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Decisions from the 8th Meeting of the U.S. Coral Reef Task Force

2-3 October, 2002 • San Juan, Puerto Rico

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Highlights

U.S. Coral Reef Task Force Meeting
October 2-3, 2002 San Juan, Puerto Rico

[for more information and complete meeting summary see <http://coralreef.gov/>]

1. TASK FORCE ADOPTS NEW STRUCTURE, PRIORITIZES ACTION AREAS:

The 8th meeting of the United States Coral Reef Task Force (CRTF) was marked by significant new commitments for strategically implementing the United States National Action Plan to Conserve Coral Reefs. These commitments include the adoption of a resolution improving the capacity of the Task Force to advance implementation by:

- Endorsing six focus areas for priority action: land-based sources of pollution, overfishing, lack of public awareness (with a focus on user groups), recreational overuse and misuse, climate change and coral bleaching, and disease.
- Establishing two regional subcommittees to support local action
- Identifying methods for tracking progress toward national goals
- Highlighting needs and opportunities to strengthen human resources for reef conservation

2. USDA AND EPA COMMIT TO LEADING EFFORT TO REDUCE IMPACTS OF LAND-BASED POLLUTION:

The United States Department of Agriculture and the Environmental Protection Agency offered to co-lead an effort to address the CRTF focus area of land-based sources of pollution and invited all interested members of the Task Force to join in this effort.

3. NEW INITIATIVE TO ADDRESS CLIMATE IMPACTS ON REEFS:

The Department of the Interior, Department of Commerce, and Environmental Protection Agency offered to co-lead an effort to address the CRTF focus area of climate change and coral reefs. The Task Force passed a resolution on coral reefs and climate change calling for an interagency, public/private partnership to advance understanding and management.

4. PUERTO RICO ANNOUNCES NEW EFFORTS TO CONSERVE REEFS:

Puerto Rico, the meeting's host, made historic commitments to advancing coral reef management, with support from NOAA, including:

1. Strengthening enforcement
2. Expanding and strengthening nature reserves
3. Improving understanding and management of recreational fisheries
4. Developing amendments to fisheries regulations
5. Convening a coral reef advisory committee for strategic planning

5. STUDY LOOKING AT EFFECTIVENESS OF MITIGATION EFFORTS:

In response to a presentation by the Department of the Interior, Fish and Wildlife Service (FWS), the CRTF adopted a resolution directing applicable agencies to continue gathering data on the effectiveness of compensatory mitigation effecting coral reef ecosystems. The initial findings presented by FWS suggest that less than 1% of the compensation for loss of coral reef ecosystems

was successfully implemented in the cases examined.

6. TASK FORCE HIGHLIGHTS CONCERNS ON TRADE IN CORAL REEF SPECIES:

A resolution on the international trade in coral and coral reef animals restated the Task Force's suggestion that there is a need to reduce the adverse impacts of trade by encouraging more responsible trade and improved coral reef management. The resolution further charges the Trade subgroup of the International Working Group to provide further recommendations on key issues, especially in conjunction with upcoming CITES meeting.

7. EFFORT TO INCREASE OPPORTUNITIES FOR INVOLVEMENT IN TASK FORCE:

The Task Force also adopted resolutions to explore options for increasing stakeholder engagement, endorsing a study proposal by the National Academy of Sciences, and providing testimony to the U.S. Commission on Ocean Policy.

8. PROGRESS AND NEW REPORTS:

Reports following-up on previous task force decisions were presented on vessel groundings, fisheries, and other topics. Two new reports were released as part of CRTF efforts:

- The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2002 (<http://www.nccos.noaa.gov/library/notables.html>)
- A National Coral Reef Action Strategy:
Report to Congress on Implementation of the Coral Reef Conservation Act of 2000 and the National Action Plan to Conserve Coral Reefs
(<http://coris.noaa.gov/>)

9. HOT TOPIC PRESENTATIONS:

Presentations to the Task Force highlighted a number of issues and initiatives. See meeting summary (<http://coralreef.gov/>) for presentations and authors. Topics included:

- update on the incidence and distribution of coral diseases;
- the impacts of water quality and climate in the Florida Keys;
- status of effort to map and characterize all U.S. reefs
(<http://coralreef.gov/mapping/mpwg.cfm>)
- release of new U.S. public opinion poll on reefs (<http://www.coralreeffoundation.org/>);
- a regional threats analysis in the Caribbean
(<http://www.wri.org/wri/reefsatrisk/reefriskcaribbean.html>);
- results of a REEFCHECK global volunteer monitoring study (<http://www.reefcheck.org/>);
- results of new coral reef expeditions in Florida and the Northwest Hawaiian Islands
(<http://www.nccos.noaa.gov/library/notables.html>)

10. TASK FORCE AWARDS:

The Task Force presented a number of awards in recognition of significant activities supporting conservation and management of coral reef ecosystems.

Resolutions

The following resolutions were adopted by the U.S. Coral Reef Task Force by consensus on October 3, 2002. Resolution text and background information follows.

Resolutions:

1. Improving Procedures of the U.S. Coral Reef Task Force
2. Trade in Coral Reef Species
3. Improving Stakeholder Involvement
4. Assessment of Coral Reef Mitigation Measures
5. Coral Reefs and Climate Change
6. Response to Ocean Commission
7. National Academy of Science Study

Resolution 1: Improving Procedures of the U.S. Coral Reef Task Force

I. Background:

At its December 2001 meeting, the U.S. Coral Reef Task Force identified a need to revise some of its procedures in order to move from planning to implementation of the National Action Plan to Conserve Coral Reefs (NAP). Based on recommendations from the All Islands Committee, constituent input, assessment of similar initiatives, expert consultation, and its experience over the past two years, the Task Force, through its Steering Committee, has identified the need to:

- 1) Improve NAP implementation by identifying threats-based priorities and key actions developed from the 13 goal areas;
- 2) Increase coordination to implement the NAP among government agencies, and across local, regional, and national levels;
- 3) Develop a system to track progress toward achievement of the NAP's goals and objectives; and
- 4) Increase human resources supporting the Task Force, All Islands Committee, State, Territory, and Commonwealth coral reef conservation efforts to implement the proposed process.

Part II outlines procedural changes needed to improve implementation of the NAP. Part III provides an overview of how these revisions integrate into the existing Task Force process and structure. Table 1 provides a quick summary of needs, procedural revisions, and resource requirements. Representatives to the Task Force from the Freely Associated States (Palau, Federated States of Micronesia, and the Marshall Islands) are invited to participate in the procedures outlined below.

