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UNITED STATES CORAL REEF TASK FORCE

***FY2002 ACCOMPLISHMENTS &
FY2003 ACTIVITIES AND KEY GOALS***

Draft #1 for Review

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Abbreviations:

AS	American Samoa
CITIES	Convention on International Trade of Endangered Species Fauna and Flora
CNMI	Commonwealth of the Northern Mariana Islands
COE	Army Corps of Engineers (DoD)
DOC	U.S. Department of Commerce
DoD	U.S. Department of Defense
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
DOS	U.S. Department of State
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FL	Florida
FWS	U.S. Fish and Wildlife Service (DOI)
GU	Guam
HI	Hawaii
NASA	National Aeronautics and Space Administration
NMFS	National Marine Fisheries Service (DOC/NOAA)
NOAA	National Oceanic and Atmospheric Administration (DOC)
NOS	National Ocean Service (DOC/NOAA)
NPS	National Park Service (DOI)
NRCS	Natural Resources Conservation Service (USDA)
NSA	National Science Foundation
OCRM	Office of Coastal Resources Management (DOC/NOAA)
PR	Puerto Rico
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
USCG	U.S. Coast Guard
USCRTF	U.S. Coral Reef Task Force
USFWS	U.S. Fish and Wildlife Service
USVI	U.S. Virgin Islands

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Coral reefs are the most diverse and biologically complex marine ecosystem on earth. They occupy only about 1% of the biosphere but form critical habitats to 25% of the marine fish species. Coral reefs are also valuable assets to many local and national economies including the United States, and support the livelihood of approximately 500 million people, wholly or partially, through providing fisheries, medicines, and income from tourism and recreation. However, pollutions from sewage, fertilizers, chemicals, and sediment runoff from shoreline development due to the growing coastal populations, over-fishing and overharvesting of coral reef species, lack of public awareness towards the importance of conserving and proper management of coral reef ecosystem, recreational overuse and misuse of coral reef areas, accompanied with the global climate change have built unprecedented pressure and stress on the world's vulnerable coral reef ecosystem.

In response to these imposing threats against the coral reef ecosystem, Executive Order 13089 was issued in 1998 to establish the U.S. Coral Reef Task Force (Task Force) to help lead and coordinate U.S. efforts to address the coral reef crisis. The Task Force, co-chaired by the Secretary of the Interior and the Secretary of Commerce, includes the head of twelve federal agencies (Department of Agriculture, Department of Commerce, Department of Defense, Department of the Interior, Department of Justice, Department of State, Department of Transportation, Environmental Protection Agency, National Aeronautics and Space Administration, National Science Foundation, U.S. Agency for International Development, U.S. Coast Guard) and the Governors of seven states, territories and commonwealths (American Samoa, Florida, Guam, Hawai'i, Northern Marianas Islands, Puerto Rico, U.S. Virgin Islands).

In March 2000, the Task Force adopted the National Action Plan to Conserve Coral Reefs (NAP), the first national blueprint to address the most pressing threats to coral reefs. The Action Plan identified two fundamental themes that frame the Task Force's conservation actions: "Understand Coral Reef Ecosystem" and "Reduce The Adverse Impacts of Human Activities". It is designed to be the nation's roadmap to more effectively understanding coral reef ecosystems and

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reducing the adverse impacts of human activities. To implement the NAP and fulfill the requirements of the Coral Reef Conservation Act of 2000 (CRCA), the Task Force, through working with NOAA, produced the National Coral Reef Action Strategy (National Action Strategy) in June 2002. The National Action Strategy outlined thirteen goals that are crucial to addressing and reducing threats to coral reefs worldwide.

At the October 2002 Coral Reef Task Force meeting in Puerto Rico, new resolutions were adopted to prioritize focus areas, to increase capacity through increased coordination amount and between federal, state/territory agencies, and to revert the focus to a local or regional effort. The US CRTF agreed that there are six key threats to U.S. coral reef ecosystems including land based sources of pollution, over-fishing, recreational overuse, lack of public awareness, coral disease, and climate change and coral bleaching. These threats are the basis of a new coordinated effort between federal and state agencies. In order to prioritize activities a the local level, state/territory and federal agencies are engaged in developing three year local action strategies for each of the key threats.

Working with federal, state, territorial, local governments and various non-government partners, the Task Force has made tremendous progress in FY2002 in assisting and coordinating conservation efforts in coral reef ecosystems, and implementing goals outlined in the National Action Strategy. This document presents a brief highlight on some of the important accomplishments in the field of coral reef conservation in FY2002 and activities and key goals in FY2003. To be consistent with the Task Force's resolution of focusing on the six priority threat on coral reef ecosystems, accomplishments and activities in this report are classified accordingly to address the Task Force's efforts in response to each of the priority threat.

Co-chairs, USCRTF



Priority Threat

LAND-BASED SOURCES OF POLLUTION

In the United States, over 10.5 million people live in coastal counties and on islands near coral reefs. Runoff from coastal development, agriculture, industries, and urban sources are major threats to the shallow water coral reef ecosystems. These runoffs carry a large amount of sediments, nutrients, and pollutants, which reduce sunlight that reaches down the water columns, cause high nutrification of near-shore waters, and produce toxins that kill corals and coral reef species. The National Action Plan called for significantly reducing or eliminating the amounts, sources, and cumulative impacts of contaminants in the water.

