

1 PROTECTING AMERICA'S MARINE ENVIRONMENT:
2 A REPORT OF THE FEDERAL ADVISORY COMMITTEE
3 ON ESTABLISHING AND MANAGING A NATIONAL SYSTEM
4 OF MARINE PROTECTED AREAS
5 VERSION 5
6
7

8 I. INTRODUCTION
9

10 **Statement of Purpose**
11

12 Executive Order 13158 on Marine Protected Areas was issued on May 26, 2000, for the purpose
13 of:

14
15 *"...strengthening and expanding the Nation's system of marine protected areas (MPAs). An
16 expanded and strengthened comprehensive system of marine protected areas throughout the
17 marine environment would enhance the conservation of our Nation's natural and cultural
18 marine heritage and the ecologically and economically sustainable use of the marine
19 environment for future generations (p. 34909)."*
20

21 Section 4 of the Executive Order authorized a Federal Advisory Committee to advise the
22 Secretaries of Commerce and the Interior on aspects of the Order. This report represents the
23 collective views of this Committee on the appropriate elements of a National System of MPAs.
24 We envision a National System of Marine Protected Areas (MPAs) that would achieve the goals
25 described in Executive Order 13158 by supporting regional efforts to fill gaps in the conservation
26 and management of marine resources, bringing coherence to the existing array of MPAs, and
27 providing for meaningful participation by a wide range of interested and affected parties. This
28 approach is consistent with the findings of the U.S. Commission on Ocean Policy, which calls
29 for a movement toward ecosystem-based management to "lead to better decisions that protect the
30 environment while promoting the economy and balancing multiple uses of our oceans and
31 coasts." A National System of MPAs is an important component of this strategy.
32

33 **Benefits of a National MPA System**
34

35 **Marine Protected Areas**[†], as a part of overall marine management, are an important tool for
36 managing human activities that affect the marine environment. Executive Order 13158 defines a
37 Marine Protected Area as "...any **area** of the **marine environment** that has been **reserved** by
38 Federal, State, territorial, tribal or local laws or regulations to provide **lasting protection** for part
39 or all of the natural and **cultural resources** therein" (see glossary and text in Section III for a
40 definition of bolded terms).
41

42 Many other tools are also being used to conserve our natural and cultural marine heritage. For
43 example, the term "Marine Managed Area" (MMA) denotes a broader set of areas under a
44 spectrum of place-based management. Other marine conservation measures include gear, size
45 and seasonal restrictions.

[†]Important terms are bolded and defined in the attached Glossary. These definitions are essential for full understanding of this document.

1
2 MPAs can add value when integrated with these other measures. MPAs allow populations of
3 organisms within their borders to recover from damage, provide focal points for comprehensive
4 protection from most major threats, provide reference sites for measuring the effectiveness of
5 management and for separating the effects of natural phenomena from human effects, and raise
6 awareness of natural and cultural resources by creating a sense of place. We believe that a
7 National System of MPAs based on our recommendations could add even greater value by
8 creating a framework for additional cooperation and coordination, improved efficiency, and
9 greater synergy. This is particularly important for nearshore coastal waters managed by States
10 and tribes, which provide valuable habitat for a wide range of species and are subject to many
11 competing uses and impacts.

12
13 A National System of MPAs could provide a variety of synergistic benefits beyond those
14 realized by the current array of individual MPAs. First, a National System could foster
15 cooperation and stronger partnerships among federal, State, tribal, and other management
16 entities, thereby increasing efficiency by sharing knowledge, resources, and infrastructure.
17 Second, the envisioned framework for a National System could improve individual MPA design
18 and implementation by clarifying terminology, standardizing processes (while respecting
19 regional and local diversity), and promoting fairness and equity for all participants. Third,
20 development of a National System of MPAs could identify gaps in existing management
21 strategies, helping to ensure that representative examples of the nation's major marine resources
22 (including both natural and cultural heritage) are conserved, enhanced, and/or restored in all
23 geographic regions. Fourth, a knowledge-based, coordinated system of MPAs built on regional
24 efforts and fully participatory processes could increase our ability to protect and conserve
25 broadly distributed species whose life cycles span multiple jurisdictions. Finally, as a
26 component of ecosystem-based management, a National System could help protect important
27 ecological processes.

28
29 The MPA Federal Advisory Committee offers these recommendations on the belief that the time
30 is now right for Federal agencies, States, tribes and various interest groups to work together to
31 create the many beneficial effects of a National System of MPAs. We envision a National
32 System of MPAs based on regional goals and priorities brought together under a national
33 umbrella that adds value by identifying gaps, ensuring that MPAs help sustain each other,
34 bringing coherence to the existing array of MPAs and other marine management approaches, and
35 enhancing the stewardship of our natural and cultural marine resources. In accomplishing these
36 goals, this system will not diminish, affect or abrogate Indian treaty rights, nor US trust
37 responsibilities to Indian tribes. Neither will the system detract from the authorities and powers
38 of States or territories. Furthermore, the system will respect and benefit from experience-based
39 knowledge, including local ecological knowledge and traditional ecological knowledge,
40 subsistence, and ceremonial practices.

41 42 **Call to Action**

43
44 The MPA Federal Advisory Committee includes individuals with a wide range of perspectives
45 and interests who share the common goal of improving the stewardship of the Nation's natural
46 and cultural marine resources. The development of a National System of MPAs would provide a
47 major and unprecedented opportunity for individual MPAs included in various jurisdictions to
48 contribute to a larger effort, producing benefits that extend beyond individual MPA sites. The

1 success of the larger effort, and the synergistic potential to be gained, is critically dependent
2 upon the participation and contribution of each MPA, its managers, and **stakeholders**, that is, the
3 parties who are interested in, affected by, or have an effect on an MPA. We encourage the
4 general public, tribes, Federal agencies, State agencies, and regional entities to share the vision
5 of a National System of MPAs and participate fully in its realization.
6
7

8 **II. Goal and Objectives of a National System of Marine Protected Areas**

9

10 **Goal**

11
12 The MPA Federal Advisory Committee envisions a National System of Marine Protected Areas
13 implemented:

