Social Science Research Strategy

For Marine Protected Areas

National Marine Protected Areas Center
MPA Science Institute
Santa Cruz, California

National Marine Protected Areas Center

The National Marine Protected Areas Center, housed within NOAA,
was established in partnership with the Department of the Interior.

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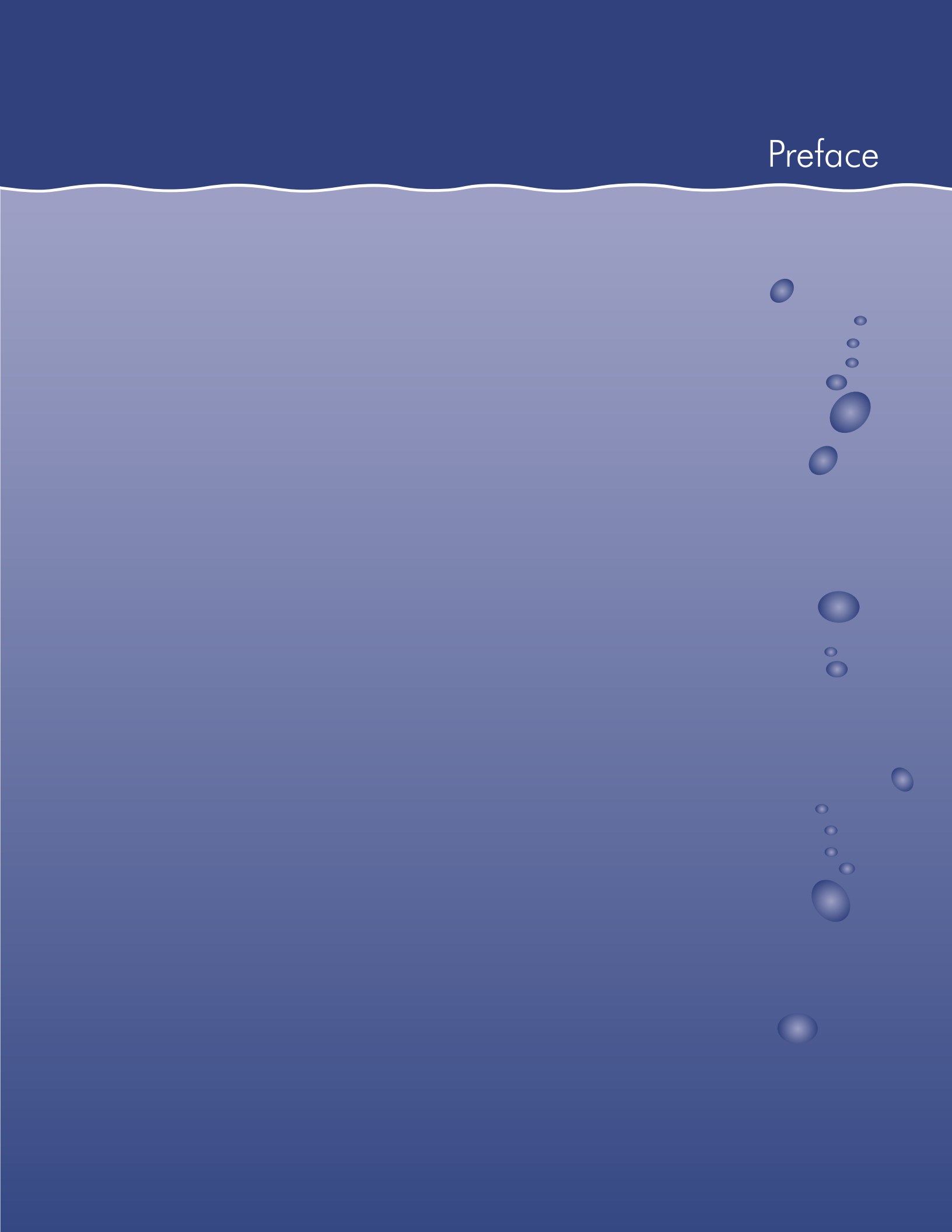

PREFACE

Marine protected areas (MPAs) are becoming widely used tools for conserving the nation's natural and cultural heritage and for sustaining the production of economically important harvested resources. MPAs of all types are currently being planned, managed and evaluated by dozens of federal, state and tribal agencies in every region of the U.S. In spite of this trend, however, MPAs are not without controversy and challenges.

MPA design has traditionally relied heavily on natural science information about the ecology and oceanography of specific marine resources or ecosystems; however, it is now inescapably clear that the successful design, establishment and stewardship of any MPA do not rest solely on biological data. Instead, it is also an intensely human endeavor that is profoundly influenced by how society values the oceans and how we perceive our role in marine ecosystems, now and in future generations. To ignore or marginalize the human dimension of MPAs risks prolonged and counterproductive user conflicts, legal challenges, procedural delays, and ineffective outcomes for both the protected ecosystems and the human users they support. Recognizing this, our challenge as a nation is now to actively develop the social science foundation needed to ensure that MPA decisions are sound, science-based, equitable and effective at meeting their conservation objectives.

In late 2000, the National Oceanic and Atmospheric Administration established, in partnership with the Department of the Interior, the National MPA Center whose mission is to facilitate the effective use of science, technology, training, and information in the planning, management and evaluation of the nation's system of marine protected areas. To that end, the MPA Center's Science Institute in California is developing parallel national strategies for natural and social science research on MPAs. This publicly reviewed document, the Social Science Research Strategy for Marine Protected Areas, reflects the thoughtful, generous and sustained input of hundreds of scientists, fishermen, managers, boaters, divers, conservationists and educators. The resulting strategy is intended to improve the incorporation of social science research, in all of its disciplines, into the planning, management and evaluation of marine protected areas, and to enhance and target the allocation of scarce resources toward high priority information needs by managing agencies, funders and researchers.

We very much appreciate the creative input we have received in crafting this strategy and look forward to its collaborative implementation.

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September 2003

Executive Summary

Introduction

As concern over the health of the oceans grows, many nations, including the United States, are considering marine protected areas (MPAs) as ways to conserve their most vital marine habitats and resources. MPAs can be effective tools in balancing sustainable use with long-term conservation of the ocean, especially when they are planned, managed and evaluated using sound natural and social science.

Because MPAs often involve some restriction of specific human uses within designated areas, they often generate considerable debate and concern among affected stakeholders. In many cases, this debate stems from the relative costs (often measured in socioeconomic terms) and benefits (often measured in ecological terms) of specific site-based proposals for MPAs. Although we are beginning to understand the natural ecology of these systems more fully, federal and state management agencies often lack information on the social, cultural and economic aspects of MPAs. This critical information gap severely complicates consideration of MPAs as effective management tools.

To fill this need, the National Marine Protected Areas Center, working with several agency and nongovernmental partners, has developed a national strategy for social science research. This document identifies high priority needs for social science information that are fundamental to the planning, management and evaluation of MPAs. It also recommends practical ways to meet these needs through research, assessment, capacity building and leveraged funding. The issues identified here are national in scope and apply to MPAs designed for many purposes under many jurisdictions. A series of regional workshops is planned to develop detailed research priorities based on the specific needs of particular areas around the U.S. This national social science research strategy, along with the resulting regional research action plans, will form the foundation for a research program that will provide crucial information about MPAs to agencies, funders and Congress.

Priority Social Science Research Themes and Topics

The national social science strategy identifies the following six priority themes:

- Governance, Institutions and Processes;
- Use Patterns;
- Attitudes, Perceptions and Beliefs;
- Economics of MPAs;
- Communities;
- Cultural Heritage and Resources.

These themes encompass a broad range of disciplines and address pressing social science needs in the design, management and evaluation of MPAs across the U.S. Within each theme, specific topics are outlined with more detailed examples or projects.

Cross-Cutting Information Needs and Issues

The Social Science Research Strategy oulines several cross-cutting issues and related information needs that emerged from the list of priority themes and topics. Among these is the growing need to collect, analyze, synthesize, store and manage social science data of all types. Additionally, the needs for baseline data, monitoring programs and evaluation methods are described. Finally, we discuss the need for the refinement and innovative application of existing tools and methods.