FY2002 Accomplishments:

- In order to reduce coastal runoffs to the Ugum Watershed in Guam, 40,000 trees were planted on 25 acres of coastal land; 8 out of 10 acres of forestland from the FY1998 plantings that were lost to fire were replanted. (GU)
- Florida NRCS (Wetland Reserve Program) and South Florida Water Management District (SFWMD) purchased conservation easement on 15,396 acres in coastal Martin County to restore wetland functions. (FL)
- To maximize irrigation and urban water use resulting in reduced nutrient and sediment runoff to coral reefs, FL NRCS and the SFWMD conducted 951 agricultural and urban evaluations resulting in potential water savings of 3,478 million gallons of water. (FL)
- South Florida Resource Conservation and Development Council, FEMA, and FL Department of Community Affairs removed 20,000 cubic yards of contaminated soils from a secondary canal system discharging into downstream aquatic ecosystems. (FL)
- Conservation practices and measures were implemented by USDA-NRCS in Florida, the Caribbean Basin, Hawaii and the Pacific Basin on private lands in watersheds outletting to coral reef ecosystems. USDA's Farm bill programs including EQIP, WRP,

FY2003 Activities and Key Goals:

- Install erosion control fabric in gullies and other badland areas per discretion of Ugum Local Working Group; collect and propagate seeds of local, native, and naturalized species (LNNS) for inter-planting throughout the 222-acre North Bubulao sub-watershed acacia planting (GU).
- Restore approximately 10,000 acres of purchased easement to functioning wetlands condition to reduce land-based runoffs into the coastal coral reef ecosystem. Conduct 900 agricultural and urban evaluations resulting in savings of a million gallons of water. (FL)
- Complete the necessary steps and obtain full approval of Non-Point Source Pollution Program in CNMI. Program submitted to the Federal Register on June 27, 2003 for public comment. Awaiting final letter of approval from NOAA and EPA Headquarters. (CNMI, DOC)
- Reduce vehicular impacts on the near shore environment to: protect turtle nesting sites, reduce non-point source pollution, and diminish devegetation to prevent shoreline erosion and storm water runoff. (CNMI)
- Initiate studies to determine whether sedimentation increases the probability of phase shifts from corals to algae on reefs by using deployable light sensors. (HI)

FY2002 Accomplishments:

and WHIP were utilized to provide incentives. Benefits to coral reefs were derived from the reduction of nutrients, pesticides and sediment entering directly into receiving waters that ultimately flow into coral reef ecosystems. (USDA-NRCS)

- Initiated Obyan Beach Revitalization Project and Beach Road Area Management Project to reduce human impacts on the reef (including sedimentation, driving on the beach, and littering) on the Island of Saipan. (CNMI, DOC)
- Partnered with the World Wildlife Federation on a project entitled "The Role of MPAs and Terrestrial Watershed Condition in Adaptation Strategy Development". The project examines the effects of land-based pollution and protected area status on coral bleaching and coral reef recovery in American Samoa. A workshop to present the results of the research to local stakeholders in American Samoa is planned for November 2003. (WWF, American Samoa)
- (USDA-NRCS, Hawaii Department of Land and Natural Resources) Coordinated studies have discovered that hardening a stream results in a greater delivery of nitrogen in the form of nitrate to the mouth of the stream and into coastal waters. However, if a stream habitat is restored below a hardened (channeled) area to a natural state for a sufficient distance upstream of the mouth, some functionality lost by the hardening process can be restored. (HI)
- Long-term studies (10 – 30 years) aimed to determine the relationship between human and natural stresses on coral reefs at six sites on the Main Hawaiian Islands were continued with HCRI-RP funding in 2002. Results from two study sites fronting hotel developments indicate that in open coral areas, resorts are not affecting coral community structure. However, in semi-enclosed embayments where poor circulation prolongs the trapping of sediments produced

FY2003 Activities and Key Goals:

- Work with all neighboring industrial park developers and landowners to stipulate similar conditions to protect water resources from nutrients and contaminants contained in wastewater and storm-water. (DOI)

FY2002 Accomplishments:

by erosion of pineapple fields following heavy rainstorms. The studies have provided valuable knowledge on controlling land-based sources of pollutions, which is a significant threat to coral reef ecosystems.

(HI)

- Upon recommendation of the Governor of Florida, the Monroe County Board of County Commissioners, and the Water Quality Protection Program Steering Committee, the U.S. EPA designated all State waters within the boundary of the Florida Keys National Marine Sanctuary as a no discharge zone effective June 19, 2002. (EPA, FL)

FY2003 Activities and Key Goals:

Priority Threat

OVERFISHING

Over-fishing and over-exploitation of coral reef species for recreational and commercial purposes have brought the changes of the ecological balance of the coral reef. The disappearing of predatory and herbivorous reef fish species has resulted in the population boom of many reef-feeding invertebrates and serious algae blooms that smother reef-building corals. The National Action Plan called for reducing the impacts of fishing and the over-harvesting of reef organisms for the aquarium trade.