II. Procedural Revisions:

1. ***Improve Prioritization of Needs.*** The Steering Committee found that there is not currently a clear prioritization of needs among the 13 goal areas outlined in the National Action Plan. Recognizing that resource constraints may preclude implementing all 13 areas concurrently, there is an urgent need to proceed strategically by focusing on the most urgent and pressing threats to coral reefs. Thus, it is recommended that the Task Force should identify and endorse 5 threats-based Focus Areas for priority implementation.

The identification of 5 areas will provide better focus for implementation, while allowing locally appropriate management actions to be developed at the jurisdictional (state, territory, and commonwealth governments) and regional levels. This prioritization does not constrain the need for Task Force members to support actions to address other significant threats. Focus Area selection should consider the severity and scale of key threats to reefs as well as the extent to which collaborative efforts can make tangible progress toward identified goals (see procedure #2 regarding 3-year action strategies).

The Steering Committee further found that some of the 13 goal areas outlined in the National Action Plan do not have specific targets clarifying how the goal should be achieved. Thus, it is recommended that, if they do not already exist within the National Action Plan, specific targets, which include timelines and performance indicators, should be established for the Focus Areas endorsed by the Task Force and other areas as appropriate.

In developing the National Action Strategy for Coral Reef Conservation and through more recent assessments by the All Islands Committee, the Steering Committee finds that the preliminary information needed to identify Focus Areas is currently available. Analysis of this information suggests the following areas should be endorsed by the Task Force as Focus Areas for 2003 – 2006:

- a. Land-based Sources of Pollution
 - b. Overfishing
 - c. Lack of Public Awareness
 - d. Recreational Overuse and Misuse
 - e-1. Climate Change and Coral Bleaching, and
 - e-2. Disease
2. **Improve Coordination.** The Steering Committee found that improved coordination would help fulfill the Task Force mission, implement the National Action Plan, and increase support for coral reef conservation efforts at state, territory, and local levels. Several areas for improvement were identified: (1) improve coordination between state/territory and federal priorities and implementation activities, (2) better engage important federal partners locally and regionally, (3) increase coordination and collaboration among and between agencies at local and regional levels, and (4) increase coordination with stakeholders. Thus, it is recommended that the Task Force should establish Regional Subcommittees of the Steering Committee in the Caribbean and the Pacific with membership to include, at a minimum, representation from each U.S. Coral Reef Task Force member.

The Steering Committee further found that there is a need to improve inter-agency coordination to implement actions to achieve the goals identified in the National Action Plan, including recommended Focus Areas. Thus, it is recommended that each state/territory and its federal partners work cooperatively to develop, locally focused, 3-year action strategies for applicable Focus Areas giving due consideration to local priorities, federal agency mandates and contribution toward the goals of the NAP. Based on the development of local action strategies, the All Islands Committee, in coordination with the State of Florida, will review and coordinate between the regions, and make recommendations to the regional subcommittees to ensure linkages between the regions.

Regional Subcommittees will:

- Coordinate jurisdictional and federally-managed area action strategies into regional action strategies,
- Identify common issues for regional actions,
- Explore opportunities for the sharing of institutional, financial and human resources among federal and local agencies and partners,
- Seek funding and resources for development of local action strategies and their implementation,
- Report to the Task Force on development and implementation,
- Develop mechanisms for engaging stakeholders, and
- Provide linkages to international efforts.

Each Task Force member will identify appropriate representatives to Regional Subcommittees within one month from adoption of the resolution. The Regional Subcommittees will be established and provide an initial update on key gaps and opportunities for implementation in Focus Areas by the next Task Force meeting. The Regional Subcommittees will provide 3-year pilot action strategies within one year based on the local input available at that time. Nothing in this paragraph will prejudice the functioning of the All Islands Committee.

3. ***Improve Mechanisms for Tracking Progress.*** The Steering Committee found that there is not currently a systematic tracking system to articulate progress toward implementation of the NAP. Past efforts to report accomplishments have been inefficient and taxed available human resources. Furthermore, unclear goals and indicators have made reporting and implementation difficult. Thus, it is recommended that the Task Force develop a web based system to facilitate reporting accomplishments and actions toward meeting the goals and objectives of the NAP, using performance indicators identified by the local and regional action strategies. Task Force members will populate and maintain this database as a current record of accomplishments and future plans and activities. The Steering Committee will report back to the Task Force with details of the reporting system.

Using this tool, the Regional Subcommittees, the Steering Committee, and, as needed, Working Groups will develop an annual report documenting progress toward the goals and objectives of the NAP. Recognizing that the Focus Areas are not the only areas requiring reporting, the new tracking mechanisms will be also available to support the development of annual work plans and other accomplishment reports by all Task Force members.

4. ***Address Human Resource Limitations.*** The Steering Committee found that limitations in available human resources and current funding mechanisms, at both the local and national levels, are significant impediments to fulfilling the mission of the U.S. Coral Reef Task Force. In order to implement these revised procedures, the Steering Committee will work with the All Islands Committee to assess human resources needs required. Furthermore, the Steering Committee should recommend strategies for increasing human resource capacity and funding to support Task Force, All Islands Committee, State, Territory, and Commonwealth coral reef conservation efforts to implement the proposed process. This shall include both the establishment of a US Coral Reef Task Force Secretariat and adequate support for the All Islands Committee Secretariat. Task Force members should evaluate their ability to contribute to these efforts. The Steering Committee will report back to the Task Force with further details for a proposed Secretariat.
5. ***Amend the Oversight Policy and Charter.*** In light of the revisions to the Task Force process proposed here, it is recommended that the Oversight Policy and Charter be amended, as necessary, to reflect this new process.
6. ***Charge to Working Groups and Steering Committee.*** Working Groups are tasked to assist the Steering Committee with implementing the changes put forth in this document. The Steering Committee will evaluate the role and function of the Working Groups and report recommendations to the next US Coral Reef Task Force meeting.

