

## **INTERNATIONAL WORKING GROUP DRAFT REPORT**

### **INTRODUCTION: URGENT CALL FOR ACTION INTERNATIONAL CHARGE OF EXECUTIVE ORDER 13089**

The Secretary of State and the Administrator of the Agency for International Development, in cooperation with other members of the Coral Reef Task Force and drawing upon their expertise, shall assess the U.S. role in international trade and protection of coral reef species and implement appropriate strategies and actions to promote conservation and sustainable use of coral reef resources worldwide. Such actions shall include expanded collaboration with other International Coral Reef Initiative ("ICRI") partners, especially governments, to implement the ICRI through its Framework for Action and the Global Coral Reef Monitoring Network at regional, national, and local levels.

### **URGENT NEED TO REDUCE GLOBAL THREATS TO REEFS**

Coral reefs around the world are seriously threatened by direct and indirect human actions. The 1998 *Reefs at Risk* study found that almost 60% of the world's coral reefs are potentially threatened by human activity - ranging from coastal development and destructive and over-fishing practices to overexploitation of resources, marine pollution and runoff from inland deforestation and farming. Reef Check surveys conducted in 1997 and 1998 found that most reefs are severely over-fished, with most organisms of high commercial-value missing. In addition, the recent global impacts of catastrophic events, such as widespread coral bleaching and mortality and increased storm intensity, compound the more localized human impacts that place reefs at risk.

Six billion people now inhabit our planet, twice as many as 40 years ago, and an additional 3 billion is expected in the next 40 years. Population pressures are particularly acute in coastal areas. Presently, almost half a billion people are estimated to live within 100 kilometers of a coral reef, deriving great benefits from reef resources while placing increasing demands on these complex and fragile ecosystems that can no longer be sustainably met.

The globalization of markets and the surge in international trade are also increasing the risks on reefs. Many coral reef species and resources are harvested around the world for commercial purposes such as food fish, the aquarium trade, live fish markets, construction materials, pharmaceuticals and traditional medicines. Some of this commercial harvest involves destructive fishing practices, and, in many cases, the local and regional intensity of harvest appears to be unsustainable over time.

### **URGENT NEED FOR U.S. AND INTERNATIONAL ACTION**

The United States has strong political and economic interests in protecting international coral reefs. Healthy marine ecosystems are critical to U.S. diplomatic and development strategies to promote economic and food security, social stability, democratic

governance, improved human health, disaster and climate change mitigation, and biodiversity conservation in many countries. Coral reef ecosystems have great economic, social and cultural importance to many nations and entire regions. According to one estimate, coral reefs provide almost \$375 billion worth of ecosystem services to humans, from living resources such as fish, as well as tourism and coastal protection. These extremely valuable ecosystems constitute the economic base and future hope for sustained development in many countries, particularly small island nations.

The United States also has strong national interests in the worldwide protection of coral reefs. The ecological health and economic benefits of U.S. coral reefs are intimately connected with international reefs. Waters that bathe the Florida Keys also sweep up through the Wider Caribbean and along the coast of Central America. These currents carry essential larvae and juvenile corals, other invertebrates, and fish that replenish our reefs; they can also carry potentially harmful pollutants and diseases. In the Pacific, coral reefs of Hawaii and U.S. territories are also connected with those of other Indo-Pacific reefs, sharing many of the same coral reef species.

Priority recommendations for action by the U.S. to address key threats were developed by the International Working Group and have been incorporated into the draft report of the U.S. Coral Reef Task Force, *The National Action to Conserve Coral Reefs*. This draft report of the International Working Group is presented in support of *The National Action Plan* to implement the Executive Order.

**Strategic U.S. actions to reduce global threats to reefs from human activities can be characterized into six broad categories:**

- Exercise global leadership in the international arena in shaping and developing environmentally sound and comprehensive ocean and coral reef policy.
- Forge strategic partnerships in concert with other governments, non-governmental groups, and the public and private sectors to address international threats.
- Build capacity to manage and conserve reef ecosystems and their watersheds in the Wider Caribbean, Pacific, South East Asia, East Africa and the Middle East regions.
- Support the creation and management of coral reef Marine Protected Areas, particularly those that contain substantial ecological (*i.e.* no-take) reserves.
- Address the impact of global climate change and coral bleaching on reefs and people.
- Address the impact of international trade in coral reef species and the U.S. role.

## **Support to International Initiatives and Diplomatic Efforts**

In developing and implementing strategies and actions to promote conservation and sustainable use of coral reef resources worldwide, the Executive Order calls for expanded collaboration with other International Coral Reef Initiative partners, especially governments, to implement the Framework for Action and the Global Coral Reef Monitoring Network.

**Background:** The International Coral Reef Initiative (ICRI) is a partnership among nations and organizations seeking to implement Chapter 17 of Agenda 21, and other international Conventions and agreements for the benefit of coral reefs and related ecosystems. The Initiative was founded by the United States in order to stop and reverse the global degradation of coral reefs and related ecosystems. The ICRI partnership and approach thus far has been to mobilize governments and a wide range of other stakeholders in an effort to improve management practices, increase capacity and political support, and share information on the health of these ecosystems. The Framework for Action calls for action in four major areas: integrated management; capacity building; research and monitoring; and review.

**ISSUE: Expand Cooperation with Partners of the International Coral Reef Initiative Through Implementation of ICRI's Framework for Action and the Global Coral Reef Monitoring Network.** As founder of the International Coral Reef Initiative (ICRI) in 1994, the U.S. has been a leader in every phase of its development and implementation. ICRI has helped reshape the international scientific and management communities and the public dialogue on the urgency to protect coral ecosystems. Key developments that guide our international strategy include action priorities of ICRI's Renewed Call to Action and its Global Coral Reef Monitoring Network.

**Proposed Actions and Strategies to Address Key Issues:** The USCRTF provides an excellent platform for targeted and coordinated U.S. support to ICRI and the conservation and sustainable use of coral reef resources worldwide, while ICRI can provide an international forum for gaining support and implementing international activities of the Task Force. USCRTF work can provide technical, scientific, legal and policy models for the management and protection of coral reefs, which can be disseminated through a variety of informational and technical assistance channels. The U.S. is, and has been, a strong supporter of international capacity building in natural resource management through its development and outreach programs. The international working group fosters strategic partnerships with other countries, international organizations and institutions, the public and private sectors, and non-governmental organizations to address international threats to coral reef ecosystems and to effectively leverage funds. The U.S. supports ICRI's goal of bringing coral reefs into the work programs of a number of international organizations and conventions, including UNEP, IOC, IUCN, World Heritage and Ramsar Conventions, and to encourage cooperation among them, such as between IOC, IUCN and UNEP as hosts of the GCRMN. UNEP's Regional Seas Program, particularly in the Caribbean and South Pacific, has been effective in situating on-the-ground action in several coral reef regions.

The French Government has asked for strong cooperation with the U.S. as they assume the ICRI Secretariat. Consultations have highlighted opportunities for cooperation on diplomatic efforts, building the commitment of development assistance agencies, and tackling important scientific (e.g. coral bleaching) and management issues.

U.S. commitment to strengthen implementation of the ICRI Global Coral Reef Monitoring Network and Reef Check will provide baselines and annual monitoring of reef health and assessment of coral bleaching events, subsequent mortality and ecological and socio-economic impacts. This commitment will require an active partnership of Task Force members, drawing upon their technical expertise and resources, at global and regional levels.

**Key recommendations include:**

- Strengthen the International Coral Reef Initiative and implement its Renewed Call to Action, and support the Global Coral Reef Monitoring Network and link it with the national monitoring program.
- Foster improved coordination with other bilateral assistance programs, multi-lateral development banks, and private foundations to strategically leverage funding and increase effectiveness.
- Support ICRI's goal of bringing coral reefs and sustainable fisheries issues into the work program of relevant international conventions, organizations and bodies such as CBD, CITES, UNEP, UNDP, IOC, IMO/IHO, ICLARM, IUCN, WCMC, World Heritage and Ramsar Conventions, WTO, FAO, Law of the Sea, and the Global Programme of Action.
- Support the stated needs and priorities of the Small Island Developing States and Alliance of Small Island States by identifying potential areas of cooperation on coral reef conservation issues.
- Support counterpart funding for the United Nation Foundation's International Coral Reef Action Network (ICRAN).
- Work with U.S. States and territories to expand coral reef conservation within the Caribbean Sea and Pacific Ocean, and highlight the ecological and economic connections between U.S. reefs and international reefs.

**ISSUE: US Cooperation with Small Island Developing States (SIDS) and the Alliance of Small Island States (AOSIS)**

- Issues such as coral reef ecosystems, climate change, sustainable fisheries and tourism, coastal protection and integrated development have unique relevance to small island nations.
- This year the United Nation's Commission on Sustainable Development conducted a five-year review of the Barbados Declaration and the Programme of Action for the Sustainable Development of Small Island Developing States.
- The global, catastrophic coral bleaching and die-off of 1998 has, for the first time, brought into focus the possibility of severe coral reef ecosystem damage or even collapse should predicted warming trends continue. The ramifications of such

damage to communities and countries dependent on coral reef resources for subsistence and economic livelihood, are only now being considered.

**Proposed Actions and Strategies to Address Key Issues:** All government agencies need to work closely to identify potential and strategic cooperation with SIDS and AOSIS member states in such a way that is responsive to their stated needs and priorities, and that represent US government interests. Focused policy development and research to identify response strategies should address ecosystem scale and socio-economic impacts of coral bleaching. Furthermore, linkages and exchanges between U.S. islands and international small island states should be forged.