FY2002 Accomplishments

- U.S. Coast Guard Cutters cited 11 vessels for fishing in the Dry Tortugas Ecological Reserve. Cases resulted in fines totaling \$159K and seizure of all catch. (USCG)
- Successfully educated Legislative decision makers to support no take zones and prohibitions on the use of nets (except hand cast nets) in light of bills introduced to permit traditional fishing practices. (CNMI)
- Provided support for community fisheries groups on the island of Culebra, Puerto Rico, through the implementation of no-take areas in the Luis Pena Channel. (DOC, PR)
- Completed workshop to build capacity and cross-train Officers on fishing, harvest, take, and protected area prohibitions, as well as legal procedures and protocols for enforcement. (DOI, CNMI).
- Revised minimum size regulations for over 20 species of reef fish. (HI)
- An increase of 51% in aquarium fish was observed on the west coast of Hawaii in Fish Replenishment Areas (closed from aquarium fishing since 1999). These results are due to the area closures coupled with high levels of juvenile fish recruitment in 2001 and 2002. (HI)
- Biscayne National Park in Florida established a groundbreaking memorandum of

FY2003 Activities and Key Goals

- Continue to partner with NOAA to monitor and patrol sensitive Coral Reefs. Particular emphasis will be on prosecuting cases solely on aircraft sightings and documentation. Utilizing aircraft is a significant force multiplier and increases deterrence. (USCG, DOC)
- Further enhance fisheries and MPA enforcement capacity by establishing a Marine Conservation Enforcement staff, cross deputizing enforcement officers, and providing continued interagency training on enforcement of fisheries and MPA laws and regulations in the CNMI. (DOI, USCG, CNMI)
- Build stakeholder support for and involvement in fisheries management through preparation for, participation in, and mechanisms for continued communication developed during the Pacific Coral Reef Fisheries Management Workshop and the development of Local Action Strategies in CNMI. (CNMI, GU, DOC)
- Set bag limits to compliment minimum size limits for fishing. Establish minimum size limits for additional species. Also revising gill net rules to require registration, and specify allowable lengths, set times and practices. (HI)
- Develop recommendations to resource managers about how to address the effects

FY2002 Accomplishments

understanding with Florida Fish and Wildlife Conservation Commission to develop a joint Fisheries Management Plan, transcending state and federal boundaries to protect and manage reef fish in and around Biscayne Bay. (DOI, FL)

- Examined the impacts of lobster fishing traps in Northwest Hawaii and created a GIS of fishing trap distribution in the Florida Keys and U.S. Virgin Island. (DOC, HI, FL, USVI)
- Research shows evidence of a shifting baseline for Caribbean coral reefs based on declining Nassau grouper fisheries. (DOC)
- Evaluated the characteristics of trap fishing in the U.S. Virgin Islands and Puerto Rico. The study incorporated fisher knowledge and quantitative field surveys and examined the amount, size, structure, and placement of traps. Traps are most often deployed in areas adjacent to reefs (sand, seagrass, hard-bottom, and algal habitats), although six fishers targeted corals in USVI. (DOC, DOI, USVI, PR)
- Convened a two day coral reef fishery management workshop for Puerto Rico and U.S. Virgin Islands, which brought together stakeholders and managers to discuss (1) coral reef fisheries uses in Puerto Rico and the Virgin Islands; (2) Caribbean coral reef fisheries in the broader context of marine management; (3) coral reef fisheries enforcement and regulations; and (4) coral reef fisheries education and outreach. (DOC, PR, USVI)

FY2003 Activities and Key Goals

of aquarium fish collecting. Implement new catch reporting system for aquarium fish collection and work with collectors to debug it. (HI)

- Based on the survey, Legacy program funding is being provided to establish a protected area for the enhancement of island marine resources and to develop and implement a management plan. Coral reefs within the protected area provide a critical breeding ground for numerous fish species, which have been decimated by non-sustainable fishing practices. (DoD)
- U.S. Coast Guard will continue to partner with NOAA to monitor and patrol sensitive Coral Reefs. Particular emphasis will be on prosecuting cases solely on aircraft sightings and documentation. Utilizing aircraft is a significant force multiplier and increases deterrence. (USCG, DOC)
- Reduce the impacts of fishing in St. Croix, U.S. Virgin Island by implementing the Trammel Net Gear Buy-Back Project. This would be implemented at the same time as the Commissioner of the Department of Planning and Natural Resource's (DPNR) implementation of a ban on this fishing gear to reduce the economic impacts of the ban. The Division of Fish and Wildlife (DFW) of USVIDPNR as part of this project would destroy nets traded. (USVI)
- Support two fishery management workshops in the Pacific to bring stakeholders and managers together to discuss the development of local action strategies on over-fishing and other pertinent issues related to coral reef fisheries management. (DOC, HI, GU, CNMI, AS)

Priority Threat

RECREATIONAL OVERUSE & MISUSE

Many coral reefs in the United States and Territories are heavily visited by millions of tourists for some form of recreation, particularly those along the shoreline and within easy cruising distances. Damage to coral reef ecosystems from tourist activities range from coastal resort development, boating activities, SCUBA diving and snorkeling. Significant actions have been taken to reduce the impacts of recreational overuse and misuse. These include limiting certain activities such as jet skis, feeding of wildlife, and installing permanent mooring buoys.

FY2002 Accomplishments

- Purchased channel markers and received USCG approval for installation of markers at the Tanapag Village boat ramp and channel, which will help reduce conflicts between divers and recreational boaters. (CNMI, DOI, USCG)
- Studied use patterns and impacts at 4 MPA's in 4 counties to determine high vs. low use areas. In situ observations as a part of the second phase of this study are based on a fragility index for each site and comparison of levels of impact at high vs. low are conducted by using sites within each MPA. Preliminary findings suggest that significance of impacts is directly related to habitat complexity and fragility. (HI)
- Initiated the process to install a chain mooring system in Hurricane Hole, St. John to protect coral reefs from boat and anchor damage. (DOC, USVI)
- Initiated a project to develop conservation areas to protect the Coral Keys within La Parguera Natural Reserve. (DOC, PR)