III. Overview of the U.S. Coral Reef Task Force Process

The recommendations outlined here are intended as revisions to the existing structure of the Task Force. The following is a brief summary of some of the key components of the existing and revised structure:

- **The National Action Plan to Conserve Coral Reefs and the National Action Strategy.** The NAP and NAS remain relevant and comprehensive blueprints for coral reef conservation in the U.S. The recommendations here are intended to strategically implement the NAP.
- **Steering Committee.** The steering committee will continue to serve as the primary working body of the US Coral Reef Task Force, providing assistance and coordination for Task Force activities.
- **State/Territory Planning and Implementation.** Ultimately, coral reef management must be implemented in local reef areas, which relies on effective planning and implementation by states and territories with support from federal partners.
- **Federal Agency Planning and Implementation.** Working within its mandates, each federal member of the task force has relevant responsibilities for reef conservation, ranging from prevention of harm to active stewardship to address key threats.
- **All Islands Committee.** The All Islands Committee has provided essential policy guidance to the Task Force since its inception and is critical to bringing local reef issues into the national dialogue at the Task Force, and increasing coordination among federal, state, territory and commonwealth efforts.
- **International Policy Work and Support for Management.** The International Working Group has made notable achievements in international policy arenas, notably regarding coral trade and no-anchoring zones. While contributing to national Focus Areas, the International Working Group will continue its existing policy work.
- **USCRTF Working Groups.** The Steering Committee will work with the Working Group chairs to develop a working group structure compatible with the new Regional Committee structure.
- **Regional Subcommittees.** The role of the regional subcommittees includes 1) to support coordination and implementation of projects of local and regional significance; 2) to explore opportunities for the sharing of institutional, financial and human resources among federal and local agencies and partners; 3) to engage regional program directors to participate in joint activities directed at coral reef management and protection; 4) to assist in the preparation of materials that meet the reporting requirements of the individual jurisdictions. The Regional Subcommittee will include representatives of US Coral Reef Task Force Members.

Table 1. Mechanisms for improving USCRTF prioritization, coordination, reporting, and human resources.

Area to Improve	Current Status	Proposed Mechanism	Resources Required (Estimates)	Expected Outcome
Prioritize Needs	<ul style="list-style-type: none"> • There is no prioritization across the 13 goal areas • Some goal areas lack specific targets 	USCRTF to endorse 5 threat-based, Focus Areas from the National Action Plan		Specific, threats-based goals based on local priorities
Improve Coordination	<ul style="list-style-type: none"> • Need to better synchronize state/territory and federal priorities, implementation • Need to better engage the regional level to support local implementation • Need for inter-agency coordination to address key threats • Need to develop specific actions to implement NAP • Need to coordinate among and between regions 	Regional Subcommittees and All Islands Committee to support local and regional development and implementation of action strategies;	[estimates] <ul style="list-style-type: none"> • Support for staff to the two regional subcommittees and All Islands Committee • Lead/sponsor workshops to develop action strategies 	<ul style="list-style-type: none"> • 3-year, action strategies for Focus Areas • Increased federal agency support for local implementation
Report Progress	<ul style="list-style-type: none"> • Reporting is inefficient and taxes available human resources • Unclear goals and indicators make reporting difficult • There is no current tracking system 	Web-Based Database	Funding to establish system; staff time to input and synthesize data	<ul style="list-style-type: none"> • Annual Task Force Report • Database available for other reporting
Human Resources	<ul style="list-style-type: none"> • Need to establish a Task Force Secretariat • Need to significantly strengthen the All Islands Committee Secretariat • Need to strengthen capacity, and funding at all levels 	Increase dedicated support for staff (e.g. details, funding, internships, fellowships, etc)	[estimates] <ul style="list-style-type: none"> • Support for: <ul style="list-style-type: none"> • 2 staff for Task Force Secretariat • 1-2 staff for All Islands Secretariat • Other needs TBD 	<ul style="list-style-type: none"> • Enhanced capacity to implement the National Action Plan • Active Task Force Secretariat • Strengthened All Islands Secretariat

Resolution 2: Trade in Coral Reef Species

The U.S. Coral Reef Task Force endorses the Statement of Findings on international trade of coral and coral reef species, and charges the Trade Sub-Group and International Working Group with identifying the best mechanisms for filling the needs identified on the second page of the statement of findings.

The Task Force continues to suggest there is a need to reduce the adverse impacts of trade and collection in coral and coral reef resources, encourage more responsible trade, and encourage the conservation and sustainable management of coral reef ecosystems both domestically and internationally.

The Task Force directs as follows:

1. Task Force members participating in the upcoming conference of the parties to CITES should use every opportunity to raise the issue of trade in coral reef species and its impacts on coral reefs:
2. The Trade Sub-Group of the International Working Group of the Task Force should meet shortly after the conclusion of the CITES meeting to consider actions taken at that meeting, the prospects for future CITES actions based on their evaluation of the actions and discussions at this meeting, and the extent to which additional statutory authority to address problems with trade in coral reef species is necessary; and
3. The Trade Sub-Group and the International Working Group report their recommendations to the CRTF at the next meeting.

Key Findings from the Trade Subgroup of the International Working Group

The Executive Order (#13089) for the Protection of Coral Reefs charged the U.S. Coral Reef Task Force with analyzing and addressing the United States's role in the international trade of coral reef species.

An initial analysis by the U.S. Coral Reef Task Force found that the U.S. is the number one consumer of live coral and marine fishes for the aquarium trade and of coral skeletons and precious corals for curios and jewelry, and that American consumption of coral reef products are inadvertently contributing to the worldwide decline and degradation of reefs.

At the second meeting of the U.S. Coral Reef Task Force, in March, 1999, a resolution was adopted to support an evaluation of options to address imports of coral and coral reef species and promote sustainable harvesting of traded coral reef resources.

At the fourth meeting of the U.S. Coral Reef Task Force, in March 2000, a broad strategy was unveiled to address the U.S. role in the international trade of coral and coral reef species; the strategy included recommendations for new trade authorities to ensure responsible and sustainable trade.

There is already strong international concern that some coral reef species are threatened or may become threatened through trade -- 2000 species of hard (stony) corals, black coral, giant clams, Queen conch, and sea turtles are listed under the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES). The U.S. continues to be a strong supporter of CITES and is supporting proposals to include more species for listing under CITES.

