

Regional Priorities for Social Science Research on Marine Protected Areas:

U.S. Caribbean and South Florida

Final Workshop Report



*The Buccaneer, St. Croix, U.S. Virgin Islands
August 19-20, 2003*

The National Social Science Research Strategy, developed in August 2003, identifies high priority needs for social science information that are fundamental to the planning, management and evaluation of MPAs at a national level. It also recommends practical ways to meet these needs through research, assessment, capacity building and leveraged funding. For the full text of the National Social Science Research Strategy please visit: http://www.mpa.gov/virtual_library/Publications/Strategy_11504.pdf

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I. INTRODUCTION

This document is the result of the first regional social science research workshop, which covered the United States Caribbean (Puerto Rico [PR] and U.S. Virgin Islands [USVI]) and South Florida (South of Broward County).

The workshop was held at the Buccaneer Hotel on St. Croix, USVI from August 19 to 20, 2003 and included 29 participants from federal and state agencies, academic institutions, regional governing bodies and non-profit organizations.

II. WORKSHOP GOALS: Crafting a Regional Research Plan

The National Marine Protected Areas (MPA) Center was established in late 2000 by the National Oceanic and Atmospheric Administration (NOAA), in partnership with the Department of the Interior. The mission of the National MPA Center is to facilitate the effective use of science, technology, training and information in the planning, management and evaluation of the nation's system of MPAs.

In an effort to strengthen our understanding of the human context of MPAs, the National MPA Center Science Institute developed the National MPA Social Science Research Strategy and subsequent regional MPA social science research plans. The National MPA Social Science Research Strategy is a conceptual piece that reflects, at the national level, the growing interest in the application of social science information in the planning, management and evaluation of MPAs. The Strategy identifies the following six priority research themes that encompass a broad range of disciplines and address pressing social science needs for MPAs:

- 1. Governance, institutions and processes:** This theme covers the formal and informal institutions (federal, tribal, state, local and non-governmental) responsible for managing the resources in marine protected areas. Component research topics include determining and assessing these institutions' respective capacities, funding sources, jurisdictions, management strategies and implementation approaches, as well as the role of social capital in each institution's interactions with the public and other institutions.
- 2. 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.
- 3. 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. It includes constituents' and stakeholders' social and cultural attitudes, values, beliefs, perceptions and preferences related to MPA issues.
- 4. Economics:** This theme deals with economic conditions and trends associated with marine protected areas. 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.

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

6. *Cultural heritage and resources*: This theme covers the historical and traditional artifacts within marine protected areas. These may include, but are not limited to, nautical history (wrecks, replicas, 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 by other themes.

Recognizing the need for more detailed, locally oriented research plans, the National MPA Center Science Institute designed a series of workshops to prioritize social science information needs at the regional and local level and create regional social science research plans to address those needs. Workshop results will include:

- A list of priority social science research projects for each region; and
- Tools for building regional capacity through the identification of potential partners and funding resources to promote and establish coordination within the region among agencies, social scientists and stakeholders.

These results are intended to inform MPA managers, agency decision-makers, researchers, funding sources and affected stakeholder groups about priorities for social science research. These workshops are also designed to stimulate and encourage collaboration and coordination within the region among agencies, social scientists and stakeholders.

III. WORKSHOP PROCESS

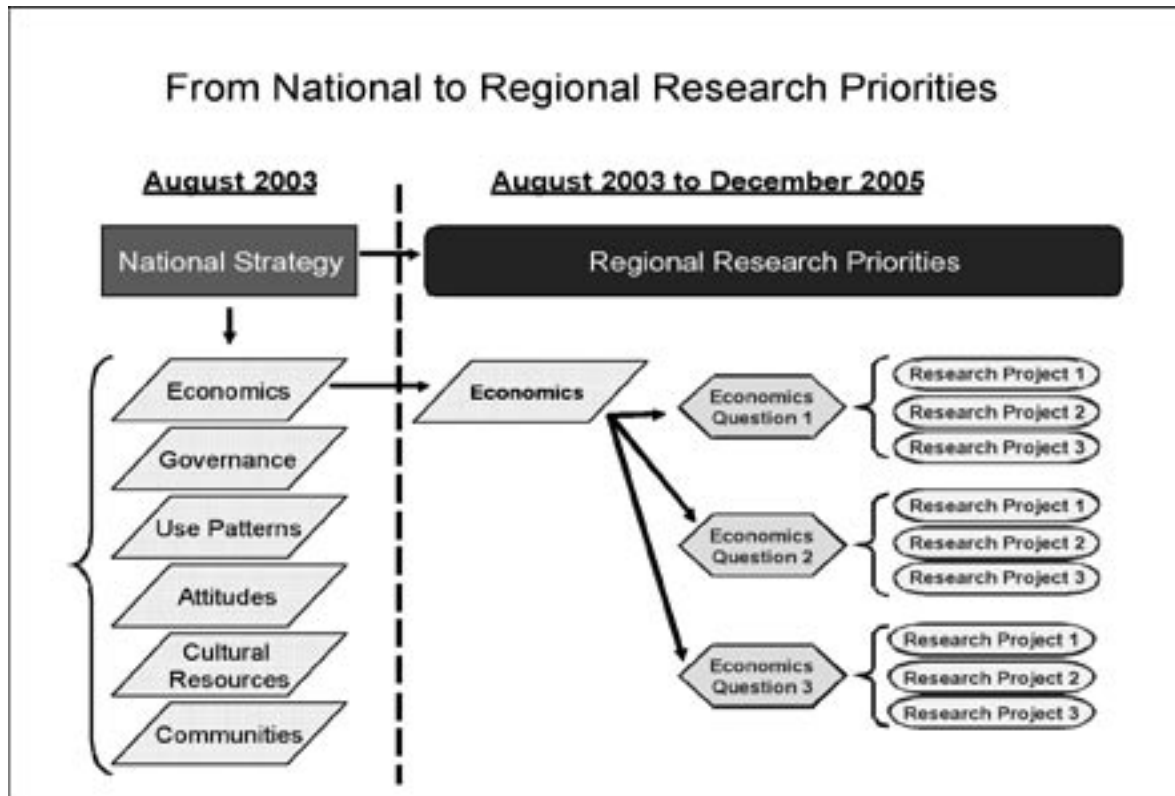
The National MPA Center Science Institute developed the following process, to be used for all regional workshops:

WHEN	ACTION	WHO
<i>Pre-Workshop</i>	Compile the following background documents: list of existing social science research efforts, list of MPA-related resources and institutions, and regulatory framework within/pertaining to each region	MPA Center
	Coordinate logistics: Develop worksheet templates, budget, invitations, etc.	MPA Center
<i>At Workshop</i>	Identify priority information needs (research questions) for each relevant research theme, across each phase of the MPA cycle	Workshop participants
	Determine strategies (research projects) to address each information need	Workshop participants
	Develop project details for high priority projects	Workshop participants
	Discuss methods for building and strengthening the regional capacity	Workshop participants and MPA Center
<i>Post Workshop</i>	Compile and post/publish/distribute information for each region	MPA Center and facilitators

In preparation for each workshop the National MPA Center Science Institute compiles the following background documents for each region: a list of existing social science research efforts (see Appendix C), a list of research institutions and information resources (see Appendix D), and a regional regulatory framework with a list of statutes and regulations related to MPAs (see Appendix E). The list of current and existing research is presented during the workshop to encourage discussion about the research that has already been done in the region and to stimulate the participants to think about information gaps and priority research needs. The list of local institutions and resources provides a basis for the discussion on building the regional capacity as it identifies potential partners and funding sources for the implementation of proposed social science projects. Finally, the regulatory framework serves primarily to show the MPA policy structure within which each region functions.

During the workshop, participants address the six thematic priorities outlined in the National Social Science Research Strategy on a regional level. Figure 1 illustrates the transition from the broad national thematic priorities, to the identification of regional research priorities.

Figure 1: Identification of regional social science research priorities



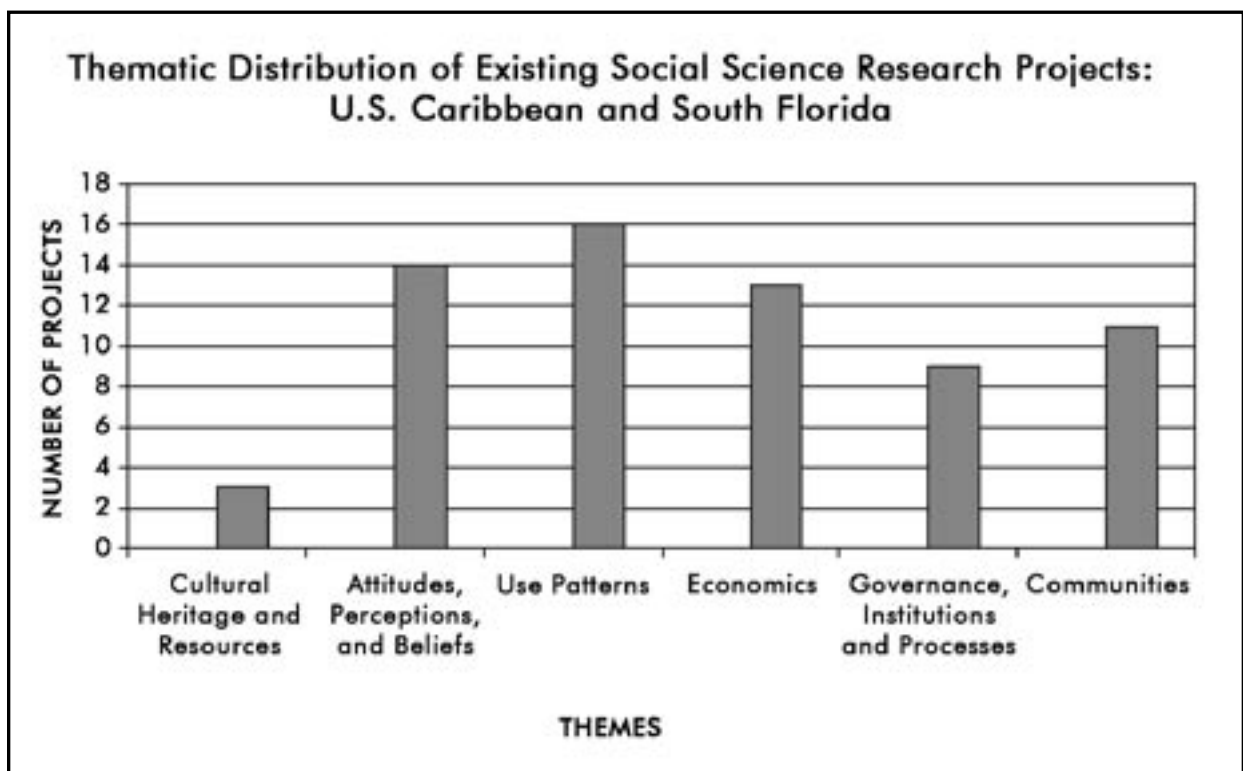
Workshop participants generate an initial list of priority needs and issues in the form of research questions for each theme (see Appendix B), ultimately choosing the nine most pressing questions. Strategies, in the form of projects, are then developed to address the priority research questions (see Appendix A). These research projects are developed in detail and include information such as geographic coverage, applicability to MPA policy cycles (planning, management and/or evaluation), expected outcomes/outputs, challenges, estimated duration, estimated cost, potential partners, and linkages with existing efforts and natural science.

IV. SUMMARY OF EXISTING SOCIAL SCIENCE RESEARCH IN THE REGION

Prior to the St. Croix workshop, the National MPA Center Science Institute compiled a list of existing social science research efforts that relate to MPAs in the region in order to stimulate discussion on information gaps and research needs. Whenever possible, the principal investigators of the projects were contacted to ensure complete and accurate information.

Figure 2 summarizes the thematic distribution of the existing research within the region (see Appendix C for details of each of these projects). The existing efforts in this region focused on the following themes: use patterns; attitudes, perceptions and beliefs; and economics. Studies ranged from socioeconomic assessment of uses (e.g., fishing and tourism) and users of marine resources to in depth ethnographic analyses of local communities.

Figure 2: Summary of existing social science research efforts by theme

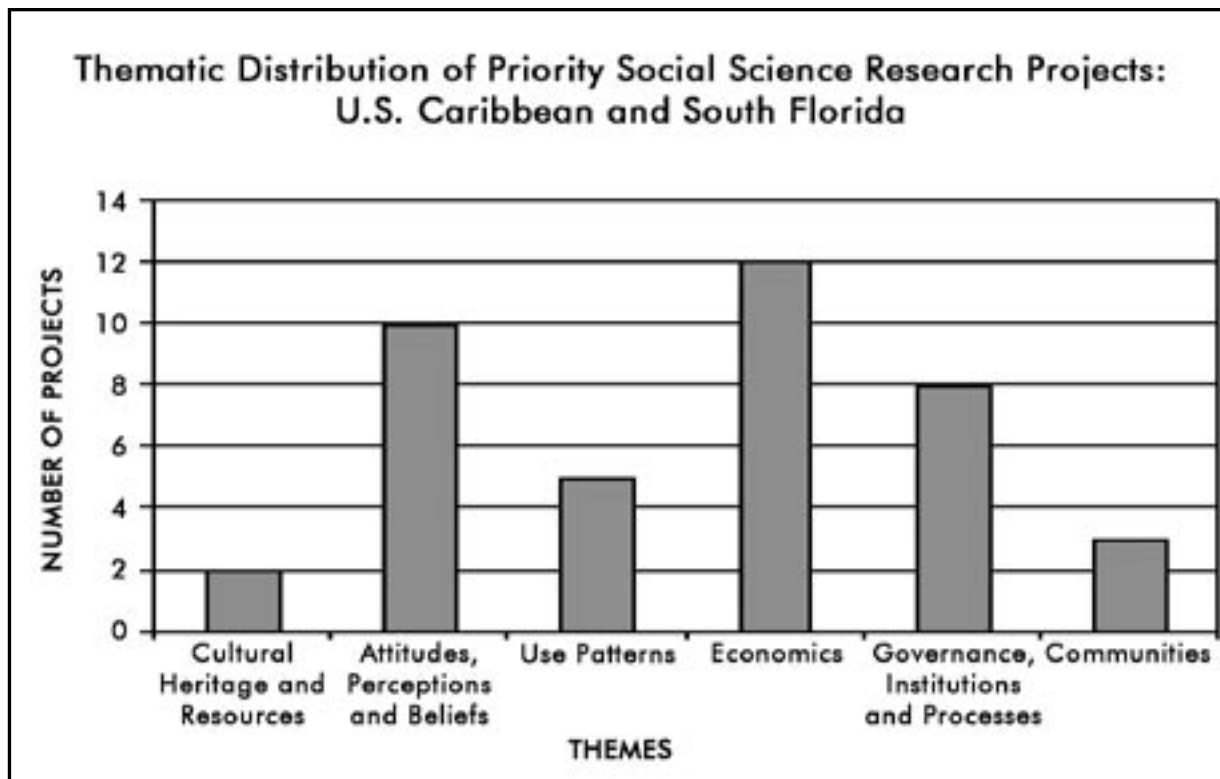


NOTE: Some projects cover more than one theme. Of a total of 40 current and existing research projects in the region: 10% are planned, 30% are ongoing, and 60% are complete.