14
15 *To enhance effective **stewardship**, **lasting protection**, and **sustainable use** of the nation's*
16 ***natural and cultural marine resources** with due consideration of the interests of and*
17 *implications for all who use and care about our marine environments.*
18

19 **Objectives**

20
21 To implement the goal of the National System of Marine Protected Areas, the MPA Federal
22 Advisory Committee proposes the following objectives:

- 23
24 1. Conserving, enhancing, and/or restoring marine **biodiversity**;
- 25
26 2. Conserving, enhancing, and/or restoring **representative examples of the nation's**
27 **marine ecosystems and habitats** in all geographic regions, as well as unique
28 biophysical and geological features;
- 29
30 3. Protecting areas vital to the conservation of particular species or species assemblages,
31 such as spawning and nursery grounds, or unique habitats;
- 32
33 4. Promoting the ecologically and economically sustainable use of marine resources for
34 the benefit of individuals, commercial enterprises, communities, and the Nation;
- 35
36 5. Protecting cultural resources and providing appropriate access for their enjoyment and
37 sustainable use;
- 38
39 6. Raising awareness and knowledge of marine and coastal resources; and
- 40
41 7. Strengthening existing ocean management frameworks of the United States (i.e.,
42 International, Federal, State, territorial, tribal or local laws and regulations).
43

44 While some MPAs may have multiple objectives, others may concern a sole objective. Any
45 individual MPA in the National System must have at least one of these objectives, thereby
46 contributing to the goal of the National System. It is acknowledged that there may be existing or
47 new MPAs that would not become part of the National System.
48

1 These objectives should be accomplished in a way that:

2 (a) recognizes both on-site and off-site influences (i.e., freshwater, marine, terrestrial,
3 and atmospheric), including linkages between watersheds and the sea,

4 (b) is based on the participation of various interest groups and use of the best
5 available information from natural science, social science, and experience-based
6 knowledge,

7 (c) considers and addresses local values and perceptions,

8 (d) encourages cooperation and coordination among federal, state, territorial, tribal
9 and other management entities to reduce administrative costs, promote efficiency, and
10 effectively utilize existing management infrastructure; and

11 (e) minimizes to the extent possible adverse social and economic impacts on citizens
12 and interest groups.

13 14 **Program Activities**

15
16 The activities of each participating MPA in the National System will include at least one of the
17 following:

- 18
19 1. Management programs to conserve ecosystems and biodiversity in general, as well as
20 particular species, such as:
- 21 a. **species at risk, threatened, or endangered and their critical habitats;**
 - 22 b. species for which concern exists about their status, but for which insufficient data
23 exist regarding their populations and habitats;
 - 24 c. **ecologically significant species and processes;**
 - 25 d. species taken incidentally by commercial and/or recreational fisheries; and
 - 26 e. commercially and/or recreationally important species.
- 27
28
29 2. Participation in **ecological** networks designed to enhance the conservation of species
30 distributed in local populations linked by dispersal or other movement;
- 31
32 3. Management programs to provide opportunities for sustainable and non-harmful
33 commercial and recreational use, for scientific research, and/or for educational
34 purposes;
- 35
36 4. Management programs to protect **unique biophysical and geological features;**
- 37
38 5. Management programs to protect **cultural resources** and provide appropriate access
39 to and/or sustainable use of such resources; or
- 40
41 6. Participation in administrative linkages to share information and use management
42 resources more efficiently.
- 43
44
45
46
47
48

III. Defining Marine Protected Areas

A common understanding of key words in Executive Order 13158's definition of MPA is essential for determining whether existing candidate sites qualify as MPAs and their subsequent eligibility for the National System. In Table 1, below, we define key words in the following definition of MPA from the Executive Order:

“...any **area** of the **marine environment** that has been **reserved** by Federal, State, territorial, tribal, or local laws or regulations to provide **lasting protection** for part or all of the natural and **cultural resources** therein.” (p. 34909)

Table 1. Definitions of Key Terms in Executive Order Definition of Marine Protected Area

Term	Definition
Area	Marine site or region that has legally defined geographic boundaries. The site or region shall not include the entire US EEZ or an entire State's waters.
Marine environment	Coastal and ocean waters and seafloors, including intertidal areas (to mean high tide level), estuaries (extending upstream to 0.5 ppt salinity), and the Great Lakes (to ordinary high water).
Reserved	Legally established by Federal, State, territorial, tribal, or local governmental authority.
Lasting	Enduring long enough to enhance the conservation, protection, or sustainability of natural or cultural marine resources. As detailed in Table 2, the minimum duration of "lasting" protection ranges from 10 years to indefinite depending on the type and purpose of MPA. An "indefinite" duration of protection means that the intent at the time of designation is permanent protection. The distinction between "indefinite" and "permanent" acknowledges that MPA designation and level of protection may change for various reasons, including natural disasters that may destroy or alter resources, or change in societal values. A closed area established for fishery management purposes may qualify as an MPA if it is established through a Fishery Management Plan amendment.
Protection	Specifically established with the goal of providing an enhanced level of conservation for part or all of the natural and cultural resources therein. Restrictions may range from managed use to no access.
Cultural resources	Any ethnographic resource, or submerged historical or submerged cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts in the marine environment. Ethnographic resources include natural resources and sites with tribal or traditional cultural meaning, value, and use.

Table 2. Definitions of "Lasting" Protection for Marine Protected Areas

Executive Order 13158 defines a marine protected area (MPA) as involving "lasting" protection. Table 2 provides minimum durations¹ that define "lasting" protection for three major goals of MPAs², recognizing that a particular MPA may achieve more than one of these goals. Note that all MPAs have a maximum possible duration of protection that is indefinite³. This table addresses only the issue of the duration of protection, and does not address the issue of level or type of protection, which may vary widely according to the specific goals of each MPA. Footnotes following the table are essential for understanding these definitions.

MPAs are not the only form of spatial management of coastal and ocean areas. The term "Marine Managed Area" (MMA) was created to denote a broader set of areas under a spectrum of place-based management. MMAs are defined in the Federal Register (v. 70, no. 15, pp. 3512-3521), and include some areas that would be excluded by the narrower definition of MPAs recommended below.