Recent reports and findings indicate that:

- International trade continues to drive over-exploitation and destructive fishing practices and that more reefs and species are threatened by these activities, as reported by recent findings of the World Resources Institute and Reef Check.
- The international aquarium trade continues to increase by 10-30% annually – with the trade in live corals increasing 400% and the trade in live reef rock increasing 1700% since 1988.
- The number of species in trade for marine aquaria continues to increase, with well over 1000 species estimated to be in trade.
- The U.S. continues to import 60 – 80% of the live coral, over 50% of the curio coral, and 95% of the live reef rock and reef substrate in international trade each year.
- Over 400 coral reef species have been identified as inappropriate species for the aquarium trade – such as those that do not survive well in aquaria or are highly poisonous – yet continue to be traded.
- International trade in coral and coral reef animals continues to be largely unregulated, unreported, and illegal.
- International trade in wildlife is associated with money laundering and the drug trade, as reported by the International Marinelife Alliance and the World Wildlife Fund/Traffic.

We have reassessed the situation two years later and found that there are still a number of urgent needs, including personnel needs, financial needs, information needs, and the need for certain authorities to fully address the U.S. role in the international trade of coral and coral reef animals:

- There is a need to strengthen existing implementation of trade responsibilities (i.e. USFWS capacity to implement CITES requirements for exports and imports in the U.S., as well as strengthen the capacity for CITES implementation and coral reef management in developing countries)
- There is a strong need to more fully assess the nature and volume of the curio trade, jewelry trade, and the trade in live invertebrates and fish.
- There is a strong need to more fully assess the U.S. coral reef export trade and its impacts on U.S. coral reefs.
- There is a strong need to assess the nature and magnitude of the illegal trade associated with coral reef animals.
- We applaud the marine aquarium industry's efforts at certification, but we recognize the limitations to industry certification and have identified key authorities that are currently gaps in the ability of the U.S. to effectively address the trade issue. These include authorities to reduce unsustainable collection and take of CITES-listed species, reduce destructive fishing practices, reduce mortality rates of animals during transportation and handling, reduce the number of inappropriate species in trade, establish an advisory council of stakeholders, and develop an ecosystem-based approach for coral reef management.

Resolution 3: Improving Stakeholder Engagement

Recognizing that there are a number of interested parties outside of the current U.S. Coral Reef Task Force structure that should be more fully engaged in the CRTF;

Acknowledging/recognizing that a number of local/regional/ national stakeholders have been involved in the CRTF for years;

The U.S. Coral Reef Task Force directs the Steering Committee to explore options for improving stakeholder / non-governmental/ interested parties engagement in the CRTF, including legal challenges and opportunities; and report back to the CRTF with recommendations one month before the next CRTF meeting. In doing so, the CRTF encourages the Steering Committee to look at the very different interests involved (i.e. agricultural, cultural, business, scientific, academic, private, public, non-governmental, etc.).

Resolution 4: Assessment of Coral Reef Mitigation Measures

Realizing that it is U.S. Government policy to avoid and minimize impacts to ecosystems, including coral reefs; (EO 13089, NEPA, etc.), and that all efforts should be made to carry out that policy;

Considering, the October 2, 2002 Compensatory Mitigation report to the Task Force suggests there are serious questions raised as to whether mitigation has been effective thus far;

The Task Force strongly encourages the applicable agencies, including FWS, EPA, NOAA, Army Corps, and local jurisdictions in the Pacific to continue to coordinate in gathering data on the effectiveness of compensatory mitigation from federally funded and permitted activities. Included should be the analysis of which mitigation actions are most successful and recommendations for improving and identifying successful mitigation by the next Task Force meeting. The model of this analysis should be applied and evaluated in the Atlantic/ Caribbean also and reported back to the Task Force next year.

Summary Findings on Compensation Mitigation for a report by the Fish and Wildlife Service

In 1998, Executive Order 13089 on Coral Reef Protection established the Coral Reef Task Force. The Task Force published the National Action Plan to Conserve Coral Reefs in 2000 (Action Plan), which lays out a science-based road map to achieve healthy coral reefs.

To specifically address Action Items in Table B.3. in the Action Plan, the U.S. Fish & Wildlife Service, with additional funding from the Environmental Protection Agency, initiated an investigation of completed Federally funded or permitted coastal construction projects in the U.S. Pacific (Clean Water Act : 404 and Rivers and Harbors Act: Section 10) where there were unavoidable impacts to coral reef ecosystems. Projects examined were those where compensatory mitigation should have been recommended and implemented, as a result of these unavoidable impacts.

The project impacts were assessed and the effectiveness of the compensatory mitigation to offset the unavoidable losses was examined. All projects were subject to FWS, EPA, National Marine Fisheries Service (NMFS) and Army Corps of Engineers (Corps) mitigation policies which aim to avoid, minimize, and where there are unavoidable impacts, provide compensatory mitigation to offset coral reef ecosystem losses. Of over 500 projects reviewed (1975-2001), files for 38 projects were useable for the analysis. These projects removed 1,651 acres of coral reef habitat and compensatory mitigation should have been recommended and implemented. The Federal resource agencies recommended compensatory mitigation for only 19 projects (50%) and some form of compensatory mitigation was implemented in 9 projects (24%). Of the cases examined, only four projects (11%) were effective in offsetting the losses to the coral reef ecosystem. These five projects compensated for the loss of 11 acres or 0.7% of the total acres (1,651) of coral reef habitat lost from all 38 projects.

Summary and Recommendations

Despite individual Federal agency's mitigation policies designed to provide compensatory mitigation for unavoidable losses to the coral reef ecosystem, the investigation documented limited implementation of these policies and poor effectiveness of the mitigation effort. The report for this investigation provides recommendations to guide improvements in compliance and effectiveness of future coral reef mitigation. Recommendations include:

1. establish a coordinated local Interagency Coral Reef Mitigation Policy;

2. closely correlate coral reef ecosystem functions and values lost to those gained through compensatory mitigation; and
3. implement a monitoring and tracking system that will increase the resource agencies effectiveness in achieving adequate compensatory mitigation.

In July 2002, the *Interagency Coral Reef Mitigation Working Group* was formed. This working group includes the U.S. Fish & Wildlife Service, Environmental Protection Agency, National Marine Fisheries Service, Army Corps of Engineers (Regulatory and Civil Works), and the State of Hawai'i natural resource agency. The group is currently working to address the problems outlined in the above report and is meeting on a monthly basis to write an Interagency Coral Reef Mitigation Policy.