V. PRIORITY RESEARCH QUESTIONS AND PROJECTS

At the St. Croix workshop, participants identified nine research questions and 40 projects as priority social science information needs in the region. Figure 3 summarizes the distribution of these projects by the broad research themes laid out in the National Social Science Research Strategy.

Figure 3: Summary of priority social science research projects



Many of the existing projects relating to social science of MPAs in the region focused on the attitudes, perceptions and beliefs and economics themes. Workshop results pointed out the need for more information in both thematic areas, ranging from basic economic information to more specific information about long-term maximization of benefits to increased understanding of variations in attitudes, perceptions and beliefs towards resources. Information regarding governance, institutions and processes, the theme with the third highest number of priority projects, focused on a general understanding of the governance framework as a means to promote effective MPA processes.

Following is a list of all questions and projects by theme:

Governance, Institutions and Processes

What are the linkages among institutions that hinder/promote effective processes?

- Identify and describe communication corridors between coastal management agencies.
- Assess legislative and other formal mandates for marine resource management, between federal, state, territorial and local agencies.
- Explore government and non-government/civil society organizational linkages: formal and informal (USVI, PR or SFI).

What is the governance framework for MPA processes?

- Develop baseline characterization of legal frameworks, organizational structures and decision-making in the Caribbean.
- Conduct a comparative study of MPA governance processes.
- Evaluate MPA governance systems in the Caribbean: factors fostering management viability.
- Determine how the relationship between governance variables shapes compliance in the USVI MPAs.
- Determine which governance structures and MPAs are best suited to PR and the USVI.

Use Patterns

Who, what, when, why, how and how much (as it relates to use patterns)?

- Research traditional, subsistence and non-consumptive use patterns.
- Assess human use: recreation and tourism.
- Determine current and historical patterns of commercial fishing.
- Develop a regional system of indicators of human use impacts to monitor the environmental and social quality of MPAs.
- Identify and characterize land uses adjacent to MPAs in the USVI.

Attitudes, Perceptions and Beliefs

What are the variations in attitudes, perceptions and beliefs of different actors (user groups, stakeholders and decision-makers) towards resources, management and other users?

- Evaluate attitudes, perceptions and beliefs (APBs) among different consumptive and non-consumptive users towards marine resources, MPA management and other users.
- Research community ethnography of a series of coastal settings.
- Explore variations in attitudes, perceptions and beliefs of decision makers (national, regional and local) on conservation and environmental justice issues associated with the development and implementation of MPAs in USVI and Puerto Rico.
- Determine the role of recent and temporary migrants in influencing the siting of MPAs in the U.S. Caribbean.
- Develop an ethnographic overview and assessment (EOA) of a Caribbean MPA.

How do we integrate popular knowledge (local, traditional) with scientific knowledge and vice versa?

- Determine local knowledge of MPAs in PR and the USVI.
- Disseminate popular and scientific information about MPAs.
- Drawing on case studies, determine and evaluate methods used to transfer knowledge to local populations.
- Research ethnobiology of marine systems and its role in MPA planning and management.
- Identify the “keepers of knowledge” and describe and identify the tools and skills needed to gather/validate/incorporate traditional/local knowledge at East End Marine Park (EEMP), St. Croix, USVI.

Economics

Understanding carrying capacity and how to maximize benefits from resources in the long-term.

- Determine thresholds of the scope and level of user-group impacts on the integrity of shipwreck sites in the Caribbean marine environment.
- Conduct a paired site study to determine visitor views on resource conditions and carrying capacity.
- Compare stakeholder views of resource conditions and carrying capacity at East End Marine Park and other sites.
- Develop and integrate “unobtrusive measures” into ongoing management analysis so as to constantly measure use and impact.
- Assess the sustainability of harvesting by user groups.

What is the basic economic information on marine resources?

- Analyze the bioeconomics of MPA siting.
- Understand trends and impacts of economic development on the marine environment.
- Conduct socioeconomic study to develop messages, identify audiences, and identify and develop the methods of communicating with those audiences.
- Document the economic value of tourism related to MPAs in the USVI and Puerto Rico.
- Explore sustainable financing options for USVI East End Marine Park.
- Explore sustainable financing options for the marine reserves in PR's natural reserve system.
- Determine the value of tourist demand on MPAs in PR and USVI.

Communities

How do managers communicate, adapt and react to successes/failures with communities?

- Characterize communities and their expectations of MPAs.
- Conduct comparative analyses of institutional design.
- Explore adaptive management.

Cultural Heritage and Resources

Local perceptions and values of cultural resources: How do values/perceptions of values vary by resource type and condition?

- Conduct Caribbean-Florida Submerged Cultural Resources Workshop.
- Identify cultural themes: identify the tangible aspects of each theme, and align each aspect to a particular community value.

VI. BUILDING REGIONAL CAPACITY

The last session at the workshop consisted of a discussion on building the regional capacity to conduct social science research and incorporate it into the planning, management and evaluation of MPAs. Participants exchanged thoughts on the creation of regional networks for information sharing, the importance of strengthening and developing academic capacity, and the identification of potential funding sources. Following is a brief synopsis of the main points discussed at the workshop:

A. Network for information sharing

The workshop participants discussed various existing mechanisms that may be leveraged for scientists to coordinate and collaborate with each other and with MPA practitioners, and for managers to include the appropriate research in their annual operating plans. They also proposed additional information sharing systems.

The existing mechanisms that were highlighted by workshop participants fell into two broad categories: information clearinghouses and professional organizations.

Existing Information Clearinghouses

- National Park Service's Applied Ethnography Program's professional tools
 - <http://www.cr.nps.gov/aad/TOOLS/INDEX.HTM>
- NOAA's Coastal and Ocean Resource Economics webpage
 - www.marineeconomics.noaa.gov
- NOAA's Coral Reef Information System (CoRIS)
 - <http://www.coris.noaa.gov/>
- UNEP Caribbean Environment Programme webpage
 - <http://www.cep.unep.org/programmes/spaw/MPA/mpa.htm>

Existing Professional Organizations

- Society for Applied Anthropology
- American Anthropological Association

The additional information sharing systems that the participants indicated would be important to have in the future include the following:

- An MPA listserv that would include both managers and scientists
- A working bibliography in EndNote that could be updated regularly

B. Academic capacity

Strengthening the academic capacity of both current and future managers is important to effectively secure the inclusion and use of social science research in the planning, management and evaluation of MPAs. While the *Report of the NOAA Science Advisory Board Social Science Review Panel - Findings and Recommendations* discusses this need within NOAA, the workshop participants deliberated different methods to increase the capacity at specific sites, such as partnering with local colleges and universities (e.g., University of the Virgin Islands, and University of Miami's Rosenstiel School of Marine and Atmospheric Science). The participants also referred to the National Park Service's Cooperative Ecosystem Study Unit (CESU) program (www.cesu.org) as a means of accessing high-quality scientific research and technical assistance.

C. Funding for regional social science research plan

Research plans accomplish little without funding. The potential sources listed below include grant programs, agencies and offices that may be able to include projects in their annual operating plans, and fellowship programs that may be able to provide individuals to help with research needs.

- NOAA Programs
 - National MPA Center
 - NMFS – Southeast Fishery Science Center (SEFSC)
 - National Marine Sanctuary Program
- NOAA Partnerships
 - The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET)
 - Environmental Technology Development Program
 - Technology Transfer Program
 - NERRS Graduate Research Fellowship program
 - CZM Programs in Florida, Puerto Rico and the U.S. Virgin Islands
- The Nature Conservancy’s David H. Smith Conservation Research Fellowship program
- National Science Foundation Biocomplexity program

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Appendix A. Proposed Priority Research Projects

Governance, Institutions and Processes

This theme covers the formal and informal institutions (federal, tribal, state, local and non-governmental) responsible for managing the resources in marine protected areas. Component research topics include determining and assessing these institutions' respective capacities, funding sources, jurisdictions, management strategies and implementation approaches, as well as the role of social capital in each institution's interactions with the public and other institutions.

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Theme: Governance, Institutions and Processes					
Question: What are the linkages among institutions that hinder/promote effective processes?					
Identify and describe communication corridors between coastal management agencies	Identify the communication windows between marine management agencies describing how successful they are and where they fail. Make recommendations about how to improve, replace, or create more applicable communication structures (corridors). Because of differences in areas, project should be conducted as separate projects in three areas: Florida, PR and USVI.	•	•	•	<ul style="list-style-type: none"> a. Periodic joint meeting to discuss, oversee, and evaluate outcomes and effort needed on specific resource issues. b. Regular joint briefing statements to communicate the results of the meetings. c. Free communication between agencies (formal and informal).
Assess legislative and other formal mandates for marine resource management, between federal, state, territorial and local agencies	This project would analyze the provisions for collaboration as set out in legal and other formal documents of a wide range of agencies involved in marine resource management, as they relate to MPA planning, management and evaluation. The analysis will highlight aspects of unclarity, inconsistencies, conflicts, and opportunities.	•	•	•	

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
Theme: Governance, Institutions and Processes												
<p>a. Ego and shyness, un-based feeling of territoriality, leveling, status and authority between agencies.</p> <p>b. Getting players to play with an open mind (step in the other person's shoes).</p> <p>c. Distance (Florida vs. Caribbean).</p> <p>d. Dilution of focus making the subject bigger than it need be.</p>											<p>a. Federal environmental agencies (National Parks Service [NPS], Department of Commerce [DOC], Environmental Protection Agency [EPA], NOAA)</p> <p>b. State environmental agencies (Department of Planning and Natural Resources [DPNR], Department of Environmental Protection [DEP], South Florida Water Management District [SFWMD], Parks Department, sewage and land fill dept., police)</p> <p>c. Non-governmental Organizations (NGOs) (The Nature Conservancy [TNC], The Ocean Conservancy [TOC], Carib, Coral, etc.)</p>	
											<p>a. Legal agencies (interpolation of legal instruments)</p> <p>b. Federal/state/ territorial agencies</p> <p>c. Consultants</p>	

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Explore government and non government/ civil society organizational linkages: formal and informal (USVI, PR or SFI)	This project would describe the organizational beliefs, values, social networks, and other socio-cultural phenomena that hinder/ facilitate coordination and collaboration in MPA development and management among government agencies and organizations within civil society (NGOs, church groups, fisheries organizations, tourism organizations, etc.). This research would provide government and civil society with a roadmap for improving coordination/ collaboration based on an understanding of these governmental and non-governmental organizations' belief and value systems, social networks, social capital, etc. This understanding is critical to facilitate coordination and collaboration among government organizations and non-governmental actors in MPA development and management.	•	•	•	a. Characterization of organizational beliefs, values, social networks, etc. b. Identification of shared and divergent beliefs and values: areas of opportunity and challenges to address. c. Enhanced collaboration and coordination of management agencies in development and management of MPAs.
Question: What is the governance framework for MPA processes?					
Develop baseline characterization of legal frameworks, organizational structures and decision-making in the Caribbean	Describe and analyze the existing legal frameworks, organizational structures, and decision-making processes in relevant agencies and organizations at the local, territorial, state, and national levels, in order to understand the capacity and performance needed to engage in MPA processes. This project can be scaled to appropriate geographical and institutional levels and replicated in each region.	•	•	•	a. An understanding of existing governance frameworks. b. Recommendations for changes to governance frameworks to better facilitate MPA processes.
Conduct a comparative study of MPA governance processes	a. Comparative study of MPA governance processes, including territorial, government, national park service authorities, national monuments and wildlife refuges. b. Identify opportunities for implementing integrated coastal zone management.	•	•	•	a. Description of governance processes related to MPAs. b. Identification of opportunities and challenges to integration. c. Recommendations on appropriate governance processes to achieve integrated management.
Evaluate MPA governance systems in the Caribbean: factors fostering management viability	This project would examine how MPA governance structures/ systems shape management capacity. For example, how might organizational structures/governance mechanisms shape capacity for financial sustainability, enforcement, monitoring, etc. This study would provide managers/agencies with governance innovations that would enhance management effectiveness/MPA performance, through a comparative examination of governance systems and mechanisms.	•	•	•	Identification of MPA governance best practices that enhance effectiveness (e.g., user fees, participatory enforcement).