Building the National Capacity

The nation is currently ill-equipped to make significant progress in filling these crucial information gaps. This section of the strategy discusses actions neccessary to create the ability to actually conduct this research and act on its findings in the pursuit of our long-term stewardship of the nation's most treasured marine ecosystems. To that end, a series of recommendations in three critical arenas is presented:

- Building the national social science research program;
- Developing agency expertise and commitment; and
- Integrating social science and natural science endeavors.

Members of the Marine Protected Areas Social Science Research Strategy Planning Team

This strategy was developed by a dedicated team of social scientists, ecologists, and marine conservation practitioners drawn from within NOAA and academia. The team included:

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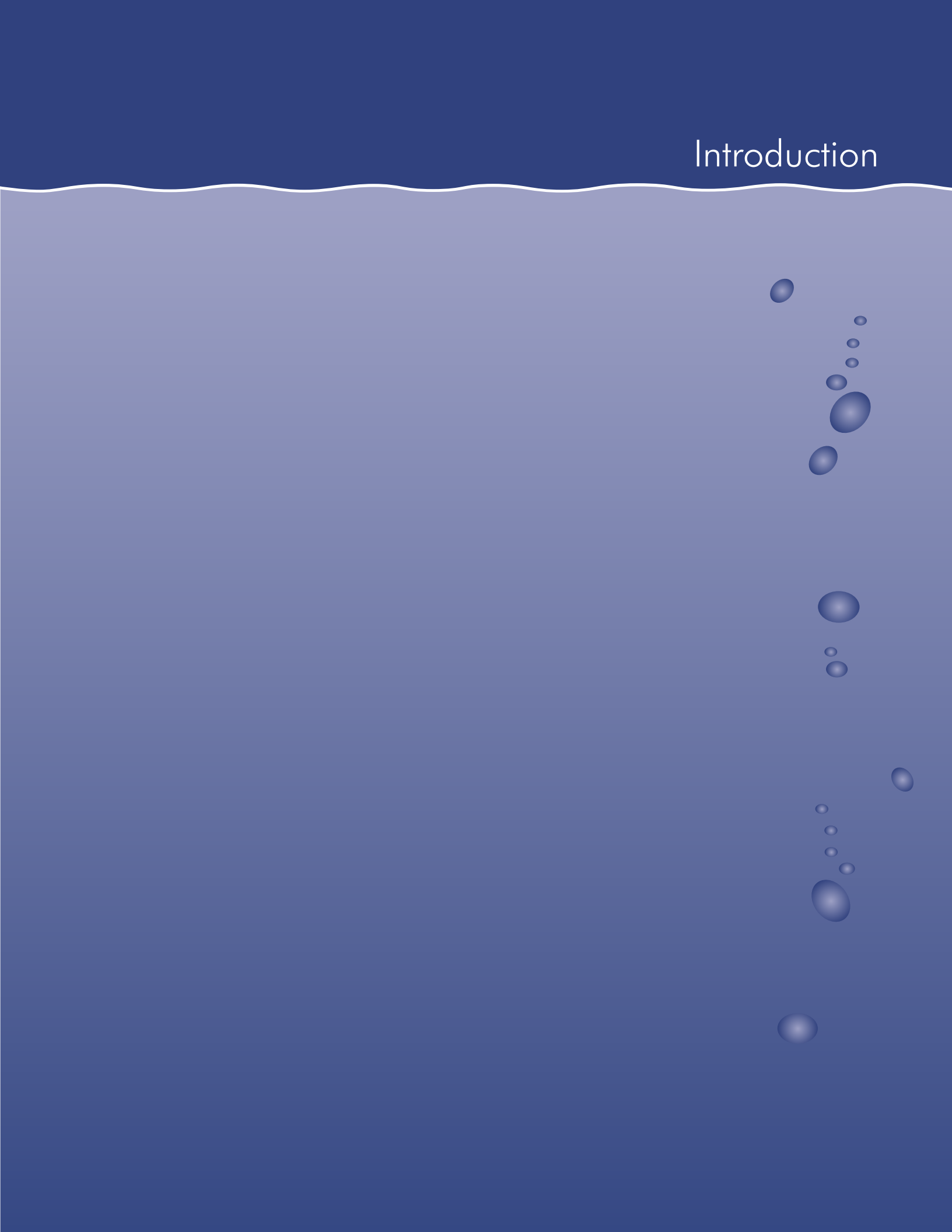
Introduction



MPAs as an Ecosystem Management Tool

MPA Trends

As concern over the health of the oceans grows, many nations, including the United States, are considering marine protected areas (MPAs) as ways to conserve their most important and valued marine habitats and resources. MPAs can be effective tools in balancing sustainable use with long-term conservation of the ocean, especially when they are planned, managed and evaluated using sound natural and social science and when existing resource management frameworks are taken into consideration. While MPAs may have many sizes, shapes and purposes, they all share a fundamental characteristic and challenge: providing a higher level of protection to specific places in the ocean (See Box 1 for a brief primer on MPAs in the U.S.).

The growing national interest in MPAs has led to a number of calls from expert panels for the broader application of science-based MPAs throughout U.S. waters (e.g., National Academy of Sciences, American Association for the Advancement of Science). Consequently, over the past few years, many federal, state and local agencies have embarked on major initiatives to design MPAs for a variety of purposes, including conservation of biodiversity, management of fisheries, protection of endangered species, establishment of marine parks for tourists and local residents, and protection of cultural resources. On the West Coast alone, more than eight governmental planning processes are currently evaluating existing sites and considering new ones. These include: the Murray-Metcalf Northwest Straits Commission, the Washington Department of Fish and Wildlife, the Washington Department of Natural Resources, the Oregon Ocean Policy Advisory Council, the Channel Islands Marine Reserve Process, the California Marine Life Protection Act, the Central California National Marine Sanctuaries Joint Management Plan Review, and the Pacific Fishery Management Council.

Understanding the Human Dimensions of MPAs

Marine protected areas are not, however, without complexity and controversy. Because MPAs often involve some restriction of human uses, they can generate considerable debate and concern among affected stakeholders. In many cases, this debate stems from, and hinges upon, the relative costs (often measured in socioeconomic terms) and benefits (often measured in ecological terms) of specific site-based proposals for MPAs. Although we are beginning to understand the ecology of these systems more fully, federal and state management agencies often lack key information on the social, cultural and economic aspects of MPAs. This critical information gap jeopardizes the nation's ability to make science-based decisions that include the human environment as well as the natural environment. The inability to adequately address the human dimension of MPAs is perhaps the greatest single impediment to their broader and effective use in marine conservation today.

To fill this need, the National Marine Protected Areas Center is working with several agency and academic partners to develop a national strategy for social science research to inform and evaluate MPA processes. This document identifies high priority information needs in the social sciences as they relate to the planning, management and evaluation of MPAs. The issues identified here are national, and even international, in scope and apply to most MPAs. A series of regional workshops will develop detailed research priorities based on the specific, and often unique, needs of particular areas around the U.S. This social science research strategy along with the regional research priority documents will form the foundation for the national MPA social science research program that will provide information about MPAs to agencies, funders, and Congress.

MPA Planning and Policy Processes

Policy processes associated with MPAs are dynamic and complicated. It is important to understand the processes in order to direct research efforts and coordinate them within a wider context. The diagram below illustrates schematically the 'life cycle' of a typical MPA. It applies equally to both large-scale (planning an entire MPA) and small-scale (addressing a single issue within an MPA) planning and policy processes. While a given site may tend to evolve sequentially through phases, as indicated in the diagram, these phases also may overlap and repeat through cycles of evaluation and adaptive management. The primary stages in the MPA life cycle include:

BOX 1. A Brief Primer On Marine Protected Areas

As interest in MPAs has grown, so too has the lexicon of terms used to describe their many purposes and types. Throughout this document, we use a number of terms relating to MPAs as a resource management tool. The following definitions represent our operational use of each concept; they are generally consistent with, but may differ slightly from, commonly used interpretations.

Marine Protected Areas

Working Definition: An MPA is any specific area of the marine or estuarine 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 [derived from Executive Order 13158 on MPAs]. Familiar examples of MPAs in the U.S. include: national marine sanctuaries, national parks, national wildlife refuges, fisheries reserves, critical habitat for marine mammals, and state parks and conservation areas.