Resolution 5: Coral Reefs and Climate Change

The U.S. CRTF requests that DOI and NOAA and EPA, along with other interested Task Force members, advance the development of an interagency, public/ private partnership for planning a comprehensive, integrative program for understanding local and system-wide coral reef responses to climate change, including its application of this knowledge for local reef management. The CRTF also directs this team to report back to the CRTF on the progress of developing the program at the next meeting.

Coral Reefs and Climate Change Program: A Program for Long-Term System Assessment, Identification, Prediction, and Adaptive Management of Coral Reef Ecosystems.

Summary

Development of an interagency, public/private partnership for developing a comprehensive, integrative program to a) study and assess the system-wide and local responses of coral reef communities to a changing climate, and b) evaluate, advise on and apply adaptive management to meet changing needs of the system over short and long-term time scales.

Purpose

The purposes of the "Coral Reefs and Climate Change Program" are:

1. To develop a comprehensive, scientifically-based program for detecting, studying, predicting, and understanding the response of coral reef ecosystem structure and function to changing climate, and the socioeconomic impacts of such;
2. To integrate the use of programs and resources of the U.S. Coral Reef Task Force, along with the larger coral reef research and conservation community and interested stakeholders, into a system-wide cooperative effort to understand coral responses to climate change; including GIS/web-based data product delivery mechanisms;
3. To use the knowledge for effective long-term preservation and adaptive management of the coral reef ecosystems for both jurisdictional and marine protected area managers.

Background

At the U.S. Coral Reef Task Force meeting in Hawaii on March 5-6, 1999, they stated:

To be most effective as early and sensitive warning signals of global climate change, coral reef bleaching events must be monitored on site and through remote sensing, and investigated and reported upon by the scientific community. In order to best inform future decisions, the research findings must then be translated effectively into public policy and communicated to funding agencies and the public.

Not long after this decision by the Task Force, scientists recognized and reported on the predicted change in ocean chemistry from the changing climate is at least as troublesome for coral reefs. Understanding the mechanisms of change and adaptation on coral reefs resulting from individual stresses and their combinations, and especially those due to the changing climate, will require systematic study on a network of reef areas that are impacted less from other human-induced stressors. Application of this understanding will be directly useful for effectively diagnosing impacts and managing coral reefs around the world, especially with respect to the more local and controllable threats.

Program Concept

Although significant capabilities exist and are being applied for understanding and predicting effects of

climate change on reefs, many of these programs exist independently -- without a systematic perspective or objective. These capabilities will be utilized throughout this program, by bringing them together in a cohesive analysis, identifying gaps in information and knowledge, and developing projects to address those gaps. To be effective for addressing the multiple stresses of climate change, planning and management of the program will require systematic observation and thoughtful interpretation at both the short and long-term time scales. This should capitalize on the protections provided by the wide-spread, near-pristine coral reefs in the National Wildlife Refuges, National Parks, National Marine Sanctuaries, Coral Reef Ecosystem Reserve, and other protected areas along natural latitudinal and longitudinal gradients.

The goal of the program is a continuing and increasingly effective flow of useful information in support of decision making for management and adaptation purposes. This program will be designed to deliver predictive tools for managers, enabling them to incorporate the effects of climate change into their management planning and design.

“First Steps” Proposal

1. Within one month, DOI and NOAA will hold a Steering Committee meeting of interested CRTF members to initiate coordination, planning, and analysis of current capabilities and resources that may be included in developing the program.
2. Convene a stakeholder workshop early in 2003 to further develop the framework and initial strategic program for the “Coral Reefs & Climate Program” as outlined above .

Resolution 6: Response to the Ocean Commission

The U.S. Coral Reef Task Force directs the Steering Committee to send the proceedings from October 2-3, 2002 CRTF meeting to the Commission, along with the CRTF summary and recommendations. Included will be the acknowledgement that these proceedings will be supplemented by individual member agencies responses to Dr. Mueller-Karger's points directly to the Commission.

The U.S. Coral Reef Task Force encourages the Steering Committee to regularly provide CRTF information to Commission.

All documents will be circulated to all CRTF members prior to submission to Commission.

Request to the Task Force by Dr. Mueller-Karger, U.S. Commission on Ocean Policy and University of South Florida College of Marine Science

As you know, the U.S. Commission on Ocean Policy has been meeting around the country over the past 9 months collecting input from the public, academia, industry, and government on issues that need to be considered in updating our country's ocean policy. We have had meetings in Puerto Rico, Florida, Hawaii, and the Gulf area, and have heard substantial testimony on tropical coral reef issues from these areas and from representatives from the Virgin Islands and Guam, and from many public speakers.

An important objective of this public Commission is to study direct recommendations for policy options in the process in drafting the report due to the President and Congress in the first half of 2003. To date, we have had very few explicit, direct, concrete recommendations for policy directions for the Federal Government on the wide range of issues that affect or are related to coral reefs.

As a member of the Commission's Stewardship Working Group, I would like to request that the Coral Reef Task Force provide the Commission with a list of specific policy recommendations that we should consider in developing policy regarding coral reef environments. The more specific the recommendations, the better and more valuable to the Commission they will be. The Stewardship Working Group will be working with the other working groups in defining policy recommendations, including in areas relevant to "governance", "research, education, monitoring, and operations", and "investment and implementation", which are the focus of the other working groups of the Commission with those names.

As you know, background on our goals and mandate, background on Commissioners, and copies of testimony submitted to the Commission to date may be found on our web page:
<http://oceancommission.gov>

I would urge you, others on the Task force, and any of our colleagues interested in providing input to the Commission, to review our draft "issues" and questions, posted on the web, and provide us with feedback. The feedback may come as comments on the document, or, again, as specific recommendations for policy options. This is a process in which we all have a chance to participate, and I welcome as much interaction with you and others interested as is possible.

Resolution 7: National Academy of Science Study

The U.S. Coral Reef Task Force acknowledges that the study charge presented by the National Academy of Sciences was developed in cooperation with members of the coral reef management, research, non-governmental organization, and private foundation communities and supports the efforts of the NAS; and endorses the development of this study. The Task Force commends the National Academies for exploring the possibility of its undertaking; and encourages the Steering Committee and agency staff to work with the NAS to assist in defining scope, audiences for the study, locating sponsors, and coordinating funding to carry out the study. The Task Force also asks that the Steering Committee report back to CRTF early in 2003.