- The U.S. Coral Reef Task Force adopted the following resolution on March 6, 1999: "It is the sense of the U.S. Coral Reef Task Force that the elements of the U.S. Islands Coral Reef Initiative (Islands Initiative) be considered by the Working Groups in the context of their current deliberations, and that the Islands Initiative elements, as updated appropriately, be considered as the first priority for support with fiscal year (FY) 2000 funds as available. And that U.S. agencies engaged in international activities to protect coral reef resources shall engage the U.S. Islands in building effective relationships with small island developing states."

## ICRI'S RENEWED CALL TO ACTION: U.S. EFFORTS TO SUPPORT PRIORITY ACTIONS

At ICRI's International Tropical Marine Ecosystem Management Symposium in November 1998, over 300 delegates from 49 nations endorsed a Renewed Call to Action, reiterating the call for concerted action by the wide range of stakeholders to reduce the threats to coral reefs and related ecosystems.

**Below, each priority action that is currently supported by the U.S. government is indicated by an asterisk (\*).**

### Current Priorities of the Renewed Call to Action

In reaffirming the Call to Action and Framework for Action, ITMEMS participants identified the following priority issues to amplify and strengthen the efforts of all in the ICRI partnership:

**Issue:** Ignorance is destroying coral reefs and related ecosystems.

\* **Response:** Launch multi-faceted, global-to-local-level mass marketing awareness campaigns to change the behavior of people. Bridge the gap between global knowledge and local action through the creation of national coral reef initiatives.

**Issue:** Pollutants, including sediments and nutrients from land-based human activities, severely threaten the health of coral reef ecosystems.

\* **Response:** Develop and implement equitable, participatory, integrated coastal management that incorporates watersheds.

**Issue:** Destructive and unsustainable fishing practices, such as cyanide, explosives, trawling and other forms of drag-netting, as well as overexploitation, are destroying coral reefs and related ecosystems.

\* **Response:** Commit to eliminating fishing practices that are not demonstrably sustainable, by promoting effective enforcement, alternative methods and market incentives.

**Issue:** Activities of the private sector, including tourism and the trade of coral reef products, can protect or destroy coral reef ecosystems.

\* **Response:** Work with the private sector to foster appreciation of the value of coral reefs and encourage the private sector to use and protect coral reefs and related ecosystems in ecologically sustainable ways by introducing incentives, such as awards and accreditation for better environmental practices.

**Issue:** An ecosystem approach to management is needed to conserve and restore the values and functions of coral reefs and related ecosystems.

\* **Response:** Implement an integrated approach to management that includes effective marine protected areas, including no-take zones, as a vital component in managing human activities within larger biogeographic frameworks.

**Issue:** Recognition of traditional knowledge and management systems is vital.

\* **Response:** Increase the confidence and capability of communities to sustainably manage and conserve resources through capacity building and validation of their traditional practices. Integrate traditional and modern approaches to management for effective results.

**Issue:** Projects have failed because they have not taken into account socioeconomic and cultural factors.

\* **Response:** Socioeconomic and cultural factors are essential components in developing community-based management programs, for tailoring management to local conditions, and for demonstrating the value of tropical marine ecosystems to policy makers and users.

**Issue:** Managers and communities are not getting the information and management tools they need to make sound management decisions.

\* **Response:** Create and use networks of knowledge-based management systems through networks of people, ideas and information to promote science-based management and public participation in that process.

**Issue:** Data produced by the GCRMN, Reef Check and other innovative programs have proven the value of monitoring to global reef assessment and local management, but more widespread monitoring is needed.

\* **Response:** Strengthen biophysical and socioeconomic monitoring efforts on all scales to improve management effectiveness. Secure long-term financing.

**Issue:** Lack of funding undermines actions to address threats to coral reefs, monitor their health, and assess the impact of management practices.

**Response:** Develop financing in a strategic manner at local, regional and international levels.

**Issue:** Coral reefs are the life support systems for the existence of small island developing states and many coastal communities of developing tropical countries.

**\* Response:** Urge governments that support the goals of ICRI to promote consideration of this report during the next session of the Commission on Sustainable Development as part of its review of Small Island Developing States, Oceans and Sustainable Tourism issues in 1999. The CSD is urged to recognize this vital relationship and support immediate and effective action to understand and address the threats to these ecosystems. Urge governments to promote ICRI goals within the World Heritage and Ramsar Conventions, in implementation of the Convention on Biological Diversity and its Jakarta Mandate as well as other relevant international and regional instruments.

**The Call:** The participants of the International Tropical Marine Ecosystems Management Symposium, in their Renewed Call to Action, call upon governments, United Nations agencies, bilateral and multilateral financial institutions, scientists, NGOs, local communities and the private sector to implement the 1995 Call to Action and the Framework for Action, taking into account the Renewed Call to Action and working group Priority Actions produced at ITMEMS. Further, we call upon the global community to re-commit to urgent action to address the threats to coral reefs and tropical marine ecosystems.

## **Appendix: Background on ICRI and the Renewed Call to Action**

**Townsville, Australia, November 26, 1998**

**‘Coral reefs are in serious decline globally, especially those near shallow shelves and dense populations.’**

The contents and message of this document were endorsed by over 300 delegates from 49 nations at ICRI's International Tropical Marine Ecosystems Management Symposium in November 1998. This document represents a renewed global call for action on the continuing decline in the health of the world's coral reefs.

### **The International Coral Reef Initiative**

The International Coral Reef Initiative (ICRI) is a partnership among nations and organizations seeking to implement Chapter 17 of Agenda 21, and other international Conventions and agreements for the benefit of coral reefs and related ecosystems. The Initiative was established in order to stop and reverse the global degradation of coral reefs and related ecosystems. The ICRI partnership and approach thus far has been to mobilize governments and a wide range of other stakeholders in an effort to improve management practices, increase capacity and political support, and share information on the health of these ecosystems.

The first International Coral Reef Initiative Workshop was held in the Philippines in June 1995 to enable countries, donors, and development and funding agencies to work with coral reef managers, private sector representatives, non-governmental organizations and scientists to develop a Call to Action and a Framework for Action for achieving sustainable management of coral reefs and related ecosystems.

The Call to Action highlighted the significance of coral reef ecosystems to sustainable development. ‘Coral reef ecosystems offer benefits to humankind beyond those realized for food production, tourism, recreation, aesthetics, and shoreline protection. Capable of sustaining innumerable coastal communities worldwide, these ecosystems also have great economic, social, and cultural importance to nations, and to entire regions. As competition among multiple uses of reef resources increases, so too will their significance to the human populations that depend on them.’ Continuing degradation of coral reefs and related ecosystems and their resources may increase the conflict amongst users and threaten environmental and food security. Coral reefs are the life support system for the existence of small island developing states and many coastal communities of developing tropical countries.

The purpose of the Call to Action was, and remains, to mobilize governments and the wide range of other stakeholders whose coordinated vigorous and effective actions are required to address the threats to reefs. The Framework for Action calls for action in four major areas: integrated management; capacity building; research and monitoring; and review.

The Dumaguete City workshop (Philippines, May—June 1995) set in place a strategy for subsequent action under ICRI, including endorsement of the need for periodic review of the extent and success of ICRI implementation as an essential element of the ICRI strategy.

### **ICRI Achievements 1995—1998**

Since the first ICRI Workshop significant progress has been made in implementing the elements of the ICRI Call to Action and Framework for Action. This resulted from the action of many involved stakeholders and through many large and small efforts from the local to the global level.

Governments of ICRI partners and non-government organizations (NGOs) raised the profile of coral reefs in the major international fora. The Initiative was endorsed by the Parties to the Convention on Biological Diversity, the Ramsar Convention on Wetlands of International Importance, the Commission on Sustainable Development (CSD), the United Nations Environment Programme (UNEP), which emphasized the importance of the Regional Seas Program to ICRI, the Intergovernmental Oceanographic Commission and the scientific community at the Eighth International Coral Reef Symposium in Panama. Agreement was reached on The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities which bears directly on reducing a major source of threat to reefs.

Regional action plans have been developed in all regions of the world: Tropical Americas; the Pacific; the East Asian Seas; South Asia; Eastern Africa and the Western Indian Ocean; and the Middle East. Regional, and also national and local coral reef initiatives were created based on the elements of the Framework for Action and ICRI regional strategies. The regional reports presented at the meeting and contained in the workshop report evaluated the state of implementation of numerous coral reef activities in each region. However, the lack of national level commitments to coral reef programs in some countries hindered implementation of global and regional achievements. While UNEP and several of its Regional Seas Programmes have been productive ICRI partners, the ongoing role of UNEP and the function of regional coordination needs, strengthening and identified resources.

Growing partnerships with the scientific and NGO communities were particularly effective in advancing ICRI goals. Borne of their strong commitment, the 1997 International Year of the Reef, followed by the 1998 International Year of the Ocean, broadened awareness and commitment around the world and created a new sense of urgency for conservation and sustainable use of coral reef ecosystems. The Pacific Year of the Reef and the launch of the ReefCheck voluntary monitoring network are just two of the many innovative activities of the International Year of the Reef. Each continues to generate action and the information and awareness needed to support that action.