FY2003 Activities and Key Goals

- Complete the *Development of Conservation Areas To Protect The Coral Keys Project* within La Parguera Natural Reserve and the *Protection of Coral Reefs Project in Culebra*, both located in Puerto Rico. Marine scientists from the University of Puerto Rico have completed the first step in these projects, a completion of habitat zoning and use survey in both reserves. (DOC, PR)
- Complete the *Pilot Community-University Coral Reef Habitat Restoration and Protection Effort Project* within La Parguera Natural Reserve, Puerto Rico. The Comité Vecinos de La Parguera has completed the permit application for installation of navigational aids in coordination with the U.S. Coast Guard. A workshop is planned in August 2003 to inform the community of the project and discuss their assistance in protecting important areas within the coral keys. (DOC, USCG, PR)

Priority Threat

LACK OF AWARENESS

The Task Force recognizes that a key element of coral reef conservation and protection is a strong outreach effort. Increasing public awareness of natural resources conservation is one of the most effective tools to prevent the coral reef ecosystem from declining.

FY2002 Accomplishments

- Coordinated with the local newspaper Pacific Daily News on its 8 month long campaign to increase public awareness of coral reef issues called "Man, Land, and Sea". (GU)
- Conducted a one-week pollution prevention course via satellite to provide instruction on the use of pollution prevention to save money and reduce liability and waste streams at DoD facilities. Preventing pollution from entering the marine environment can help to protect and conserve coral reefs. (DoD)
- Produced the Coral Reef Conservation Guide (Guide) for the Military. The Guide provides an overview of DoD activities that have the potential to adversely impact coral reef ecosystems and outlines DoD requirements and U.S. national laws and policies regarding coral reef protection. DoD continued to promote and distribute this outreach brochure in 2002. (DoD)
- Initiated "Walk it Don't DRIVE it" campaign to reduce coastal impacts from illegal off-road driving on the beach in CNMI; 98% of school children attending presentations knew the reasons for not driving on the beach and understood the impacts it causes. The Campaign increased community awareness of the law by 26% and decreased the number of cars driving on the beach by 28%. (CNMI, USDA)
- Facilitated Reef Check Survey program incorporating participants from schools, dive operators and resource agencies on Saipan and Rota. (CNMI)

FY2003 Activities and Key Goals

- Organize all segments of "Man, Land, and Sea" for printing and mass distribution to increase the public awareness to coral reef issues. (GU)
- Offer an one-week pollution prevention course again in July 2003. (DoD)
- Continue to make available the Coral Reef Conservation Guide (Guide) for the Military. The Guide provides an overview of DoD activities that have the potential to adversely impact coral reef ecosystems and outlines DoD requirements and U.S. national laws and policies regarding coral reef protection. (DoD)
- Continue "Walk it Don't DRIVE it" campaign and other activities to decrease vehicular impacts on beach habitat in the CNMI. (CNMI)
- Support establishment of Natural Resources Management degree and Marine Technology certificate programs at Northern Marianas College and continue to provide internship opportunities with the natural resource protection agencies in the CNMI. (CNMI, DOC)
- Continue coral reef education small grants program, provide support and oversight to assure completion of selected awardees, and seek out and assist others to secure other sources of funding for environmental education and outreach efforts in the CNMI. (CNMI, DOC, DOI)

FY2002 Accomplishments

- Evaluated Governance Indicators for enhanced MPA management effectiveness in conjunction with the World Commission on Protected Areas. Also, served as one of 23 test sites internationally for the IUCN/WWF sponsored analysis (CNMI DFW, CRM; NOAA; University of Guam; WWF; IUCN). Funded by USCRI funds.
- Created a series of pocket reference cards for “dos and don’ts” relating to spread of alien algae and worked with Waikiki Aquarium to design a display. Worked with community groups to initiate additional community clean up events. And developed brochure insert on “what you can do” to help Hawaii’s reefs. (HI, EPA)
- Funded 3 community-based management and monitoring projects, Project Sea Link in Maui to train community members in the use of REEF, Reef Check on Oahu and Kauai, and supported both Reef Watchers monitoring programs in Kona. Also funded community liaisons to work in individual ahupaa on community based fisheries management initiatives. (HI, DOC)
- The *Coral Reef Initiative Program Video* and *Impacts of Fishing Gear* and *Illegal Take on Corals Video* were completed. The videos are for the Spanish-speaking audience of Puerto Rico, informing them about the threats to coral reefs and the importance of this ecosystem and how the community can help protect this system. (DOC, PR)
- With several local partners, initiated workshops in Puerto Rico with local fishers to discuss the values of corals and coral reefs and enhance the willingness of these constituents to protect coral reefs. (DOC, PR)

FY2003 Activities and Key Goals

- Publish State of the Reef Report for the CNMI public, decision makers, the Coral Reef Task Force, and other interested parties to raise awareness of the importance of and threats to coral reef systems within the CNMI and to generate support for coral reef protection. (CNMI)
- Develop training programs and educational materials regarding the control of alien and invasive algae species. Produce underwater identification cards for alien algae species and their native relatives. (HI)
- Will fund 5 additional community-based monitoring, management and outreach projects in both MHI and NWHI. Projects include Navigating Change sail to NWHI, continued support for groups funded in previous year, and support for a monitoring and outreach project with Hawaii Wildlife Fund at La Persouse Bay, Maui. (HI)
- Expand the Workshops for Fishers project to include visits to interested fishing associations in Puerto Rico to discuss specific themes of interest to them. This activity would be coordinated with the same agencies that were integral in completing the Puerto Rico Fishers workshops. (DOC, PR)
- Conduct workshops for the fishers of USVI in St. Thomas and St. Croix similar to those completed in Puerto Rico to discuss with the fishers the importance of the coral reef ecosystem and regulations related to its protection. (NOAA, USVI)