Background information on the study proposal

Background

The National Academy of Sciences (NAS) sponsored a one-day meeting on September 17, 2002, to determine the feasibility of conducting a National Academies study on coral reef status, trends, causes of decline, and management efforts. Such a study could provide recommendations to ecosystem managers, legislators, and research agencies to enhance current efforts. Approximately 55 representatives from federal and state agencies, NGOs, congressional offices, and academia attended this meeting to discuss the possible scope of work for a committee to address as well as debate whether such a study should be actively pursued, and suggest possible sources of support for such a study. It was widely agreed that an NAS coral reef study would be extremely valuable. The meeting attendees drafted a statement of task (below) for such a study, which has not yet been established. The Coral Reef Task Force will discuss this statement of task as well as potential sources of funding.

Proposed Statement of Task

This study will summarize the current health of global coral reef ecosystems relative to historical levels, based on a critical review of existing scientific information. In addition to examining coral reef ecosystem biology, the economic, political, social, and cultural dimensions of coral reef use and protection will also be discussed, including an analysis of relevant stakeholders. The study will identify the factors, with a focus on potential global impacts of U.S. actions.

The committee will review current U.S. legislation, federal, state, and local management policies, and implementation strategies identifying strengths, gaps, and weaknesses in achieving sustainable management of coral reef ecosystems. Characteristics of successful management efforts, both within the U.S. and abroad, will be highlighted. The committee will recommend management actions at the federal, regional, and local levels that might help reverse the existing declines and achieve sustainable coral ecosystems, and will outline the legislation, policies, research, and education efforts needed to support those management actions.

Announcements

Several important commitments were announced at the U.S. Coral Reef Task Force meeting. Joint statements were issued by both Puerto Rico and NOAA as well as the U.S. Department of Agriculture and the Environmental Protection Agency. These remarks follow. Additional announcements were made on times and locations for future Task Force meetings.

Joint NOAA-Puerto Rico Announcement

Summary

1. With support from NOAA, Puerto Rico will implement a strategy to strengthen enforcement of its existing regulations by improving public awareness, providing further training and support for rangers, and addressing other critical constraints to enforcement.
2. With support from NOAA, Puerto Rico will advance coral reef management in exceptional places, by strengthening reserves in Culebra, Cabo Rojo, Parguera, Desecheo Island Marine Reserve and Vieques, and by establishing over the next 2 years a natural reserve in Rincón and a no take zone at Isla Cabrita in Ceiba, in collaboration with the U.S. Naval base.
3. The Department of Natural and Environmental Resources' Marine Recreational Fishing Project will continue to work in collaboration with the National Marine Fisheries Service (NMFS), to document aspects related to the recreational marine fishery and determine the economic value of that activity in Puerto Rico. Puerto Rico will use the results of this assessment to better incorporate recreational fishing on coral reefs into its management, regulations and enforcement.
4. Puerto Rico will work over the next year to identify the much needed coral reef fisheries regulation. To achieve this, the Department of Natural and Environmental Resources will establish a task force with representation of state and federal agencies and NGOs
5. With support from NOAA, Puerto Rico will reconvene its interagency coral reef advisory committee, created by Puerto Rican Law 147 (Coral Reef Conservation Act of 1999), to establish a Strategic Management Plan for Puerto Rico's Coral Reefs outlining how to address these threats over the next five years. Through public hearings, consultations with experts, and review of existing work, the advisory committee will provide a report to the Department of Natural and Environmental Resources's Secretary with recommendations to the Governor within 1 year on key steps that can be taken.

Announcement Presented by Honorable Salvador Salas, Commonwealth of Puerto Rico

Good morning, distinguished members of the Coral Reef Task Force, Government officials from the Commonwealth of Puerto Rico, and other invited guests. It is an honor to welcome all of you to our Island. The United States of America recognized the importance of and the need to conserve coral reefs under Executive Order 13089 which designated protection and awareness of coral reefs by all appropriate federal agencies. I have a personal commitment to protect, conserve and restore our natural resources, and share with you the common interest in the conservation of one of our most precious natural resources, the forests of the sea...Our Coral Reefs.

The Commonwealth of Puerto Rico acknowledges the valuable and consistent contributions of the All Islands Committee to the U.S. Coral Reef Task Force. This Committee was instrumental in the formulation of the public policy with respect to coral reef conservation, and thus, in the creation of the Executive Order 13089 and the Task Force. We are proud to be members of the All Islands Committee.

In response to our commitment and in the spirit of collaboration between local and federal partners, The Commonwealth of Puerto Rico and NOAA have agreed to collaborate in a series of actions.

Strengthen DNER's Law Enforcement Rangers

Through its laws and policies, The Commonwealth of Puerto Rico has made commitments to protecting coral reefs from a variety of threats. For example, Puerto Rico was the fourth coastal jurisdiction, and the first island, to have an approved plan for coastal non-point pollution. Additionally, Puerto Rico manages its commercially important fish and shellfish species, such as Queen Conch, Red Hind and Spiny Lobster by maintaining seasonal closures.

Puerto Rico realizes that the social and economic benefits of healthy coral reefs, requires active enforcement of these existing regulations. Currently, Puerto Rico's enforcement rangers work with great dedication to implement these important measures. However, they have not always had the technical and financial support they needed from the people they are trying to serve. Puerto Rico recognizes the essential need for strong enforcement. With support from NOAA, Puerto Rico will implement a strategy to strengthen enforcement of its existing regulations by improving public awareness, providing further training and support for rangers, and addressing other critical constraints to enforcement.

Puerto Rico's Coral Reefs as Natural Reserves

Puerto Rico has designated a series of natural reserves, and no take zones, to protect important coastal and marine resources. As an example, through Public Law no. 57 of March 10, 2000, the Puerto Rico Legislature, designated about 0.8 km (about 0.5 miles) of coastal waters and ecosystems surrounding Desecheo Island as the Desecheo Marine Reserve. Desecheo coastal waters, the second no-take zone area in Puerto Rico, harbor some of the best developed and healthiest coral reefs in Puerto Rico. Similarly, through Joint Resolution 307 of July 12, 2000 ordered the Department of Natural and Environmental Resources to identify and designate within 3 years, at least 3% of the insular platform of Puerto Rico and adjacent Islands the management mechanism that it requires.

Puerto Rico would like to build on the successes of its reserves by further strengthening its protected system. With support from NOAA, Puerto Rico will advance coral reef management in exceptional places, by strengthening reserves in Culebra, Cabo Rojo, Parguera, Desecheo Island Marine Reserve and Vieques, and by establishing over the next 2 years a natural reserve in Rincón and a no take zone at Isla Cabrita in Ceiba, in collaboration with the U.S. Naval base.