The international science community continues its leading role in the development of new initiatives to better assess the state of coral reef ecosystems and to engage the public

in these efforts. ReefCheck has involved recreational divers in over 40 countries to obtain a scientifically valid picture of the impacts of humans on reefs, while also raising public awareness. The ICRI Global Coral Reef Monitoring Network (GCRMN) was established under the Intergovernmental Oceanographic Commission, the World Conservation Union (IUCN) and UNEP, and made significant progress in implementing coral reef monitoring around the Indian Ocean and South Asia, and in parts of Southeast Asia, the Pacific Ocean and the Caribbean, where the Caribbean Coastal Marine Productivity network is already monitoring reefs in 18 countries. The GCRMN and ReefCheck have now combined forces to form a comprehensive monitoring program. The lack of sustainable funding sources continues to jeopardize the viability of these efforts.

The Global Coral Reef Monitoring Network, ReefCheck, ReefBase, the Representative Assessment of Management Parameters and other efforts have increased our understanding of the state of reefs — this meeting has reviewed the results of monitoring efforts in all regions of the world produced by ReefCheck and the GCRMN and heard reports on significant efforts to use rapid assessment techniques to survey coral reef ecosystems.

It is also clear that many local communities around the world continued or initiated efforts to find sustainable means to use the marine resources upon which they depend. Many more require the education, capacity building, training and finances necessary to begin to realize this possibility. Since 1995 bilateral and international development resources have continued to be directed at projects related to coastal management, sustainable coastal development, biodiversity conservation and other relevant activities. These activities have not been systematically enumerated but it is clear that some funding priorities have been shaped by ICRI goals. Furthermore the World Bank has shown its strong commitment to building the ICRI partnership by hosting a major coral reef symposium and other efforts. A study conducted by the World Bank in Indonesia has increased our understanding of the economic value of reefs to local, regional and national economies.

We must continue and strengthen this progress in the face of clear evidence of increasing threats to coral reefs and related ecosystems. Fortunately, evidence suggests that reefs have a high capacity for recovery; if pressures are reduced there is hope that the health of many reefs will rebound.

The International Tropical Marine Ecosystems Management Symposium (ITMEMS) was held in Australia in November 1998. The Symposium provided a forum for the review and evaluation of ICRI implementation. The review was conducted within a framework of the four ICRI cornerstones: integrated management; capacity building; research and monitoring; and review. The Symposium also provided an opportunity to identify shortcomings in the global ICRI strategy and for delegates to give guidance to the Secretariat and ICRI partners on the future direction of the Initiative.

## **Wider Caribbean Region**

### **Wider Caribbean Subgroup**

#### **Report to the U.S. Coral Reef Task Force**

##### **Need for Strategic Approach to Wider Caribbean**

To fulfill the international mandate of the Executive Order for the Protection of Coral Reefs, an interagency working group made up of members representing 12 government agencies and territories has produced a Plan of Action for the Wider Caribbean. Major USG participants were USAID, NOAA, the Department of Interior, and EPA. Through two consultative meetings, the following items were compiled and discussed: the U.S. strategic interests of coral reefs in the Caribbean, current U.S. government and territory programs, short-term U.S. government deliverables for the U.S. Coral Reef Task Force (USCRTF) meeting in March, opportunities for improved collaboration among U.S. government entities, actions to be taken with additional funding and partnership opportunities for co-financing priority actions.

##### **I. Overview**

###### **United States Strategic Interests**

Coastal systems of the wider Caribbean -- the coral reefs, mangroves, and sea grass beds -- harbor globally important biological diversity and support the region's economies. Intact coastal ecosystems are the underpinnings of the region's fisheries and tourism industries, thereby providing sustainable economic opportunities for the people of the Caribbean. Destruction of coastal ecosystems not only threatens biodiversity, but it impoverishes local people, who then are more likely to turn to illicit economic activities and/or migrate to the United States. Coral reefs also buffer coastal communities against disasters and are early indicators of global warming (via coral bleaching). Maintaining the Caribbean's coastal resources outside of the United States also directly impacts the quality of coastal resources within the U.S. (e.g., Florida, the Virgin Islands, and Puerto Rico). This is because migratory species, such as birds and fish, utilize international Caribbean resources, and ocean currents link U.S. reefs with the wider Caribbean ecosystem.

###### **Status of Coral Reef Ecosystems in the Wider Caribbean**

A recent World Resources Institute report states that about 9 percent of the world's mapped reefs are found in the Caribbean, especially along the Central American coast and off the Caribbean islands. Of these reefs, almost 2/3 of reefs here are at risk and about 1/3 at high risk (WRI, 1998). Several signs of stress are apparent. Coral diseases have been documented most frequently in the Caribbean region. Several Caribbean species have declined to the point that they are

candidates for possible addition to the U.S. Endangered and Threatened Species list, including 2 species of reef building corals (*A. palmata* and *A. cervicornis*) and 4 apex predator species (e.g. grouper).

The status of corals and coral reef ecosystems is highly variable in the wider Caribbean. Coral health is generally best on deeper reefs, around low islands, and away from centers of population or tourism development. In recent years, however, there has been a marked trend toward increasing degradation throughout the region. This degradation is the result of several factors, including both direct and indirect impacts. Direct impacts include (1) anchoring, (2) littering, (3) trampling, (4) diver damage, (5) collection of corals and other reef organisms, and (6) overfishing and destructive fishing practices, which has contributed to excessive algal growth -- this growth has replaced live coral cover in many areas. Indirect impacts include those factors contributing to the wide-spread decline in coastal environments in the Caribbean, such as (1) mangrove depletion, (2) increased turbidity due to coastal development, deforestation and poor agricultural practices, (3) land-based pollution loading from industrial wastes, fertilizers, pesticides and other agricultural products, and (4) eutrophication from sewage and other domestic waste (less than 10% of total domestic waste receives treatment before disposal), as well as marine-based pollution from oil refineries, oil tanker traffic and offshore oil reserves (Wilkinson, 1998; Jameson et al., 1995).

### **Caribbean Institutional Capacity**

There are at least a dozen regional institutions and programs operating throughout the Wider Caribbean which support coral reef ecosystem conservation and/or other directly related environmental programs. Considerable capacity also exists at the national level. For example, there are over fifty public and private research institutions and agencies located in twenty-four countries engaged in marine biology, marine ecology, and marine resource management. U.S. government (USG) entities and other international donors provide support to both enhance their institutional capacity and to support their specific programs.

## **II. Current United States Government Agency and Territory Programs**

In implementing its various programs in the Wider Caribbean, the USG and its territories work closely through consultative processes with local stakeholders, and in partnership with national and regional institutions, non-governmental organizations (NGOs), various private sector groups, and other donors. Program areas include: protected areas management and biodiversity conservation; pollution prevention and mitigation; fisheries management; coastal zone management; sustainable tourism; watershed management; sustainable financing; research, monitoring and training; and climate change and disaster mitigation. Table 1 lists U.S. government agencies and territories that have programs in the wider Caribbean (non-U.S.), including the program areas they are involved in.

The Wider Caribbean Sub-Group is currently in the process of compiling a compendium of current government programs and activities in the wider Caribbean (non-U.S. territories). This compendium has proved to be very valuable as the sub-group works to coordinate its efforts. Illustrative examples of these activities include:

- **USAID's Environment and Coastal Resources Management (ENCORE):** in collaboration with the Organization of Eastern Caribbean States (OECS), Caribbean Environmental Health Institute (CEHI), and WWF, supports sustainable tourism, coastal zone management, water quality monitoring, and marine park protection in the Eastern Caribbean. Ended 9/99 but elements have been included in the new regional program described below.
- **NOAA's Coral Disease Mapping Program:** the National Marine Fisheries Service has developed guides to Western Atlantic coral diseases and is collaborating with the World Conservation Monitoring Center (WCMC) to develop GIS-based maps of the reported global incidences of coral diseases.
- **EPA's Wider Caribbean Initiative on Coral Reefs-Agreement on Land-Based Sources:** involves the negotiation of legally binding agreement for the wider Caribbean Region which will establish regional effluent standards for domestic wastewater and best management practice's for agriculture and non-point sources.
- **DOI/Interagency Caribbean Marine Protected Area Management network (CaMPAM):** is a collaborative effort between the National Park Service, the United Nations Environment Programme and the National Oceanic and Atmospheric Administration that aims to improve marine protected area management through the exchange of knowledge, ideas and experiences. Currently, over 300 managers are members of the consortium.
- 

### **III. Proposed Actions and Strategies**

#### **A. Recommended Short Term Deliverables**

- The Coral Reef Task Force should announce the State Department's earmarked funding for the United Nations Environment Programme's Caribbean Environment Programme (UNEP CEP), a clearinghouse for marine and coastal environmental data and information in the Wider Caribbean Region.
- The Coral Reef Task Force should announce that USAID has developed a five year insular Caribbean Regional Environment Strategy after extensive consultations in the region. Program design is underway with implementation beginning in December, 1999.
- The Coral Reef Task Force should promote implementation of the Tulum Declaration to support MesoAmerican coral reefs. The declaration was signed in 1997 by the Prime Minister of Belize and the presidents of Honduras, Guatemala

- and Mexico to conserve the world's second longest coral reef, running from the tip of the Yucatan in Mexico to Honduras's Bay Islands.
- The Coral Reef Task Force should make a high-profile call for the ratification of the Inter-American Convention for the Protection and Conservation of Sea Turtles, with follow-on legislative push by the Agencies.
  - The Coral Reef Task Force should support a permanent interagency committee to coordinate USG coral reef efforts for the wider Caribbean.