Three Primary Purposes: MPAs come in many varieties, but most are established to serve one of three primary, overarching conservation goals:

- Natural heritage
- Cultural heritage
- Sustainable production

Types and Levels of Protection: Levels of protection and allowable uses often vary widely among different types of MPAs. In practice, MPAs have two general levels of protection:

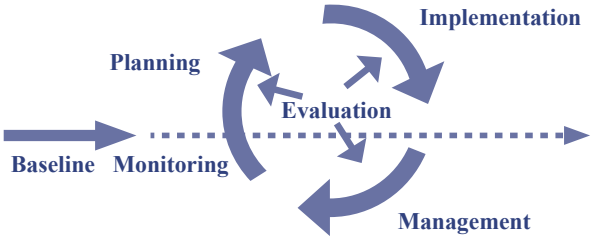
- No take areas in which extractive uses, and sometimes access, are restricted (rare in the U.S.)
- Multiple use areas in which competing uses are often balanced through marine zoning.

Scales of Organization: Any given MPA may exist as: (a) a single site; (b) an integral part of a functional "network" of ecologically linked sites in the same local or regional ecosystem; or (c) part of a broader "system" of MPA sites or networks of sites of various types that collectively protect representative habitats, areas of high biodiversity, and special use areas. Both networks and systems of MPAs may include sites from multiple jurisdictions and management authorities (e.g., a marine sanctuary, a national wildlife refuge and a state park in the same ecosystem). Single sites may fall under multiple jurisdictions as well.

- **Planning:** During this stage, conservation and management issues and needs are identified, and the MPA's goals, objectives and management strategies are developed.
- **Implementation:** During the implementation stage, the site is established and its legal authorities go into effect.
- **Management:** This stage, which may extend in perpetuity or be limited in duration to a fixed number of years, involves routine stewardship of the site and its resources. Typical activities include: monitoring, research, restoration, education, enforcement, coordination and consultation.
- **Evaluation:** During this stage, which should recur regularly, the site's management and resources are evaluated against its goals and objectives, and its management strategies or regulations may be modified to improve their effectiveness.

- **Baseline and Monitoring:** In an ideal world, a baseline would be determined before a policy is set, and monitoring activities would be consistently carried out using the baseline as a reference point. However, while the figure below depicts the ideal conceptual approach, establishing the baseline and conducting monitoring may start at any point in the process.

Figure 1. MPA Process



Social Science Overview

Virtually all of the federal mandates relevant to MPAs refer to the integral role of social and economic factors in MPA policy development and management decisions (e.g., Sustainable Fisheries Act, National Marine Sanctuaries Act, Coastal Zone Management Act, Presidential Proclamations and Executive Orders). Similar requirements to address the social sciences of MPAs exist in national environmental legislation, such as the National Environmental Policy Act (NEPA) and Executive Order 12044 on improving government regulations. In general, all of these mandates refer to the need for interdisciplinary assessment in support of policy and management decisions, including both formal social scientific data and the inclusion of public and stakeholder input. In this document, the term "social science" encompasses the full set of social science disciplines (anthropology, sociology, economics, geography, psychology, political science, public policy, archaeology) as well as humanities, law and ethics.

The need to consider the human dimension is particularly acute when planning or managing MPAs. To date, the vast majority of research and literature on MPAs has focused on natural science, with largely anecdotal references to social science and few rigorous projects or programs evaluating the complexities of the human dimension of MPAs. As with any policy or management decision, those regarding MPAs always involve tradeoffs between the natural and human environments. Both must be adequately described, analyzed and integrated for sound decision-making processes to occur (National Research Council 1995, 2001).

In this social science research strategy, a "Human Ecology" perspective is used in MPA policy and management. In this context, MPAs must be viewed holistically as they fit into the biophysical environment, as they reflect and affect past and present human users, as they relate to the prevailing policy and management framework, and as they are informed and influenced by science and stakeholder perspectives.

Current National Investment and Capacity for Social Science

The current national capacity for MPA social science research, funding and application is rudimentary at best. In fiscal year 2001, for example, the NOAA National Marine Fisheries Service (NMFS), a federal agency with the mandate to include MPAs for fisheries purposes, employed 46 social scientists nationwide, including 39 economists and seven sociologists/anthropologists. The agency goal for fiscal year 2007 is to increase that number of social scientists to 140 federal employees.

Because of the historic lack of funding for social science research in coastal and marine affairs, the network of social scientists outside of the government, working on issues related to MPAs is similarly underdeveloped (NRC, 2001). Recent initiatives have been taken within NMFS to further develop a network of social science capabilities, which may serve as a model for portions of the MPA social science research strategy. Related social science capabilities exist in other federal agencies, primarily in the U.S. Department of Interior (Fish and Wildlife Service, Park Service, Minerals Management Service) and the Environmental Protection Agency. With a few notable exceptions, the individual state marine resource agencies have little or no social scientific capabilities.

The Social Science Strategy

Scope and Purpose. This national strategy is intended to provide a practical and compelling framework

for incorporating social science in the planning, management and evaluation of the nation's MPAs. The strategy's target audiences includes agency decision-makers, MPA managers, researchers, stakeholders, and public and private funders.

To this end, the Social Science Research Strategy for MPAs:

- Identifies and prioritizes key social science research areas and information needs;
- Recommends practical ways to meet these needs through research, assessment, capacity building and leveraged funding; and
- Identifies potential areas of collaboration among scientists, MPA practitioners and other stakeholders.

Process of Strategy Development. The social science research strategy development process was participatory, involving policy makers, academics, MPA practitioners and stakeholders. Through workshops, meetings and reviews, multiple constituents provided valuable input and ideas. In developing this strategy, several existing social science plans were used as models, including: Usable Knowledge: A Plan for Furthering Social Science and the National Parks; A Social Science Plan for South Florida National Park Service Units; Report on the Socioeconomic Roundtable Convened by the Chequamegon and Nicolet National Forests; and the South Florida Action Plan for Applied Behavioral Sciences. The major milestones of the strategy development process are outlined in Figure 2, and are described in detail in Appendix D.

Figure 2. Social Science Research Strategy Development Process

Role of the National MPA Center

In recognition of the need to improve the scientific basis and stakeholder input into MPA planning and management, Executive Order 13158 directs NOAA and the Department of the Interior to work collaboratively and with many partners and stakeholders to create a framework for a national system of MPAs. Important components of this challenging endeavor include:

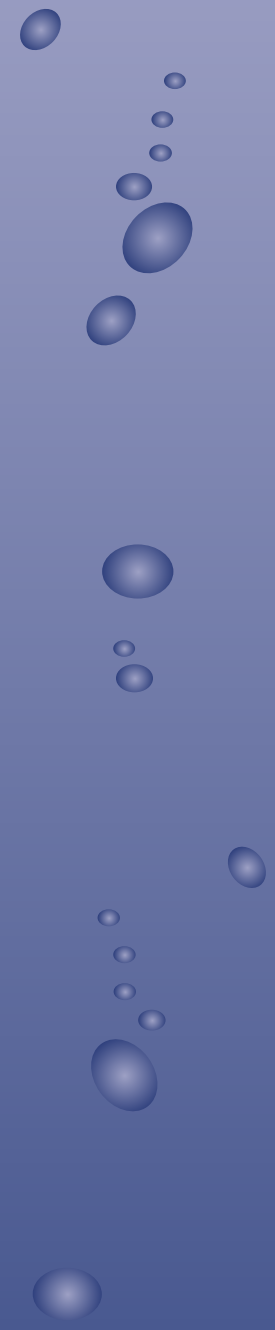
- Creating a Federal Advisory Committee on MPAs;
- Creating a publicly accessible web site (mpa.gov) with important and timely information on MPAs throughout the U.S.;
- Creating a national inventory of U.S. MPAs;
- Using sound natural and social science to assess the effectiveness, costs and benefits of MPAs and the potential for new MPAs to fill important gaps in ecosystem protection; and
- Creating the National Marine Protected Areas Center.

The mission of the National MPA Center is to develop and disseminate the information, tools and strategies needed to effectively design, manage and evaluate the nation's system of MPAs. In an effort to strengthen our understanding of the human context for MPAs,

the National MPA Center has developed this national strategy for MPA social science research and will support and coordinate its dissemination, implementation and incorporation into the broader science and management frameworks of other partners.

The National MPA Center will provide information about MPAs to agencies, funders and Congress. In time, the MPA Center will serve as a catalyst for the incorporation of solid social science research into the planning, management and evaluation of MPAs. The National MPA Center Science Institute may facilitate this process in a variety of ways including: hosting a website to link MPA practitioners with social scientists working on MPAs; providing syntheses of major studies and issues; managing relevant data and metadata sets; creating a database of MPA social science experts; identifying and highlighting relevant funding opportunities; and developing budget initiatives.