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Requires support of relevant management authorities.</p> <p>b. May reveal "sensitive" information.</p> <p>c. Requires skilled and trusted researcher(s).</p>		•				•					<p>a. Universities (University of Puerto Rico [UPR], etc.)</p> <p>b. Agencies</p>	<p>a. Link between organizational mandates (law/policy) and beliefs/values.</p> <p>b. Link between beliefs/values and implementation practices.</p>
<p>Willingness of organizations and agencies to fully participate.</p>		•				•					<p>a. National, state, territorial and local agencies</p> <p>b. University researchers</p> <p>c. Consultants</p>	<p>This is foundational knowledge that will inform many other subsequent analyses. NOTE: To be accompanied by subsequent analysis of non-formal processes.</p>
<p>a. Each governance process was designed to be primarily independent.</p> <p>b. Issues of authority and jurisdiction.</p>			•			•					<p>a. NGOs</p> <p>b. National Marine Sanctuary Program</p> <p>c. Community involvement</p> <p>d. DPNR (USVI), Department of Natural and Environmental Resources (DNER, PR), Coastal Commission (USVI)</p>	<p>a. Department of Interior (linked to DPNR, USVI)</p> <p>b. Community involvement (linked to DPNR, USVI)</p> <p>c. Watershed management/ marine connectivity</p> <p>d. Tourism/ recreation.</p>
	One quarter, 1 year, or 2 years: varies, depending upon desired level of insights/ scope.					< \$50K, \$50-100K: varies, depending on desired scope and level of resolution.					<p>a. Universities</p> <p>b. MPAs</p> <p>c. Agencies</p>	<p>Could be linked to generic characterization of MPA governance systems to identify reforms.</p>

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Determine how the relationship between governance variables shapes compliance in the USVI MPAs	Compliance with MPA policies and regulations can be obtained voluntarily/willingly or by coercion/sanctions. This project compares the economic and socio-cultural costs and benefits of each of the approaches to obtaining compliance in the USVI. Voluntary/ willing compliance occurs when user/ stakeholder groups see compliance as being in their economic and social interest. The project will examine mechanisms (e.g. community involvement), co-management, education and outreach, which promote voluntary compliance, and the economic and social costs associated with them. Similarly, the project will examine the costs of compliance by coercion/sanctions by selected methods (e.g. enhanced policing, low/medium/high sanctions, enhanced judicial system).	•	•	•	<ul style="list-style-type: none"> a. Comparative costs and benefits of different forms of obtaining compliance. b. An understanding of users' decision-making with regard to compliance. c. Improved governance recommendations. d. Improved compliance with MPA policies and regulations.
Determine which governance structures and MPAs are best suited to PR and the USVI	Review of existing MPA governance structures in PR and the USVI to tease out common themes, policies and practices; to evaluate the effectiveness for each site; and to develop or revise governance structures to better meet PR and USVI needs. The study will focus on decision-making processes, the involvement of stakeholder groups and coastal communities, and the roles and activities of commonwealth and territorial governments and federal agencies. The review will draw on existing literature and legislation, interview surveys or participants, and an evaluation of economic, ecological and social change. From this baseline, optimum processes for governance for specific sites will be developed as templates.	•	•		<ul style="list-style-type: none"> a. Improved governance structures for each site. b. Better understanding of governance framework on the part of managers, user groups and the general public.

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Institutional approaches to compliance (e.g., FI MPA policies are said to favor coercion).</p> <p>b. Voluntary compliance assumes partnership between territorial agencies, federal agencies, and user/stakeholder groups.</p> <p>c. Agencies' basic laws may conflict with recommendations for change.</p>		•					•				<p>a. Federal agencies, USVI agencies</p> <p>b. Universities/ Extension/Sea Grant</p> <p>c. User groups/ foundations</p>	<p>a. Other economic and sociological studies of compliance with laws and legislative mandates.</p> <p>b. Management of natural resources.</p> <p>c. Inform and relate to agency future policies and practices.</p>
<p>a. Complexity of existing systems.</p> <p>b. Little or no economic or social cost/benefit evaluation or site-specific projects.</p>			•					•			<p>a. Universities, user groups</p> <p>b. Federal agencies</p>	

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.

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Theme: Use Patterns					
Question: Who, what, when, why, how and how much (as it relates to use patterns)?					
Research traditional, subsistence and non-consumptive use patterns	Cultural resource use patterns would describe the who, what, where, when, how and why of traditional, subsistence, and other non-consumptive uses of MPAs/marine environment. Answering this research question would inform MPA management decisions to maximize success, provide information on interests/uses of under-represented populations, assess dependence/relationship with the marine environment, contribute to general understanding of cultural beliefs/values/uses/ cognition, and satisfy legal requirements regarding MPA processes.	•	•	•	<ul style="list-style-type: none"> a. Characterize patterns and extent of use/ dependence/ relationship to marine environment (temporal, spatial, demographic, etc.). b. GIS maps, etc. c. Enhanced MPA development and management and characterization and success. d. Voice/empowerment of under-represented populations.
Assess human use: recreation and tourism	Identification of the players, issues, dynamics, geography, economics and sociocultural influences as they relate to planning and management of the tourism sector of MPAs.	•	•	•	<ul style="list-style-type: none"> a. Description of consumptive and non-consumptive tourism and recreational uses. b. The economic importance of recreational and tourism activities. c. Guidelines to ensure sustainability of tourism and recreational uses.
Determine current and historical patterns of commercial fishing	<ul style="list-style-type: none"> a. Puerto Rico <ul style="list-style-type: none"> i. Spatial patterns, spatial variability ii. Compile historical records – establish measurement of representative year. Time and variability might differ by species. iii. Weather/ safe havens. b. Virgin Islands - have trip ticket with area of catch <ul style="list-style-type: none"> i. Important species ii. Correlate to habitats (PR and USVI have habitat maps). 	•	•	•	<ul style="list-style-type: none"> a. Maps of use. b. Foster cooperative management process: increase in compliance and lower transaction costs. c. Informed decision-making on MPA placement, size, and impact.

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
Theme: Use Patterns												
<p>a. No baseline.</p> <p>b. Poorly developed methods to capture target populations and activities.</p>	Depends on desired level of resolution/scale/scope										<p>a. Universities (UPR, University of Miami, University of Wisconsin, Duke, Arizona, etc.)</p> <p>b. Consulting firms</p> <p>c. Management authorities (fisheries councils, local and federal agencies)</p>	<p>a. Impact of governance on use (e.g., regulations, decision-making, etc.).</p> <p>b. Impact of use on natural environment.</p> <p>c. Change in time.</p> <p>d. Change in space.</p> <p>e. Change in other social variables (ethnicity, demography, etc.).</p>
<p>a. Absence of mapping of resource use patterns.</p> <p>b. Existing data are likely to be unreliable.</p> <p>c. Respondents' mistrust with regard to future use of data.</p>						Depends on scope					<p>a. Tourism administrations</p> <p>b. Tourism sector associations</p> <p>c. Private regional, sub-regional, or local consultants as appropriate (depending on scale)</p>	<p>a. Must link with comparable natural science research strategies (e.g., report by John McManus).</p> <p>b. Existing effort: regional coordinating plan for MPAs in Caribbean (WCPA/NOAA).</p>
<p>a. Establishing representative totals for map distribution.</p> <p>b. Evaluation – larger environmental, economic and social.</p>											<p>a. NOAA Coral funding</p> <p>b. National Marine Fisheries Service (NMFS) and DNER</p> <p>c. Puerto Rican Fishermen Congress, Caribbean Fishery Management Council, Sea Grant Outreach Program (who will they work with?)</p>	<p>a. Appledorn – Ecosystem Puerto Rico</p> <p>b. Benthic Habitat Mapping – Monaco, USVI, FKNMS</p> <p>c. NMFS – DNER</p> <p>d. DNER Coral reef effort</p> <p>e. USVI – DNER</p> <p>f. NMFS – Jim Waters – commercial fishing trap use</p> <p>g. Trap study – USVI and Puerto Rico</p>

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Develop a regional system of indicators of human use impacts to monitor the environmental and social quality of MPAs	<p>a. This project will develop a series of indicators to monitor the environmental and social quality of MPAs. The indicators will reflect the relationship between characteristics of the biophysical environment (e.g., habitat type, level of sensitivity, etc.), human use activities (e.g., consumptive and non-consumptive uses), and management objectives (e.g., habitat preservation/ restoration, education, concentrated or dispersed recreational use, etc.).</p> <p>b. Developing indicators requires:</p> <p>i. A state of the field knowledge review across disciplines.</p> <p>ii. Input/participation by subject matter experts to coordinate this process across ecosystem types/uses/ management objectives.</p>	•	•	•	<p>a. Compile state-of-the-field knowledge for human use impacts associated with various ecosystem types (habitats).</p> <p>b. Use state-of-the-field knowledge and ongoing consultation with subject matter experts to specify a range of potential indicators.</p> <p>c. Select indicators to monitor at various spatial scales/resource types/management settings/human use conditions.</p> <p>d. Specify standards of quality based on site-specific criteria.</p> <p>e. Perhaps specify five indicators to monitor region-wide; additional indicators monitored on a site-by-site basis.</p>
Identify and characterize land uses adjacent to MPAs in the USVI	<p>a. Inventory of “land uses” adjacent to MPAs.</p> <p>i. Residential coastal development.</p> <p>ii. Tourism development (hotels, resorts, golf courses, casinos, docking facilities, moorings, lighting, parking, shopping, restaurants, commercial tour operations, port development).</p> <p>iii. Agricultural fertilizer, animal waste, loss of vegetative cover leading to runoff and erosion.</p> <p>iv. Municipal services (waste water treatment, water production – e.g., desalination, infrastructure).</p> <p>v. Sand mining.</p>	•	•	•	<p>a. Understanding of impact potential of adjacent land uses on MPAs.</p> <p>b. Inventory of varied land uses and parties adjacent to MPAs.</p> <p>c. Develop best management practices for adjacent land uses (to mitigate impacts).</p>

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Indicators are difficult to develop (require scientific data and/or high level of expertise).</p> <p>b. Social science-based indicators to assess the quality of social conditions (especially non-economic social conditions such as on-site experience, satisfaction, sense of ownership, public participation in management, changes in behavior, etc.) have not been developed and/or applied widely to MPAs.</p> <p>c. Monitoring of indicators at a region wide level is tough (limited resources – staff, \$, time), but this is the best way to ensure comparability of data across sites.</p>	2 years – for preliminary results. 5+ years –ongoing for implementation of ongoing monitoring and assessment program.					\$250K- \$500K to >500K. Cost depends on scope/ scale; if address all possible ecosystem/ habitat types and include primary data collection related to 1) human use activities/ impacts and, 2) expert input regarding potential indicators for environmental and social quality, then >\$500K.					<p>a. Academic – Theresa Coble at SFASU, Taylor Stein at U of FL, Dorothy Anderson at U of Minnesota, Chad Pierskalla at West Virginia University</p> <p>b. Federal/state – NOAA Coastal Services Center (CSC) – Tom Fish, Heidi Reckseik</p> <p>c. Non-profit – TNC, The Ocean Conservancy, etc.</p>	Builds upon current efforts by synthesizing results thus far and integrating them into a comprehensive plan for monitoring environmental and social conditions for MPAs.
<p>a. No baseline data.</p> <p>b. Large number of parties involved.</p> <p>c. Human subject issues (regarding survey work, data collection for landowners, etc.).</p> <p>d. Covers huge amount of economic aspects.</p> <p>e. Develop awareness of impacts of uses (among users).</p> <p>f. Foster stewardship mindset toward MPAs or explore/ develop incentives for BMPs.</p>											<p>a. University of the Virgin Islands (UVI), UPR, University of Florida, other state-side academic such as Sea Grant</p> <p>b. Federal and local agencies (NPS, DPNR, FWS)</p> <p>c. NGOs (TNC, The Ocean Conservancy, Island Resources Foundation)</p> <p>d. Private consulting firms</p>	Territorial marine parks initiative, NPS, General Management plan revision/ development (underway).

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. It includes constituents' and stakeholders' social and cultural attitudes, values, beliefs, perceptions and preferences related to MPA issues.

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Theme: Attitudes, Perceptions and Beliefs					
Question: What are variations in attitudes, perceptions and beliefs of different actors (User Groups, Stakeholders and Decision-					
Evaluate attitudes, perceptions and beliefs (APBs) among different consumptive and non-consumptive users towards marine resources, MPA management and other users	<p>a. We will identify all consumptive and non-consumptive views around an MPA and associated with MPAs.</p> <p>b. We will develop a series of comparable indicator questions to determine the following:</p> <p>i. Views on the MPA – its benefits and drawbacks.</p> <p>ii. Views on the future of MPAs.</p> <p>iii. Views on the different user groups and how they perceive to benefit/lose in the MPA process.</p>	•	•	•	<p>a. The APBs of all user groups/stakeholders or management efficacy success and problems.</p> <p>b. APBs on the user groups who identify the areas of conflict, corporation, etc.</p> <p>c. Long term monitoring of APBs and how they demonstrate an understanding of MPA goals and objectives, thereby facilitating adaptive management.</p>
Research community ethnography of a series of coastal settings	<p>a. Located at edge of sea.</p> <p>b. History of various outside-controlled interaction-driven large- scale businesses: sugar, banana, timber/forest products = outside influence in community adaptive strategy.</p> <p>c. Boom-bust economic history = occupational multiplicity, lack of trust in authority.</p> <p>d. The first step is to use documents such as articles - where are geographic communities along coast, how culturally diverse are they. Second step is to get permission to interview village leaders.</p> <p>e. Scoping to find community structure.</p> <p>f. Sample communities and sample ethnic groups.</p>	•			<p>a. Identifying organization-grounded groups/communities with homogeneous sets of APBs - link APBs to groups, identify leadership.</p> <p>b. Study gives manager reliable point of contact (POC) with local population.</p>



Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
Theme: Attitudes, Perceptions and Beliefs												
Makers) towards resources, management and other users?												
a. Cooperation from community/groups. b. Logistical difficulties in remote areas. c. Identification of actual users (to reduce bias). d. Development of comparable questions.					•			•			a. Local user groups b. Commonwealth agencies c. University of Puerto Rico or University of the Virgin Islands researchers with linkages in local communities (UPR Sea Grant and UVI Sea Grant)	Similar studies have been conducted in South Florida and none are additional linkages to local studies available (Ex: Jobos Bay NERR gestion ambiental study, 1999). APB information will assist the institutional and management process as well as related economic and user-based studies. Linkages to natural science depend on whether users agree with natural science conditions.
a. Willingness to trust and participate - want to minimize bias. b. Identifying mode of reaching individuals. c. Avoid omitting important groups. d. Multilingual, gender.		•						•			a. NGOs b. Social scientists c. Community organizations d. Village leaders e. Universities	Is there a disconnect between what natural scientists think is the situation and what local APBs represent? You have a big problem if they do not match.