Puerto Rico's Coral Reef Recreational Fisheries

Interest and participation in marine recreational fishing has grown dramatically in recent years, without being adequately assessed. Until recently, Puerto Rico only collected information on the commercial component of the marine fishery. Since January 2000, the DNER, in collaboration with the National Marine Fisheries Services (NMFS), started an islandwide project to collect data on marine recreational fishing. Results obtained showed there are approximately 200,000 local marine recreational anglers and dozens of thousands of visiting anglers that fish in our waters from shore, private boats and charters annually.

The Department of Natural and Environmental Resources' Marine Recreational Fishing Project will continue to work in collaboration with the National Marine Fisheries Service (NMFS), to document aspects related to the recreational marine fishery and determine the economic value of that activity in Puerto Rico. Puerto Rico will use the results of this assessment to better incorporate recreational fishing on coral reefs into its management, regulations and enforcement.

Puerto Rico's Coral Reef Fisheries Regulations

Fisheries are an essential element of Puerto Rico's economic and social character. There is a need to manage these for the long-term benefit of the Puerto Rican people. This management has been a challenge for the past decade, however, inaction will only result in long-term losses for all parties involved. Fisheries data have already shown declines in coral reef fish size and abundance as well as increases in the effort it takes fishers to maintain the same level of catch.

Puerto Rico will work over the next year to identify the much needed coral reef fisheries regulation. To achieve this, the Department of Natural and Environmental Resources will establish a task force with representation of state and federal agencies and NGOs one year from today.

Strategic Management Plan for Puerto Rico's Coral Reefs

Puerto Rico has identified several issues as posing immediate, high threats to the territory's coral reefs, including, over fishing, sedimentation and non-point pollution, coral bleaching and diseases, development pressure and unmanaged recreational activities and tourism. Puerto Rico recognizes the need to establish strategies to address these key threats in consultation with stakeholders from government, universities, private industry, and the public. With support from NOAA, Puerto Rico will reconvene its interagency coral reef advisory committee, created by Puerto Rican Law 147 (Coral Reef Conservation Act of 1999), to establish a Strategic Management Plan for Puerto Rico's Coral Reefs outlining how to address these threats over the next five years. Through public hearings, consultations with experts, and review of existing work, the advisory committee will provide a report to the Department of Natural and Environmental Resources's Secretary with recommendations to the Governor within 1 year on key steps that can be taken.

We have a real challenge for the future...to halt coral reef degradation. I ask you, as members of the Coral Reef Task Force, the Federal Government, our local Government, and those that derive income, pleasure and other benefits from coral reefs, to face the challenge and do your very best to restore the health of our reefs. As my contribution, I will oversee that our agencies work in close collaboration with Federal agencies, the academy, stakeholders and interested parties to ensure that we all commit to actions that reduce adverse impacts on coral reefs.

Thank you very much for sharing with us your ideas, your enthusiasm and your devoted dedication to restore coral reefs health and our quality of life.

Joint USDA-EPA Proposal on Land Based Sources of Pollution

The U.S. Coral Reef Task Force has identified land-based sources of pollution as one of the key threats facing coral reef ecosystems.

EPA and USDA have a number of tools that can provide state and local stakeholders with additional means to protect their natural resources, including coral reef ecosystems, from the impacts of point and non-point source pollution.

USDA and EPA, therefore, propose to co-lead an effort to address the key CRTF focus area of land based sources of pollution. We invite all interested members of the Task Force to join this effort, which initially will involve creation of a planning committee that will include representatives of local and regional stakeholder groups.

As a next step, EPA and USDA will consider the coordination and hosting of regional workshops to be held in the Pacific and in the Caribbean/Atlantic regions. The purpose of the workshops is to coalesce on-going local efforts to address land based sources of pollution, and provide support to local jurisdictions to develop and implement action strategies to address this key focus area.

Within 45 days, USDA and EPA will produce the framework to more fully develop this proposal.

Future Meetings of the U.S. Coral Reef Task Force

The next Task Force meeting will be held in Washington, D.C. in February - March, 2002.

Guam and CNMI offered to host the meeting in October 2003. The CRTF was pleased to accept their invitation.

Coral Reef Task Force Awards October 2002 Meeting

Award #1:

Presented to: Governor Tauese Sunia

for outstanding leadership and management to protect the valuable coral reef resources of American Samoa by banning harmful scuba-assisted fishing and the harvest of live rock, and for outstanding commitment to the U.S. Coral Reef Task Force.

Award #2:

Presented to: Surfrider Foundation

for outstanding leadership and commitment to protecting Puerto Rico's valuable coral reefs by promoting designation of a Natural Reserve in Rincon.

Award #3:

Presented to: Robert Johannes

for outstanding scientific achievement by pioneering an approach to the conservation of marine biodiversity that integrates specialized ecological knowledge and traditional marine resource management systems of community-based tropical fishing peoples with Western-based scientific management.

Award #4:

Presented to: Dr. Edwin Hernandez Delgado

for outstanding advancement of science and conservation by publishing data integral to the designation and future management of the Luis Pena Channel Natural Reserve on the island of Culebra, Puerto Rico, the first community-based "no take" coral reef protected area designated in Puerto Rico.

Award #5:

Presented to: Sir Nicholas Nuttall and the Bahamas Reef Environmental Education Foundation

for outstanding leadership and commitment to increasing awareness of the citizens and government of the Bahamas on the value and importance of their reef ecosystems.

Award #6:

Presented to: CORALations

for outstanding leadership and creativity to raise public awareness, promote coral reef education, and foster community participation in the protection of Puerto Rico's coral reef ecosystems.

Award #7:

Presented to: La Asociacion de Pescadores de Culebra/The Culebra Fishermen's Association

for outstanding community-level participation through its leadership and commitment in supporting and helping implement the Canal Luis Pena Natural Reserve, the first "no take" coral reef protected area in Puerto Rico.

Award #8:

Presented to: Donna Turgeon

for outstanding leadership and determination to produce the first nation-wide report on the condition of U.S. coral reefs entitled, "The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States." The report is a significant milestone towards building an integrated system to track the effectiveness of management efforts and the condition of the nation's valuable coral reefs.