Priority Social Science Research Themes and Topics



PRIORITY SOCIAL SCIENCE RESEARCH THEMES AND TOPICS

In the table below are six priority themes for social science research needed to strengthen the planning, management and evaluation of MPAs. These themes span the spectrum of MPA information needs, and often correspond to specific disciplines within the social sciences. The table illustrates how the themes generally cut across MPA processes. The circular symbols indicate, in a very general sense, the relative applicability of each theme to specific stages in the generalized MPA life cycle (solid = high; half shaded = medium; open = low).

● High
◐ Medium
○ Low

Theme:	Planning	Management	Evaluation
	MPA Processes		
Governance, Institutions and Processes	●	◐	●
Use Patterns	●	●	◐
Attitudes, Perceptions and Beliefs	●	◐	◐
Economics of MPAs	●	◐	●
Communities	●	◐	◐
Cultural Heritage and Resources	●	◐	○

Within each theme, we present a number of specific research topics that identify, in greater detail, the nature of the information needed and potential research approaches to fill those gaps. In addition, the tables presented under each theme illustrate, in a general sense, two aspects of each research topic:

- The relative role, utility and/or importance of the results of such a study during different phases in typical MPA processes – from planning to management to evaluation (and back); and
- The relative complexity, cost and duration of a typical project or initiative designed to address this topic in a generalized MPA context.

This assessment is intended simply to highlight the potential importance, complexity and applicability of different social science research topics in order to help MPA practitioners and researchers prioritize efforts when resources are limited. Clearly, specific applications may differ depending on local needs and conditions.

Governance, Institutions and Processes

This theme covers the formal and informal institutions (federal, tribal, state, local, and NGOs) responsible for managing the resources in marine protected areas. Component topics include the capacity of these institutions, their funding sources, jurisdiction, management strategies and implementation approaches, as well as the role of social capital in their interactions with the public and with other institutions.

- **Topic: Jurisdictional Structure.** Examination of the nature of intra-agency, interagency, and intergovernmental interactions and their relationships to MPA planning, management and evaluation in order to design optimal structures and avoid inter-jurisdictional incompatibilities and conflict. This may include regulatory analysis.
- **Topic: Public Participation and Stewardship.** Examination of models for the meaningful integration of the public into MPA decision-making.
- **Topic: MPA Processes.** Evaluation of information, resources, legal authorities, processes, and structures that are needed to plan, manage and evaluate a site or network of MPAs and effectiveness of past designation processes.
- **Topic: Institutional Analysis.** Analysis and understanding of governmental and non-governmental institutional cultures and how they influence and constrain decision-making.

Theme: Governance, Institutions and Processes	Planning	Management	Evaluation	Complexity	Cost	Duration
Topic	MPA Processes			Characteristics		
Jurisdictional Structure	●	○	◐	◐	◐	◐
Public Participation and Stewardship	●	◐	◐	◐	●	◐
The MPA Process	●	◐	◐	●	◐	●
Institutional Analysis	●	○	●	○	◐	◐

Use Patterns

This theme addresses the ways stakeholders use resources in and around marine protected areas. It includes

extractive uses such as harvesting fish or invertebrates, and non-extractive uses such as boating and diving.

- **Topic: Baseline Data on Human Ecology of Use.** Studies should be at a variety of spatial and temporal scales. This baseline data will provide the context for understanding interactions and trade-offs among uses and users. It could also be used to evaluate MPA outcomes.
- **Topic: Political Ecology of MPA-Related Use Patterns.** Studies of the legislative institutional, social, environmental and economic dimensions of decision making, as well as of legal and historic frameworks that depict the "rights and responsibilities" of resource use.
- **Topic: Historical Ecology of MPA-Related Use and Management Patterns.** Studies that combine biophysical and social data describing patterns of human use and resource management from prehistoric to present time to assess and understand the current issues in order to make sensible and acceptable policy choices.

Theme: Use Patterns	Planning	Management	Evaluation	Complexity	Cost	Duration
Topic	**MPA Processes**			**Characteristics**		
Baseline Data on Human Ecology of Use	●	●	◐	◐	●	●
Political Ecology of MPA-Related Use Patterns	●	◐	◐	◐	◐	◐
Historical Ecology of MPA-Related Use and Management Patterns	●	◐	◐	◐	●	◐

Attitudes, Perceptions and Beliefs

This theme covers the underlying motivations that may influence human preferences, choices and actions. It examines the factors that shape human behavior and how these behaviors affect and are affected by marine protected areas. The following priority topics pertain to constituents' and stakeholders' social and cultural attitudes, values, beliefs, perceptions and preferences related to MPA issues.

- **Topic: Baseline Data.** Collection of baseline data on constituents' and stakeholders' attitudes, perceptions and beliefs regarding habitats, species, spaces and ecological processes, relationships between people and MPAs, current environmental status, and the effects of MPAs on quality of life.
- **Topic: Traditional and Local Ecological Knowledge.** Collection of traditional and local ecological knowledge regarding habitats, species, spaces, ecological processes; development of validation frameworks and incorporation of traditional and local ecological knowledge; and assessment of the value managers place on this knowledge.
- **Topic: Uncertainty and Attribution.** Studies regarding the extent to which people take responsibility for their actions and how they perceive the causes and effects of these actions, and their primary, secondary and cumulative impacts, particularly as they relate to protected marine ecosystems and their uses.
- **Topic: Aesthetics.** Examination of aesthetic ideals as they derive from or drive human-environment interactions and assessment of the relationship between aesthetics and the development and maintenance of a sense of place.
- **Topic: Environmental Ethics.** Assessment of individuals' and interested communities' principles and morals regarding the environment, and examination of how these ways of thinking influence decision-making and behavior regarding MPAs.

Theme: Attitudes, Perceptions and Beliefs	Planning	Management	Evaluation	Complexity	Cost	Duration
Topic	**MPA Processes**			**Characteristics**		
Baseline Data	●	○	◐	◐	●	●
Traditional and Local Ecological Knowledge	●	●	◐	●	◐	●
Uncertainty and Attribution	◐	●	◐	◐	◐	◐
Aesthetics	●	◐	○	◐	◐	○
Environmental Ethics	◐	◐	○	○	◐	○

Economics of MPAs

This theme deals with economic conditions and trends associated with MPAs. Subjects of interest include, but are not limited to, market and non-market values, costs and benefits, and positive and negative impacts associated with marine protected areas.

- **Topic: Baseline Information.** Development of a national inventory of socioeconomic data and analyses

on groups and measures pertinent to MPAs including: commercial and recreational fisheries, shoreside support industries and coastal communities and associated infrastructure; coastal development; MPA-associated tourism and recreation; and non-consumptive use and existence value. Identification of the gaps and core data needs.

- **Topic: Cost Benefit Analysis.** Adaptation and application of cost benefit analysis to marine protected areas. Adaptations and applications may include the definition of costs and benefits, the consideration of basic groups (recreational, business and tourism, etc.), the consideration of different kinds of MPAs and specific scenarios, the recognition of cultural values, and the determination of net costs and benefits to current and future generations.
- **Topic: Environmental Variability.** Increased understanding of the incorporation of ecological variability (space and time) into economic theory and tools. Use of this expanded framework to look at spatially heterogeneous patterns of resource use and enjoyment in MPAs.
- **Topic: Non-Market Values (Use And Non-Use).** Development methods for estimating non-market values, in order to compute total economic value. This may encompass the social and cultural dimensions of MPAs, including bequest, existence, option, and use values, as well as ecosystem services.

Theme: Economics of MPAs	Planning	Management	Evaluation	Complexity	Cost	Duration
Topic	**MPA Processes**			**Characteristics**		
Baseline Information	●	◐	●	◐	●	●
Cost Benefit Analysis	●	◐	○	◐	◐	○
Environmental Variability	●	○	◐	●	●	◐
Non-Market Values	●	◐	◐	●	●	◐

Communities

This theme examines the characteristics of geographic and stakeholder communities associated with marine protected areas and the way these communities function, particularly as they relate to the use and conservation of marine resources.