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Explore variations in attitudes, perceptions and beliefs of decision makers (national, regional and local) on conservation and environmental justice issues associated with the development and implementation of MPAs in USVI and Puerto Rico	<p>a. A study of attitudes, perceptions and beliefs of decision-makers relative to national, regional and local issues related to MPAs in USVI and Puerto Rico</p> <p>b. The core will be an assessment of “ocean centrality” in the APBs of decision-makers.</p> <p>c. The assessment will probe the interaction of the APBs at each decision level and between levels. The information obtained will be used to assist decision makers in understanding the impact of different levels of knowledge.</p> <p>d. The decision-makers will be elected officials of municipalities, counties, and territory legislatures.</p>	•	•	•	<p>a. Improve understanding of issues faced at national, regional and local level by decision-makers.</p> <p>b. Comparative environmental, cognitive and cultural landscapes of decision-makers.</p>
Determine the role of recent and temporary migrants in influencing the siting of MPAs in the U.S. Caribbean	Recent migrants change the social characteristics of potential MPA “host” communities and other stakeholders. This is a study of how migrant APBs influence the patterns of how they use and consume the marine resources. The study will identify key APBs of migrants and define how these influence the preexisting relationship of ocean stakeholders. The study will also identify all key recent migrant groups.	•	•		<p>a. Managers need to know how and why human–ecology relationships are rapidly shifted by migrants.</p> <p>b. Managers need to know the relationship between conservation plans and development efforts that stimulate migrants to come for construction and operation of large scale projects.</p>
Develop an Ethnographic Overview and Assessment (EOA) of a Caribbean MPA	<p>a. By synthesizing data provided through ethnographic and historic literature reviews, demographic data, and interviews, this project will provide a synopsis of traditional and contemporary ways in which people identify with, relate to, and utilize both natural and cultural resources in a given marine protected area.</p> <p>b. This study will discuss tangible and intangible links between cultural groups of a specific geographic area and the resources of the MPA under analysis.</p> <p>c. An EOA provides an excellent planning tool and also establishes a foundation for managers to make informed decisions regarding land management considering the protected area’s socio-cultural context.</p>	•	•	•	<p>a. The knowledge provided will provide agency decision makers with a better understanding of historical resource use.</p> <p>b. The project will generate a heightened level of understanding and a deeper appreciation of impacts to distinct cultural groups that are resultant from land management decisions.</p> <p>c. The project will identify gaps in social science data that address future research needs.</p> <p>d. The project will facilitate a heightened sense of awareness of cultural attributes between distinct cultural groups of the Caribbean islanders.</p>

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Sensitivity of potential subjects to outcomes.</p> <p>b. Accessibility of decision-makers.</p>		•					•				<p>a. Universities</p> <p>b. National Science Foundation/Sea Grant/ NOAA CSC</p> <p>c. Foundations</p>	<p>a. Comparison with APBs of communities, users and stakeholders.</p> <p>b. APBs of decision-makers can be linked and related to natural science information and projections.</p> <p>c. Predictability of congruence of users' and stakeholders' "ocean centrality" measures with those of decision-makers will assist in defining probability of regulatory success.</p>
<p>a. Migrants are not dispersed geographically, nor are they heterogeneous culturally.</p> <p>b. Some migrants are in the country illegally and may be threatened by the study.</p> <p>c. Some migrant uses of marine resources are illegal so they may be unwilling to share information on the topic.</p>		•					•			<p>a. Universities</p> <p>b. NGOs – especially those interested in helping migrants</p>	<p>Social groups that help migrants.</p>	
<p>The project presents the need for identifying and locating current data sources.</p>			•					•			<p>a. Educational institutions</p> <p>b. Traditional groups and representative NGOs</p> <p>c. Federal, state, local and tribal governments</p>	<p>a. The information provided in the EOA will provide critical information for other economic and user-based studies.</p> <p>b. Due to historic and contemporary demographic trends between South Florida and the wider Caribbean, information provided in the EOA will provide useful information to managers of other MPAs in the region.</p>

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Question: How do we integrate popular knowledge (local, traditional) with scientific knowledge and vice versa?					
Determine local knowledge of MPAs in PR and the USVI	Using MPAs as study areas, the project shall collect information from local (adjacent) communities to determine local knowledge and uses of the MPA. Of particular interest shall be the collection of local names for areas, resources and uses, cognitive mapping and other participatory approaches and the determination of local APBs and how they relate to the scientific knowledge of the MPA.	•	•	•	a. Mapping of areas of use (and local names and significance) and the overlaying of local names with scientific ones (including GIS maps, where applicable). b. Identification of names given to local resources and variations within the local communities (by class, ethnic group, and generation). c. Collection of a suite of names, locations, areas of interest, and issues of concern that can be integrated across the general and scientific community to create congruent MPA goals and objectives.
Disseminate popular and scientific information about MPAs	Study of various informational formats (signage, brochures, pamphlets, video, etc.) that can best integrate popular and scientific information for dissemination to a broad range of people.	•	•		Recommendations for suitable formats of public information.
Drawing on case studies, determine and evaluate methods used to transfer knowledge to local populations	Using case studies, key elements of successful examples of sharing scientific information will be identified. The analysis will include, but not be limited to, local vernacular, resource names and/or descriptors to impart complex scientific principles and management alternatives to resource issues. The scope of review will include examples such as the Vieques National Wildlife Refuge.	•	•		a. Greater stakeholder support. b. Deeper public understanding of issues.
Research ethnobiology of marine systems and its role in MPA planning and management	This is a study on how traditional people learn about, transfer knowledge intergenerationally, and cluster knowledge into domains. First, identify the traditional people (that is, populations who have lived in an area for more than three generations) who live in the study area. Interview, in homes and the sea, people about key knowledge about sea plants, animals, tides, and topography. Study should identify who is responsible in the ethnic group for contemporary learning, how new knowledge is shared, how traditionally knowledge is transmitted intergenerationally, and how knowledge is tested.	•	•	•	a. Traditional knowledge can serve as a foundation on which new marine science can build. b. All knowledge of the marine ecosystem is useful for siting an MPA, and when measured, can become a baseline for evaluation.

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Changing nature of human systems, with migration and generations (thereby leading to an evolving ecologically condition).</p> <p>b. Building trust within the community.</p> <p>c. Bounding a community (i.e., where does the community end, physically and otherwise?).</p>		•						•			<p>a. Local community leaders</p> <p>b. Local community members</p>	<p>Linkages exist with the scientific evaluation of MPAs, in the determination of areas of concern (and whether these exist within the local community), the standardization of terms, and the development of a shared perspective on MPA protection and management.</p>
	•					•					<p>This would be a good project for an intern, or 2 graduate students.</p>	<p>There could be many sources of data and examples of media formats to use as research links.</p>
<p>The effective interpretation of local linguistics.</p>			•				•				<p>a. Local community councils and NGOs</p> <p>b. Educational institutions</p> <p>c. Community leaders and elders</p>	<p>a. Linguistic analysis</p> <p>b. Ethnobotanical studies</p> <p>c. Other ethnographic studies</p>
<p>a. Traditional knowledge is not expected to be evenly distributed in a population, so need to stratify interviews. (See: Stoffle, R. et. al. To Know Plants: Traditional Knowledge and the Cultural Significance of Southern? Plants. Human Organization. 58(4) 416-429).</p> <p>b. Traditional knowledge tends to be guarded from outsiders so need to have time to establish rapport.</p>			•				•	•			<p>a. Universities</p> <p>b. Local ethnic leadership – specialists, scholars</p> <p>c. Agency managers</p>	<p>When traditional knowledge is shared by an ethnic group who has cultural ties to an area being considered for or currently managed as an MPA, the agency is provided with the opportunity to honor this knowledge by integrating it with science findings. This integration can occur when the traditional ecological knowledge (TEK) is used directly in management action, is highlighted in the MPA interpretation program, and when TEK specialists are incorporated into advisory groups or given positions as co-managers.</p>

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Identify the “keepers of knowledge” and describe and identify the tools and skills needed to gather/ validate/ incorporate traditional/ local knowledge at East End Marine Park, St. Croix, USVI	<ul style="list-style-type: none"> a. Locate/identify “keepers of the knowledge”/ tradition bearers. b. Develop/test methods for best approach to encourage participation based on individual/ community differences. c. Develop best method for establishing information base. d. Conduct participatory research to validate information. e. Develop methods for applying integrated knowledge into management planning. 	•	•	•	<ul style="list-style-type: none"> a. Confirmation of appropriate approaches to obtain traditional knowledge. b. More holistic understanding of resources. c. Greater acceptance of management decisions by stakeholders.

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
a. Previous negative experiences with approaches to data gathering. b. Fear of misuse of data gathered. c. Building trust and engaging marginalized people.				•				•			a. Resource user groups/associations/individuals b. UVI c. NGOs (IRF, TNC, TOC, etc.)	a. Territorial MPA efforts b. USVI/PR MPA projects c. Existing NR monitoring programs (DPNR, NPS, UVI, etc.)

Economics of MPAs

This theme deals with economic conditions and trends associated with marine protected areas. 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.

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Theme: Economics					
Question: Understanding carrying capacity and how to maximize benefits from resources in the long-term.					
Determine thresholds of the scope and level of user-group impacts on the integrity of shipwreck sites in the Caribbean marine environment	This project would identify a variety of shipwreck sites in differing physical environments and analyze the type and degree of user-group impacts to the physical integrity of each site. Indicators that are the result of anthropogenic impacts such as anchor damage, looting, excavation and resource use that is not conducive to optimal site preservation, will be analyzed for their effect on: artifact displacement or removal, increased structural corrosion rates resultant from disturbances in sedimentation and broken or severed marine growth encrustation, and the impacts that result from the presence of intrusive materials (marine debris including lobster traps, monofilament and hooks, and long-lines).	•	•	•	The information gained from this analysis will assist managers in predicting quantifiable changes to the integrity of shipwreck sites. This knowledge can in turn be used to develop appropriate management strategies that will maximize resource preservation while allowing for visitor use.
Conduct a paired site study to determine visitor views on resource conditions and carrying capacity	Comparison of visitor views on resource conditions (natural, social and other conditions) in an MPA and non-MPA, and their perceptions on carrying capacity as determined by their satisfaction with, and willingness to pay for, the sites.		•	•	<p>a. An understanding of crowding conditions as perceived by visitors in an MPA, and whether they are different than those for a non-MPA (due to management measures – for instance, mooring buoys, gear, licenses, bag limits, etc.).</p> <p>b. Determination of a maximum number of users (thresholds) that make an MPA “degraded” or “unattractive”, and a comparison of whether that total correlates with the total determined by natural studies.</p> <p>c. Determination of attributes and site conditions that attract visitors, and vice versa.</p>

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
Theme: Economics												
Baseline data, which indicates the presence of and exact spatial relationship between archeological assemblage components, would be necessary before the actual monitoring of impacts could begin.				•				•			a. National Park Service, Submerged Resources Unit b. Parks Canada, Ontario Service Centre c. National Park Service, Biscayne National Park	Linkages with natural science coral, fisheries, and submarine geology studies.
a. Securing user support and willingness to participate. b. Obtaining accurate information from dive operators (dive logs) or charter boat operators. c. Differences in paired sites that may make meaningful comparisons difficult.					•		•				a. User groups that visit paired site (inland contribution) b. Local university and graduate student support	a. Similar work ongoing in the Lower Florida Keys. b. Linkage with natural science findings to see areas of convergence/divergence. c. Determination of changing baselines over time (as conditions change by site).

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Compare stakeholder views of resource conditions and carrying capacity at East End Marine Park (EEMP) and other sites	Measure and compare stakeholders' (cruise ships, fishers, divers, snorkelers, visitors, managers, residents, non-residents) perceptions of resource conditions (e.g., fish, reef, other biophysical attributes, quality of recreational experience, equitable access, aesthetics in and surrounding EEMP) and carrying capacity (i.e., ability of resource to withstand use) at EEMP and adjacent areas. Comparing use in and out of specific zones/areas within EEMP. People accessing EEMP via confined access points vs. open access.	•	•	•	<ul style="list-style-type: none"> a. Identification of stakeholder perceptions of resource conditions in and adjacent to EEMP. b. Identification of stakeholder conceptions of carrying capacity for EEMP and surrounding areas. c. Identification of disparities/differences in assignment of resource and carrying capacity conditions (definition).
Develop and integrate "unobtrusive measures" into ongoing management analysis so as to constantly measure use and impact	For selected MPAs or marine resource areas, identify measurement tools that measure resource access and use without affecting or influencing user behavior. These tools could include records of usage of specific mooring buoys in coral reef areas, passenger capacity and use by visitors of dive boats, and use of beach access areas. The unobtrusive measures would provide a constant, seasonal record of use and potential impacts which can be easily incorporated into management analysis of carrying capacity.	•	•	•	<ul style="list-style-type: none"> a. Better, cheaper data sets. b. Reduces visitor and user contacts and human subject surveys. c. Provides quantitative data for incorporation into analyses.