MPA CATEGORY & Sub-Category	MINIMUM DURATION OF PROTECTION	RATIONALE FOR MINIMUM DURATION OF PROTECTION
MPAs WITH NATURAL HERITAGE GOALS:		
Living Natural Resources (i.e., species, populations, ecological communities, and/or ecosystems, including habitats and ecological processes)	10 years	<ul style="list-style-type: none"> ● <i>procedural</i>: time required for public involvement, regulatory processes, and at least 5 yr of scientific and other monitoring and analysis, including independent review in an adaptive-management framework. ● <i>scientific</i>: response rate of species, populations, ecological communities, and/or ecosystems and their associated features are determined by the generation time⁴ of focal species.
Large-Scale Non-Living Natural Resources ⁵ (i.e., larger geological features that are well-documented and permanent from the human perspective, some examples being submarine canyons, volcanic features, seamounts, and pinnacles)	indefinite ³	Representative, unique, rare, or uncommon seafloor features are irreplaceable and sufficiently valued to be preserved for present and future generations.
Small-Scale Non-Living Natural Resources ⁵ (i.e., smaller geophysical features that may be poorly documented and/or ephemeral from the human perspective, some examples being hydrothermal vents, methane seeps, submarine freshwater springs, and sand "waterfalls")	10 years	<ul style="list-style-type: none"> ● <i>procedural</i>: time required for public involvement, regulatory processes, and scientific monitoring of the persistence of a geophysical feature in an adaptive-management periodic review. ● <i>scientific</i>: poorly documented features may be more common than previously assumed and/or features may be ephemeral, both cases justifying occasional adaptive-management review.

1
2

MPA CATEGORY & Sub-Category	MINIMUM DURATION OF PROTECTION	RATIONALE FOR MINIMUM DURATION OF PROTECTION
MPAs WITH CULTURAL HERITAGE GOALS:		
Archaeological Resources (i.e., artifacts, shipwrecks, and other archaeological sites or objects, including human remains)	indefinite ³	Some archaeological features may degrade over time, requiring periodic survey and assessment followed by adaptive management, yet the intent is that these features are irreplaceable and sufficiently valued to be preserved for present and future generations.
Tribal/Indigenous Cultural Resources	indefinite ³	Continued access to and sustainable use of resources in an area may be paramount to a culture's identity and/or survival.
MPAs WITH SUSTAINABLE PRODUCTION GOALS:		
There are multiple possible sub-categories, all of which are designed to provide for sustainable production of focal species, and may protect supporting ecological communities and ecosystems, including habitats and ecological processes.	10 years	<ul style="list-style-type: none"> • <i>procedural</i>: time required for public involvement, regulatory processes, and at least 5 yr of scientific and other monitoring and analysis, including independent scientific review in an adaptive-management framework. Stringent criteria for modification (e.g. FMP amendment). • <i>scientific</i>: response rate of species, populations, ecological communities, and/or ecosystems and their associated features are determined by the generation time⁴ of focal species. Also, large-scale oceanographic cycles (e.g., El Niño-Southern Oscillation and Pacific Decadal Oscillation) occur on multi-year time scales.

3
4
5
6
7
8
9
10
11
12
13

Notes for Table 2: Definitions of "Lasting" Protection for Marine Protected Areas:

1. The "**duration**" of protection is defined as the time period an MPA (or candidate site) has been designated to exist, regardless of how long that MPA (or MMA) has actually existed. For example, a 3-year-old MPA designated to exist for 25 years is considered to have a 25-year duration of protection. The specified **minimum durations of protection** are also based on the following general considerations:
 - (a) any MPA may have an indefinite³ duration if specified by legal authority;
 - (b) MPAs with only seasonal protection must provide that protection at a fixed and regular period each year that corresponds to the timing of a predictable ecological process or anthropogenic threat (otherwise the absence or removal of such explicit periodic protection means that the site is no longer an MPA); and

1 (c) the specified minimum durations of protection incorporate the times estimated to be required for: (i) the MPA to become fully
2 functional after establishment; (ii) some effect of the protection to occur, especially in the case of MPAs that protect living resources;
3 (iii) a statistically valid trend in performance to be monitored and assessed; and (iv) the appropriate adaptive-management response to
4 be taken based on the results of monitoring and analysis, which may include alterations or de-commissioning of the MPA.
5

- 6 **2.** For detailed definitions of the **categories of MPA**, see MPA Center publication "A Classification System for Marine Protected Areas
7 in the United States: A Tool To Understand What We Have and What We May Need" (January 2004).
8
- 9 **3.** An "**indefinite**" duration of protection means that the intent at the time of designation is permanent protection. The distinction
10 between "indefinite" and "permanent" acknowledges that MPA designation and level of protection may change for various reasons,
11 including natural disasters that may destroy or alter resources, or change in societal values.
12
- 13 **4.** At least one full **generation**, at a minimum, is necessary to determine the trajectory of protected biological populations inside an MPA
14 or regional populations ecologically linked to that MPA.
15
- 16 **5. Non-living natural resources** that are protected principally to conserve their associated marine life are, by definition, subsumed
17 within the sub-category of living natural resources (as the habitat for those living resources).

IV. Developing the National System of MPAs

Overview

The foundation of the National System rests on involving interested and affected parties at all stages of a transparent process that is based on the best available scientific and experience-based knowledge. At the national level, criteria, guidelines, objectives and policies must be established, and sustainable funding for the system provided. At the regional level, processes must be established to develop regional goals and priorities, and identify sites that meet the criteria for the National System. Existing or new sites would be nominated at the regional level for inclusion in the National System on the basis of supporting information regarding need, design and implementation. Specific criteria for establishing new sites must be developed.