- **Topic: Socioeconomic Conditions.** Collection of descriptive and explanatory information regarding the social, cultural and economic aspects of communities and stakeholder groups of particular regions and sub-regions.
- **Topic: Capacity and Skills.** Development of community capacity and skills related to MPA issues, such as determining the best ways to empower communities to articulate and develop their own visions and tools, and the assessment of existing capacity and skills.
- **Topic: Information Flow and Use Among Communities.** Analysis of community decision-making patterns and processes, determination of indicators of community resiliency and identification of sources of power as they influence political and social change.
- **Topic: Management Structures and Processes.** Studies on how to reach marginalized groups, determining incentives for community compliance with MPAs, determining which management structures and processes allow for flexibility and adaptation, and impacts of various management practices on communities.
- **Topic: Lessons Learned.** Studies of the historic social construction of MPAs and interdisciplinary studies of MPA "successes and failures."

Theme: Communities	Planning	Management	Evaluation	Complexity	Cost	Duration
Topic	**MPA Processes**			**Characteristics**		
Socioeconomic Conditions	●	◐	●	●	◐	◐
Capacity and Skills	◐	◐	◐	◐	●	◐
Information Flow and Use Among Communities	●	◐	○	◐	○	○
Management Structures and Processes	●	◐	●	○	◐	○
Lessons Learned	●	○	●	○	◐	◐

Cultural Heritage and Resources

This theme covers the historical and traditional artifacts within marine protected areas. This may include, but is not limited to, nautical history (wrecks, repli-

cas, etc.), maritime infrastructure (piers, lighthouses, locks, ports, forts, etc.), and historical documents (books, photographs, music, recipes, etc.) of MPAs. This theme addresses primarily the physical manifestation of historical and traditional uses of marine resources; their social and cultural underpinnings are addressed mainly by other themes.

- Topic: Characterization. Science-based inventories, documentation, and evaluations of cultural resources associated with MPAs.
- Topic: Protection. Development and testing means of protecting cultural resources including archeological, historical and ethnographic resources. This also includes the creation of databases for these resources.
- Topic: Information Resources. Compilation, analysis and synthesis of historical and archival records, databases, books, folklore and correspondence.

Theme: Cultural Heritage and Resources	Planning	Management	Evaluation	Complexity	Cost	Duration
Topic	**MPA Processes**			**Characteristics**		
Characterization	●	◐	◐	◐	◐	◐
Protection	●	◐	◐	●	●	●
Information Resources	●	●	●	◐	●	●

Cross-Cutting Information Needs and Issues

CROSS-CUTTING INFORMATION NEEDS AND ISSUES

Throughout the social science research strategy, several cross-cutting information needs and issues have emerged from across the research themes that apply to integrating solid social science into the planning, management and evaluation of MPAs. Most stem from the growing need for a national capacity to collect, analyze, synthesize, store and manage social science data of all types. The current lack of easily accessible social science information hinders effective study of general MPA issues as well as the development of practical and equitable MPAs. The following cross-cutting efforts will be fundamental to overcoming these challenges.

Baseline Data

Baseline socioeconomic data are essential for sound and useful social science research related to MPAs. Currently, these data are scarce. Baseline information includes quantitative and qualitative data that describe and explain "the existing conditions and past trends that are relevant to the human environment" associated with a particular MPA process (ICGP 1994). Baseline data can be used to provide historical context and current conditions, to predict the potential effects of MPAs and attendant ecological, regulatory, social and economic change, and as a standard against which such effects can be measured.

Baseline information includes both quantitative and qualitative data, collected and analyzed using a broad range of approaches and methods (see Appendix B). Baseline analysis of fishery use patterns, for example, would entail the integrated analysis of quantitative landings data together with ethnographic data on the qualitative dynamics and variability in the observed landings patterns over time. The integration of quantitative and qualitative data is essential to providing a grounded, useful and accurate understanding of baseline conditions on all MPA themes.

Issues of scale, both temporal and spatial, apply to the collection and analysis of baseline data. In the social sciences, human ecology and cultural ecology provide an apt framework for guiding baseline and subsequent research related to MPAs. Netting (1986) characterized cultural ecology as "an effort to understand human behavior in an ever wider and more inclusive frame of reference" in temporal, spatial and social terms. As an example, baseline analyses of use patterns should encompass the social and economic linkages between on-the-water resource users and the shore-based communities and businesses that support and depend upon them (Pomeroy 2002). Baseline assessments of these linkages will most likely find that they are not confined locally, but extend to other communities not readily or intuitively associated with a particular marine use or value.

In conducting baseline research, care must be taken to limit and control potential biases in the information collected, which may occur as individuals, groups and institutions become aware of and begin to respond to MPA discussions and processes. Baseline data can include information collected and analyzed through directed study associated with the MPA process, as well as secondary data and analyses.

Monitoring

Monitoring entails the short- and long-term measurement of the human dimensions as they interact with: (a) MPAs and the larger biophysical environment, and (b) MPA processes. An essential foundation for monitoring is baseline information on the key features of the human environment and how it interacts with the biophysical environment prior to MPA establishment. Periodic or ongoing measurement of these features over time is necessary to identify and assess MPA processes and outcomes. In this way, monitoring is essential to adaptive management, as it provides critical information to enable the adjustment of management to insure that conservation and socioeconomic goals are not compromised (Charles 2001).

Although monitoring is essential, it also poses critical challenges. Information needs, and the social science and public capacity (i.e., funding, qualified research personnel, collaborating research participants, time) to fulfill those needs vary by location, context and stage in the MPA process. Moreover, these information needs vary in their immediacy, and as perceived by managers, scientists and other stakeholders. In general, however, monitoring needs include: 1) qualitative and quantitative baseline human dimensions data and analyses; 2) sustained monitoring using indirect (e.g., landings data) and direct measures (e.g., through sur-

veys, focus groups, panels); and 3) sustained human, financial and social resources to support monitoring. In addition, it is critical that MPA monitoring be coordinated between the natural and social sciences, and with other coastal and marine management processes.

Evaluation

In the context of MPAs, evaluation entails the assessment of MPA processes, outcomes and effectiveness in achieving goals and objectives, and the identification of unintended consequences. Evaluation, together with monitoring, is part of adaptive management, an institutionalized process for continuous learning and adjustment of management to improve its effectiveness (Charles 2001). Most evaluation of the human dimensions of MPAs has, to date, focused on participants' satisfaction with the process (e.g., Suman et al. 1999) or whether or not MPAs have been established pursuant to the process (e.g., Fiske 1992). MPAs are theorized to generate substantial social and economic benefits (Hannesson 1998, Sanchirico and Wilen 1999), and are driven in part by social and economic goals and objectives. However, limited attention has been directed toward systematic, empirical evaluation to test these assertions (Badalamenti 2000, Alder 2002) or comparable assumptions about potential costs to users. Evaluation requires the establishment of criteria based on goals and objectives related to both MPA processes and outcomes. Evaluation must also explicitly examine the interactions between the human and the "natural" environment, as these influence MPA processes and outcomes in ecological as well as socio-economic terms (Pomeroy 1999). Alder et al. (2002) recommend these criteria (or measures of effectiveness) be simple, measurable, cost-effective and reflective of MPA goals and objectives; they also need to be clearly defined and understood by all participants in the MPA process (Pomeroy 2002).

Data Management: Architecture and Access

The collection, use and access to data on the human dimensions of MPAs raises ethical issues that must be recognized and addressed in the MPA research and management processes. In particular, data on use patterns, economics, attitudes, perceptions and beliefs are proprietary and sensitive. For example, an individual's use patterns reflect proprietary knowledge gained from experience. That knowledge is valuable and is not generally shared with others outside well defined social networks. Social science research to document such use patterns to inform and assess the potential and actual impacts of MPAs is potentially problematic because it brings this proprietary information into a more public arena (even if it is aggregated with other such information), and makes it available to a process that may in turn negatively affect those who have provided it. Human subjects and institutional review board procedures that require social science researchers to uphold three principles pertaining to study participants—voluntary participation (through informed consent), anonymity of participants, and confidentiality of individual data—mitigate this problem somewhat in the immediate research context. Access to and use of this information beyond the initial, directed research, and reporting process, however, raises social and ethical issues that have yet to be addressed, despite the potential for significant economic harm from its misuse.

Similarly, the availability of data concerning the nature and location of cultural heritage and resources (e.g., shipwreck or Paleolithic sites) has long been of concern for resource managers and archeologists. Such cultural resource sites, particularly where enforcement is insufficient, are subject to looting, which results in loss of artifacts as well as damage to the historical context in which they were found.