## **B. Opportunities**

### **Improved Collaboration Among USG Agencies and Territories**

To maximize the impacts of the USG's current investments to protect coral reefs and conserve other coastal ecosystems of the Greater Caribbean, improved information dissemination and collaboration among USG agencies and territories is needed. Therefore, an interagency working group on international coral reef affairs will be established and will meet regularly to improve USG coordination and to identify critical gaps in donor efforts.

### **U.S. Government Priority Actions to be Taken with Additional Funding**

Below is a list of priority actions if additional USG support becomes available. The interagency working group will also seek partnerships with other donors, regional institutions, key NGOs and local government agencies to mobilize resources for these actions.

- **Caribbean Marine Protected Area Management:** Enhance effectiveness of existing marine protected areas; assist in the development of new MPAs of national and regional importance; and support the implementation of a network of marine protected area managers (CaMPAM).
- **Global Coral Reef Monitoring Network (GCRMN):** Implement the Global Coral Reef Monitoring Network and other valuable assessment activities (AGRA) in the wider Caribbean region by assisting with the establishment of a regional node and coordination among monitoring programs, e.g., CARICOMP.
- **Prevention of Marine Pollution and Physical Damage through Safe Navigation:** Address safe and ecologically sound navigation, working with relevant international (International Maritime Organization and International Hydrographic Organization) and regional organizations, by promoting and integrating Federal activities in the region related to:
  - *Proper Disposal of Ship Generated Garbage;*
  - *Contingency Plans for Response to Hazardous Material Spills;*
  - *Prevent Groundings on Coral;*
  - *Damage Assessment; and,*
  - *Charting*

- **Integrated Coastal Zone Management:** Implement the Cartagena Convention Protocol (Land based Source Pollution Protocol) now under discussion to address pollution of the marine environment from land-based activities. Identify innovative practices for coastal zone and watershed management and demonstrate their effectiveness in the region through pilot activities. Support sustainable tourism initiatives. Support community-based ICZM programs (i.e. Peace Corps).
- **Protected Areas Management and Biodiversity Resources:** Develop and implement conservation and sustainable use of biodiversity, focused on management of critical habitat, by linking and strengthening existing programs (Parks in Peril, CAMPAM, Western Hemisphere Convention) and new initiatives (MesoAmerica Reef, zoning/no-take reserves).

**Co-financing Opportunities with Non-USG Entities: Multilaterals, Bilaterals, Private Sector, Private Foundations and NGOs**

The magnitude of the challenge requires donor coordination and will be a priority in the USG's design of programs and its consultations with other donors, NGOs and host countries. There are numerous donors (e.g., UNDP, Global Environment Facility, Caribbean Development Bank), regional institutions (e.g., Central American Commission on Environment and Development, CARICOM, others), and non-governmental organizations (e.g., Island Resources Foundation, The Nature Conservancy, Center for Marine Conservation), currently financing coral reef conservation and related programs in the region that offer opportunity for partnership. The USG will actively seek these co-financing opportunities for current activities and priority actions with additional funding.

## **South East Asia Region**

### **South East Asia Subgroup**

#### **Report to the U.S. Coral Reef Task Force**

##### **Need for Strategic Approach to South East Asia Region:**

Coral reefs in South East Asia are severely threatened or degraded due to destructive fishing practices, international trade in coral reef organisms, overfishing, land-based sources of pollution, coral bleaching events, mangrove deforestation, and coastal population pressures. The coastal waters of South East Asian countries once represented some of the world's richest marine ecosystems, characterized by extensive coastlines, coral reefs and mangrove forests. Over 70% of the population in the region live in close proximity to the coast, and coastal and marine ecosystems provide subsistence resources for a considerable proportion of the population. Coastal resources are also important to national economies; for example, about 23% of the national economic output (GDP) of Indonesia is derived from coastal and marine industries, such as fishing, tourism and transport. However, coastal areas are now exposed to high-level resource exploitation brought about by increasing population pressure and associated economic activities, such as tourism, fishing, coastal aquaculture, waste disposal, salt-making, tin mining, oil drilling, tanker traffic, rural construction, and industrialization.

Large-scale destruction of the region's resources, as well as unisectoral overuse, have caused serious degradation of the environment. Deforestation, indiscriminate logging and mining in upland areas have proved detrimental to lowland activities, such as fisheries, aquaculture, and coastal-dependent tourism activities. Indiscriminate cutting of mangroves for aquaculture, fuel wood, and timber has led to the loss of nurseries for commercially important fish and shrimp, the loss of important coastal buffer zones from storms and waves, as well as an increase in soil erosion. Overfishing and the use of destructive fishing practice - such as dynamite blasting, cyanide fishing, and fishing in spawning aggregation sites - have caused serious reductions in fish stocks and the destruction of fish and reef habitats. The globalization of the fish and seafood markets, coupled with the decline of fish stocks in temperate and cold water fisheries, has exacerbated the fishing pressures, leading to ever more destructive fishing practices.

The 1998 *Reefs at Risk* report, by the World Resources Institute, found that over 80% of the reefs in this region are at risk from human activities, with over half (56%) at high risk. A pressing need in the region is to stop the spread of destructive fishing practices, such as use of cyanide and explosives to catch fish from coral reefs; large areas of reef are being destroyed and key species of large fish are threatened by these illegal-fishing practices. The Asian financial crisis is accelerating the environmental degradation of reef resources.

##### **Summary of Current US Activities:**

US ongoing programs in coral reef and coastal resources management in Southeast Asia are primarily activities being implemented within wider community-based natural resources programs and national capacity-building efforts in the Philippines and Indonesia. These activities combine demonstrations of improved management by local communities with support from government, NGOs and private sector, and they include policy reform for decentralizing and clarifying management authorities, institutional capacity building, technology transfer, and dispute resolution elements. USAID's bilateral program in Philippines and Indonesia are partially addressing the issues of overfishing and destructive fishing, but lack the geographic scope or mandate for the broader regional effort that is needed. There is an opportunity to work with US and international environment groups that are actively involved in the region.

**I. Key Issues/Threats/Pressures:**

o **International Trade and Destructive Fishing Practices**

International trade in corals and fish is driving destructive and unsustainable fishing practices, particularly in the Indo-Pacific Region. Almost 80% of the live and dead coral trade and over 50% of the aquarium fish trade is imported into the U.S.; some of the trade originates from South East Asia and the Pacific regions. Most American consumers are unaware of the impact of the aquarium and curio trades on coral reefs.

o **Destructive Fishing Practices — blast-fishing, cyanide-fishing and the live-food fish trade**

Destructive fishing practices are serious threats to some of the world's richest coral reefs. Destructive activities are those that damage the habitat and associated organisms in addition to the target species, and include blast fishing, fish poisoning, muro ami, trawling, and over collecting of coral. Blast fishing is driven primarily by the subsistence needs of small-scale fishers. However, cyanide fishing is driven entirely by the lucrative and unregulated international trade in marine aquarium fishes and live reef food fishes. Cyanide is used by fishermen to stun and capture reef fish alive, but the cyanide also kills corals and many other coral reef organisms.

In 1995, it was estimated that the annual volume of the live reef food fish trade in Asia was between 20,000 and 25,000 metric tons (mostly groupers and large wrasses) with an estimated annual retail value of approximately \$1 billion. The total annual volume of the marine aquarium fish trade, approximately 10 to 30 million specimens comprising hundreds of species, represents an annual retail value of approximately \$200 to \$750 million. Most of this trade passes through the port of Hong Kong.

Recently the practice of cyanide fishing has spread to other countries to meet the growing worldwide demand for ornamental aquarium fishes and for live reef food fish (especially in the restaurant trade in Hong Kong, China and Taiwan). Cyanide

fishing is especially widespread in Indonesia, and has also been confirmed in Taiwan, Papua New Guinea, Thailand, Malaysia, Vietnam and the Maldives. There are unconfirmed reports from the Red Sea, Palau, Tanzania, the Seychelles, Sri Lanka, the Marshall Islands, Solomon Islands, Fiji, and Haiti.

- **Overfishing and Food Insecurity**

Coral reefs are particularly critical to the food security of the South East Asia region. Coral reefs and associated sea grass and mangrove habitats provide fishery resources that represent a critical source of food, for both subsistence and commercial fishers. In developing countries, coral reefs contribute about one quarter of the total marine catch. In Asia alone, nearly one billion people depend on these resources for food. Reef fisheries have already been greatly diminished by overfishing and habitat destruction in South East Asia.

- **Land-based Sources of Pollution**

Land-based sources of marine pollution pose some of the greatest threats to coral reefs because of their widespread impact on water quality. Land-based sources of pollution include run-off from coastal development, agricultural practices, industrial activities and inland deforestation. In South East Asia more than 70% of the region's people live within the coastal zone.

### **Proposed Actions and Strategies to Address Key Issues**

Key components of a regional strategy include actions to address unsustainable coral trade and destructive fishing, and to evaluate the causes and consequences of the severe coral bleaching that has impacted this region. To contribute to the long-term viability of reef ecosystems, development programs need to address approaches to sustainable coastal management, watershed management and sustainable cities.

Measures to address destructive fishing practices depend first and foremost on education (of both the fisher and consumer), alleviating poverty and overfishing, proper legislation and regulation to ban improper techniques, and enforcement of existing and new fishing regulations. In most cases, destructive fishing techniques are associated with poverty and a perceived lack of viable alternatives. Adoption and implementation of the FAO Code of Conduct for Responsible Fishing by all states is also a key step.

