Appendix C. INFORMATION ACTIVITIES IN THE CARIBBEAN

Information available and limitations of current information are presented in five broad categories—information on the location and extent of coral reefs (reef mapping); information on impacts to reefs and coral reef condition; accessibility of such information; information on protection and management of coastal resources; and valuation of these resources. Attempts are underway to address many of the deficiencies mentioned below.

CORAL REEF MAPPING

Estimates of coral reef area across the region vary widely (*see Table A1*). For many countries, there are no national maps of coral reefs, from which reef area can be estimated. The U.S. National Oceanographic and Atmospheric Administration (NOAA) has recently improved the mapping of benthic habitat within U.S. waters in the Caribbean region, and the Nature Conservancy's Bahamian Ecological Planning project is improving mapping of coral reefs in the Bahamas. In addition, the Millennium Coral Reef Mapping project, a collaboration of the University of South Florida and the U.S. National Aeronautics and Space Administration (NASA), is mapping global reef geomorphology from 30-m Landsat imagery. These maps are expected to be released for the entire Caribbean during 2004. (See http://eol.jsc.nasa.gov/reefs/.)

MONITORING AND ASSESSMENT

Information on coral reef condition is limited, partly due to the vast area of coral reefs, spread across 35 countries and territories, and partly due to the lack of financial resources devoted to monitoring coastal ecosystems. There are, however, many noteworthy efforts within the Caribbean:

- An important effort within the region is the Caribbean Coastal Productivity Program (CARICOMP), a long-term monitoring program that uses a standardized monitoring method. CARICOMP has collected data at 27 reef locations across 20 countries, beginning in 1993. As of 2001, repeat monitoring at 22 sites had established temporal trends in such parameters as live coral cover. (See http://www.uwimona.edu.jm/cms/ccdc.htm.)
- A more recent and more extensive effort in the region focuses on assessment, rather than monitoring, of resources. The Atlantic and Gulf Rapid Reef Assessment (AGRRA) protocol has been applied at more than 730 reef locations in 17 countries across the region. This assessment provides a snapshot of many indicators of reef condition that will support setting of regional norms and making comparisons among different areas in the region.
- Selected universities, marine labs, and government institutions across the region carry out a diverse array of research, mapping, and monitoring activities on coral reefs. The Association of Marine Labs of the Caribbean (AMLC) meets annually to share information. Other notable efforts are the Florida Keys National Marine Sanctuary and Sistema Nacional de Monitoreo de Arrecifes Coralinos en Colombia (SIMAC), which have good time-series data sets for those areas.
- Several other important activities enlist volunteer divers to monitor coral reefs. Since 1997, the Reef Check program has documented social, physical, and biological conditions at over 186 sites in 16 countries within the region, providing information on benthic habitat, invertebrates, and reef fish. (See http://www.reefcheck.org.)
- The Reef Environmental Education Foundation (REEF) Fish Survey project allows volunteer scuba divers and snorkelers to collect and report information on coral reef fish populations. REEF has assessed more than 2,500 locations across the region. Recently, the Ocean Conservancy has partnered with REEF to develop a benthic component for sport divers termed RECON. (See http://www.reef.org.)

DATA INTEGRATION AND ACCESSIBILITY

These assessment and monitoring activities provide valuable information on a relatively limited number of coral reefs across the Caribbean. At present, information from only some of these sources is publicly available, and little of this information has been consolidated into a central repository.