General Principles

The creation and management of the National System of MPAs should be based on the following guiding principles:

1. In accordance with Executive Order 13158, primary responsibility must lie with existing legal, statutory, and legislative authorities. While the MPA-FAC offers a new approach to creating a coordinated National System and its constituent parts, the actual designation and establishment of individual MPAs within the system should be accomplished under existing provisions of law.
2. The National System of MPAs would be based on national criteria but would be developed through a regional planning process. The system of nomination, selection and planning of the National System of MPAs (including individual MPAs within a system) must be clearly delineated, understandable by the public, and based on the best available scientific data and analysis, and/or on knowledge of documented cultural, subsistence or ceremonial sites.
3. The public, user groups, tribes and governmental agencies at the local and regional level must be an integral part of the nomination, planning, implementation, evaluation and **adaptive management** process. This should be a combination of a “top-down” process guided by Federal, State, and tribal authorities and national criteria and standards, and a “bottom-up” process that meaningfully engages all parties with an interest in the status of the nation’s marine environment.
4. There must be incentives for participation and cooperation by government agencies and by existing and future stakeholders.
5. A commitment to compliance must be fostered through a combination of participation, education, incentives and enforcement to enhance the effectiveness of individual MPAs and the National System.
6. There must be awareness of, and respect for, the sovereignty of States, territories, and tribes and, as appropriate, local jurisdictions. International commitments must also be respected.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

Process

National Level

The above principles support a process for establishing the National System of MPAs composed of both existing and new sites. At the national level, and in accordance with the goal and objectives of the National System, the Secretaries of the Departments of Commerce and the Interior, in consultation with other pertinent Federal agencies (or working with or through any national ocean agency that might be established through legislation or executive order), would:

1. Identify a lead agency to staff and coordinate the MPA nomination process.
2. Establish criteria, objectives, guidelines and policies for the National System based upon existing authorities (unless those authorities are changed through legislation).
3. Utilize existing or new regional entities to assist in implementation of these guidelines;
4. Work with Congress to provide funding for the system; and
5. Conduct periodic review, evaluation and gap analysis of the National System and develop national priorities to be considered by regional entities.

Regional level

A strong regional planning and implementation process is needed to ensure that the National System reflects regional and national priorities, effectively engages the public, and is coordinated with regional marine management initiatives. Moreover, the regional scale is appropriate for coordinating protection efforts for critical coastal and estuarine areas which experience cumulative impacts from nearby and distant watersheds. In accordance with national guidelines, existing or new regional entities composed of Federal and State agencies, tribes, and other groups would:

1. Establish regional goals and priorities;
2. Utilize existing authorities to implement a planning process that identifies (a) existing MPAs that meet National System criteria and regional goals and (b) gaps where new MPAs, including transboundary MPAs, may be needed to address threats to marine resources not covered by existing legal protections;
3. Nominate those sites to the National System and provide technical support for the MPA implementation process; and
4. Create a framework for informing and educating interested and affected groups about MPAs and encouraging their active participation in the nomination, approval and management of MPAs.

In the absence of a regional entity, the Secretaries of Interior and Commerce should designate one or more agencies to serve in this capacity.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48

Nominating Sites

The MPA-FAC envisions the National System being created from both existing and new marine sites meeting the criteria described in Section III with respect to the duration of the protection. State and/or Federal agencies, tribes, groups of agencies, non-profit organizations, commercial and recreational fishing interests, other marine- based industries, individual citizens, or other citizen groups could nominate existing or potential sites. As Executive Order 13158 provides federal agencies with direct authority to establish a National System, it is recommended that a process be developed to facilitate admission of qualified existing federal sites to the National System without a formal nomination.

Some existing sites may have been established without explicit goals, objectives, and other desirable characteristics, and it is essential that the managers of these sites consider the issues raised here. As part of the MPA nomination and acceptance process, Marine Managed Areas (MMAs) with identifiable deficiencies will be considered for inclusion in the MPA system contingent upon acceptance of a management plan and a schedule to correct the deficiencies.

It is also important to offer specific criteria for the decision to add new sites to the National System. Once the National System of MPAs is established, new sites may qualify as part of that system on the basis of supporting information regarding need, design, and implementation provided by the regional entities responsible for nominating such sites. New MPA sites must be reviewed and approved in accordance with existing legal procedures, and would be subject to this review process if they are to become part of the National System.

In the case of both existing (non-federal) and new sites, nomination will require that nominating parties:

1. Explain why the site should be part of the National System. Describe the site and its contributions to achieving regional and national goals, including achieving representation of nationally significant natural heritage, cultural heritage and sustainable production resources. Describe how the site meets MPA criteria.
2. Characterize the MPA using available geological, oceanographic, biological, cultural, and socioeconomic data, preferably in a user friendly on-line Geographic Information System. This process presents an opportunity for participatory research with knowledgeable individuals to elicit, collect, and use local, traditional, and experience-based knowledge.
3. Describe the current site status, including identification (and a priority ranking) of existing or potential threats to the resources identified, the sources of those problems or threats, strategies to address problems and threats, and necessary measures to achieve the goals and measurable objectives that have been identified for the MPA.
4. Describe existing or proposed local, State, territorial, tribal or Federal authorities that protect (or would be used to protect) the site. This would include a description of current levels and sources of protection for those sites (e.g. regulations and enforcement), and any actions needed to move the site toward the level of protection required to meet National System and regional goals.

- 1 5. Propose a decision-making structure. Binding agreements (e.g., Memoranda of
2 Understanding, etc.) would describe the roles and responsibilities of the regional and
3 national partners in establishing the sites as part of the National System, and ensures that
4 the sovereignty of states, territories and tribes is acknowledged.
5
- 6 6. Describe existing and potential linkages to other regional marine management activities.
7 For MPAs designated principally to conserve living marine resources, an assessment of the
8 processes important to **ecosystem structure and functioning**, and of the **ecological**
9 **linkages** between MPAs and the broader environment is needed, especially regarding
10 whether the site would likely be part of an **ecological network**. Programmatic linkages
11 and cooperation should also be described.
12
- 13 7. Propose a specific plan for monitoring and evaluation. Monitoring and evaluation should
14 make use of the natural sciences, the social sciences and customary and local knowledge,
15 where appropriate. Such evaluation will be necessary to determine whether or not the
16 objectives of individual MPAs are being met and whether adjustments to MPA design and
17 management are needed, in accordance with the principles of **adaptive management**.
18 Explicit criteria will be required for the de-commissioning of MPAs that have not met their
19 goals and objectives. In addition, monitoring and evaluation are needed to assess whether
20 the National System is meeting its goal and objectives.
21
- 22 8. Explain how agencies and the public have been informed and engaged in the nomination
23 process. Special efforts should be made to identify both **effecting parties** and **affected**
24 **parties** of MPA-related decisions, whether or not they express an interest in them. Such
25 outreach may increase constituencies for the MPA and prevent or reduce conflict later
26 arising from perceptions of exclusion.
27
- 28 9. Describe existing and/or proposed funding for the site.
29
30