The Government of the Philippines, in close cooperation with non-governmental and fishing communities, has been a leader in addressing cyanide fishing. The Philippines has the only effective program to combat cyanide fishing, and provides a model for other exporting countries. Workshops sponsored by the Asia-Pacific Economic Cooperation forum (APEC) in 1997 also point to workable solutions. APEC includes major exporting and importing countries and the U.S.-hosted APEC Oceans Conference (10/98) addressed cyanide fishing. Solutions require action and commitment on the part of live reef fish

exporting countries and regional cooperation among trade partners. Specific recommendations for action include:

- Strengthen community-based management of local fisheries and education of local fishers in alternatives to cyanide fishing (e.g., hook and line fishing for live food fish and netting aquarium fishes). Promote alternative sources of income and environmental education.
- Support capacity building for environmental management by engaging Peace Corps volunteers to help integrate and disseminate traditional and non-traditional natural resource management.
- Provide information to consumers to identify fishes that were captured using sustainable techniques (*see international trade section*), explore private sector approaches to establish trade standards, oversee environmental certification and promote conservation education for commercial food fishes and aquarium fishes, respectively.
- Promoting anti-cyanide policies and practices for the aquarium fish industry in the United States and Europe, and for the live food fish industry in Asia.
- Conduct studies to assess the relative impacts of different threats --cyanide vs. blast-fishing vs. aquarium trade — on coral reefs throughout the region, and the potential socio-economic consequences.
- Work with members of the Asian Pacific Economic Cooperation (APEC) forum to implement the APEC recommendations for addressing destructive fishing.
- Support efforts to engage the private sector in implementing the Global Plan of Action for Land-based Sources of Pollution.
- Support a representative network of marine protected areas throughout the region, as called for by ICRI and the IUCN. The Asian financial crisis has caused many countries in the region to reduce government expenditures. The financing of parks and protected areas for marine biological diversity conservation has been cut dramatically in many countries.
- Support a regional network of marine park and coastal managers, for the sharing of information and best practices.
- Map the locations of deeper coral reefs and protect them from trawling; technological improvements in trawling gear are exposing coral reefs to the destructive practice of bottom trawling.

#### **SHORT-TERM DELIVERABLES:**

- Significant policy coordination at global level, and major funding through UNEP to the Regional Seas Programs for the GCRMN and regional ICRI coordination. (State: FY99 \$150,000)
- Support for capacity building in marine park management in Indonesia (Komodo National Park) and Papua New Guinea (Kimbe Bay), implemented by The Nature Conservancy (USAID: FY00 \$400K).

Almost \$1.3 million in new funds was directed in 1999 towards protecting coral reef resources under the "East Asia and Pacific Environmental Initiative." Programs under this

initiative were specifically designed to address aspects of the international trade issue in coral and coral reef species, land-based sources of pollution, and marine protected areas, including:

- Actions to retrain fishers on the use of non-destructive fishing practices and to stop the spread of cyanide use, and to establish monitoring programs to assess and inventory the trade in live food fish, particularly through the port of Hong Kong. Implementation is through the Destructive Fishing Reform Initiative of the International Marinelife Alliance/ World Resources Institute.
- Actions to address the live food fish trade through advancing policies, laws, management plans, awareness, and alternative livelihood programs such as maricultured live reef fish. Implementation is through The Nature Conservancy.
- Actions that engage the private sector in establishing cyanide-free and sustainability certification plans for aquarium fish and coral species. Implementation is through the Marine Aquarium Council.
- Coral reef conservation efforts of the South Pacific Region Environmental Program (SPREP). Activities will address destructive fishing practices, coral harvest for foreign markets, coral bleaching and other threats, and include training workshops for member nations to develop permit systems, and certification and labeling protocols for the coral harvest and trade.
- Capacity-building in protected areas law enforcement for resource professionals, implemented by the Department of the Interior in conjunction with the World Wildlife Fund.
- Sea turtle conservation efforts through policy dialogue, information exchange, sea turtle monitoring of migratory range, and a multilateral conference to address regional conservation needs. Activities will be implemented by the Department of State and NOAA.
- Actions to protect the Sulu-Sulawesi Large Marine Ecosystem, an area that is rich in coral, fish and sea turtle biodiversity. Activities include increased management capacity and enforcement at marine protected areas and is implemented by the World Wildlife Fund.
- Actions to engage the private sector in addressing land-based sources of pollution through a Partnership Market meeting.

## **PACIFIC REGION**

### **PACIFIC SUBGROUP**

#### **REPORT TO THE U.S. CORAL REEF TASK FORCE**

##### **XXVI. Need for Strategic Approach to Pacific Region**

**The U.S. has important historical, cultural and environmental interests in the Pacific region. Global issues such as climate change, sustainable forests, fisheries and coral ecosystems offer opportunities for action at regional and local levels.**

Coral reefs form the most important and diverse ecosystem within the Pacific island region. Together with the closely associated mangroves and sea grass bed environments, they are a critical element of the small island environment. The social, cultural, and economic prosperity of the Pacific island region is directly dependent upon the health of coral reefs and the associated ecosystems. Most of the people in the Pacific islands are heavily dependent on reef species for their protein needs; linkages to cultural identity; and coral reefs provide a host of other economic goods, ranging from corals and shells for curios and jewelry, live fish and corals for the aquaria trade, to sand and limestone used in construction. In addition, coral reefs offer a wide range of environmental and economic services including tourism and coastal protection from oceanic waves and storms. Annual fisheries catch by Pacific nations is estimated at \$240 million, of which only 20% is for commercial markets (Anon, 1994).

In this region, approximately 70% of the coral reefs were rated to be in good to excellent condition, and 30% in fair to poor condition (Jameson et al., 1995). Reefs in this region appear to be in better shape than in other regions, with almost 60% assessed as being at low risk (Bryant et al., 1998). Several areas, particularly those near centers of human population face significant pressures from over-fishing, coastal development, non-point source pollution associated with agriculture and logging, and sewage discharge. In addition, over-fishing is a problem on some reefs distant from human settlements. Reefs have also been damaged by heavy wave action during frequent tropical cyclones, and outbreaks of coral-eating crown-of-thorns sea stars (Maragos, 1998; Maragos et al., 1998).

Coral reef ecosystems worldwide are under increasing pressure primarily from human interactions and natural events. The SPREP/ICRI 1995 regional report summarized the major threats impacting coral reefs and associated environments in the Pacific:

- Non-point source pollution associated with land clearing, agricultural development, coastal construction and dredging
- Sewage and solid waste discharge
- Chemical pollution from oil and hazardous materials spills
- Over-fishing and over-harvesting of marine invertebrates
- Rapid population growth

- Inadequate enforcement of fisheries management regulations and education against over-fishing and destructive fishing
- Major cyclones/hurricanes, earthquakes and heavy wave action
- Crown-of-thorns starfish infestations
- Coral reef bleaching events

There is a regional intergovernmental cooperative framework to address small island development and coral reef ecosystems: South Pacific Regional Environment Programme, The South Pacific Community (SPC), Forum Fisheries Agency, and South Pacific GeoScience Commission. However, at the national level, small island states have severe human resources constraints. The SIDS Eminent Persons report

"recommend(ed) ways of strengthening institutional capabilities, at the sub-regional, regional and international levels, to respond to the sustainable development priorities of small island developing States, with particular reference to human resources development and capacity-building, technology development and transfer, and inter-island exchange of international and expertise.."  
 Recognizing the role of traditional practices of conservation, the SIDS Programme of Action conservation of island biodiversity "requires...taking into account customary land and reef tenure systems and practices..."

**XXVII. Current USG Agency and State/Territorial/Commonwealth International Programs**

U.S. bilateral assistance over the past 10 years to the region has declined. Some areas of current relevant activities include: community based education; environmental professional and academic exchanges and training; coral program support; nominal support for coral monitoring in Samoa and for the Pacific Year of the Reef through SPREP; disaster management; coral reef resource surveys; climate change; coastal management; protected resources and control of illegal trade of coral; and fisheries. Within the region, due to its historic relations with Micronesia, the U.S. has strong ongoing relations with the Republic of Palau, the Federated States of Micronesia and The Republic of the Marshall Islands.

**XXVIII. Proposed Actions and Strategies**

**CC. Opportunities for Improved Collaboration Among Task Force Members**

Existing programs and interests among Task Force members provide the foundation for developing a broader, more integrated U.S. regional engagement. Among the early opportunities identified for consideration by the Task Force are:

Build strategic partnership with SPREP to implement the regional Coral Action Plan and other SPREP capacity building programs of direct relevance to coastal ecosystems

Support expanded intra-regional and international exchanges

Support local Coral Reef Initiatives in Freely Associated States

Reduce threats to coral ecosystems through integrated coastal management and sustainable fisheries management through other regional strategic alliances

Address trade pressures from live food fish and aquarium trade through capacity building

**A. 1. Build strategic partnership with SPREP to implement the regional Coral Action Plan and other SPREP capacity building programs of direct relevance to coastal ecosystems**

Coral Action Plan and Other Relevant SPREP Program Activities

Pacific Island Countries (PICs) developed an Activity Plan for the Conservation of Coral Reefs in the Pacific Islands Region, following on from the successful 1997 Pacific Year of the Coral Reef (PYOCR) Campaign. This Activity Plan was developed by SPREP and its PIC partners, the 15 participating member governments of American Samoa, Cook Islands, FSM, Fiji, Guam, Kiribati, Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Is., Tonga, Tuvalu, and Vanuatu.