Priority Threat

CLIMATE CHANGE, BLEACHING, & DISEASE

Global climate change is a major, yet largely unmanageable threat to the survival of coral reef ecosystems. The raise of ocean temperature is believed to be the cause the dramatic increase of coral bleaching in the past decade. Along with coral bleaching incidents, coral disease outbreaks are also increase in frequency and geographic range and are affecting a greater diversity of coral reef species. The USCRTF's National Action Plan (2000) called for an integrated nationwide coral reef monitoring system that could provide regular assessments of reef health as well as initiate new monitoring to fill gaps.

FY2002 Accomplishments

- Completed a coral survey in the Florida Keys and Dry Tortugas to evaluate the prevalence of bleaching and disease in a mild El Nino year (2002). Preliminary analyses of data have been completed and indicate relatively few diseases and low bleaching. Nonetheless, it appears that coral survival is declining. (EPA)
- Initiated research in developing "Risk Maps", a forecasting tool incorporating oceanographic models into known SST and ocean color remotely sensed values to increase long term forecasting of the location and severity of coral bleaching events. (DOC)
- Completed a cooperative research effort with the University of California at Davis to evaluate the effects of ultraviolet light on corals. The final report "Coral Bleaching, UV Effects and Multiple Stressors in the Florida Keys" has been submitted to EPA, and at least two manuscripts are expected from this project; one on the variation of thymine dimers in *Porites porites* using an immunoassay developed at UC Davis, and the other on a comparison of different responses to UV by different coral species. (EPA)

FY2003 Activities and Key Goals

- Conduct another multi-agency cruise to the Northwest Hawaii to continue reef monitoring activities and to assess change in coral mortality/cover from last year's bleaching event. (HI, DOC, DOI) (NOTE: Am assuming this one will be combined with NOAA-Fisheries information provided)
- The NOAA Coral Watch Program intends to (1) move forward with plans to site and install more CREWS stations throughout the U.S. coral reefs; and (2) continue discussions with the World Bank on installing CREWS Stations in the Caribbean. (DOC)
- Strengthening of strategic collaborative relations and activities with ReefBase to deliver increased functionality and accessibility to the HotSpot and Degree Heating Weeks (DHW) bleaching products. (DOC)

FY2002 Accomplishments

- Documented a major bleaching event in northern most atolls of NWHI and returned 3 months later to assess recovery/mortality as part of a multi-agency NOWRAMP Expedition in 2002 in Northwest Hawaii. (DOC, DOI, HI) (NOTE: Am assuming this one will be combined with NOAA-Fisheries information provided)
- Researchers provided information on the factors governing reef growth over the past 1,000-10,000 years, and described likely future trends of Hawaiian reef response to shifts in environmental controls under business-as-usual global change scenarios. From a management perspective, it is important to assess how these patterns might enhance or suppress potential anthropogenic influences on reef growth in the future. According to model results, the frequency and intensity of El Nino events are likely to increase in the coming decades due to increasing greenhouse gases. (HI)
- In collaboration with the Caribbean Marine Research Station, a new CREWS station was deployed in St. Croix (June 2002) and an underwater coral web cam was installed at the St. Croix CREWS Station (Fall 2002). Additionally, CREWS software successfully predicted mild coral bleaching at Myrmidon Reef on the Great Barrier Reef. (DOC, USVI)
- HotSpots and Degree Heating Weeks (DHW) web accessible products achieved operational status, bringing increased reliability for coral reef monitoring and forecasting data serving all CRW users. These products enabled webcasts of several coral reef bleaching events worldwide including the Great Barrier Reef in Australia, American Samoa and

FY2003 Activities and Key Goals

FY2002 Accomplishments

the Northwest Hawaiian Islands
(<http://www.coral.noaa.gov/crw/>).
(DOC)

- Over 200 volunteers removed over 32,000 pounds of the invasive algae, *Gracilaria salicornia*, from the coral reefs in Waikiki. (Options for Eradication and Control of *Gracilaria salicornia*). (HI)
- 30 volunteers removed over 2000 pounds of the invasive algae, *Kappaphycus*, at two clean up events at Kaneohe Bay. Manual removal is effective, but time-consuming and the algae grow back. Enhancing the native urchin populations is a promising strategy. (Options for Eradication and Control of *Kappaphycus*). (HI)

FY2003 Activities and Key Goals

Addressing Tourism Challenges and Threats in Quintana Roo, Mexico

Villagers of Xcalak, a small fishing village of about 300 people in the Yucatan Peninsula of Mexico, felt that their way of life and livelihoods were threatened by the intense, high impact tourism development occurring in Cancun and extending southward toward the village. A request by the village for assistance to the state government was directed to a local NGO, the Amigos de Sian Kaán, which has been instrumental in protecting the Sian Kaán Biosphere Reserve, which lies between Cancun and the village of Xcalak.

The overall project goal of this USAID-funded program was to conserve critical coral reef ecosystems and biodiversity through an ICM approach. Three intermediate goals addressed improved governance, quality of life and environment by: (1) Establishing tangible demonstrations of site-based, participatory ICM as a tool to promote sustainable tourism development along a reef-lined coast with low population density; (2) Promoting development and use of low impact practices for tourism; and, (3) Building capacity of the Amigos de Sian Kaán, the Xcalak community and Mexican government to carryout management site management and low impact tourism practices.