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. No baseline.</p> <p>b. Need for “defined” sampling methodology (for replications, transfer to other sites).</p> <p>c. Use varies temporally, spatially, group vs. individual, mass vs. small group.</p> <p>d. Requires a number of individuals for ground work/data collection for different stakeholders.</p> <p>e. Intercept interviews, mail surveys, secondary data analysis (trip logs, customer information, hotel information, tax/property information, agency data).</p>					•			•			<p>a. Local and federal agencies</p> <p>b. University graduate students and faculty</p> <p>c. Local homeowner associations</p> <p>d. User group organizations (sport, tourism industry, cruise lines)</p>	
<p>a. Development of tools applicable to each MPA or marine resource.</p> <p>b. Development of specialized tools for a certain place.</p> <p>c. Involvement of user groups and community in development and use of the measures.</p>					•		•				<p>a. State and federal agencies, local municipalities</p> <p>b. User groups</p> <p>c. Universities and foundations</p>	<p>a. Links to state and federal vessel license data.</p> <p>b. Links to the use of “unobtrusive measures” methodologies in museums and other settings.</p>

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Assess the sustainability of harvesting by user groups	3-part study: 1) Identify the types of users historically and currently using the marine resource; 2) Specify the user – resource trends historically in time frames appropriate to major resource cycles; 3) Specify the potential of historic and contemporary resource use patterns to influence the distribution and abundance. Conduct controlled comparisons of resource conditions under different use patterns and no use patterns.	•		•	<p>a. Trends of resource change tied to patterns of resource use.</p> <p>b. Provide managers with data for supporting some resource use patterns and discouraging others.</p>
Question: What is the basic economic information on marine resources?					
Analyze the bio-economics of MPA siting	The establishment of a network of MPAs is contentious. A full-blown bioeconomic model that incorporates both the commercial and recreational sectors is needed to examine the biological, economic and social impacts of various proposals.	•	•	•	<p>a. Model to analyze trade-offs of difficult user groups, distribution of economic and biological benefits/costs.</p> <p>b. Comparative policy analysis of management alternatives.</p> <p>c. GIS maps, building of human capacity.</p>
Understand trends and impacts of economic development on the marine environment	A micro and macro analysis of the decision-making processes impacting marine and coastal environments. To achieve this goal, the project has the following objectives: a. Identify economic policies that influence the spatial configuration of development. b. Analyze the impact of spatial patterns of development on marine and coastal ecosystems. c. Analyze the decision-making process of households and firms impacting coastal and marine environments. d. Identify the valuation of open spaces. e. Examine these processes on a historical (temporal) scale.	•	•		<p>a. Understanding the economic and decision-making processes transforming landscape and seascape.</p> <p>b. Mapping economic impacts and the spatial framework of MPAs.</p> <p>c. Provide guidance and information for appropriate planning and decision-making.</p>

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Shifts in resource distribution and abundance may be due to natural cycles and unrelated to patterns of use.</p> <p>b. Selecting resource theory that describes changes like those deriving from current and historical use patterns.</p> <p>c. Some resource uses occur in larger than annual cycles.</p> <p>d. Some resources have decade-long natural change cycles.</p>			•					•			<p>Combined team of social and natural scientists.</p>	<p>a. Can serve as a test of Connell's theory of intermediate disturbances (1978). Human uses may constitute an intermediate disturbance if they fit Connell's theory and its need for disturbances of certain scales of frequency and intensity.</p> <p>b. It may be that some uses have been sustainable historically but have changed in frequency or intensity so they no longer are intermediate in scale. Such use may become intermediate by managers reestablishing use patterns as intermediate instead of eliminating them.</p>
<p>a. Limited or non-existent cost and earnings information and opportunity cost information</p> <p>b. Human subject issues (e.g., user groups, learning about sensitive questions such as income).</p> <p>c. Influencing decision-making, institutional apathy of user groups.</p>			•				•				<p>a. U of Miami, U of California, Duke University, U of Rhode Island, UPR</p> <p>b. NOAA Southeast Fisheries Science Center (SEFSC)</p> <p>c. Consulting firms</p>	<p>Links with other biological works and anthropological/sociological efforts to describe linkages of various users of the marine environment.</p>
<p>Assessing an ongoing process while affecting policies to protect the environment.</p>				•						•	<p>a. TNC</p> <p>b. Sea Grant</p> <p>c. Southeast Fisheries Lab</p>	<p>a. Coral reef ecosystem studies</p> <p>b. Watershed management programs</p> <p>c. NERRS</p> <p>d. DNER/DPNR coral reef and watershed programs</p>

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Conduct socio-economic study to develop messages, identify audiences, and identify and develop the methods of communicating with those audiences	<p>a. Define message, identify audiences, develop mechanism of delivery.</p> <p>b. Research to understand values (different messages for different groups) to turn into marketing tool.</p> <p>c. Identify key groups to use information to further mutual goals, including improving success of MPA – who should hear this? Chamber of commerce? Churches?</p> <p>d. Determine method of delivery – radio? TV? Individuals? Meetings? Civic groups?</p> <p>e. Develop information to get experts' MPA economic values.</p>	•	•		<p>a. Defined messages, identified audiences, appropriate method of delivery.</p> <p>b. General protocol to implement (utilize tools by developing outreach campaign).</p> <p>c. Follow-up survey on effectiveness/message retained (evaluating campaign).</p>
Document the economic value of tourism related to MPAs in the USVI and Puerto Rico	<p>a. Visitor survey to determine links between area tourism and existence of MPAs and natural resources provided by MPAs.</p> <p>b. Develop expenditure profiles based on MPA related activities.</p> <p>c. Market economic values (sales, employment, etc.).</p> <p>d. Non-market economic values (consumer surplus).</p> <p>e. Maintain flexibility.</p>	•	•	•	<p>a. Value of natural resource to local communities.</p> <p>b. Value of natural resource to tourists.</p> <p>c. Foster investment by government/private industry to market/protect the resources (cooperative management processes).</p>
Explore sustainable financing options for USVI East End Marine Park	<p>a. Exploration of all finance options for MPA.</p> <p>b. Select most appropriate options (given legal, management, geographical, economic factors).</p> <p>c. Analyze feasibility of implementation and expected results.</p>	•	•	•	Recommended financing package for East End Marine Park.
Explore sustainable financing options for the marine reserves in PR's natural reserve system	<p>a. Explore all possible financing mechanisms for MPAs.</p> <p>b. Select most appropriate options given geographical, economic, management and legal factors and limitations.</p> <p>c. Analyze the feasibility of implementation of each selected financing option (e.g., if user fees are chosen, do you need to do a willingness to pay study?).</p>	•	•	•	A recommended financing package for PR's natural reserve system (may vary between different reserves).
Determine the value of tourist demand on MPAs in PR and USVI	Study or link between tourists and MPAs when they visit PR and VI. Also, study through managing value of commerce such as travel agencies.	•			<p>a. Report of study from the tourists.</p> <p>b. Increased investment in government sector and private sector.</p>

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
<p>a. Diverse audience – multiple messages.</p> <p>b. Limited resources for delivery of message.</p> <p>c. Establishing trust – human subject issues.</p> <p>d. Coordination of efforts, timing, resisting overwhelming audience.</p> <p>e. Ensuring not to overwhelm audience.</p>		•					•				<p>a. Universities/ academia</p> <p>b. NGO</p> <p>c. Local point of contract (POC)</p>	<p>Coordinating with other similar efforts in terms of inundating community with questions.</p>
<p>a. Survey sample design.</p> <p>b. Community-based approaches to survey/analysis.</p>			•						per island group		<p>a. Tourism departments/site manager</p> <p>b. NOAA (funding)</p> <p>c. Universities (UVI/UPR)</p> <p>d. NGOs (TNC, TOC)</p>	<p>a. Need valuation of natural resources.</p> <p>b. Estimates of uses that exist.</p> <p>c. Tied to APBs.</p> <p>d. Development pressures.</p>
<p>a. Need to collect existing data about how MPAs elsewhere are financed.</p> <p>b. Need to find matching funding.</p>		•				+ local matching					<p>a. USVI Department of Planning and Natural Resources (DPNR)</p> <p>b. The Nature Conservancy (TNC)</p> <p>c. Sub-contractors for economic consultation</p> <p>d. UVI Eastern Caribbean Center (St. Thomas)</p> <p>e. VI NPS</p> <p>f. Island Resources Foundation</p>	<p>a. Local dive shops</p> <p>b. Fishermen</p> <p>c. Tourism operators</p> <p>d. School system</p>
<p>a. Need to collect existing data about MPA financing options.</p> <p>b. Acceptability of certain financing options by local community and management entities.</p>			•				•				<p>a. Department of Natural and Environmental Resources (DNER)</p> <p>b. Local community committees (e.g., ACDEC in Culebra)</p> <p>c. Contracted economists, subcontracted through DNER – send out requests for proposals (RFPs)</p> <p>d. UPR</p>	
		•						•			<p>a. VI National Park</p> <p>b. UVI</p> <p>c. DPNR, Department of Tourism, IRF, TNC</p>	<p>a. Tourism operators</p> <p>b. Taxi association</p>

Communities

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

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Theme: Communities					
Question: How do managers communicate, adapt and react to successes/failures with communities?					
Characterize communities and their expectations of MPAs	a. Identify and characterize communities. b. Identify expectations. c. Identify best methods of delivering information.	•	•	•	a. Identified communities of “natural” groups – audience (Inventory). Profile of communities with associated map (GIS). b. Defined expectations of groups. c. Methods of communication – group-specific. d. Suggestions of how to convey information.
Conduct comparative analyses of institutional design (How do you develop an institutional design that supports, represents and enhances accountability, communication and evaluation? How do you pull together advising members that have credibility?)	a. Examine advisory bodies; how are they credible? b. What works well? Advisory boards? Community meetings? c. Comparative analysis of different institutional designs around the world that enhance: accountability, credibility, evaluation, and communication.	•	•	•	a. Effective method of communication/ community representation. b. Case study examples/ lessons learned. c. Suggestions or recommendations for most appropriate structure for different regions, geographies, government structure. d. Evaluation of different processes (i.e., advisory councils).
Explore adaptive management (How is it applied? Is it effective? How can it be applied to MPAs, and can it be effective with MPAs?)	a. Study examples of adaptive management for use in communication of flexibility to community. b. Hold up successes, failures, and general examples. c. Explore lessons learned from adaptive management.		•	•	a. Examples of successful and unsuccessful processes that have utilized adaptive management. b. Identification of how and where adaptive management is being used: a better understanding of the use of adaptive management. c. Compilation of recommendations for adaptive management for regional/local use. d. Identification of barriers to using adaptive management.

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
Theme: Communities												
<p>a. Identifying ALL groups and subsets.</p> <p>b. Overcoming suspicions, gaining trust.</p> <p>c. Capturing heterogeneity in user groups, paying attention to under-represented or marginalized groups.</p>				•				•			<p>a. Universities/ academia</p> <p>b. Government</p> <p>c. NGOs, local stakeholders</p>	<p>a. Activities/ outputs are common to proposed projects – want to make sure a community profile is not replicated. Make sure these projects compliment each other and take advantage of other efforts. We do not want to overwhelm communities with multiple studies.</p> <p>b. Links well to APBs.</p>
<p>a. Identifying the examples.</p> <p>b. Diversity.</p> <p>c. Reluctance to be “evaluated” – timing an issue.</p>		•					•				<p>a. Universities/ academia</p> <p>b. NGOs, local stakeholders</p> <p>c. Government agencies</p>	<p>Link to other “case study” projects.</p>
<p>a. Institutional inertia.</p> <p>b. Resistance to change.</p> <p>c. Blockades at middle management.</p> <p>d. Lack of commitment.</p> <p>e. Lack of understanding of what adaptive management is.</p> <p>f. Uncertainty of effectiveness.</p>		•					•				<p>a. Academia/ universities</p> <p>b. NGOs</p> <p>c. Government</p>	<p>Links to other “case studies”.</p>

Cultural Heritage and Resources

This theme covers the historical and traditional artifacts within marine protected areas. These may include, but are not limited to, nautical history (wrecks, replicas, etc.), maritime infrastructure (piers, light-houses, 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 by other themes.

Project Title	Description	Planning	Management	Evaluation	Outputs/Outcomes
		Applicability			
Theme: Cultural Heritage and Resources					
Question: Local perceptions and values of cultural resources: How do values/perceptions of values vary by resource type and condi-					
Conduct Caribbean-Florida Submerged Cultural Resources (SCR) Workshop	A 2-part workshop for managers, communities and local users: 1) Week-long orientation to study different types of SCRs and management techniques; 2) Week-long field inspection of various SCR sites to learn about on-site partnership options for community-assisted protection and management.	•	•	•	a. Shared knowledge about SCRs and options for their protection and management. b. A workbook for managers and communities as a reference and resource guide. c. Field experience with SCRs between managers and users.
Identify cultural themes: identify the tangible aspects of each theme, and align each aspect to a particular community value	An aspect would be an artifact or other feature that requires protection from anthropogenic disturbance or natural degenerative processes. The local community linkage of the tangible aspects would be defined by the source, method, origin or construction and its value to current and existing community activities, such as recreation, education and historical preservation.	•			a. Site maps. b. Descriptive brochures. c. Continuation of traditional activities and uses (cultural festivals or reenactments – living histories).

Challenges	1 Quarter	1 year	2 years	5 years	Ongoing	<50	50-100	100-250	250-500	>500	Potential Partners	Linkages
	Estimated Duration					Estimated Cost (\$K)						
Theme: Cultural Heritage and Resources												
tion? Study traditional cultural properties.												
<p>a. Organizing appropriate people, materials, in a suitable location for part one.</p> <p>b. Organizing field logistics for visits to SCRs and interaction with communities.</p>		•					•				<p>a. Florida Department of State</p> <p>b. Florida Keys National Marine Sanctuary</p> <p>c. Biscayne National Park</p> <p>d. Virgin Islands National Parks</p> <p>e. Puerto Rico Coastal Zone Management</p> <p>f. University of the Virgin Islands, University of Puerto Rico</p>	
<p>a. Difficulty in defining cultural themes.</p> <p>b. Loss of cultural histories – Misunderstanding of what actual cultural themes developed, but were not maintained by oral or written histories.</p> <p>c. Difficulty of searching and discovering factual information.</p>				•				•			<p>a. Universities</p> <p>b. Historical societies</p>	<p>a. Link how marine sites change naturally through time.</p> <p>b. Link how community activity (boating, camping, swimming, diving, etc.) threatens and alters the condition of tangible items or changes interpretation of those aspects.</p>

Appendix B. Complete List of Priority Social Science Questions

Following is a list of all the questions that were developed in the initial brainstorming session of the St. Croix workshop. These questions were prioritized by the workshop participants in terms of their perceived importance for the generation of social science information for MPAs in the region. The number in parenthesis after each question represents the number of votes received during the prioritization process. The bolded questions comprise the final nine questions that the participants developed in detail, which are included in Appendix A.

GOVERNANCE, INSTITUTIONS AND PROCESSES

- **What are the linkages among institutions that hinder/promote effective processes? (9 votes)**
- **What is the governance framework for MPA processes? (6 votes)**
- What is the significance of differences between formal and non-formal government processes for MPAs? (4 votes)
 - Including decision-making, resource use rights/ownership, monitoring and enforcement, and conflict resolution.
- What is the significance of differences between legal and defacto government processes for MPAs? (2 votes)
- How effective were various institutional processes to establish MPAs? (1 vote)
- How do governance variables influence compliance? (1 vote)
- How well do managers adaptively manage MPAs? (1 vote)
 - How well do they evaluate and incorporate responses to evaluation in their management?
- How are managers influenced or constrained by general management plans? (1 vote)
 - Does effective management include management plans and responsiveness to these plans?
- Are there formula(s) for effective combinations of institutions including government, private industry, NGO, etc? Rules of operation, actors, funding, etc.? (1 vote)
- How can government processes be structured for engaging different kinds of communities (vs. collectivities) in MPA processes?
- What is the significance of differences between top-down and bottom-up government processes for MPAs?