This initiative proposes to raise the U.S. voluntary contributions from all Federal Agencies to 800K per year to address the regional implementation of the SPREP Coral Action Plan and other SIDS priorities in the SPREP program that directly affect coral ecosystems and coastal communities such as SPREP's SPREP South Pacific Biodiversity Conservation Programme (BCP) and Coastal Management and Planning Programme (CMPP).

**SPREP Coral Action Plan**

The Activity Plan is developed by Pacific Island Countries in response to national issues and concerns. The activity plan is comprised of 5 key issues identified by PICS:

B. Education and Awareness;

C. Monitoring, Assessment and Research;

D. Capacity Building;

E. Legislation, Planning and Management; and

F. Networking/linkages

Based on carrying capacity of countries and local concern and needs, countries were able to develop realistic national actions to address the goals and objectives of the 5 key issue areas. PICs went several steps further by putting time frames to when these national actions should be implemented as well as corresponding regional actions and partners supporting the national action. A time frame for the regional action was also included. Thus the Activity Plan is basically a list of activities that the partnership between countries and regional organizations, especially SPREP as the lead agency is expected to implement for the conservation of coral reefs in the Pacific Islands region.

Activities to be conducted in the first year with U.S. funds include support to the development of a Global Coral Reef Monitoring sub-node and network in Micronesia, rationalizing coral permitting practices through a workshop in the Pacific region, and community based fisheries management in American Samoa. These activities reflect the priority given by the Task Force in March to address coral bleaching, trade, local approaches to management, early focus on U.S. insular Pacific interests. There are only some 35 MPAs in this Pacific region (Maragos on Melanisa and Polynesia) for some 2500 major island and reef systems. Engaging government, local communities and traditional management systems in the establishment and improved management of MPAs, especially no-take areas, is a priority.

This Coral Action Plan has been supported by the SPREP South Pacific Biodiversity Conservation Programme (BCP) and Coastal Management and Planning Programme (CMPP). The BCP addresses the threats to biological diversity through the establishment and management of Conservation Areas where important features of the conservation of biodiversity protected and in which there are agreed criteria which assist local communities to use their natural resources sustainably. The Coastal Management Programme, like ICRI, establishes ICM as the larger framework for coral ecosystem protection and sustainable development. Its five key areas include: survey and monitoring of coastal habitats; pilot ICM programs in island states, coastal information management; and support to the SPREP Coral Action Plan implementation. Lastly, the CMPP is the key programme element to address regional implementation of the Global Program Action to Address Pollution of the Marine Environment from Land-based Activities.

Extending Community-Based Environmental Conservation and Management throughout the Pacific Islands: Leveraging the Peace Corps Network: Papua New Guinea, Solomon Islands, Vanuatu, Kiribati, Federated States of Micronesia, Palau, Samoa, Tonga, Niue

The Peace Corps, which has a network of approximately 350 Volunteers serving in 9 countries throughout the Pacific, has a long track record of successful community based leadership training utilizing local assets (e.g. traditional support systems and values) to provide lasting solutions.

One Pacific Initiative priority is its collaboration with The South Pacific Regional Environment Programme (SPREP) on the "Capacity Building for Environmental Management in the Pacific (CBEMP)" project. This project identifies, integrates, and disseminates traditional and non-traditional natural resource management practices. Given the Peace Corps Volunteers extensive cross-cultural and language training, the project dovetails extremely well with the Agency's expertise. Ten Peace Corps Volunteers serving as environmental educators, community organizers, and trainers, are working hand in hand with host national counterparts in the public, private, and NGO sectors in 5 Pacific Island nations.

U.S. Government conservation efforts in the region can be advanced through a complementary support structure within the region. By pooling the resources of US Government agencies, regional institutions (primarily SPREP), NGOs, national governments, and local communities a more comprehensive approach to conservation can be achieved.

US Federal agencies (Peace Corps, USAID, EPA, DOS, DOI, NOAA), in collaboration with SPREP, Pacific Island Governments, and NGOs could leverage their collective impact by joining forces to support community-based environmental management projects throughout the region.

The Peace Corps will:

1. provide up to 15 Environmental Volunteers a year (for Fiscal Years '01-04) to work in collaboration with SPREP on the CBEMP project; and
2. provide up to 20 Volunteers a year (Fiscal Years '00-'04) to work on the Peace Corps' Marine Resource Development and Conservation project (Palau and FSM) and other environmental education and natural resource management programs throughout the nine Pacific Island countries in which the Peace Corps has a presence.
3. Funds from other Federal agencies would be used to support the Peace Corps-SPREP partnership, convene technical workshops, and provide start up capital for community projects.
4. Through a coordinated effort, U.S. Federal agencies can help to:
5. create a mechanism that will mobilize and pool resources and expertise,
6. facilitate a program that "trains trainers" to disseminate information and transfer skills throughout their respective countries, and
7. establish "vertical" and "horizontal" support systems within and across countries.

## **A.2. Support expanded intra-regional & intl. Exchanges**

The U.S. All Islands Coral Reef Initiative Strategy 1999 identified the need for a "Regional and International Coordination and Information Exchange." The goal of this project is to (a) offer U.S. Pacific flag island expertise internationally; and (b) to further build U.S. flag Pacific islands' own capacity to manage their coral ecosystems through participation in regional and international meetings. The report states:

"Regional and international organizations throughout the Pacific and Caribbean, make available meetings, conferences, workshops and training courses related to coral reefs and reef ecosystems. Often, representatives from the U.S. flag islands are invited to share their experiences or to learn from their island neighbors and countries. Unfortunately, those opportunities are more often than not missed due to a lack of travel and per diem funds, although the U.S. islands are otherwise eligible and are encouraged to participate. Because of the information and experience sharing available at these events, the ability to participate would greatly enhance the U.S. islands abilities to better manage and preserve U.S. reefs."

"Additionally, the U.S. flag islands of Guam, ...Commonwealth of the Northern Mariana Islands,...American Samoa, and Hawaii have considerable expertise in coral management and science. The U.S. islands already work both formally and informally (through joint efforts with federal partners, through local university exchanges, or other avenues) with independent island nations throughout the respective neighboring, but independent islands. For Guam and CNMI this could mean collaborations and cooperative efforts with Federated States of Micronesia, Republic of Palau, and Republic of the Marshall Islands. For American Samoa, activities and information sharing with South Pacific island nations such as Western Samoa, Fiji, Tonga and others is possible.

Moreover, the current inability to support the travel cost of non-U.S. Pacific islanders to international meetings (including in U.S-sponsored workshops) in the region further constrains U.S. ability to share its experience and build a capacity building network within the region.

## **A. 3. Support local Coral Reef Initiatives in Freely Associated States**

Institution building for Marine Resource Management in the Freely Associated States is a key element in sustainable development in the region. Historically, in the South Pacific, decision making authority and administration of funds for coral reef management, research and educational programs has rested with individuals, agencies and institutions far-removed from the resource and by administrators with limited hands-on experience. The greatest opportunity for capacity building lies in supporting the regional institutions directly, allowing for local decisions on priorities, approaches and program support. Further development of educational and training programs in the islands and taught by

the islands is essential for producing the next generation of reef resource managers and researchers.

Marine Protected Area Management is an increasingly valued tool in conserving coral ecosystems and sustaining the local populations that depend on them. Efforts to identify and develop effective marine conservation and protected areas within the region need to be increased, emphasizing community participation and traditional practices. A 1995 analysis indicated that FSM and Marshall Islands had no MPAs, and Palau had only 4.

Several surveys of prime candidate marine protected areas have been accomplished in the FSM, Marshalls, and Palau, and most include uninhabited islands and atolls which have higher biodiversity values and lower levels of competing uses. The local authorities of these areas would be receptive to MPA designation of coral reefs, provided there are incentives and technical support in the form of training, community-based management regimes, potential ecotourism opportunities, and close linkages to nearby U.S. counterparts. The upcoming renegotiations of the Compacts of Free Association provides opportunities for the U.S. to offer the technical assistance to willing authorities and sustain the program over a longer time period.

The Palau International Coral Reef Research Center is a joint project of the Republic of Palau, Japan and the United States under the US/Japan Common Agenda. It is the priority coral reef project under the Common Agenda. A facility will be established in Palau which will serve as a center for marine resource and conservation expertise, and will include facilities such as a marine aquarium, marine education and outreach, coral research and monitoring, and the development of small and sustainable enterprises to promote sustainable development for Palau. It is expected that, once built, the PICRC will be self-sustaining through its activities. It is the goal of the US to contribute to the successful start-up and future implementation of the PICRC by supporting activities at and through the Center which fulfill ongoing US objectives (coral monitoring, marine protected areas, extension services, aquaculture, etc). (Note - the design and construction of the facility is supported by Japan; support for implementation is expected from the US)

As an added benefit, the Center will serve as a facility to support other regional coral priorities including activities for SPREP, FAS, Peace Corps etc. Opportunities to utilize the PICRC, while at the same time pursuing other objectives, should be sought.

Federal agencies will look for further opportunities to support the start-up and implementation activities of the PICRC, specifically as they contribute to global and regional coral assessment, monitoring and research activities, and as they contribute to the strengthening of Palau's capacity to manage their marine and coastal resources, and thereby support sustainable development. Special attention will be given to supporting activities at or through the newly established PICRC facilities in order to promote its self-sufficiency and ultimate success.

A. 4. Reduce threats to coral ecosystems through ICM and sustainable fisheries management through other regional strategic alliances

Although coral ecosystems in this region are among the least threatened from human impacts, the largest threats to these reefs arise from rapidly increasing populations on these islands and the countries surrounding the region.