A combined physical and institutional architecture is needed to manage social science data and govern its use to uphold research ethics and standards. The physical architecture should contain and manage information consistent with those standards, ensuring that individuals' data remain anonymous and confidential. The institutional architecture would also entail clear rules about how and by whom the meta-data is to be managed, and how and for what purpose it is to be used, consistent with concerns for the well being of study participants, the other stakeholders they represent, and their communities.

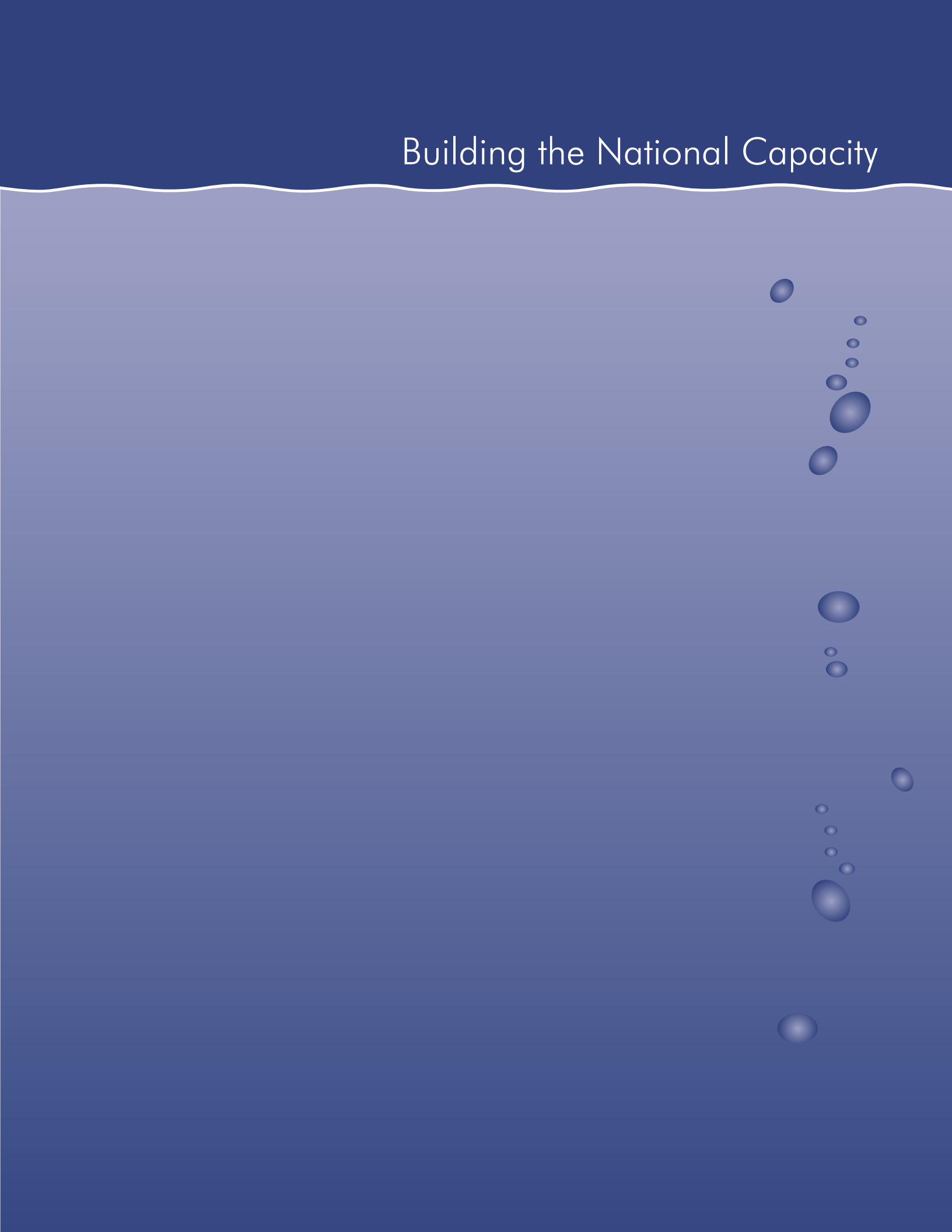
Given the diverse nature and sources of social science data on MPAs, it is likely that a portal for relevant information, rather than a centralized database with complex data transfer and management requirements, would best serve the national need. Specific partners would assume the responsibility to develop and maintain specific aspects of the broader data set, which

would be overseen and coordinated at the national level, perhaps by the National MPA Center, with access through the national MPA website, www.mpa.gov. With the exception of confidential information, all data and information in the national database should be fully accessible to all interested parties.

Tools and Methods

As seen in the results of several workshops and studies, including the April 2002 National MPA Center Science Institute's MPA Social Science Workshop held in Monterey, California, the February 2002 California Sea Grant Socioeconomic Workshop held in Watsonville, California, and the National MPA Center's MPA Needs Assessment, methods and tools for analyzing, monitoring and evaluating MPAs need to be explored. Current social science tools and methods do not always account for ecological variability and need to be refined and/or applied in innovative ways for developing, analyzing, defining and assessing qualitative and quantitative data. See Appendix B for a table describing social science research approaches potentially useful to MPA social science research.

Building the National Capacity



BUILDING THE NATIONAL CAPACITY

This strategy is intended to enhance the use of social science in the planning, management and evaluation of the nation's MPAs. The previous sections present key information needs that constitute a national research agenda. This information alone, however, is not sufficient to meet the national need for social science. The section below presents specific actions we must undertake collectively if the nation is to create the ability to conduct this research and act on its findings in our long-term stewardship of the nation's most valued marine ecosystems. We present a series of recommendations in three critical arenas: (a) building the national MPA social science research program; (b) developing agency expertise and commitment; and (c) integrating social science and natural science endeavors.

Building the National MPA Social Science Research Program

Regional Research Agendas. This document creates the foundation for a national research program in the social science of marine protected areas. By focusing on general issues with broad applicability across the U.S., it highlights major information needs, research priorities, and funding targets. The national strategy also provides a framework for the development of regional research programs based on expert input in a series of workshops in coastal areas throughout the U.S. These focused research programs will in turn drive initiatives and stimulate partnerships among agencies and researchers in areas of shared interests. They will be used by agencies to help guide new budget initiatives on MPA social science, and will be presented to other public and private funders for their consideration.

Coordination. The National Marine Protected Areas Center Science Institute, working collaboratively with other agency and nongovernmental organizations, will coordinate the development of these multi-tiered research agendas through workshops, information sharing and developing specific partnerships to address key scientific questions. In addition, the MPA Center will work closely with the relevant federal, state, tribal and local agencies as well as public and private funding organizations, such as the National Science Foundation, Sea Grant and others, to incorporate MPA social science questions into their funding priorities

Academic Training. The success of this strategy (as measured by increased social science capacity in the U.S.) requires a substantial influx of new, well-trained professional social scientists whose graduate education prepares them for the unique challenges posed by MPAs. To this end, the National MPA Center and its partners will work to develop a number of training opportunities for graduate students and postdoctoral fellows, including: dedicated fellowships at partner universities with relevant social science programs; student research assistance grants; fellowships and internships with MPA agencies (e.g., Sea Grant Fellows and the National Estuarine Research Reserve System's Graduate Research Fellows); and specialized courses in MPA social science.

Stakeholder Engagement. Stakeholder engagement is an important aspect of the planning, management and evaluation of MPAs. Stakeholders may often have significant contributions to make in identifying critical research priorities, providing access to needed information, and highlighting the potential consequences of various actions. As such, research should be undertaken to examine the design, implementation and evaluation of effective and meaningful stakeholder involvement. The regional social science research workshops will provide a venue for interaction between social scientists and other stakeholders in the same community and will provide the opportunity to create innovative partnerships for future research. Federal grants should encourage research working collaboratively with stakeholders.

Building Agency Expertise and Commitment

Staffing. If agencies are to incorporate social science and the human dimension into MPA planning and management, they must increase their internal expertise in several disciplines. MPA planning will require social scientists prepared to work on both the policy and practice of MPAs. MPA programs should strive to develop and train a core team of social scientists working at the national level on issues of broad national importance, and to ensure that social scientists work alongside natural scientists at every field site. Clearly, such an effort will require substantial resources and time; this document is designed to provide the impetus, framework and justification for undertaking this initiative.