USE PATTERNS

- **Who, what, when, why, how and how much (as it relates to use patterns)? (10 votes)**
- What are the tools for affecting change in use patterns? (includes identifying existing tools) (6 votes)
- How do we synchronize social science data collection with other forms of data collection? (e.g., landings data) (5 votes)
 - What are visitor use patterns?
 - What are cultural use patterns?
 - What are traditional use patterns?
- What are the cultural landscapes? (4 votes)
- Occupational multiplicity/pluralism and existing values (2 votes)
- How do we assess private households—spatial analysis?
- What are impacts of specific uses? (2 votes)

- How do we synthesize existing information and apply knowledge utilization to this region? (1 vote)
- Are users satisfied—what do they want?
- How do we control use? (1 vote)
- What are the long-term trends in use patterns?
- How do we change behavior? (1 vote)
- How do we increase our understanding of impacts of demand for fish resources on MPA effectiveness?

ATTITUDES, PERCEPTIONS AND BELIEFS

- **What are the variations in attitudes, perceptions and beliefs of different actors (User Groups, Stakeholders, and Decision-Makers) towards marine resources, MPA management and other users? (10 votes)**
- **How do we integrate popular knowledge (local, traditional) with scientific knowledge and vice versa? (6 votes)**
- What causes/influences a sense of ownership among the public towards MPAs? (6 votes)
- What are the best ways to explain public benefits of MPAs? (5 votes)
- Does the public embrace the MPA process?
- What and how does culture influence APBs?
- How do we better understand the “squeaking wheel” phenomenon?
- How does knowledge affect APBs?
- How are beliefs and values a foundation for perceptions and beliefs?

ECONOMICS

- **Understand carrying capacity and how to maximize benefits from resources in the long-term (9 votes)**
- **What is basic economic information on marine resources? (9 votes)**
- Informal/secondary economies (barter, traditional, exchange); quantify and bring into market. (6 votes)
- Assess how to effectively communicate economic information to communities, decision-makers (need different strategies for different audiences) (4 votes)
- Assess value of sustaining traditional uses/ cultures (4 votes)
- Domestic (household) economies/contribution of resources to livelihoods (quantity) (3 votes)
- How do MPAs impact displaced users? (3 votes)
 - How do MPAs impact expenditures and revenues?
 - Where do these displaced users go?
- Non-use values/non-economic benefits (3 votes)
- Identify non-fishing activities and quantify values (e.g., conch shells for housing) (3 votes)
- Economics of management institutions (identify successful models) (2 votes)
- Evaluate alternative livelihoods/economic options that are appropriate given traditional interests and skills (1 vote)
- Develop bioeconomic models (1 vote)
- Understand economics within the context of ecosystems and governance structures (1 vote)
- Tease out MPA vs. non-MPA economic impacts (1 vote)
- How does level of biological complexity influence economic value? (1 vote)
- Identify best methodology for capturing economic information (e.g., fisheries data)

COMMUNITIES

- **How do managers communicate, adapt and react to successes/failures with communities? (8 votes)**
- How do we define “community health”, what are the indicators and how do we use these indicators to assess changes in community health associated with MPA processes? (6 votes)
- How can communities better participate in MPA processes? (5 votes)
- What are the kinds of “MPA impacted communities”? (4 votes)
 - Include history, demography, geography, ethnicity, economics, etc.
 - What are “coastal communities”?
 - What are “fishing communities”?
- What are the historic dynamics of communities? (3 votes)
- How do communities or parts of communities function? (includes existing or potential conflicts) (3 votes)
- What is the relationship of environmental justice to MPA processes? (1 vote)

CULTURAL HERITAGE AND RESOURCES

- **Local perceptions and values of cultural resources: How do values/perceptions of values vary by resource type and condition? (9 votes)**
- Basic inventory (5 votes)
- Characterizing/assessing resources (4 votes)
- Study level of awareness and content of awareness (what information do people have/care about?) (4 votes)
 - How can we change the conception of what constitutes a historic site/cultural resource? (e.g., how do we get prehistoric sites and historic sociological information included?)
- Understand threats to submerged cultural resources (monitor natural and human impacts) (1 vote)
- What are the best ways to interpret submerged cultural resources for public benefit, while ensuring preservation? (1 vote)
 - Investigate how it can be linked to education?
- What are public benefits of submerged cultural resources?
- Who owns and who manages submerged cultural resources?
- Characterize local vs. established government definitions of cultural resources

Appendix C. Existing Social Science Research Efforts

Existing Social Science Research Efforts							
Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
University of the Virgin Islands: Research and Public Service Office (RPSO), with Department of Planning and Natural Resources (DPNR), The Nature Conservancy, Island Resources Foundation	VI Marine Park Project	Includes component of socio-economic assessment of the uses and users of the marine resources in the USVI.	Use patterns; Communities		•		Project Coordinator: lgardne@uvi.edu; and Janice Hodge for the DPNR: viczmp@viaccess.net, (340) 774-3320; http://rps.uvi.edu/VIMarinePark.html
University of Puerto Rico	Coral Reef Ecosystem Studies	Assesses environmental and social potential of MPAs. Includes attitudes, values, perceptions and knowledge of stakeholders.	Attitudes, perceptions and beliefs; Communities				Manuel Valdez Pizzini: ma_valdes@rumac.uprm.edu, m_pizzini@hotmail.com
University of Puerto Rico, Mayagüez; Puerto Rico Sea Grant Program	Inventory, Needs Assessment, and Market Analysis for the Development of a Coastal Training Program in Puerto Rico	Developed an inventory of courses and materials offered in PR related to coastal themes; assessed all stakeholder needs (training) and performed a market analysis that was used to develop a strategic plan to implement a CTP in Puerto Rico.	Attitudes, perceptions and beliefs			•	Manuel Valdez Pizzini: ma_valdes@rumac.uprm.edu, m_pizzini@hotmail.com
University of Miami	Development of the Dry Tortugas Ecological Reserve (DTER): Characterization of the Commercial Fishery	Determined current population of fishermen; characterized demographic, social and economic components of the fishery in the DTER; identified areas of use within DTER; assessed user perceptions on the <i>Tortugas 2000</i> planning process and views on the outcome of the reserve.	Use patterns; Attitudes, perceptions and beliefs			•	Manoj Shivlani: mshivlani@rsmas.miami.edu, (305) 361-4608; http://www.rsmas.miami.edu/divs/maf/icz/manoj.pdf

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Project Status			Contact
				Planned	Ongoing	Complete	
University of Miami	Linkages Between Development and Political Factors and Protection of the Coastal Environment in the Wider Caribbean Region	This study seeks to test the hypothesis that increasing development and sophistication in political systems (measured by economic, educational, and other institutional and development indicators) results in greater coastal/marine resource protection and therefore, effective management.	Use patterns; Governance, institutions and processes; Economics	•			Manoj Shivlani: mshivlani@rsmas.miami.edu, (305) 361-4608
University of Miami, NOAA	Economic Valuation of Marine Reserves in the Florida Keys as Measured by Diver Attitudes and Preferences: Implications for Valuation of Non-consumptive Uses of Marine Resources	The objective of this study is to determine the value of a non-consumptive activity, diving and snorkeling, on marine reserves in the Florida Keys, as measured by contingent valuation and user attitudes. A secondary goal is to identify the factors that either enhance or reduce marine reserve value. (Funded by MARFIN - Marine Fisheries Initiative)	Economics		•		Manoj Shivlani: mshivlani@rsmas.miami.edu, (305) 361-4608; with David Letson, Daniel Suman and Kristin Kleisner
University of Miami, NOAA	Socioeconomic Monitoring of Commercial Fisheries in the Florida Keys National Marine Sanctuary (FKNMS): Major Findings from the First Four Years: 1997-2000	This project concerns the human uses dimension in the FKNMS, focusing on the commercial fisheries in the Florida Keys, the effects of FKNMS regulations on the commercial fishing industry, and the additional impacts on the local economy.	Use patterns; Economics; Governance, institutions and processes			•	Bob Leeworthy, Manoj Shivlani, and Thomas Murray
University of Central Florida	MPA Multi-attribute Analysis	Assesses the attributes that increase community's support and acceptability of MPAs.	Attitudes, perceptions and beliefs; Economics		•		Dr. Juan Agar; SEFSC/ Miami: 305-361-4218
Duke University	Governance of Marine Protected Areas in the Wider Caribbean: Preliminary Results on an International Mail Survey	International mail survey sent to MPA managers, aimed at developing a regional "profile" of MPA governance regimes. Survey results provide the contextual basis for designing and translating research into the development and management of MPAs.	Governance, institutions and processes		•		Michael B. Mascia: michael.mascia@duke.edu

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
University of Michigan	Senses of Place and Protected Areas on St. John, U.S. Virgin Islands	This research examines how relationships to places and between people living on the island of St. John, U.S. Virgin Islands help shape perspectives towards the conservation and development of natural resources, specifically concerning two protected areas: Virgin Islands National Park and the recently declared Virgin Islands Coral Reef National Monument. The research is concerned with how people experience and identify with the world individually and especially through shared experiences.					
NOAA, Duke University, and Environmental Defense	An Evaluation of the Short-term Social and Economic Impacts of Marine Reserves on User Groups in Key West, FL	Survey conducted to investigate short-term socioeconomic impacts of the establishment of a marine reserve on key users of the Florida Keys National Marine Sanctuary.	Use patterns; Economics			•	Betsy Nicholson: Betsy.Nicholson@noaa.gov; and Tanya Dobrzynski: tanya.dobrzynski@noaa.gov
NOAA - Coastal and Ocean Resource Economics (CORE)	Socioeconomic Impacts of Marine Reserves (Florida Keys NMS, Dry Tortugas Ecological Reserve, Channel Islands NMS)	CORE has the lead role in all socioeconomic aspects of the process to establish marine reserves in National Marine Sanctuaries. CORE's role in the marine reserve process includes providing background socioeconomic information to establish a socioeconomic framework for the study area, collecting data needed to analyze impacts from reserve alternatives, assisting working groups in designing reserve alternatives, and providing objective analyses of reserve alternatives being considered.	Economics			•	Dr. Vernon R. (Bob) Leeworthy: bob.leeworthy@noaa.gov, (301) 713-3000 x.138
NOAA - Coastal and Ocean Resource Economics (CORE)	Multi-county (Florida) Study of Coral Reefs	Looked at market and non-market values of artificial and natural reefs, and economic impacts on the community.	Economics			•	Dr. Vernon R. (Bob) Leeworthy: bob.leeworthy@noaa.gov, (301) 713-3000 x.138

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
NOAA - Coastal and Ocean Resource Economics (CORE)	Review of Global Coral Reef Valuation Studies	On-line searchable database of coral reef valuation studies. Included abstract of study and key findings.	Economics			•	Dr. Vernon R. (Bob) Leeworthy: bob.leeworthy@noaa.gov, (301) 713-3000 x.138
NOAA - National Marine Sanctuaries Program: FKNMS Research and Monitoring Program	Linking the Economy and the Environment of the Florida Keys and the Florida Bay	The overall project objectives were: 1) to estimate the market and non market economic values of recreation/tourism uses of the marine resources of the Florida Keys/Florida Bay ecosystem; 2) to provide a practical demonstration of how both market and non-market economic values of an ecosystem can be considered an integral component of the economy of a region when formulating sustainable development objectives and policies; and 3) to foster the goal of improving cooperative management processes.	Economics			•	Dr. Vernon R. (Bob) Leeworthy: bob.leeworthy@noaa.gov, (301) 713-3000 x.138 Brian Keller, Research and Monitoring Program Science Coordinator for FKNMS: brian.keller@noaa.gov, (305) 743-2437 x.25
NOAA - Jobos Bay National Estuarine Research Reserve (JBNERR) and University of Puerto Rico	Study of the Social and Environmental Conditions of the Communities Surrounding the Jobos Bay NERR	A social environmental profile of the communities surrounding JBNERR. Determines the environmental risks that the communities are exposed to and presents the physical and ecological environment of the communities.	Communities				Melina M. Umpierre Lopez, Environmental Science Campus, University of Puerto Rico. Carmen Gonzalez: carmen.gonzalez@noaa.gov, sifontecarmen@yahoo.com
NOAA - Jobos Bay National Estuarine Research Reserve and University of Puerto Rico	Environmental Management of the Resident Population in the Jobos Bay NERR	A characterization of the communities surrounding JBNERR, including: demographic composition, education, history and culture of Aguirre; environmental health; social and community aspects; and education and management issues. Utilized spatial and geographic analysis.	Communities			•	Dr. Jose Seguinot Barboza, Environmental Science Campus, University of Puerto Rico. Carmen Gonzalez: carmen.gonzalez@noaa.gov, sifontecarmen@yahoo.com

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
NOAA - Jobos Bay National Estuarine Research Reserve and University of Puerto Rico	Evaluation of the Exhibit Area of the Visitor's Center of the JBNERR	Assessed and evaluated the current exhibits, education and interpretation programs of the center in terms of visitor's profile, environmental knowledge, user satisfaction, visitor's interaction, and quality, in order to develop a master plan for the enhancement of the exhibits.	Attitudes, perceptions and beliefs			•	Dr. Maria del Carmen Zomilla and Dr. Jimmy Torres, University of Puerto Rico. Carmen Gonzalez: carmen.gonzalez@noaa.gov, sifontecarmen@yahoo.com
NOAA - Jobos Bay National Estuarine Research Reserve and University of Georgia	Ecological Knowledge and Success in a Puerto Rico Small-scale Fishery	Explored and empirically tested the relationships between traditional knowledge and social/economic success in fisheries and around JBNERR.	Economics			•	Carlos Garcia Quijano. Carmen Gonzalez: carmen.gonzalez@noaa.gov, sifontecarmen@yahoo.com
NOAA's SEFSC and Murray and Associates, University of Miami, and University of Puerto Rico	Cost and Earnings Survey of the U.S. Caribbean Fish Trap Fishery	Collection of demographic and economic information to analyze management alternatives designed to protect coral reefs.	Use patterns; Economics		•		Dr. Jim Waters; SEFSC/ Beaufort: 252-728-8710
NOAA's SEFSC and U.S. Virgin Islands Division of Fish and Wildlife	U.S. Virgin Islands Commercial Fishermen Census	Collection of baseline information to support fishery managers' decision-making.	Communities; Use patterns		•		Dr. Jim Waters; SEFSC/ Beaufort: 252-728-8710
NOAA's SEFSC and University of Puerto Rico	Fishing Community Profiles of St. Croix	The survey intends to collect demographic, cultural and economic information on communities that are dependent on marine resources.	Communities; Use patterns; Attitudes, perceptions and beliefs		•		Dr. Juan Agar; SEFSC/ Miami: 305-361-4218
NOAA's SEFSC	Fishing Community Profiles of St. Thomas and St. John	The survey intends to collect demographic, cultural and economic information on communities that are dependent on marine resources.	Communities; Use patterns; Attitudes, perceptions and beliefs	•			Dr. Juan Agar; SEFSC/ Miami: 305-361-4218
NOAA's SEFSC	Fishing Community Profiles of Western Puerto Rico	The survey intends to collect demographic, cultural and economic information on communities that are dependent on marine resources.	Communities; Use patterns; Attitudes, perceptions and beliefs	•			Dr. Juan Agar; SEFSC/ Miami: 305-361-4218