Noteworthy efforts to consolidate information on coral reefs include:

- **ReefBase** (http://www.reefbase.org)—Offers a wide range of information on the world's coral reefs including status summaries, a database on coral bleaching, satellite images, and an Internet map server.
- **The Caribbean Coastal Data Center, University of West Indies (UWI)** (http://www.uwimona.edu.jm/cms/ccdc.htm)—A central repository for information on Caribbean coral reefs and coastal environmental data. An Internet map server is planned for 2004.
- **The Global Coral Reef Monitoring Network (GCRMN)** (http://www.gcrmn.org/)—Using its collaborative network, GCRMN has produced a biannual publication on the status of the world's coral reefs since 1998. This publication provides a good text summary for each country based on monitoring information, anecdotal observations, and expert opinion on observed impacts to coral reefs and changes in the condition of coral reefs and the associated fisheries.
- **Coral Disease**—Attempts are being made to consolidate and maintain databases on coral disease and coral bleaching. The University of Puerto Rico, NOAA, and UNEP-WCMC provide extensive information on coral disease incidence across the region. (See http://www.wcmc.org.uk/marine/coraldis/home.htm.)
- **Coral Bleaching**—The Reef Base database maintains an online database on coral bleaching. NOAA is working on tools for predicting where bleaching might occur, given sea surface temperatures and weather conditions. (See http://www.osdpd.noaa.gov/OSDPD/OSDPD_high_prod.html.)

PROTECTION AND MANAGEMENT

Information on protection and management of coral reefs is limited. Mapping of marine protected areas across the region is inadequate, and associated information on the management policies and use restrictions within Marine Protected Areas (MPAs) is often unavailable. Also unavailable is information about effectiveness of management within MPAs, which would allow the differentiation of "paper parks" from areas offering actual protection. Information on protected areas and the sharing of experiences should improve in the future under the Caribbean Marine Protected Areas Network and Forum (CaMPAM), an initiative aimed at enhancing the effectiveness of MPAs.

ECONOMIC VALUE

The true economic value of coral reefs is often not recognized, and this reduces the incentives for effective management of these vital resources. Studies on the economic value of coral reefs within the Caribbean are few, and those that have been done have used such varied methods that comparison between studies is often difficult. Attempts are being made to encourage more consistent valuation of coastal resources in the Caribbean region. (See http://marineeconomics.noaa.gov/.)

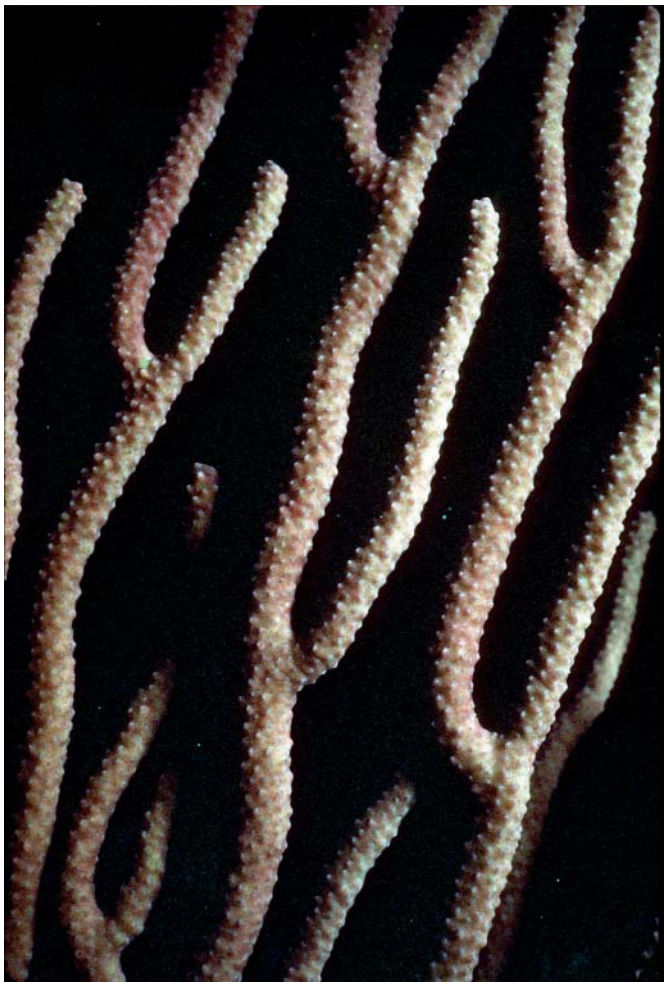

PHOTO: TONI PARRAS