Training. The National MPA Center's Training and Technical Assistance Institute will work with a variety of federal, state, tribal and local agencies that plan, manage or evaluate MPAs to develop and, where appropriate, provide training opportunities in MPA social science for two distinct audiences:

- Existing and new agency social scientists who may lack direct experience in MPA-specific issues; and
- MPA managers and practitioners, including natural scientists, in the field who may lack social science background but need to understand its context in order to set funding or action priorities.

Budget Initiatives. The National MPA Center will work with agencies and organizations to identify and leverage the resources necessary to support social science research based on the priorities identified here and in the subsequent regional workshops.

Integrating the Social and Natural Science of MPAs

This strategy identifies and highlights information gaps in our collective understanding of the human dimension of MPAs and suggests practical ways to fill them. Its ultimate success, however, will depend in part on filling another need that is currently lacking: the integration of the social and natural sciences in the planning, management and evaluation of MPAs. While a detailed action plan is beyond the scope of this document, the following ideas will be pursued in concert with the efforts laid out here:

- Identify areas of overlap and synergy between research priorities identified in the social science and natural science strategies (e.g., use patterns and their impacts, traditional ecological knowledge);
- Develop pilot studies on a regional scale that integrate both disciplines to illustrate the power of an integrated approach to complex ecological and socioeconomic problems;
- Recommend ways to better integrate and leverage the technical information from both disciplines into MPA processes; and
- Promote cross-discipline training for natural and social scientists.

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Appendix A.

Existing Social Science Strategic Plans

Appendix A. Existing Social Science Strategic Plans

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Appendix B.

Social Science Tools for MPAs

Appendix B. Social Science Tools for MPAs

The best social science tools and methods for a project depend on information need, time, resources (money and people), and context. In the matrix below, several common research approaches are described. The matrix shows which common research methods and approaches may be pertinent to each phase of the MPA cycle. Depending on the location of the MPA and the managing agency, some methods, such as socio-economic impact assessment, may be required at certain stages. In addition, we include a list of references where more information can be found about social science research approaches, methods, and tools.

It is essential to note that this matrix is not meant to prescribe certain methods for certain stages of the MPA cycle, but rather to provide a sampling of commonly used research methods and approaches and to give MPA managers an idea of when certain methods may be helpful. The Further Reading suggestions below can help better explain the relationships between methods and their relative strengths and weaknesses.

Further Reading

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Common Research Methods and Approaches	MPA Processes: Planning	Management	Evaluation
Focus Groups. An interactive interview, managed by a moderator, in which a small number (e.g., 6-12) of usually homogeneous respondents engage in discussion of a set of questions on a particular topic.[1]	✓	✓	✓
Survey Research. The administration of a standardized questionnaire in person, by phone or via mail, e-mail or other "self-administered" formats, to a sample of respondents.[2]		✓	✓
Socio-Economic Impact Assessment. The systematic evaluation, *in advance*, of the social and economic consequences likely to follow from specific policy actions.[3]	✓		✓

[1] Johnson, B., and L.A. Turner. 2003. Data collection strategies in mixed methods research. Pp. 297-319 in A. Tashakkori and C. Teddlie, eds., Handbook of mixed methods in social & behavioral research. Thousand Oaks: Sage Publications, p. 308.

[2] Babbie, E.R. 1992. The practice of social research. 6th ed. Belmont, CA: Wadsworth Publishing Co., pp. 8-9.

[3] Interorganizational Committee on Guidelines and Principles (ICGP). 1994. Guidelines and principles for social impact assessment. US Dept of Commerce, NOAA Tech. Memo. NMFS-F/SPO-16. Also note: Social variables examined include population characteristics, community and institutional structures, political and social resources, individual and family changes, and community resources (ICGP 1994, p. 8).

Common Research Methods and Approaches (Continued)	MPA Processes		
	Planning	Management	Evaluation
Rapid Assessment. Intensive, team-based qualitative inquiry using triangulation, iterative data analysis and additional data collection to quickly develop a preliminary understanding of a situation from an insider's perspective.[4]	✓	✓	
Ethnography. The social scientific study of people and culture using participant observation, interviews and examination of artifacts and records.[5]	✓	✓	
Contingent Valuation. A survey technique that assesses respondents' willingness to pay to prevent a decline in environmental resources or to support an improvement in them, as an indication of economic value of large changes in environmental quality, as hypothetically presented.[6]	✓		✓
Predictive Modeling. Research in which data is collected, a statistical model is formulated, predictions are made and the model is validated (or revised) as additional data becomes available. The model can be a simple linear equation or it can be a complex network mapped out by sophisticated software.[7]	✓		
Content Analysis. A method of data analysis for narrative data (e.g., texts, transcriptions) in which the segments of text are systematically categorized as similar to or different from segments in other categories. Categories may be derived from the underlying theory and conceptual framework of the research, or identified through the analysis.[8]		✓	✓
Cost Benefit Analysis. The systematic identification, organization and evaluation of costs and benefits that are expected to result from proposed policy alternatives, including the "no action" (status quo) alternative.[9]	✓	✓	
Comparative Research. An approach oriented toward identifying and unraveling complex patterns of similarities and differences across moderate number of cases.[10] Comparison provides a basis for making statements about empirical regularities and for evaluating cases relative to substantive and theoretical criteria.[11]		✓	✓

[4] Beebe, J. 2001. Rapid assessment process: An introduction. Walnut Creek, CA: AltaMira Press, p. 171.

[5] Tashakkori, A., and C. Teddlie, eds. 2003. Handbook of mixed methods in social & behavioral research. Thousand Oaks: Sage Publications, p. 708.

[6] Edwards, S.F. 1987. Introduction to Coastal zone Economics: Concepts, methods and case studies. New York: Taylor and Francis, p.45.

[7] http://searchcrm.techtarget.com/sDefinition/0,sid11_gci809473,00.html. Accessed 2/1/03.

[8] Handbook of mixed methods, p.705.

[9] Edwards, p.46.

[10] Ragin, Charles. 1994. Constructing Social Research: The Unity and Diversity of Method. Pine Forge Press (Sage), p. 105.

[11] Ragin, Charles. 1987. The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies. University of California Press, p. 1.

Common Research Methods and Approaches (Continued)	MPA Processes: Planning	Management	Evaluation
Historical Research. A qualitative research approach that entails the use of historical records including existing documents, artifacts and oral histories.	✓		
Secondary Data Analysis. A form of research in which data collected and processed by one researcher are reanalyzed, often for a different purpose, by another researcher.[12]		✓	✓
Case Study Research. A strategy for doing research that involves the empirical investigation of a particular contemporary phenomenon within a real life context using multiple sources of evidence.[13]	✓	✓	

[12] Babbie, p.G7.

[13] Robson, Colin. 1999. Real World Research: A Resource for Social Scientists and Practitioner-Researchers. Malden, MA: Blackwell Publishers, Inc., p. 146

Appendix C.

Examples of Federal Statutes and Regulations

Appendix C. Examples of Federal Statutes and Regulations

The federal statutes and regulations in the table below mandate or contain provisions for the conduct of Social Impact Assessment.

Year	Law	Provisions
1960	Multiple-Use Sustained-Yield Act [16 USC 528]	Requires consideration of the social, economic and ecological benefits and costs of non-timber harvest use and services of national forests.
1964	Civil Rights Act (Title VI) [42 USC 2000(d)]	Requires that any program or activity receiving federal financial assistance be free of discriminatory effect on the ground of race, color or national origin.
1970	National Environmental Policy Act of 1969 [42 USC 4321 et seq.]	Calls for the integrated use of the social sciences in assessing impacts "on the human environment." Also requires the identification of methods and procedures that ensure that presently unquantified environmental and cultural amenities and values are given appropriate consideration.
1970	Federal-Aid Highway Act [23 USC 109(h)]	Requires full consideration of any adverse economic, social and environmental effects of any proposed project on any federal aid highway system.
1970	Uniform Relocation Assistance and Real Property Acquisition Policies Act [42 USC 4601]	Requires analysis and demonstration by agencies to show that all groups are treated uniformly and fairly in residential relocations resulting from eminent domain.
1972	Coastal Zone Management Act [46 USC 31] (amended by the Coastal Zone Protection Act of 1994 [P.L. 104-150])	Requires that the nation's coastal zones be protected from environmentally harmful development.
1972	Marine Protection, Research and Sanctuaries Act [43 USC 1301	Provides for assessment of impacts of human activities in environmentally sensitive areas, and consideration of social and economic effects of regulation or other federal action.
1974	Forest and Rangeland Renewable Resource Planning Act [P.L.100-446]	Required social and economic assessments of use alternatives for federal forests and rangelands and their incorporation in planning decisions as part of the forest inventory analyses.
1976	Fishery Conservation and Management Act [16 USC 1801 et seq.] (in 1996 renamed the Magnuson-Stevens Fishery Conservation and Management Act)	Calls for assessment and consideration of ecological, economic and social impacts of fishing regulations on fishery participants and fishing communities in marine fishery management plans.