Appendix A: Task Force Attendees

Katherine Andrews,	Florida
Athline Clark,	Hawaii
Lawrence Clark,	U.S. Department of Agriculture
Becky Cruz Lizama,	Commonwealth of Northern Marianas Islands
Gerry Davis,	Guam
Janice Hodge,	U.S. Virgin Islands
Tim Keeney,	Department of Commerce
Ambassador Hersey Kyota,	Palau
Daniel MacLeod,	U.S. Coast Guard
Craig Manson,	Department of Interior
Tom Praster,	Department of State
Diane Regas,	Environmental Protection Agency
Donald Schregardus,	Department of Defense
Eileen Sobeck,	Department of Justice
William Sugrue,	U.S. Agency for International Development
Salvador Salas,	Puerto Rico
Chuck Trees,	National Aeronautics and Space Administration
Lt. Governor Togiola Tulafono,	American Samoa

Appendix B: Agenda

Meeting Agenda United States Coral Reef Task Force

October 2-3, 2002
Caribe Hilton Hotel, Las Olas Room, San Juan, Puerto Rico
(note: p = presentation, d = discussion)

Monday, SEPTEMBER 30

8:30 – 5:45 Caribbean Regional Workshop on Coral Fisheries Management [OPTIONAL]
(Contact: Jen Lechuga, NOAA Fisheries, 301-713-2325)

Tuesday, OCTOBER 1

8:30 – 5:30 Caribbean Regional Workshop on Coral Fisheries Management [OPTIONAL]
(Contact: Jen Lechuga, NOAA Fisheries, 301-713-2325)

8:00 am USDA-NRCS Puerto Rico Watershed Tour "Summit to the Sea" [OPTIONAL]
(Contact: Becky Fraticelli (NRCS 787-766-5206 X-236))

5:00-6:30 pm TASK FORCE PRE-MEETING (Task Force and staff)

- Welcome and Introductions (Co-chairs)
- Review Meeting Agenda
- Review Task Force business proposals
- General Discussion

7:00-8:30 pm Welcome Reception (Hotel Terrace)

Wednesday, OCTOBER 2

8:30 AM Open Meeting (Task Force Co-Chairs)

Official Welcome (Governor of Puerto Rico)

Task Force Member Introductions (all)

9:00 AM Task Force Business Items: Presentation and Discussion

1. Report from the Steering Committee: (Steering Committee cochairs)
 - Status of National Coral Reef Action Strategy (15 min p 5 min d)
 - Proposal re: Task Force Implementation (30 p 10 d)
 - Proposal re: Oversight Policy (5)
 - Proposals re: National Academy study, Ocean Commission (5)

10:10 AM 2. Report from the All Islands Coral Reef Initiative (Lelei Peau)(15 p 5 d)

- 10:30-10:45 Break
- 10:45 AM
3. Report from Vessel Grounding Workshops (Doug Helton, NOAA)(10 p 5 d)
 4. Report from Fisheries Workshop (Tom Hourigan, NOAA)(10 p 5 d)
 5. Report from International WG, Trade Subgroup (Sheila Einsweiler, DOI)(10 p 5 d)
 6. State of U.S. Coral Reef Ecosystems Report (Donna Turgeon, NOAA)(10 p 5 d)
 7. Report on mitigation for federal action on reefs (Antonio Bentivoglio, DOI)(15 p 5 d)

12:05 – 1:00 Lunch

- 1:00 PM Task Force Awards (cochairs)
- Finalists, local school poster contest
 - Task Force awards

1: 15 Public Comment Session (registration required)

3:15-3:30 Break

- 3:45 Hot topic updates (part 1)
- Report re: Tropical Consortium Opportunities (USDA)(10 p 5 d)
 - Report re: Coral reef disease issues (Ernesto Weil)(15 p 5 d)
 - Report re: Status of Florida Keys reefs (Billy Causey, NOAA)(15 p 5 d)
 - Report re: Changing climate and coral reefs (Robert Buddemeier)(10 p 5 d)

4:45 Wrap Up

5:00 Adjorn

EVENING – exhibits/reception

Thursday, OCTOBER 3

- 8:30 AM Action on Task Force Business Items: (all)
- Proposal re: Task Force Implementation (30)
 - Proposal re: Oversight Policy (5)
 - Request from Ocean Commission (5)
 - Proposed National Academy study (5)
 - Coral Trade Issues (10)
 - Other

10:00-10:15 Break

10:15 AM Progress Reports from Task Force members
(brief updates on key accomplishments, actions or issues)

12:00-1:30 Lunch

1:30 PM

Hot topics (part 2)

- Report on Task Force coral reef mapping initiative (Mark Monaco, NOAA)(20 p 5 d)
- Release of new poll of U.S. public re: coral reefs (Lisa Dropkin, SeaWeb)(15 p 5 d)
- Report on Reefs At Risk –Caribbean study (John McManus)(10 p 5 d)
- Report on Reef Check 5 year report (Gregor Hodgson, Reef Check)(10 p 5 d)
- Report on NWHI expedition (Athline Clark, Hawaii /Don Palawski, USFWS)(15 p 5 d)
- Report on Florida Keys expedition (Jim Bohnsack, NOAA)(15 p 5 d)

3:35

Wrap up

3:45

Adjorn

Friday, OCTOBER 4

Task Force Field Trips [OPTIONAL]

Appendix C: Public Comment and Exhibitors

The following individuals and organizations provided public comment:

Dr. Ken Lindeman	(Environmental Defense)
Mary Anne L.	(CORALations)
Dr. Edwin Delgado	(Asst. Professor, University of Puerto Rico)
John McManus	(Director, NCCORE)
Dan Clark	(Cry of the Water)
Richard Dodge	(National Coral Reef Initiative)
David Rainey	(Pacific NGO representative)
Ms. Ortiz	(Caribbean Blue Flag Program)
Michelle Scharer	(community-based NGO)
David Vosseler	(Marine Aquarium Council)
Ricardo Desoto	(Puerto Rico Surfrider)
Omar Perez Gill	(Fisherman)
Ivan Lebo	
Phil Duston	(Cousteau Society)

The following organizations exhibited at the meeting:

Reef Check
National Center for Caribbean Coral Reef Research (NCCORE)
National Oceanographic and Atmospheric Administration
USDA Natural Resource Conservation Service
Puerto Rico Department of Natural Resources
Department of Interior
Marine Aquarium Council
National Coral Reef Institute
Department of Defense
PBSJ Consulting