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
NOAA's SEFSC	Fishing Community Profiles of Eastern Puerto Rico	The survey intends to collect demographic, cultural and economic information on communities that are dependent on marine resources.	Communities; Use patterns; Attitudes, perceptions and beliefs	•			Dr. Juan Agar; SEFSC/ Miami: 305-361-4218
American Museum of Natural History (lead), Resources for the Future, University of Arizona, University of Miami, College of The Bahamas	Bahamas Biocomplexity Project (BBP)	The Social Working Group of the BBP is investigating uses and values (economic and cultural) of marine species and habitats, perceptions and attitudes about these resources and their conservation, and broad patterns and processes of governance with respect to coastal development and conservation. Aspects of these components are being incorporated with biophysical patterns and processes into various integrative, spatial models about the functions of MPA networks (with respect to biodiversity conservation, fisheries sustainability, and socioeconomic impacts).	Use patterns; Communities; Economics; Attitudes, perceptions and beliefs; Governance, institutions and processes		•		Dan Brumbaugh, Project Coordinator: brumba@amnh.org, (831) 420-3963, (212) 496-3494
NPS - National Parks Service Social Science Program (Usable Knowledge: A plan for furthering social science and the national parks)	Visitor Services Projects in Florida and the Caribbean	NPS Social Science Program developed a research review series to further scientific understanding of the issues. The products include a visitor service project that provides park managers with accurate information about visitors – who they are, what they do, their needs and opinions. Park managers have used this information to improve visitor services, protect resources, and manage parks more efficiently.	Attitudes, perceptions and beliefs		•		Dr. Jim Gramann, Visiting Chief Social Scientist: james_gramann@partner.nps.gov, (202) 513-7189; Dr. Steven Hollenhorst, Visitor Services Project Director: stevenh@uidaho.edu, (208) 885-7911; www.nps.gov/socialscience/
NPS - Biscayne National Park	Ethnographic Overview and Assessment	Supported park-planning mechanisms. Discussed how different ethnic groups relate to or use area. Included ceremonial and historical uses.	Use patterns			•	Brenda Lanzendorf: brenda_lanzendorf@nps.gov

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
Governor's Commission for a Sustainable South Florida	South Florida Action Plan for Applied Behavioral Sciences	This action plan was developed as a guide for managers involved in South Florida Ecosystem Restoration - a guide designed to help integrate cultural, social, and economic concerns into the decision-making process.	Governance, institutions and processes			•	Dr. Bonnie Kranzer, Executive Director Governor's Commission for the Everglades: Bkranze@sfwmd.gov
United States Coral Reef Task Force (CRTF): National Action Plan for Coral Reef Conservation; Coastal Uses Work Group (CUWG); All Islands Coral Reef Initiative (AICRI); and International Coral Reef Initiative (ICRI)	Managing Visitor Use in Coastal and Marine Protected Areas: A Workshop on the Recreational Use of U.S. and Caribbean Coral Reefs	The objectives of this workshop are: to assist participating states and territories in the development of 3-year local action strategies for recreational use of coral reef ecosystems; to enhance coordination and cooperation among Caribbean/ Atlantic region states and territories; and to identify and highlight common issues, goals and objectives among participant jurisdictions in order to provide a foundation for potential regional efforts.	Governance, institutions and processes		•		website: www.coralreef.gov
Florida Coastal Management Program (Department of Environmental Protection, DEP)	Florida Assessment of Coastal Trends 2000	The tool is an indicator system that provided a comprehensive perspective of the important environmental, growth management, economic and social values associated with the coast. This system provided a means of evaluating Florida's progress in protecting its coastal areas, provided a basis for making strategic decisions about programs and financial resources, and provided information about coastal issues and problems to other decision-makers and the general public.	Communities			•	Lynn Griffin, Coastal Program Administrator: lynn.griffin@dep.state.fl.us , (850) 245-2161; www.dep.state.fl.us/secretary/legislative/coastal/index.htm

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
Florida Department of State; Bureau of Archaeological Research - Underwater Archaeology Program	Atlas of Maritime Florida	Statewide overview of environmental, archaeological and historical data about Florida’s maritime heritage. Research for the atlas also proved useful for the creation of a statewide plan for their management. A draft of this plan, which includes comprehensive reviews of existing national, state and international laws, policies and programs pertaining to submerged cultural resource management, was completed and disseminated for public review. The plan focuses on the various kinds of statewide resources, explores the ways in which they are threatened, and provides recommendations for their protection, preservation and interpretation for the public benefit.	Cultural heritage and resources			•	Roger Smith, FI Dept. of State: rsmith@mail.dos.state.fl.us, (850) 245-6444 x.4334; with James J. Miller, Sean M. Kelley, and Linda G. Harbin
Florida Department of State; Bureau of Archaeological Research - Underwater Archaeology Program	Underwater Archaeological Preserves	Underwater archaeological preserves, or “shipwreck parks,” are relatively new tools for historic preservation and public education. A combination of heritage, recreational, and ecological tourism at a single location makes these parks attractive destinations for residents and visitors. In Florida, there are seven underwater preserves in place, and three more in preparation.	Cultural heritage and resources			•	Roger Smith, FI Dept. of State: rsmith@mail.dos.state.fl.us, (850) 245-6444 x.4334

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Planned	Ongoing	Complete	Contact
				Project Status			
Florida Department of State; Bureau of Archaeological Research - Underwater Archaeology Program	Florida Maritime Heritage Trail	The Florida Maritime Heritage Trail is a collection of interesting and fun locations that are open to the public. The Trail is made up of six themes: Coastal Communities, Coastal Environments, Coastal Forts, Lighthouses, Historic Ports, and Historic Shipwrecks. The focus of the trail is public access and visitation. All sites on the poster and brochure for any theme are open to the public, and information about access is provided on the web site and in the brochures.	Cultural heritage and resources; Use patterns			•	Roger Smith, Fl Dept. of State: rsmith@mail.dos.state.fl.us, (850) 245-6444 x.4334
Caribbean Fishery Management Council (CFMC)	Rapid Socioeconomic Evaluation of the Proposed St. Thomas Marine Conservation District (1997)	Characterized user groups and sector profiles; discussed issues by group and sector; and provided the socioeconomic context necessary to frame and understand the organization and composition of proposed marine conservation district (MCD) area users.	Economics; Use patterns			•	Michael Downs, John Petterson, Edward Towle, and Leah Bunce
Gulf and Caribbean Fisheries Institute (GCFI) (The projects mentioned here are only some of the many social science research experiences in the region)	An Economic and Environmental Analysis of Commercial Catch in St. Thomas and St. John, USVI	The results of the study indicated that merit exists in employing trip ticket data in commercial catch analyses for the USVI and that the information collected from the trip ticket data can be used to assist managers in the decision making process.	Economics				Walter Keithly, Jr. and Graciela Garcia-Moliner
Gulf and Caribbean Fisheries Institute (GCFI) (The projects mentioned here are only some of the many social science research experiences in the region)	Institutional Arrangements for Caribbean MPAs and Opportunities for Pro-Poor Management	The purpose of this project was to identify current institutional constraints to, and development options for, successfully implementing MPAs in a way that leads to a sustained improvement in the livelihoods of poor people in the Caribbean.	Governance, institutions and processes			•	Leroy Creswell, Executive Secretary: leroy.creswell@gcfi.org, (561) 462-1660; www.gcfi.org

Existing Social Science Research Efforts

Institution	Project	Description	Theme	Project Status			Contact
				Planned	Ongoing	Complete	
Gulf and Caribbean Fisheries Institute (GCFI) (The projects mentioned here are only some of the many social science research experiences in the region)	Symposium on Caribbean MPAs: Practical Approaches to Achieve Economic and Conservation Goals: Workshop on Human System Connectivity: a Need for MPA Management Effectiveness	This report was based on a workshop session in which the human system and its connectivity, both to the marine system and within itself, were prominent.	Attitudes, perceptions and beliefs			•	www.gcfi.org/
The Nature Conservancy	The Virgin Islands and Eastern Caribbean Program	The Virgin Islands government hired The Nature Conservancy (TNC) to develop a management plan to guide the future of East End Marine Park. TNC collaborated with local fishermen and dive operators, professionals at local and national universities, and local and federal agencies to develop the plan.	Governance, institutions and processes			•	St. Thomas: (340) 774-7633; St. Croix: (340) 773-5575; Worldwide Office: mpoe@tnc.org, (703) 841-4878; http://nature.org/wherewework/caribbean/usvirginislands/
Caribbean Natural Resources Institute (CANARI)	Marine Protected Areas in the Caribbean: A Tourism Market Study; Evaluation of Caribbean Experiences in Participatory Planning and Management of Marine and Coastal Resources	The Caribbean Natural Resources Institute (CANARI) is an independent technical and research organization, which analyzes and promotes the participatory management of natural resources in the islands of the Caribbean. For more than twenty years, CANARI has developed a thorough knowledge of issues related to participatory management. The results of its research and analysis in this field have been disseminated throughout the Caribbean region through publications, technical assistance and training.	Use patterns; Attitudes, perceptions and beliefs; Governance, institutions and processes			•	www.canari.org

Appendix D. Research Institutions and Information Resources

Research Institutions and Information Resources			
Institution	Program	Description and/or Mission	Contact
Caribbean Alliance for Sustainable Tourism (CAST)		CAST's mission is to lead in the sustainable development of the Caribbean by catalyzing the tourism and business communities and working with multi-sectorial partners, to ensure social responsibility and environmental care for the benefit of our people and visitors.	www.cha-cast.net
Caribbean Conservation Association (CCA)	The Caribbean Regional Environmental Programme (CREP); The Specially-Protected Areas and Wildlife (SPA) Protocol; Coastal and Marine Management Programme (CaMMP)	The CCA exists to enhance the quality of life for present and future generations of the Caribbean by facilitating the development and implementation of policies, programmes and practices, which contribute to the sustainable management of the region's natural and cultural resources. The CCA has identified the following seven programme areas: Marine and Coastal Resources, Protected Areas, Water Resources Management, Land-based Sources of Marine Pollution, Trade and the Environment, Multi-lateral Environmental Agreements (MEAs), and Cultural Heritage.	Dr. Joth Singh, Executive Director: execdirector@ccanet.net ; www.ccanet.net/
Caribbean Fisheries Management Council (CFMC)		The Caribbean Fishery Management Council is responsible for the creation of management plans for fishery resources (fishery management plans; FMPs) in waters off PR and the USVI. The CFMC established the first no-take area off St. Thomas in 1999 (the marine conservation district, MCD) under Amendment No. 1 to the Coral Fishery Management Plan. The FMP includes information on research needs for the U.S. Caribbean.	Miguel A. Rolon, Director: miguel.a.rolon@noaa.gov , (787) 766-5927; www.caribbeanfmc.com
Caribbean Regional Fisheries Mechanism (CRFM)		The CRFM's mission is to promote and facilitate the responsible utilization of the region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region.	www.caricom-fisheries.com
Caribbean Tourism Organization (CTO)		An intranet of the Caribbean tourism community. Provides tourism statistics and information, and supports interaction among Caribbean tourism companies and governments.	www.onecaribbean.org

Research Institutions and Information Resources

Institution	Program	Description and/or Mission	Contact
Center for Environmental Leadership in Business (CELB)		A division of Conservation International, CELB engages the private sector world-wide in creating solutions to critical global environmental problems in which industry plays a defining role. CELB's Travel and Leisure program works with leading tourism companies to integrate conservation principles into their day-to-day operations and to influence the planning and management of key tourist destinations.	www.celb.org
Coral Reef Alliance (CORAL)		The Coral Reef Alliance promotes coral reef conservation around the world by working with the dive industry, governments, local communities and other organizations to protect and manage coral reefs, establish marine parks, fund conservation efforts, and raise public awareness with the mission to keep coral reefs alive for future generations.	www.coral.org
Environmental Defense	Oceans Program (includes Marine Protected Area theme)	Environmental Defense is dedicated to protecting the environmental rights of all people, including future generations. Among these rights are clean air and water, healthy and nourishing food, and a flourishing ecosystem. Guided by science, Environmental Defense evaluates environmental problems and works to create and advocate solutions that win lasting political, economic and social support because they are nonpartisan, cost-efficient and fair.	Ken Lindeman (Florida and the Caribbean): klingdeman@environmentaldefense.org ; www.environmentaldefense.org
Island Resources Foundation (IRF)		IRF works with small tropical islands in the fields of management, development planning, information management, and publication production.	www.irf.org
World Conservation Union (IUCN) – World Commission on Protected Areas (WCPA)		Priority programs include: <i>Connecting Protected Areas to Social and Economic Concerns</i> ; <i>Saving the Crown Jewels - World Heritage</i> ; <i>Building Capacity to Manage Protected Areas</i> .	www.iucn.org/themes/wcpa/wcpa/wcpawork.htm
Latin American and Caribbean Association of Environmental and Resource Economists (ALEAR)	Held the First Latin American and Caribbean Congress on Environmental and Resource Economics (7/9-11/03). Included presentations on social science research and protected areas.	Disclose and support the development and implementation of environmental and natural resource economic instruments, in order to contribute to the sustainable development of Latin American countries.	www.alear.org/english/products/congress/default.asp