Unsound coastal development poses one of the greatest threats to coral reefs. The growth of coastal cities, towns, tourist resorts, industries, agriculture, and mariculture along the coast generates a range of direct and indirect threats to nearby reefs. Outright destruction of reefs can occur by: shoreline modification for urban infrastructure; construction projects, airports, ports, and navigation routes which are built upon or through reefs; the dredging of nearby ports and channels; and the mining of coral sand and limestone for cement. Indirect effects of development are often the most damaging and widespread, including loss of coastal water quality and increased nutrient and sediment runoff into coral ecosystems.

Activities to reduce these threats to coral ecosystems in the Pacific region will focus on strategic alliances outside of SPREP, targeting bilateral relationships, site specific activities/ameliorating specific stresses, and capacity building at local and national levels.

#### A. 5 Address trade pressures from live food fish and aquarium trade through capacity building

The unsustainable commercial extraction of species associated with coral ecosystems for food, aquarium and ornamental specimens, jewelry, and construction materials is joining other threats as cause for concern to the biodiversity, structure, and function of coral reef ecosystems. Extraction of corals for curios, jewelry, and the aquarium trade is driven by international demand, with most collection occurring in the Indo-Pacific and most exports going to the United States and Japan. Without a regional regime, improved management of sustainable harvest and trade will only shift trade to other countries with less stringent management regimes. Among the key strategies to be addressed are alternative economic opportunities, sustainable fishery practices, public education, control of explosives and cyanide, and improved management of the trade regime.

#### B. Co-Financing Opportunities with Non-USG Entities: Multilaterals, Bilaterals, Private Sector, Private Foundations and NGOs

It is imperative to leverage U.S. technical assistance given the constraints on U.S. assistance and the level of national institutional strength in the region. Regional organizations, in particular SPREP (regional ICRI/GCRMN coordination), NGOs, and partners (e.g. private foundations) must be key partners.

## **Unprecedented Coral Bleaching and Mortality**

### **Need for a Strategic and Coordinated Response**

In 1998 coral reefs around the world appear to have suffered the most extensive and severe bleaching (loss of symbiotic algae) and subsequent mortality on record. In the same year, tropical sea surface temperatures were the highest on record, topping off a 50 year trend for some tropical oceans. These events may not be accounted for by localized stressors or natural variability alone. Rather, the coral bleaching events and elevated sea surface temperatures were likely induced by an underlying global cause. It is likely that anthropogenic global warming has contributed to the extensive coral bleaching that occurred simultaneously throughout the disparate reef regions of the world. Thus the geographic extent, increasing frequency, and regional severity of mass bleaching events are a likely consequence of a steadily rising baseline of marine temperatures.

Based on early reports, the repercussions of the 1998 mass bleaching and mortality events will be far reaching in time and through space. Even under the best of conditions, many coral reef ecosystems will need decades to recover. In the meantime, human populations dependent on reef services face losses of marine biodiversity, fisheries, and shoreline protection. Trends of the past century suggest that coral bleaching events may become more frequent and severe as the climate continues to warm, exposing coral reefs to an increasingly hostile environment. This global threat to corals compounds the effects of more localized anthropogenic factors that already place reefs at risk. Significant attention needs to be given to the monitoring of coral reef ecosystems, research on the projected and realized impacts of global climate change, and measures to curtail greenhouse gas emissions. Even those reefs granted well-enforced legal protection as marine sanctuaries, or managed for sustainable use, are threatened by global climate change.

### **ISSUE: Unprecedented Coral Bleaching and Mortality**

- The mass coral bleaching and mortality events of 1998 appear to be the most severe and extensive ever documented. Simultaneously, tropical sea surface temperatures were the highest on modern record, topping off a 50 year trend for some tropical oceans.
- The geographic extent, increasing frequency, and regional severity of mass bleaching events are a likely consequence of a steadily rising baseline of marine temperatures, perhaps driven by anthropogenic global warming.
- The rise in sea temperature and consequent coral bleaching events pose a significant threat to coral reef ecosystems and the human populations which depend on them, particularly small island developing states.
- Based on these findings, the U.S. Department of State released a report entitled, "Coral Bleaching, Coral Mortality, and Global Climate Change" to the U.S. Coral Reef Task Force in March of 1999.
- In response, the U.S. Coral Reef Task Force passed a resolution stating that biodiversity conservation can no longer be achieved without consideration of the

global climate system and urging agencies to address the impacts of global climate change on the natural resources they manage.

### **Proposed Actions and Strategies:**

- Further the U.S. commitment to strengthen the implementation of the ICRI Global Coral Reef Monitoring Network and ReefCheck to provide baseline data, rapid response assessments, and annual monitoring of coral reef health, coral bleaching and mortality events, and the economical and socio-economic consequences of reef decline. This commitment will require active partnership of Task Force members, drawing upon their financial resources and technical expertise at regional and global levels.
- Task Force Endorsement of the resolution and recommendations for priority action resulting from the NOAA/ICLARM meeting on remote sensing and CBD experts meeting on coral bleaching.
- Expand the opportunities for Task Force member agencies to address the causes and consequences of coral bleaching and mortality events in domestic and foreign policy fora.

### **Key Deliverables:**

- U.S. Department of State officials presented briefings on coral bleaching and climate change in a wide variety of policy and scientific fora, including meetings of the Small Island Developing States (SIDS), Framework Convention on Climate Change (FCCC), and the Society for Conservation Biology.
- U.S. Department of State report has been accepted for publication in the Journal of Conservation Biology.
- In 1999, U.S. Department of State provided \$650,000 to the ICRI Global Coral Reef Monitoring Network and associated regional monitoring networks through the UNEP Regional Seas Programs.
- In June of 1999, NOAA and ICLARM hosted a international meeting on advancing remote sensing technologies for coral reef conservation, passing a resolution and recommendations for action that called for the improvement of technologies and programs to specifically address the causes and consequences of mass coral bleaching events.
- NOAA established a program of scientific cooperation with Australia to study the causes and consequences of coral bleaching on the Great Barrier Reef and to develop technologies and strategies that can be applied to assess coral bleaching in other regions.
- The U.S. Department of State and U.S. Agency for Development contributed financial support to the Secretariat of the Convention of Biological Diversity to hold an experts meeting on coral bleaching.

The meeting, hosted by ICLARM in October, produced a background paper and meeting report, including recommendations for priority actions to address coral

bleaching. The CBD Secretariat will present these documents at the next SBSTTA and hopefully they will be adopted by the CBD at the next Conference of Parties.

Through the East-Asia Pacific Program, the U.S. Department of State and U.S. Agency for International Development are providing financial for: (1) a symposium on the biological and socio-economic impacts of climate change on coral reef ecosystems at the International Coral Reef Symposium in 2000 and (2) a series of case studies on the socio-economic impacts of the 1998 coral bleaching event.

## **APPENDIX**

### **1. Participants in The CRTF International Working Group — Pacific Sub-Group**

Participants who were involved in one or both of the Sub-Group's meetings and/or submitted comments on the draft documentation included:

Arthur Paterson, NOAA/NOS

Leah Bunce, NOAA/NOS

Scott Frew, NOAA/NOS

Nancy Daves, NOAA/NMFS

Andrew Bruckner, NOAA/NMFS

Tom Hourigan, NOAA/NMFS

Debbie Subera-Wiggins, DOI

Paul Souza, DOI/FWS

James Maragos, DOI/FWS

George Mahaffey, DOI/NPS

Ken Potts, EPA

Ruben Alcantara, State

Andrew Fried, State

Barbara Best, US AID

John Wilson, US AID

Richard Volk, US AID

Maryann Minutillo, Peace Corps

Douglas Weisburger, Peace Corps

Scott Tobias, Peace Corps

David Gulko, State of Hawaii

Robert Richmond, Guam: University of Guam

Nancy Daschbach, American Samoa: National Marine Sanctuary

John Furey, Commonwealth of the Northern Mariana Islands: Coastal Resource Management Program

## **2. Status of Coral Reef Ecosystems**

Reefs in this region appear to be in better shape than in other regions, with almost 60% assessed as being at low risk (Bryant et al., 1998). Several areas, particularly those near centers of human population face significant pressures from over-fishing, coastal development, non-point source pollution associated with agriculture and logging, and sewage discharge. Reefs have also been damaged by heavy wave action during frequent tropical cyclones, and outbreaks of coral-eating crown-of-thorns sea stars (Maragos, 1998; Maragos et al., 1998).

Coral reef ecosystems worldwide are under increasing pressure primarily from human interactions and natural factors. The SPREP/ICRI 1995 regional report summarized the major threats impacting coral reefs and associated environments in the Pacific:

- Non-point source pollution associated with land clearing, agricultural development, coastal construction and dredging
- Sewage and solid waste discharge
- Chemical pollution from oil and hazardous materials spills
- Over-fishing and over-harvesting of marine invertebrates
- Rapid population growth
- Inadequate enforcement of fisheries management regulations and education against over-fishing and destructive fishing
- Major cyclones/hurricanes, earthquakes and heavy wave action
- crown-of-thorns starfish infestations
- Coral reef bleaching events

Melanesia (5,500,000 km<sup>2</sup>): Coral reefs in this region support a high biodiversity of invertebrates and fish, including over 300 species of coral. The species diversity of corals is among the highest in PNG, with a slight decrease going south to Vanuatu and New

Caledonia, and east to the Solomon's, and Fiji. While reefs are generally in good to excellent shape, some areas in the Solomon Islands, PNG, New Caledonia and Fiji are under increased threat from soil erosion related to land clearing for mining and logging, and coastal development. Over-fishing and over-harvesting of marine invertebrates and sewage discharges are degrading reefs near population centers. Almost half of the Solomon Island reefs and two-thirds of the reefs off Fiji are potentially threatened (Bryant, et al., 1998). Fiji's reefs are important for tourism and are a major source of food, generating close to \$200 million annually in fisheries and tourism revenues; Fiji is the largest exporter of coral (live coral, coral skeletons and reef rock) in this region.