This program was implemented by the URI-CRC with their local partners – the villagers of Xcalak, the Amigos de Sian Kaán, and the University of Quintana Roo. Villagers of Xcalak identified several key issues of importance to them, including the character of the community, their traditional economic livelihoods and way of life, and the protection of the natural resources. Through the efforts of the partners, the Xcalak National Marine Park was established in 2000. Encompassing 18,000 hectares, the park contains a variety of designated use zones and sets limits on the tourism development along the coast in the park.

Besides the establishment of the first community-driven national park in Mexico, the program and its emphasis on governance processes had several significant outcomes beyond the boundaries of the national park. First, it changed the trajectory of development along the Quintana Roo coast. Second, the State and Federal planning process has become more responsive to the needs of local communities and the environment, and tourism good practices, such as low impact practices, have been incorporated into zoning ordinances and national guidance. Third, the process has strengthened the partners and partnerships in the region that will continue to promote sound development and reduced environmental impacts both within and beyond the national park.

Additional Accomplishments / Activities**Supporting the Goals of the National Action Strategy**

In June 2002, the National Coral Reef Action Strategy was published as part of the implementation of the Coral Reef Conservation Act 2000 and National Action Plan to Conserve Coral Reefs. The Strategy consists of two fundamental themes and 13 goals to reduce threats to coral reef ecosystems worldwide:

Theme 1: Understand Coral Reef Ecosystems

- Goal 1: Create comprehensive maps of all U.S. coral reef habitats;
- Goal 2: Conduct long-term monitoring and assessments of reef ecosystem condition;
- Goal 3: Support strategic research to address the major threats to reef ecosystems;
- Goal 4: Increase understanding of the social and economic factors of conserving coral reefs.

Theme 2: Reduce The Adverse Impacts of Human Activities

- Goal 5: Improve the use of marine protected area to reduce threats;
- Goal 6: Reduce adverse impacts of fishing and other extractive uses;
- Goal 7: Reduce impacts of coastal uses;
- Goal 8: Reduce pollution;
- Goal 9: Restore damaged reefs;
- Goal 10: Improve education and outreach
- Goal 11: Reduce international threats to coral reef ecosystem;
- Goal 12: Reduce impacts from international trade in coral reef species;
- Goal 13: Improve coordination and accountability

Theme 1. Understanding Coral Reef Ecosystems

1. Create comprehensive maps of all U.S. coral reef habitats

- Utilized data being collected to meet shallow-water requirements for the protection and conservation of coral reefs. A Scanning Hydrographic Operational Airborne Lidar Survey (SHOALS) system has provided information that will benefit the mapping of coral reef ecosystems in shallow water environments in areas such as the Hawaiian and Northern Marianas islands. (DoD)
- Naval Facilities Engineering Service Center (NFESC) staff performed marine ecological surveys of Pearl Harbor, the Entrance Channel and adjacent areas offshore Hickam AFB. Data from the survey are being analyzed to determine the percentage of live coral cover, species composition, and size frequency distribution of coral reefs in the study areas. The primary objective of the surveys is to establish a rigorous quantitative database on corals in and adjacent to Pearl Harbor. (DoD)
- Conducted an assessment of near-surface currents surrounding the island of Guam. Satellite altimetry and current meters were used to develop a numerical model of the circulation around Guam. Results of the study indicate that both oceanic and island-generated eddies around Guam are biologically important to coral reefs along the island. The various ocean currents transport coral eggs and larvae, and control the connectivity of the island's reef systems. (DoD)
- Conducted a baseline assessment and implemented a long-term monitoring plan for coral reefs at the eastern end of Vieques, Puerto Rico. The assessment includes: Reef characteristics and conditions; fish population data; coral habitat maps; sedimentation rate analyses (to identify operational impacts); and a coral literature review. (DoD)
- Mapped and Characterized Ten Fathom Ledge, North Carolina. This area is highly influenced by the Gulf Stream flow and many coral reef species are found in this area including gag grouper, vermilion snapper, damselfish, angelfish, butterflyfishes, sea fans, lobe star, and starlet corals. Recent years have shown trends in more tropical species, including the tropical "basket sponge". (DOC)

2. Conduct long-term monitoring and assessments of reef ecosystem condition

- Completed year eight of the Coral Reef Evaluation and Monitoring Project (CREMP), which documents the status and trends of coral reefs in the FKNMS. This comprehensive data set produced by the CREMP will assist managers in determining if the fully protected reserves and preservation areas within the FKNMS are protecting sensitive biological resources. (EPA)
- Completed quantitative assessment of dramatic declines in *Acropora* populations in the Florida Keys. Results showed that the aerial extent of elkhorn coral (*Acropora plamata*) declined by 93% and staghorn coral (*A. cervicornis*) declined by 98% between 1983 and 2000. (DOC, USGS, FL)
- Determined the levels of genotypic diversity of *Acropora plamata* in selected locations. Results show that Bahamian populations were most diverse, followed by Panama and Mexico populations and with Florida stands having the lowest levels of genotypic variability. (DOC)
- Completed base line assessment of reef resources on Navassa Island. (DOC, DOI, FL)
- Completed a four-year study of the reef fishes off Broward County, Florida establishing important baselines and trends. (DOC, FL)
- Multi-disciplinary expedition was conducted from Miami to the Tortugas Bank covering over 230 miles of coast and ocean. The main objective of the expeditions was to provide a comprehensive survey of coral reefs along the Florida reef tract, including a survey of fishes, corals, conch, spiny lobster, and other reef species using rapid assessment sampling techniques and a sophisticated sampling design. Results will be used to define current conditions and monitor future changes that may result from management actions in Biscayne National Park, the Florida Keys National Marine Sanctuary, and the Dry Tortugas National Park. (DOC, DOI, FL)