31 Adding New Sites

32
33 New sites nominated for inclusion would enter the system under existing authorities (e.g., National
34 Parks, National Marine Sanctuaries, state parks, fishery closures, etc.). In addition to addressing the
35 steps noted above, newly established sites proposed for inclusion in the National System would be
36 required to assess the following.
37

- 38 1. The need for, and benefits from, an MPA based on supporting materials from the natural
39 sciences, the social sciences, and customary and local knowledge. This would include an
40 assessment of alternative means to achieving MPA goals;
41
- 42 2. The implications of the proposed MPA for national interests, including navigation routes,
43 national security and international commitments; and
44
- 45 3. The economic effects of the proposed MPA, including both monetary and non-monetary
46 effects. This will include evidence that the adverse social and economic implications for
47 users of the marine environment have been considered and are, to the extent practicable,
48 minimized.

V. Implementation

Actions at the site, regional and national levels will be required to implement the National System of MPAs.

At the site level, acceptance of a particular MPA into the National System would require the site to:

1. Implement an **action plan** via a binding agreement among the participating agencies to define roles and responsibilities, stipulate the goals and measurable objectives for the MPA, set out specific, quantifiable performance measures, and include a timeline for carrying out the plan of action. The duration of the agreement would be established depending upon the authority for creation of the MPA and by negotiation with the regional entity.
2. Commit all agencies to a governance process that builds upon the principles outlined in this document, as well as to internal and external monitoring of performance and adaptive management strategies for the MPA. Monitoring protocols and performance indicators should be designed, insofar as possible, to establish transparent and objective measures of success of MPAs in meeting their goals and objectives, and in using this information to guide subsequent management decisions.

At the regional level, the regional organization charged with coordinating regional input to the national system, would:

1. Formalize arrangements for institutional networking to achieve economies of scale. For instance, arrange for sharing of technical and financial resources for monitoring, surveillance, enforcement, staff training, etc;
2. Facilitate continued managerial coordination among MPAs across regional, national and international boundaries, to ensure consistent approaches to monitoring, enforcement, emergency response, threat abatement, coordination with other countries and international organizations (such as through transboundary MPAs), and ensuring compliance with international law; and
3. Provide technical and logistical support to achieve the goals of each MPA as well as the entire National System.

At the national level, the national entity charged with coordinating the national system, comprised of a Federal agency or group of Federal agencies, would:

1. Provide additional funding for entities managing MPAs accepted into the National System. These could be matching funds or special allocations of categorical funding from participating programs to offset the incremental costs of participating in the national

1 system. It is not envisioned that the national entity would be the primary financial
2 supporter for sites entered into the National System. A sustainable source of funding for
3 the National System must be established. Planning grants to pay some portion of the cost
4 of the nomination process should also be available to nominating organizations.
5

- 6 2. Provide additional protection for MPAs accepted into the National System. This would be
7 provided by federally required notifications of potentially harmful actions by Federal
8 agencies, required consultations to prevent or mitigate such harmful actions, regulatory
9 procedures, NEPA procedures, Coastal Zone Management Act consistency requirements,
10 and similar measures. Being part of the National System would prevent a reduction in the
11 level of protection for various kinds of existing MPAs.
12
- 13 3. Formally recognize MPAs accepted into the National System. This recognition could help
14 attract visitors or promote economic activities within or adjacent to the MPA.
15
- 16 4. Conduct a performance assessment for the system according to an established schedule,
17 and conduct **adaptive management** for the system and individual MPAs.
18
19

20 VI. Promoting Stewardship and Effectiveness

21 Stewardship

22
23
24
25 The effectiveness of MPAs in accomplishing their goals and objectives is heavily dependent on the
26 development of the shared concept of individual and collective **stewardship**. Stewardship entails
27 considerate and discerning use and management to ensure that goals and objectives are being achieved
28 for the benefit of present and future generations. It requires the commitment of all participants —
29 members of the general public, users of the marine environment, individuals or organizations whose
30 activities can affect the integrity of an MPA, scientists, government agencies, and others. Stewardship
31 is dependent on the quality and character of decision-making processes, and on the extent to which
32 prior commitments are honored. It is essential to the long-term effectiveness of all MPAs.
33

34 *Individual stewardship* depends on public awareness, educational programs, personal ethics,
35 individual and group incentives, and culture. *Collective stewardship* entails the exercise of
36 governmental actions to achieve the goals and objectives of a National System. Collective
37 stewardship also entails the creation of formal and informal linkages among entities that have some
38 responsibility for a particular MPA, or for a system of MPAs.
39

40 Top Down vs. Bottom Up

41
42 Successful stewardship requires collaborative partnerships among public, tribal, and private
43 organizations, including local as well as more distant interests. The “top-down” approach to marine
44 conservation, where a government agency uses its authority to impose rules, is unlikely to succeed
45 where knowledge is uncertain or contested, and where monitoring and enforcement promise to be
46 difficult. It is also problematic where there are complicated jurisdictional issues, such as many
47 inshore and near-shore areas, and at the boundaries of States and nations.
48

1 The “bottom-up” approach is frequently effective because those individuals closest to the marine
2 resource or area have experience-based and traditional knowledge to contribute to planning and
3 management. These individuals often depend on the marine environment and this brings interest and
4 commitment. The bottom-up approach creates opportunities for full participation and a sense of
5 ownership and stewardship on the part of local people or dedicated resource users.