1976	Federal Land Policy and Management Act [43 USC 1701]	Requires protection of the scenic, scientific, historic and ecological values of federal lands and calls for public involvement in their management.
1978	Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act [40 CFR 1500-1508] (Council on Environmental Quality)	Requires federal agencies to interpret "human environment" comprehensively to "include the natural and physical environment and the relationship of people with that environment."
1978	Outer Continental Shelf Lands Act [43 USC 1331 et seq.]	States that "The term 'human environment' means the physical, social, and economic components, conditions and factors which interactively determine the state, condition, and quality of living conditions, employment, and health of those affected directly or indirectly" by resource development and extraction activities on the U.S. outer continental shelf.
1980	Comprehensive Environmental Response, Compensation and Liability Act [26 USC and 43 USC]	Calls for working with affected publics through community relations programs and assessment of community and state impacts of Superfund plans.
1982	Regulatory Flexibility Act [5 USC 601]	Calls for assessment of impacts of federal actions on small entities—businesses, local governments and non-governmental organizations—to ensure that the proposed actions do not discriminate or impose an undue burden on small entities.
1982	Nuclear Waste Policy Act [P.L. 97-425]	Calls for preparation of a social impact assessment and places specific demographic limits on siting nuclear repositories. Affected Indian tribes must be included in the siting process, impact assessment and mitigation.
1982	Guidelines for Economic and Social Analysis of Programs, Resource Plans, and Projects [Federal Register 47(80): 17940-17954] (USDA Forest Service)	Requires the incorporation of social impact assessments in forest management plan development.
1983	Economic and Environmental Guidelines and Principles for Water and Related Land Resources Implementation Studies (U.S. Water Resources Council)	Outlines six planning steps for integrating economic, ecological and social assessments into water resource studies and actions to ensure compliance with NEPA.
1984	National Social Sciences Manual (USDA Soil Conservation Service)	Describes best practices for USDA actions requiring social and economic impact assessments under NEPA.

1986	[Revised] Regulations Implementing the Procedural Provisions of the National Environmental Policy Act [40 CFR 1501-1508] (Council on Environmental Quality)	Clarifies the treatment of incomplete or unavailable information in assessments.
1987	Environmental Impact and Related Procedures [23 CFR 771] (Federal Highway Administration)	Provides administrative guidance for assessments required by NEPA and federal highway mandates.
1987	Civil Rights Restoration Act	Clarifies Title VI of the Civil Rights Act to cover all programs and activities of federal-aid recipients, sub-recipients, and contractors, whether or not the programs and activities are federally funded.
1990	Americans with Disabilities Act	Recognizes and protects the civil rights of people with disabilities and is modeled after earlier landmark laws prohibiting discrimination on the basis of race and gender.
1991	Intermodal Surface Transportation Efficiency Act: Federal Compliance with Right to Know Laws and Pollution Prevention Requirements [Executive Order 12856]	Provides conditions and authorization for flow of federal highway revenue to states for roads, transit, ferries, and other transportation purposes.
1994	Farmland Protection Policy Act (1981), as amended [7 CFR 658]	Minimizes the extent to which Federal activities contribute to the converstion of agricultural land to non-agricultural uses, and seeks to ensure the federal policies are administered in a way that will be compatible with state, local, and private policies that protect farmland.
1994	Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations [Executive Order 12898]	Required assessments of actions to ensure equity in the treatment of minority populations and low-income populations relative to the treatment of the population as a whole.
1995	Small Business Regulatory Fairness Act	Amended the Regulatory Flexibility Act to permit judicial review of agency assessments and actions.
1997	Protection of Children from Environmental Health Risks and Safety Risks [Executive Order 13045]	Necessitates EPA evaluation of any rule which is 1) deemed to be "economically significant" (as per EO 12866) and 2) concerns an environmental health or safety risk that the EPA has reason to believe may have a disproportionate effect on children.

1997	Considering Cumulative Effects Under the National Environmental Policy Act (Council on Environmental Quality)	Provides guidance on the assessment of the cumulative effects of related actions on a community or population over time.
2000	Consultation and Coordination with Indian Tribal Governments [Executive Order 13175]	Establishes consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications and to reduces the imposition of unfunded mandates upon Native American tribes.
2000	Treasury and General Government Appropriations Act for Fiscal Year 2001, Section 515 [Public Law 106-554]	Requires federal agencies to publish guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by them. These guidelines also include procedures allowing affected persons to seek and obtain correction of information maintained and disseminated by federal agencies.
2000	Marine Protected Areas (Executive Order 13158]	Strengthens the management, protection, and conservation of existing marine protected areas, establishes new or expanded MPAs, and develops a scientifically based, comprehensive national system of MPAs representing diverse U.S. marine ecosystems and the Nation's natural and cultural resources.
2001	Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use [Executive Order 13211]	Requires the preparation of a Statement of Energy Effects by agencies whose actions have adverse effects on energy supply, distribution, or use, including reasonable alternatives.
2002	Proper Consideration of Small Entities in Agency Rulemaking [Executive Order 13272]	Requires that the potential impacts of federal agencies' draft rules upon small businesses, small governmental jurisdictions, and small organizations be properly considered during the rulemaking process.

Appendix D.

Strategy Development Process Details

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Pacific Coast MPA Science and Coordination Workshop. The National MPA Center hosted the Pacific Coast MPA Science and Coordination Workshop on July 31 and August 1, 2001, in Monterey, California. One of the four breakout groups focused on identifying priority needs and information gaps regarding the human dimensions of MPAs on the Pacific Coast of the United States. This group called for the development of a national social science research strategy for MPAs.

Social Science Research Planning Team. In October 2001, the MPA Social Science Planning Team was created. This team, consisting of representatives from across NOAA, Duke University and the University of California, Santa Cruz, worked together to plan, design and write the strategy.

MPA Social Science Workshop. The National MPA Center, in partnership with Duke University, the University of California, Santa Cruz, and the Canadian Department of Fisheries and Oceans, hosted the MPA Social Science Workshop from April 8 to 9, 2002 in Monterey, California. Approximately 75 invited social scientists, as well as MPA practitioners, policy-makers and stakeholders from across the United States and Canada, were convened for this two-day facilitated workshop. The goal of the workshop was to identify and prioritize economic, social and cultural aspects of MPA information needs as the foundation of the national strategy. The participants were divided into six groups to concentrate on six themes: economics of MPAs; use patterns; attitudes, perceptions and beliefs; governance and institutional structures; community organization; and cultural heritage and resources. Participants identified priority research topics in MPA design and management, identified and scoped out key projects to address these research topics, and identified tools and mechanisms for completing projects. The workshop ended with a large group session in which all of the participants worked to identify issues and needs that cut across all of the themes. The workshop notes, which include the list of workshop participants, are published on www.mpa.gov.

Draft Strategy. Using the results of the MPA Workshop as a starting point, the MPA Social Science Planning team met at Duke University Marine Lab in Beaufort, North Carolina from June 10 to 11, 2002, to develop a detailed outline of the Social Science Research Strategy.

Review of Draft Strategy by NOAA Staff and External Experts. The draft Social Science Research Strategy was made available for public review from March to April 2003. The document was also shared with all MPA Social Science Workshop participants as well as other key individuals. After the review period closed, the feedback was considered and incorporated into the final Social Science Research Strategy by the planning team. The final strategy is available on www.mpa.gov.

Next Steps. The final MPA Social Science Research Strategy is being used to guide a series of focused regional workshops to identify more specific regional priorities, develop necessary capacity, and fully integrate the social sciences in MPA planning and management on a relevant scale.

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