Partners in the State of Hawaii will survey the hull fouling to identify organisms present and create a list of species, including vessels in dry docks and boat yards. Compile arrival patterns and vessel operation dynamics for commercial barges, foreign fishing boats, and motor yachts and sailboats. Form a working group to discuss hull-fouling as a mechanism for introducing marine alien species to Hawaii, develop a list of criteria involved, and propose management options. The State will also inventory marine nonindigenous, invertebrate species on coral reefs in the MHI using REA. Evaluate effectiveness of indicators (i.e., 54 nonindigenous species) to show the influence of these species on the reefs surveyed. Characterize sites by level of human disturbance. Create a relational database using information obtained from the surveys in both narrative and tabular form and suitable for conversion into ArcView.

3. Support strategic research to address the major threats to reef ecosystems

- Continued marine invertebrate, algal and fish biodiversity surveys of southern islands (CRM, DEQ, DFW) to expand understanding of both diversity and distribution of marine organisms in coral reef habitats.
- Completed a coral reef ecosystem management study that summarizes available scientific and technical information, and identifies coastal use pressures and information gaps with respect to coral reef ecosystems surrounding Kane'ohe Bay, Hawaii. The study, conducted by a diverse team of marine ecologists and consultants, provides recommendations for more effective management of Kane'ohe Bay's marine resources. (DoD)
- Legacy program funding was utilized to survey and research Wake Atoll's aquatic fauna, particularly the Atoll's numerous fish species. Field surveys identified 122 additional fish species, including 22 new families of fish, for the Atoll. An improved understanding of resident species should enhance the management of surrounding reef systems. (DoD)
- In-situ oceanographic observations at Howland, Baker, and Jarvis Islands demonstrate that large-scale ocean processes can have profound influence on local processes. In this case, the interaction of the strong westward flowing Equatorial Undercurrent with the steep topography of these islands is observed to drive strong topographically-induced equatorial upwelling, which in turn provides nutrient enrichment, high productivity, and localized high biomass of these reef ecosystems. (DOC, HI)
- Biscayne National Park greatly expanded its coral nursery by transplanting 285 coral fragments rescued from reefs damaged by boat groundings. Park biologists will use nursery-grown colonies to restore and replenish coral growth at damaged reefs. (DOI)
- Preliminary data from coral coring studies in the NWHI and MHI indicate that there is no decline in growth rates with increasing latitude for corals in shallow, sheltered reef flat and lagoonal habitats, but there is a significant decline in growth rates for corals on the exposed outer slopes of the same reefs. (HI, DOI, DOC)
- Developed method for determining coral reef fish utilization of inshore habitat in Florida Bay and Ten Thousand Islands. (DOC, FL, DoD)

4. Increase understanding of the social and economic factors of conserving coral reefs

- Coral reef managers from the six U.S. Pacific and Caribbean islands, federal agency coral representatives, NGOs, and nine economists met to discuss ways of describing the value of U.S. coral reefs. The workshop provided an opportunity for state and territorial managers to describe the status of their coral reefs, the various users of these reefs, and local efforts underway and needed to describe their economic value. The economists provided information on elements of resource valuation and uses of various economic data, information, and analysis.

The State of Hawaii sponsored research on the economic value of Hawaii's reefs. The results show that over 50 years, reefs surrounding the Main Hawaii (MHI) will have contributed over \$18 billion in added value to the economy. Hawaii's coastal reefs generate almost \$364 million annually in added value. About 84% of the annual added value (\$304 million) is generated from snorkeling and diving and emerges from \$700-\$800 million in gross sales per year. Over 50 years, the Haunama Bay Education Center will generate about \$100 million in added value. Each year over \$20 million in potential revenue is lost in Kihei because of algal blooms. (HI)

Theme 2. Reduce The Adverse Impacts of Human Activities

5. Improve the use of marine protected area to reduce threats

- Funded a study to evaluate Johnston Atoll's potential as a "National Environmental Research Park (NERP), which would be designated to study the environmental impacts of industrial by-products and other human related activities. (DoD)
- Drafted rules to establish a marine refuge system in Northwest Hawaii. Finalized regulations to establish MPA at Wai'opae, outside of Hilo, Hawaii - rules adopted and MPA established. (HI)
- Signed two no-take marine sanctuaries into law in 2001 on Saipan. The two sites, Bird Island and Forbidden Island, build upon adjacent Wildlife Conservation Areas managed by DFW in CNMI. Introduced legislation for the establishment of one no-take zone marine sanctuary on Tinian, CNMI and four no-take marine sanctuaries in the Northern Islands that expand on existing adjacent Wildlife Conservation Areas in CNMI. (CNMI)

6. Reduce adverse impacts of fishing and other extractive uses

See accomplishments being reported under "Overfishing" (p.8) and "Recreational Overuse and Misuses" (p.10).