6
7 Potential problems with bottom-up initiatives arise when local users may not have the larger regional
8 or national interest in mind and believe that the natural resources and unique, nonrenewable cultural
9 resources “belong” to the local people. Clearly a balance must be achieved. The top-down
10 articulation of national goals and legal mandates can be useful and necessary in galvanizing many
11 MPA processes, but care must be taken to avoid the unwelcome imposition of seemingly arbitrary and
12 capricious strictures on long-established patterns of resource use. As with most endeavors, a mixture
13 of top-down and bottom-up approaches will likely prove to be more effective than a preponderance of
14 a single approach pursued in isolation.

15 16 17 **Effectiveness**

18
19 The effectiveness of individual MPAs in protecting important marine resources depends, in many
20 respects, on a widely shared commitment to compliance. Compliance is often confused with
21 enforcement. Enforcement—the imposition of penalties and sanctions for non-compliance, and
22 deterrence based on fear of being caught—is but one factor in the creation of a commitment to
23 compliance or non-compliance. A high degree of transparency, clear rules, and consistent but fair
24 enforcement often improves the degree of compliance.

25
26 Over time, one can expect to see a commitment to compliance strengthened by:

- 27
- 28 • Clear and open planning, implementation, and decision-making processes whereby affected
 - 29 parties can learn about and agree to the values of an MPA;
 - 30 • Effective participation of those to whom the rules directly apply (e.g., fishermen, divers,
 - 31 vessel operators);
 - 32 • Major efforts in communication and education on MPA rules and benefits to promote
 - 33 conservation ethics and practices;
 - 34 • Use of the particular compliance goals and tools that are appropriate for the objectives of the
 - 35 individual MPA;
 - 36 • Appropriate economic and social incentives;
 - 37 • Siting and boundaries that promote compliance and ease enforcement; and
 - 38 • Consistent, rather than arbitrary, enforcement (even for minor offenses).
- 39

40 **Communication and Participation**

41
42 Effective stewardship requires enhanced communication among all interested and affected parties, as
43 well as the general public. Communication must be multi-dimensional if it is to accomplish its
44 purposes. Those directly involved in an MPA process must make an effort to learn from others.

1
2 MPAs typically involve multiple, sometimes conflicting goals, objectives and interests, entailing the
3 consideration of diverse human communities. It is therefore important to have a highly participatory
4 process at all points of planning and implementation. Some of the key principles of participation are:

- 5
6 1. Interested, affected and effecting parties must be identified and actively engaged from the
7 beginning of the process,
8
- 9 2. Clear rules and procedures for comment, dialogue, and participation must be spelled out
10 and available. Full participation is enhanced by using a variety of communication means—
11 web pages, printed materials, email, Public Service Announcements,
12
- 13 3. There must be transparent means to resolve issues and conflicts,
14
- 15 4. Local values must be understood, acknowledged, and considered in decision-making
16 processes,
17
- 18 5. The schedule of the process must be clear and readily available,
19
- 20 6. There must be accommodations made for varying the degree of power sharing. This will
21 depend on the cultural context of the MPA, and it will require an assessment of the social,
22 cultural, and economic attributes of the local community.
23
- 24 7. Skilled and knowledgeable facilitators must be involved to interview stakeholders, help
25 develop the planning and implementation process, and run meetings,
26
27

28 **Adaptive Management**

29
30 An overarching principle for successful MPAs—and thus for a successful National System of
31 MPAs—is **adaptive management**. Adaptive management entails a continual process of assessing,
32 evaluating and improving on-going decisions in light of new knowledge and evidence. The science of
33 developing and managing MPAs is relatively new and evolving. Moreover, the ocean environment
34 and the human dimension (changing markets, cultural values, fishing practices, etc) are highly variable
35 on multiple scales of time and space. Given this variability, procedures must exist to allow flexibility
36 and learning in the face of new conditions, evidence or understanding.
37

38 Adaptive management should be a normal part of the planning and management process. It relies on
39 the collection and timely use of monitoring data, careful research to determine cause-and-effect
40 relationships (including statistically rigorous experimental designs), evaluation of management
41 measures and ecological indicators, communication of new information, and transparent decision-
42 making. Care must be taken to avoid speculative experiments and management protocols where there
43 is a potential for adverse impacts on livelihoods or other important interests. Monitoring and research
44 activities must also be sensitive to potential conflicts with other uses of the marine habitat being
45 studied.
46

47 Ideally, the monitoring and research programs should be integrated to maximize their usefulness and
48 cost-effectiveness. That is, research hypotheses inform particular monitoring programs, and data from

1 monitoring activities then facilitate management decisions. Formal research programs must include
2 the social and natural sciences and should be related to MPA goals, objectives, and monitoring needs,
3 with scope for both basic and applied research.

4
5 Participatory research that elicits, interprets and uses experience-based **knowledge** (including
6 traditional ecological knowledge and local knowledge), and experience-based information are as
7 important as research from the natural and social sciences. The particular mix of each kind of research
8 that will prove most useful will depend on which questions are under discussion and the information
9 needed to answer them. Participatory research facilitates communication, education, and trust, thereby
10 enhancing the prospects for good stewardship and effective MPAs.

11
12 Stewardship is also enhanced by the information gained from an integrated monitoring and research
13 program. The frequent and coherent dissemination of data and information creates transparency about
14 the process of MPA management and therefore enhances trust among various interest groups. The
15 availability of data and information also makes independent analyses of MPA effectiveness possible,
16 further enhancing adaptive management.

17
18 Evaluation of MPA effectiveness is a critical element of adaptive management and should be
19 conducted on a planned schedule appropriate to the objectives of the MPA. Evaluation must be
20 transparent, it must entail clear criteria, and it requires effective communication and public
21 participation.

22 23 24 25 **VII. Conclusion**

26
27 In this report, we have offered recommendations by which the mandate of Executive Order 13158
28 might be realized. As such we are concerned with a judicious process of: (1) identifying areas in need
29 of protection; (2) specifying the precise steps that must be taken to justify inclusion in a National
30 System of MPAs; (3) specifying the administrative means for the coordination of a national system of
31 MPAs through existing authorities; (4) identifying the exact measures that must be followed to
32 monitor and evaluate the effectiveness of that protection; and (5) stipulating procedures to be followed
33 to assure that administrative costs and burdens are held to a minimum.