Micronesia (8,800,000 km<sup>2</sup>): Reefs off Palau, the Federated States of Micronesia and Marshall Islands are generally in good condition, with severe degradation only around population centers because of sediment and nutrient pollution. On most reefs, giant clams, lobsters, sea cucumbers, trochus shells and many of the top quality fish have been depleted. Reefs off the Marianas Islands have deteriorated, with large declines in living coral cover, reduced rates of coral recruitment, and dramatic reductions in biomass and abundance of reef fishes. Due to a loss of commercially important fish, fishers now target herbivorous fish, which has been correlated to increases in algal abundance and loss of live coral (Maragos et al., 1998). Natural disturbances such as volcanoes, earthquakes and tropical cyclones limit reef development in many areas.

Polynesia (13,200,000 km<sup>2</sup>): Natural disturbances including cyclones and crown-of-thorns starfish outbreaks have had severe impacts on reefs throughout this region, because the coral is often dominated by fragile branching species (Maragos, 1998). Coral bleaching and extreme low tides have also reduced coral cover in the last 20 years. Major human impacts arise from land erosion, pollution and coastal development, primarily near population centers. Over-fishing and destructive fishing are also detrimental factors affecting even remote locations.

Regional circulation patterns affect recruitment of corals, reef fish and other organisms having pelagic larvae. In this region, coral species diversity is highest in the west with over 300 species, decreasing sharply to the east. Because most equatorial currents flow from east to west, larvae are not transported from the most biodiverse reefs to eastern reefs. Large distances between islands also limits recruitment from distant source reefs, increasing the reliance on locally produced larvae. In the case of corals, which spawn during a very brief period each year, the presence of pollutants such as petroleum, pesticides, herbicides and heavy metals may prevent successful fertilization, hence severely limiting coral recruitment. In Guam, peak coral spawning occurs during the rainy season, when levels of coastal contamination via runoff are at their highest (Richmond and Hunter, 1990). Therefore, in degraded areas, recruitment may become limiting, such that reefs require several decades to recover from disturbances.

### **3. Illustrative Overview of Some Expertise in the U.S. Insular Pacific and Micronesia**

In the CNMI: Northern Marianas College, The Office of Coastal Resources Management, The Division of Environmental Quality, and the Division of Fish and Wildlife.

Since 1980, the Coastal Resources Management (CRM) Program in the CNMI has been the principal planning, permitting and enforcement agency for all large-scale development projects and all commercial activities within areas of particular concern, (including coral reefs). CRM led a successful drive to establish a local coral reef monitoring capacity. We've also jointly led a parallel initiative, via a "call" from NOAA and the EPA to document and improve our control of non-point source pollution. Led by one of our CRM program agencies, the Division of Environmental Quality, we now have a very active and professionally trained Interagency Marine Monitoring Team. We also have an active Interagency Watershed Planning Group and have recently established a well-functioning interagency geographic information systems capacity (centered at CRM). CRM likewise works in close partnership with our Community College and our Public School System in curriculum development and improvement.

CRM is close to finalizing a comprehensive "Island Ecology and Resource Management" textbook specifically developed for use in our island's secondary and post secondary environmental science classes. In digital format and modeling the open software movement's copy 'left' sharing principle (as opposed to copyright), it is being developed in such a manner that it will be easily shareable with and revisable by all Pacific Island jurisdictions. The CRM program is presently actively seeking funding support.

In the Federated States of Micronesia (FSM): College of Micronesia (they teach a tropical marine biology program), the Micronesian Seminar, Kosrae Island Resource Management Authority, Yap Marine Resources Management Division, Micronesian Island Conservation (NGO), and the state regulatory agencies.

In Guam: The University of Guam (The UOG Marine Laboratory has been serving the region for 29 years, and has produced over 700 publications including journal articles, technical reports, environmental surveys, theses, proceedings and articles on coral reef biology and ecology and has active programs with many of the islands of Micronesia; The College of Agriculture and Life Sciences has aquaculture and extension programs and the Water and Energy Research Institute works on hydrogeology and coastal processes), The Guam Division of Aquatic and Wildlife Resources (has one of the most complete and extensive databases on coral reef fisheries decline as well as developed legislation on marine protected areas), The Guam Coastal Management Program, and Guam EPA.

In Palau: Palau Community College, Palau Conservation Society, Coral Reef Research Foundation, Palau Mariculture Demonstration Center, Palau Environmental Quality Protection Board, the Nature Conservancy and the developing Coral Reef Research Center.

In the Republic of the Marshall Islands: College of Micronesia, Marshall Islands Marine Resource Authority

Within Micronesia, Micronesian Legal Services has historically helped on ship groundings and reef damage issues. The Palau Conservation Society is an extremely important NGO with a regional value beyond Palau. The Nature Conservancy has local offices as well as an Asian-Pacific coastal management program.

American Samoa has vested its coral reef planning and decision-making in the American Samoa Coral Reef Advisory Group, which reports to the Governor. The group comprises resource managers and technical experts from several agencies including the American Samoan Environmental Protection Agency, the Department of Commerce (which includes the American Samoa Coastal Management Program and the Fagatele Bay National Marine Sanctuary), The Department of Marine and Wildlife Resources, the National Park of American Samoa and the American Samoa Community College.

In Hawaii: The Division of Aquatic Resources (DAR), Department of Land & Natural Resources along with the Hawaii Department of Health and the Hawaii Coastal Zone Management Program all interact with our Pacific neighbors on issues related to coral reefs. DAR recently hosted an international meeting in Hawaii to look at coral reef monitoring issues. The University of Hawaii (UH) has a number of programs involved with international coral reef issues: the Marine Option Program runs annual Quantitative Underwater Ecological Survey Techniques (QUEST) courses which has trained a number of resource managers from CNMI, American Samoa, Palau and the Federated States of Micronesia; the Hawaii Institute of Marine Biology has active research and education programs involving a number of Pacific areas; the UH Zoology, Botany & Oceanography departments all have active coral reef-related research projects taking place within the tropical Pacific. The UH College of Education's Curriculum Development and Research Group (CRDG) has developed a high school marine science series (including coral reefs) which is used both throughout the U.S. mainland and the Pacific. The Pacific Resources for Education and Learning is another group that consults throughout the Pacific on educational issues. Both Bishop Museum and the Polynesian Voyaging Society educate and conduct research on cultural issues related to coral reefs. The Bishop Museum and the Pacific Science Association also serve as major focal points for discussions amongst scientists on a wide variety of scientific issues related to coral reefs in the Pacific.

The Oceanic Institute has active programs in the tropical Pacific consulting on aquaculture and community-based resource management of fisheries. The Pacific Basin Development Council also consults on regional issues. The UH Sea Grant program and the East-West Center both sponsor education and research for Pacific areas.

Pacific Marine (coral reef) Research Facilities: Full research facilities with ongoing coral reef research include the Hawaii Institute of Marine Biology, the Kewalo Marine Laboratory and the Waikiki Aquarium in Hawaii, the University of Guam Marine Lab, in Guam, The Marine Sciences Institute in Fiji, The University of the Philippines Labs, and The Sesoko Marine Sciences Research Center and the Akajima Marine Lab in Okinawa.

Field stations include the Coral Reef Research Foundation in Palau, the Univ. of California Lab on Moorea, and the now defunct Mid-Pacific Research Lab on Enewetak.

#### **4. References**

Bryant, Dirk, Lauretta Burke, McManus, John, Spalding, Mark, Reefs at Risk: A Map-Based Indicator of Threats to the World's Coral Reefs. A joint publication by World Resources Institute, International Center for Living Aquatic Resources Management, World Conservation Monitoring Centre, United Nations Environment Programme, 1998.

Jameson, Stephen, McManus, John, Spalding, Mark, "State of the Reefs: Regional and Global Perspectives: An International Coral Reef Initiative Executive Secretariat Background Paper", May 1995.

Maragos, Jim, "Status of Coral Reefs of the Southwest and East Pacific: Melanesia and Polynesia," pp. 79-88, Status of Coral Reefs of the World: 1998, edited by Clive Wilkinson, published by Australian Institute of Marine Science, 1998.

Maragos, Jim, Charles Birkland and Gregor Hodgson, "Status of Coral Reefs in the Northwest Pacific Ocean: Micronesia and East Asia," pp. 89-108, Status of Coral Reefs of the World: 1998, edited by Clive Wilkinson, published by Australian Institute of Marine Science, 1998.

Programme of Action for the Sustainable Development of Small Island Developing States, May 4 1994

Statement by the Group of Eminent Persons on the Sustainable Development of Small Island Developing States, Bridgetown, Barbados, 21-22 April 1994.

Smith, Andrew, "Pacific Ocean Regional Report on the Issues and Activities Associated with Coral Reefs and Related Ecosystems," prepared by SPREP for The 1995 International Coral Reef Initiative Workshop.