7. Reduce impacts of coastal uses

- Conducted an evaluation of how federal programs address damage to coral reefs caused by coastal construction projects. Results showed there was limited implementation of individual Federal agencies' mitigation policies designed to provide compensatory mitigation for unavoidable losses to the coral reef ecosystem, and that this resulted in poor effectiveness of mitigation efforts. An *Interagency Coral Reef Mitigation Working Group* was formed, which includes the U.S. Fish & Wildlife Service, Environmental Protection Agency, National Marine Fisheries Service, Army Corps of Engineers (Regulatory and Civil Works), and the State of Hawaii natural resource agency.
- NOAA and DOI partnered to award \$2.1 M in grants to the seven State and Territory members of the USCRTF to support priority local coral reef management efforts. Project areas included managing local coral reef fisheries; funding of key enforcement, coordination, and education personnel; implementation of marine protected areas; and public education and outreach.

8. Reduce Pollution

- The U.S. Coast Guard Marine coordinated with Guam's Safety Office to remove of 10 grounded/abandoned vessels off coral reefs around Guam after typhoon Cha'tan. (USCG, GU)
- Funded 2 community-based marine debris removal efforts at South Point, Hawaii and at Kahoolawe. Results from clean-up still need to be assessed. (HI, DOC)
- Remote sensing techniques and the deployment of in-situ surface velocity program (SVP) drifters were used to study the North Pacific Subtropical Convergence Zone, which provides a mechanism for debris accumulation in the NWHI region. (DOC)

9. Restore Damaged Reefs

- US Coast Guard cited M/V MSC Diego for anchoring in Tortugas North Ecological Reserve. NOAA partnered with the Coast Guard to prosecute this case and resulted in judgment and required restoration by vessel owners. Close coordination with NOAA personnel resulted in the first case of its kind. Quick action was critical to identification of responsible party resulting in establishment of restoration project. (USCG, DOC)
- The restoration of seagrass and mangroves at Gugilligan's Island in Guánica State Forest and Natural Reserve in Puerto Rico has begun. Restoration of these habitats is designed to protect coral reefs in the area by providing buffer zones between corals and uplands. (DOC, PR)

10. Improve education and outreach

See accomplishments being reported under "Lack of Awareness" (p.11).

11. Reduce international threats to coral reef ecosystems

- NOAA convened two regional meetings on MPAs. In Southeast Asia, NOAA brought together of over 30 MPA and fisheries experts, sponsored by NOAA, IUCN, TNC and others to prioritize regional needs to strengthen MPA networks and in the Caribbean, NOAA convened a regional meeting to prioritize regional needs to strengthen MPA networks. (DOC)
- Based on NOAA's support and technical assistance the Senate of Palau has crafted draft legislation to establish a national system of MPAs. (USAID)
- Developing integrated coastal management and participatory governance in Tanzania, Indonesia, the Philippines, Mexico and Jamaica. (USAID)
- NOAA enhanced Chinese capacity to manage diver impacts through training on installation of mooring buoys as well as facilitated sharing their expertise with Vietnam
- NOAA provided drill equipment and training on the installation of 12 mooring and boundary buoys in Nha Trang Hon Mun to reduce harmful damage from local recreational dive uses at the coral site.
- Supporting implementation of the Global Program of Action (GPA) in countries with coral reefs to address marine degradation from land-based activities. (USAID, NOAA, DOS, EPA)

In an effort to enhance cooperation among the independent nations of the eastern Caribbean, an international partnership was created to promote long-term sustainable use and conservation of marine resources in the eastern Caribbean nations of Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. The Organization of the Eastern Caribbean States and Barbados (ECS), NOAA, the U.S. AID, DOS Environmental Diplomacy Fund collaborated to assist countries in the region to promote conservation, expand eco-tourism in the marine environment, and encourage economic diversification. As part of this effort, in September 2002, representatives from resource management organizations of several Eastern Caribbean States participated in a weeklong training program sponsored by NOAA and the Caribbean Marine Research Center (CMRC), NOAA's Undersea Research Program Center for the Caribbean. The training involved benthic and fish assessments on coral reefs near CMRC, a field station and laboratory on Lee Stocking Island, Bahamas.

12. Reduce impacts from international trade in coral reef species

- Successfully worked with CITES and partners to include all seahorses, whale sharks and basking sharks under listing for Appendix II, and to have a recommendation accepted for a technical workshop on sea cucumbers. (DOI, DOC, DOS)
- Supported programs in Southeast Asia and the Pacific to reduce the impacts from destructive fishing and over-fishing practices associated with the marine aquarium trade and the live food fish trade. (USAID, DOS)
- Invited by the House Oceans Caucus to present on the environmental and socio-economic issues associated with US imports of coral reef animals and products for the marine aquarium trade, and the urgent need for trade measures. (USAID)
- Continued implementation of a comprehensive trade strategy to reduce adverse impacts of trade by building human and institutional capacity in developing countries. (USAID)
- Continued to assess the U.S. role in the international trade, with an updated analysis of the amount of coral imported into the U.S. (USAID)
- Continued to recommend that new measures be adopted to ensure that U.S. consumer demand for coral reef animals and products does not contribute to the degradation of coral reefs. (USAID)

13. Improve coordination and accountability

- In cooperation with the USCRTF, NOAA produced *A National Coral Reef Action Strategy* to fulfill the requirements of the *Coral Reef Conservation Act of 2000 (CRCA)* and help track implementation *The National Action Plan (2000)*. (DOC)

USCRTF MEMBERSHIP:



DOC



DOI



EPA



USDA



DOS



DoD



DOJ



DOT



NSF



USAID



NASA



USCG



AS



CNMI



FL



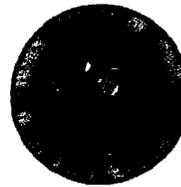
GU



HI



PR



USVI