34
35 The processes of designing, implementing, monitoring, and adapting MPAs should be interactive and
36 participatory, involving the full range of interested parties and public authorities. A general rule for
37 controversial, complex policy-formation is to involve all interested parties early, often, and with a
38 genuine commitment to recognize and, where possible, respond to their ideas and concerns.
39

Glossary

This glossary is included to clarify the meaning of key words and concepts, using as available, legal or broadly accepted definitions.

Action plan: A coordinated strategy of interventions to address a particular issue. The Management Plan is the sum of the Action Plans.

Adaptive management: "A systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Its most effective form—'active' adaptive management—employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed." (British Columbia Forest Service, <http://www.for.gov.bc.ca/hfp/amhome/Amdefs.htm>)

Affected party: An individual, group, or organization that may or may not express an interest in an MPA but is likely to be affected by MPA-related decisions. An affected party is typically one who uses an MPA or uses the MPA location (e.g., for ocean transportation and or national defense); one on whom a specific MPA or National System of MPAs will have a noticeable impact, either beneficial or adverse.

Area: Marine site or region that has legally defined geographic boundaries. The site or region shall not include the entire US EEZ or an entire State's waters.

Biodiversity: The variety of living organisms in all their forms. Technically, biodiversity includes variety at three levels of biological organization: genetic variation within species, the variety of species, and the variety of ecological communities.

Cultural resources: Any ethnographic resource, or submerged historical or submerged cultural feature, including archaeological sites, historic structures, shipwrecks, and artifacts in the marine environment. Ethnographic resources include natural resources and sites with tribal or traditional cultural meaning, value, and use.

Cultural heritage MPAs: MPAs established and managed principally to protect, understand, and interpret marine cultural resources that reflect the nation's maritime history and traditional cultural connections to the sea, as well as the uses and values they provide to this and future generations. (MPA Center, 2004).

Customary Knowledge: New or adapted material developed with living cultures and customs in addition to aspects of culture which remain demonstrably faithful to ancient beliefs, practices and knowledge (World Intellectual Property Organization).

Ecological linkages: Connections between marine systems manifested by swimming (in the case of fish and other nekton) or by horizontal/vertical drift or diffusion (in the case of nutrients, pollutants, and larvae and other plankton), or among terrestrial, freshwater, atmospheric, and marine systems.

Ecological network: A set of discrete MPAs within a region that are connected through dispersal of reproductive stages (eggs, larvae, spores, etc.) or movement of juveniles and adults. The effective management of certain marine species may require networks of discrete MPAs encompassing regional collections of local populations linked by dispersal and movement, which may be essential for some local populations to persist. The creation of MPA networks must take into consideration other non-

1 MPA areas that provide similar linkages and does not necessarily imply additional management
2 measures outside MPAs or the creation of a "super MPA" with boundaries encompassing all MPAs in
3 the network.
4

5 **Ecologically significant processes:** Interactions among species (e.g., predation, competition,
6 mutualism, habitat formation), within species (e.g., communication, mating, schooling), and between
7 species and the physical environment that play important roles in the structure and function of an
8 ecosystem and its component communities.
9

10 **Ecologically significant species:** Species that have substantial roles and impacts in their ecological
11 communities.
12

13 **Ecosystem-based management:** A management approach that "looks at all the links among living
14 and nonliving resources, rather than considering single species in isolation." This approach "reflects
15 the relationships among all ecosystem components, including humans and nonhuman species, and the
16 environments in which they live. This system of management considers human activities, their
17 benefits, and their potential impacts within the context of the broader biological and physical
18 environment." (USCOP, 2004).
19

20 **Ecosystem structure and functioning:** An ecosystem's biotic and abiotic organization and associated
21 processes, including interactions among the constituent species (interactions being predation,
22 competition, mutualism, etc.), as well as the cycling of matter and the flow of energy.
23

24 **Effecting parties:** Individuals or entities whose action or inaction may cause changes to the marine or
25 social environment that affects an MPA. Examples would be coastal developers and residents,
26 upstream farmers, municipal water authorities, or businesses the activities of which affect water
27 quality or other ecological processes important to maintaining the ecological integrity of an MPA.
28

29 **Interested party:** An individual, group, or organization with direct and expressed interest in an MPA
30 through a recognized stake in the outcome—or a more general concern with the issues involved.
31 Interested parties could be users of an MPA (for example, for ocean transportation, tourism, national
32 defense, or fishing) or of the products of an MPA (i.e., fish that are protected in an MPA and travel
33 outside of it). They could also be parties that are more broadly concerned about ocean management or
34 marine conservation.
35

36 **Lasting:** Enduring long enough to enhance the conservation, protection, or sustainability of natural or
37 cultural marine resources. As detailed in Table 1, the minimum duration of "lasting" protection ranges
38 from 10 years to indefinite depending on the type and purpose of MPA. An "indefinite" duration of
39 protection means that the intent at the time of designation is permanent protection. The distinction
40 between "indefinite" and "permanent" acknowledges that MPA designation and level of protection
41 may change for various reasons, including natural disasters that may destroy or alter resources, or
42 change in societal values.
43

44 **Local Ecological Knowledge:** Knowledge of a particular place or resource derived from the frequent
45 and regular exposure to, or use of, the place or resource in question and that is held locally. Usually
46 acquired more recently than traditional ecological knowledge.
47
48

49 **Marine environment:** Ocean waters and seafloors, including intertidal areas (to mean high tide level),
50 estuaries (extending upstream to 0.5 ppt salinity), and the Great Lakes (to ordinary high water level).

