
Professor  
Department of Zoology  
Oregon State University  
3029 Cordley Hall  
Corvallis, OR 97331  
[hixonm@science.oregonstate.edu](mailto:hixonm@science.oregonstate.edu)

Lauren Wenzel  
Designated Federal Official  
Marine Protected Areas Federal Advisory Committee  
National Marine Protected Areas Center  
NOAA  
1305 East West Highway, Room 12-227  
Silver Spring, MD 20910  
[Lauren.wenzel@noaa.gov](mailto:Lauren.wenzel@noaa.gov)