Research Institutions and Information Resources

Institution	Program	Description and/or Mission	Contact
Sea Grant Program: Puerto Rico and USVI		The program's mission is to conduct excellent scientific research in the areas of water quality, fisheries and mariculture, seafood safety, marine recreation and coastal tourism, coastal hazards, and coastal communities' economic development, and to apply our scientific knowledge to solve a variety of problems our communities of users face every day.	Dr. Manuel Valdez Pizzini, Director: ma_valdes@rumac.uprm.edu, (787) 832-3585; http://seagrant.uprm.edu
Sea Grant Program: Florida		Program's goal is to use academic research, education and extension to create a sustainable coastal economy and environment. Publications include: "Economic Impacts of the Processing and Marketing of Commercial Florida Marine Landings"; "Current and Projected Tourist Demand for Saltwater Recreational Fisheries in FL"; "Recreational Anglers' Valuation of Near-Shore Marine Fisheries in Florida"; "The Impacts of Florida Net Ban on Commercial Fishing Families"; and "Commercial Fisheries' Perceptions of Marine Reserves for the Florida Keys National Marine Sanctuary".	Dr. Jim Cato, Director: jcato@ifas.ufl.edu, (352) 392-5870; www.flseagrant.org/
United Nations Environment Program (UNEP) – Caribbean Regional Coordinating Unit (CAR/RCU) – Caribbean Environment Program (CEP)		The Caribbean Environment Programme (CEP) is facilitated by the Caribbean Regional Co-coordinating Unit (CAR/RCU) located in Kingston, Jamaica. CAR/RCU does not conduct research itself, but serves as a focus for the collection, review and dissemination of studies, publications and the results of work performed under the aegis of CEP. Some of the issues include: Coastal Zone Management, Maintenance of Biological Diversity, Land Based Sources of Marine Pollution, Coral Reef Management, Sustainable Tourism Initiatives, and Environmental Education and Awareness.	www.cep.unep.org/
United Nations Environment Program (UNEP) – Caribbean Regional Coordinating Unit (CAR/RCU) – Caribbean Environment Program (CEP)		CAR/RCU does not conduct research itself, but serves as a focus for the collection, review and dissemination of studies, publications and the results of work performed under the aegis of CEP.	www.cep.unep.org/
United Nations Environment Program (UNEP) – World Conservation Monitoring Center (WCMC) Program on Protected Areas (PPA)		The UNEP – WCMC was established in 2000 as the world biodiversity information and assessment center of the United Nations Environment Program. The UNEP – WCMC Program on Protected Areas locates and compiles information on the protected areas of the world.	http://www.unep-wcmc.org/index.html

Research Institutions and Information Resources

Institution	Program	Description and/or Mission	Contact
University of Miami	Caribbean Marine Cultural Resource Initiative	Long term plan to address the incorporation of submerged cultural resources into coastal zone management plans.	Dr. John Gifford: jgifford@rsmas.miami.edu, (305) 361-4191; www.rsmas.miami.edu/groups/cmcri.html
University of Puerto Rico at Mayaguez	Center for Applied Social Research	Carries out interdisciplinary research for natural resource management, disaster management, etc., in the fields of anthropology, biology, business administration, engineering, marine science, nursing, political science, psychology and sociology.	Dr. Douglas Santos, Director, and Manuel Valdes Pizzini: (787) 265-5466, (787) 832-4040, x.2071, x.2108, x.2109; www.uprm.edu/socialsciences/cisa/id36.htm
University of the Virgin Islands	Center for Marine and Environmental Studies (CMES) of the RPSO	Composed of the Virgin Islands Marine Advisory Service (VIMAS), MacLean Marine Science Center (MMSC), Environmental Research Unit (ERU), and Virgin Islands Environmental Resource Station (VIERS). Current research includes evaluating the effectiveness of MPAs for sustainable fisheries.	CMES: (340) 693-1380; http://marsci.uvi.edu
University of the Virgin Islands	Eastern Caribbean Center (ECC) Research Institute	The Eastern Caribbean Center (ECC) is a resource organization that conducts research and associated training, technology transfer and information dissemination, responsive to development issues in an evolving U.S. Virgin Islands and applicable to small island communities. It conducts and sponsors research in the U.S. Virgin Islands and the rest of the Eastern Caribbean and disseminates information to enhance the contribution of scientific inquiry to human well being in the Caribbean region.	Dr. Henry H. Smith, Director: HSmith@UVI.EDU, (340) 693-1020; www.uvi.edu/ECC/ecc.htm
World Conservation Union (IUCN) – World Commission on Protected Areas (WCPA), supported by the IUCN’s Program on Protected Areas (PPA)		WCPA’s international mission is to promote the establishment and effective management of a worldwide representative network of terrestrial and marine protected areas, as an integral contribution to the IUCN mission.	http://www.iucn.org/themes/wcpa/wcpa/paunit/programme.htm

Appendix E. Regional Regulatory Framework

INTERNATIONAL OVERVIEW

Regulatory Framework		
Title	Summary	Includes Social Science
Ramsar Convention on Wetlands, 1971	Intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The Convention's mission is the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world.	
UNESCO's World Heritage Convention, 1972	The most significant feature of the Convention is its linking together into a single document the concepts of nature conservation and preservation of cultural sites. Nature and culture are complementary and cultural identity is strongly related to the natural environment in which it develops.	•
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1973	Establishes a system of regulations and/or prohibitions in the trade of species, both plant and animal, or any specimen part thereof. See: Appendix I of the Convention for species threatened with extinction as a result of trade; Appendix II of the Convention for species in which trade control is necessary for survival; Appendix III of the Convention for species subject to regulation in the host nation.	
United Nations Convention on the Law of the Sea (UNCLOS), 1982	The United Nations Convention on the Law of the Sea lays down a comprehensive regime of law and order in the world's oceans and seas, establishing rules governing all uses of the oceans and their resources. It enshrines the notion that all problems of ocean space are closely inter-related and need to be addressed as a whole.	
United Nations Conference on the Environment and Development (UNCED), 1992	Agenda 21, adopted by UNCED, is a program of action to be implemented by governments, development agencies, United Nations organizations and independent sector groups in every area where human (economic) activity affects the environment.	•
• Agenda 21 Chapter 17 - Oceans and Coasts	Agenda 21 sets out comprehensive strategies and programs to counter environmental degradation and promote sustainable development.	•
• Rio Declaration of Principles	The goal of this Declaration is to establish cooperation among member states to reach agreement on laws and principles promoting sustainable development. The Declaration addresses the following areas: natural resources; environmental impact of development; poverty; ecosystem protection; the sharing of scientific ideas; public participation/public access to information; implementation of legislation; economic policies, internalization of environmental costs and the 'polluter pays' principle; notification of pollution incidents; environmental impact statements; and indigenous cultures.	•
• Convention on Biological Diversity (CBD)	The objective of the CBD is to conserve biological diversity, promote the sustainable use of its components, and encourage equitable sharing of the benefits arising out of the utilization of genetic resources.	
• Framework Convention on Climate Change	The Convention's objective is to achieve the stabilization of production of greenhouse gasses. It sets out principles to achieve a greater understanding of global warming, and includes the sharing of research, the development of technology, and technology transfer.	

Regulatory Framework		
Title	Summary	Includes Social Science
United Nations Environment Program (UNEP) – Global Program of Action for the Protection of the Marine Environment from Land-based Activities (GPA), 1995	The GPA is designed to be a source of conceptual and practical guidance to be drawn upon by national and/or regional authorities for devising and implementing sustained action to prevent, reduce, control and/or eliminate marine degradation from land-based activities.	•

REGIONAL OVERVIEW

Regulatory Framework		
Title	Summary	Includes Social Science
Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias, 1983)	The Convention requires the adoption of measures aimed at preventing, reducing and controlling pollution. The Parties are also required to take appropriate measures to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species and to develop technical and other guidelines for the planning and environmental impact assessments of important development projects in order to prevent or reduce harmful impacts on the area of application.	
• Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region (Cartagena de Indias, 1983)		
• The Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region (Kingston, Jamaica, 1990)		
• The Protocol Concerning Pollution from Land-based Sources and Activities in the Wider Caribbean Region		
United Nations Environmental Program (UNEP) – Caribbean Regional Coordinating Unit (CAR/RCU) – Caribbean Environment Program (CEP)	CAR/RCU does not conduct research itself, but serves as a focus for the collection, review and dissemination of studies, publications and the results of work performed under the aegis of CEP.	

NATIONAL OVERVIEW

Regulatory Framework		
Title	Summary	Includes Social Science
National Environmental Policy Act of 1969	The purposes of this Act are: to declare a national policy that will encourage productive and enjoyable harmony between man and his environment; to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.	•
Marine Protection, Research, and Sanctuaries Act of 1972	The Marine Protection, Research, and Sanctuaries Act (MPRSA) regulates the ocean dumping of waste, provides for a research program on ocean dumping, and provides for the designation and regulation of marine sanctuaries. Often known as the Ocean Dumping Act, the Act regulates the ocean dumping of all material beyond the territorial limit (three miles from shore) and prevents or strictly limits dumping material that “would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities.” The regulating agencies are the EPA (permitting and setting of environmental criteria) and USACE (dumping of dredged materials).	•
National Marine Sanctuaries Act of 1972 (Also known as Title III of the Marine Protection, Research, and Sanctuaries Act)	Allows the regulating agency to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational or esthetic qualities as National Marine Sanctuaries. The primary objective of this Act is to protect marine resources, such as coral reefs, sunken historical vessels or unique habitats. The regulating agency is NOAA (Department of Commerce).	
Clean Water Act of 1972	Established the basic structure for regulating discharges of pollutants into the waters of the United States, and deals primarily with surface water quality protection. The regulating agency is the EPA.	
Coastal Zone Management Act of 1972	Established a voluntary national program within the Department of Commerce to encourage coastal states to develop and implement coastal zone management plans. Funds were authorized for cost-sharing grants to states to develop their programs. Subsequent to federal approval of their plans, grants would be awarded for implementation purposes. The regulating agency is NOAA (Department of Commerce).	
Marine Mammal Protection Act of 1972	The Marine Mammal Protection Act (MMPA) was enacted in 1972 to protect and manage marine mammals and their products (e.g., the use of hides and meat). The regulating agencies are the Fish and Wildlife Service (FWS; Department of the Interior), and NOAA’s National Marine Fisheries Service (NMFS; Department of Commerce). The FWS manages walrus, polar bears, sea otters, dugongs, marine otters and West Indian, Amazonian and West African manatees. The NMFS manages whales, porpoises, seals and sea lions.	
Endangered Species Act of 1973	The purpose of this Act is to protect endangered and threatened species and to provide the means to conserve their ecosystems. The regulating agencies are the Fish and Wildlife Service (FWS; Department of the Interior), and NOAA’s National Marine Fisheries Service (NMFS; Department of Commerce).	

Regulatory Framework		
Title	Summary	Includes Social Science
Magnuson-Stevens Fishery Conservation and Management Act of 1976	This Act governs the conservation and management of ocean fishing. It establishes exclusive U.S. management authority over all fishing within the exclusive economic zone (EEZ), all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the Continental Shelf. The Act also establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. The Magnuson Fishery Conservation and Management Act is now the Magnuson-Stevens Fishery Conservation and Management Act, and is also known as the Sustainable Fisheries Act. The regulating agency is NOAA's National Marine Fisheries Service (NMFS; Department of Commerce).	

LOCAL OVERVIEW

Regulatory Framework		
South Florida		Includes Social Science
Title XXIX of the Florida Statutes on Public Health. Environmental Protection Act of 1971. Chapter 403.804 Environmental Regulation Commission; powers and duties: "...The commission, in exercising its authority, shall consider scientific and technical validity, economic impacts, and relative risks and benefits to the public and the environment. . . The department [of Environmental Protection] shall have a study conducted of the economic and environmental impact which sets forth the benefits and costs to the public of any proposed standard that would be stricter or more stringent than one which has been set by federal agencies pursuant to federal law or regulation."		•
Title XVIII of the Florida Statutes on Public Lands and Property. Chapter 258, Part II (Also known as Florida Aquatic Preserve Act of 1975) refers to Aquatic Preserves and suggests that submerged lands with exceptional biological, aesthetic and scientific value be set-aside as preserves or sanctuaries for the benefit of future generations.		
Title XXVIII of the Florida Statutes on Natural Resources; Conservation; Reclamation; and Use (The lead regulating agency is the Fish and Wildlife Conservation Commission). Chapter 370.025 refers to Marine Fisheries: Policies and Standards and states: "Conservation and management measures shall be based upon the best information available, including biological, sociological, economic, and other information deemed relevant by the commission."		
Puerto Rico		Includes Social Science
Puerto Rico does not have specific laws for the protection of marine areas; however, the Department of Natural Resources and Environmental Protection (DNREP) has the responsibility, as the leading regulatory agency, to put forth a series of regulations to protect such areas as Commonwealth Forests, Wildlife Refuges and Natural Reserves. Some of these regulations are based on laws that indirectly offer some protections, such as the Forestry Law, which prohibits cutting of mangroves and other coastal flora. The DNREP is the main agency from the Government of Puerto Rico responsible for the conservation and proper use of natural resources, specifically related to the operational phase of environmental public policy. Other agencies include the Puerto Rico Planning Board (PB) and the Environmental Quality Board (EQB). The PB is able to recognize recreational and natural resource values of areas, within the planning process.		

Regulatory Framework

U.S. Virgin Islands

Includes Social Science

The Department of Planning and Natural Resources' Department of Environmental Protection (DPNR/DEP) is the lead agency for the USVI Coastal Zone Management Program (CZM), and is responsible for environmental protection and the enforcement of environmental laws and regulations in the U.S. Virgin Islands. Together with the Department of Housing Parks and Recreation (DHP&R) and the federal government, the DPNR works on developing management plans for protected areas. A variety of regulations exist pertaining to the use of areas within the national park system, most of which are aimed at providing a safe environment for visitors and protecting natural and cultural resources. The Government of the Virgin Islands works closely with the federal government in the development of management plans for its various types of protected areas.

The mandates of the Division of Environmental Protection are to protect and conserve the natural resources of the Government of the U.S. Virgin Islands: air, water and land, upon which life depends; and the health, comfort and repose of the public. These mandates are codified in twelve Virgin Islands Code (VIC) Chapters: 5: Ground Water; 7: Water Pollution Control; 9: Air Pollution Control; 17: Oil Spill Prevention; and 19: Pesticides Control. Additional mandates are codified in VIC chapter 51: Safe Drinking Water and 56: Solid & Hazardous Waste.