- 1
2 **Marine Managed Areas (MMA):** a broad set of natural and cultural resource areas in the marine and
3 Great Lakes environment under a spectrum of place-based management. Criteria for MMAs are
4 defined in the Federal Register (v. 70, no. 15, pp. 3512-3521), and are expected to be more inclusive
5 than the criteria for MPAs.
6
- 7 **Management plan:** A coordinated strategy of programmed interventions and action plans that meets
8 the goals and objectives of the MPA.
9
- 10 **Marine Protected Area (MPA):** Any area of the marine environment that has been reserved by
11 Federal, State, territorial, tribal or local laws or regulations to provide lasting protection for part or all
12 of the natural and cultural resources therein. (Executive Order 13158)
13
- 14 **Marine resource:** Any living or non-living entity in the marine realm that contributes to ecosystem
15 processes or services and/or is used or otherwise valued by humans. (adapted from Daily, 1997).
16
- 17 **Monitoring and evaluation:** The process—based on independently reviewed natural and social
18 science, as well as other information—of determining whether, and to what extent, an MPA has met or
19 is on course to meet its specified goals and objectives, and whether modifications are warranted.
20
- 21 **Natural heritage MPAs:** MPAs established and managed principally to sustain natural biological
22 communities, habitats, ecosystems, and processes, and the ecological services, uses, and values they
23 provide to this and future generations. (MPA Center, 2004).
24
- 25 **Protection:** Specifically established with the goal of providing an enhanced level of conservation for
26 part or all of the natural and cultural resources therein. Restrictions may range from managed use to
27 no access.
28
- 29 **Representative examples of the nation's major marine ecosystems and habitats:** areas that are
30 characteristic of recognized major categories of ecosystems and habitats. An **ecosystem** comprises all
31 the species that occupy a habitat, the nonliving environment included within, and all biotic and abiotic
32 interactions and processes included within. A **habitat** is a place where species normally live, typically
33 characterized by dominant physical features and/or structurally dominant organisms. (adapted from
34 Art 1993).
35
- 36 **Reserved:** Legally established by Federal, State, territorial, tribal, or local governmental authority.
37
- 38 **Species at risk, threatened, or endangered and their critical habitats:** An **at-risk species** is a
39 candidate for threatened or endangered status. According to the U.S. Endangered Species Act (ESA)
40 of 1973 (Pub. L. 93-205, 87 Stat. 884, 16 U.S.C. § 1531 - 1534). An **endangered species** is "in
41 danger of extinction throughout all or a significant portion of its range." A **threatened species** is
42 "likely to become an endangered species within the foreseeable future throughout all or a significant
43 portion of its range." The ESA further defines **critical habitats** for a threatened or endangered species
44 as "(1) the specific areas within the geographical area occupied by the species, at the time it is listed in
45 accordance with the provisions of the Endangered Species Act, on which are found those physical or
46 biological features (a) essential to the conservation of the species and (b) which may require special
47 management considerations or protection; and (2) specific areas outside the geographical area
48 occupied by the species, at the time it is listed in accordance with the provisions of the Endangered
49 Species Act, upon a determination by the Secretary of the Interior or the Secretary of Commerce that
50 such areas are essential for the conservation of the species."

1
2 **Stakeholder:** Individuals, groups of individuals, organizations, or political entities interested in and/or
3 affected by the outcome of management decisions. Stakeholders may also be individuals, groups, or
4 other entities that are likely to have an effect on the outcome of management decisions. Members of
5 the public may also be considered stakeholders. See Interested, Affected and Effecting Parties.
6

7 **Stewardship:** A commitment to careful and responsible management of individual MPAs and the
8 National System of MPAs to ensure that the goals and objectives are being achieved for the benefit of
9 present and future generations.
10

11 **Sustainable use:** The extraction and/or utilization of a living or non-living resource in a way that
12 enhances social and economic benefits from that resource, with the goal of conserving the long-term
13 viability of that resource with acceptable environmental impacts. In short, the goals of sustainable use
14 include ecological, social, and economic viability.
15

16 **Sustainable production MPAs:** MPAs established and managed to support the continued sustainable
17 extraction of renewable living resources within or outside the MPA by protecting important habitat,
18 including but not limited to spawning, mating, or nursery grounds, or providing refuges for by-catch
19 species. (MPA Center, 2004).
20

21 **System:** The national MPA "system" consists of MPAs of all types, purposes, and jurisdictions in
22 State and territorial marine waters and Exclusive Economic Zone of the United States, including the
23 Great Lakes, the purpose of which is to enhance the conservation of natural and cultural marine
24 resources.
25

26 **Traditional knowledge:** A body of knowledge built up by a group of people through generations,
27 living in close contact with nature, which includes knowledge of nature and natural resources as well
28 as of other aspects of existence (adapted from UNEP/CBD/TKBD/1/2, paragraph 85)
29

30 **Traditional Ecological Knowledge:** A body of knowledge built up by a group of people through
31 generations, living in close contact with nature, living in close contact with nature. It includes a
32 system of classification, a set of empirical observations about the local environment, and a system of
33 self-management that governs resource use (adapted from UNEP/CBD/TKBD/1/2, paragraph 85)
34

35 **Transboundary MPAs:** adjoining marine protected areas of shared ecosystems that involve a degree
36 of cooperation across one or more jurisdictional boundaries within one nation or between two or more
37 two or more nations.
38

39 **Unique biophysical and geological features:** Natural structures on the seafloor (e.g., submarine
40 canyons, hydrothermal vents, volcanoes, pinnacles) and unusual oceanographic features (e.g., locally
41 prominent upwelling areas and oceanic fronts) that are rare or uncommon, including associated
42 biological assemblages.
43

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

References

- Art, H.W. 1993. The dictionary of ecology and environmental science. Henry Holt; New York, NY.
- Daily, G. C. (ed.) 1997. Nature's services: societal dependence on natural ecosystems. Island Press; Washington, D.C.
- MPA Center. 2004. A classification system for marine protected areas in the United States: a tool to understand what we have and what we may need. U.S. National Marine Protected Areas Center; Silver Spring, Maryland.
- Pew Oceans Commission. 2003. America's Living Oceans: Charting a Course for Sea Change, Washington, D.C.
- U.S. Commission on Ocean Policy (USCOP). 2004. An Ocean Blueprint for the 21st Century, Washington, D.C.