

VIRMC Makes Intensive Data Collection Effort

By Caroline S. Rogers

In an earlier *Park Science* issue (Summer, 1985), we discussed the Virgin Islands Resource Management Cooperative (VIRMC) research projects and activities for 1984-1985 (Phase I) and 1985-1986 (Phase II). The Phase I final reports were printed in October 1986, with printing of Phase II reports expected in the spring of this year.

Following is an update on VIRMC activities and a brief description of 1986-87 projects. Island Resources Foundation is the fiscal agent and main contractor for all VIRMC projects subcontracted to other VIRMC members. The VIRMC studies represent probably the most intensive data collection effort ever carried out in a protected area in the eastern Caribbean.

International Workshop

In July 1986, Allen Putney from the Eastern Caribbean Natural Area Management Program, and Dr. Walter Knausenberger, University of the Virgin Islands, conducted a workshop on Coastal Protected Areas in the Lesser Antilles. The workshop was sponsored by the Commonwealth Science Council, Eastern Caribbean Center (Univ. of the Virgin Islands), and VIRMC. Results of VIRMC projects and several case studies from around the region were presented to resource managers and scientists from the U.S. Virgin Islands, French Antilles, the Netherlands Antilles, Puerto Rico, Belize, and Costa Rica. About 75 people attended the sessions.

Synthesis/summary report

Research Biologist Caroline Rogers is responsible for coordination and preparation of a synthesis and summary of research and resource management information with relevance to terrestrial and marine resources in Virgin Islands National Park and Biosphere Reserve. Robert Teytaud has prepared the terrestrial sections. The objectives of the report are to present the extent of our knowledge of natural resources in the park; to synthesize information which has implications for resource management within St. John and the wider Caribbean; to identify future research needs; and to recommend management alternatives and options for ecosystems within the park and biosphere reserve. The report is intended for scientists and protected-area managers in the Caribbean.

Recreational Uses of Marine Resources

Dr. Rogers is also the principal investigator of a study of boating and other recreational uses of marine resources within the park. Park Resources Management Specialist John Miller, park Biological Technician Larry McLain, former park Biological Technician Vonnie Zullo, and several volunteers have assisted in the field. A dramatic increase in the number of boats visiting the park has resulted in severe, localized damage to several coral reefs, both from careless anchoring and from boats striking the reefs. Inexperienced snorkelers also break off fragile coral branches. The reefs are among the park's greatest assets. Coral breaks on selected, particularly vulnerable reefs are recorded monthly.

Following installation of marker buoys near one reef in May (with help from Ralf Boulon, Virgin Islands Government Division of Fish and Wildlife), damage decreased markedly. Monitoring of the damage to coral communities and seagrass beds from boats an-

choring in popular north shore bays continues. Captains of various small cruiseships now visiting St. John have been contacted and are cooperating by anchoring in sandy areas rather than on seagrass or coral communities.

Seagrass Communities

Dr. Susan Williams, from West Indies Laboratory, and graduate student Dan Cooke have completed the field work for a study of seagrass beds and green sea turtles in Francis and Maho Bays on the north side of St. John. Comparison of their recent maps with earlier aerial photographs and a map prepared in 1959 suggest a marked decline in the extent of the healthy grass beds in both bays. The plants they have examined in stressed areas have lower growth rates.

Small turtle exclosures were set up in stressed areas to determine if elimination of turtle grazing would increase grass productivity. Seagrass protection zones, where anchoring is prohibited, have been established in small portions of each bay. Research/Resource Management staff plan to monitor seagrass recovery within these zones in the future.

Buck Island Fisheries

NPS is working with William Tobias from the local Division of Fish and Wildlife and Dr. John Ogden from the West Indies Laboratory in a study of the fish and shellfish populations at Buck Island Reef National Monument off St. Croix. One objective of the project is to determine the effectiveness of protective legislation in sustaining or increasing these populations. Census data (from visual surveys and fish trap counts) are being compared to data from previous studies funded by NPS and carried out by West Indies Laboratory.

St. John's Forests

Work continues this year on a long-term vegetation monitoring project started in 1985. Principal Investigators are John Earhart, World Wildlife Fund, and John Matuszak, University of the Virgin Islands. Anne Reilly and Matt Davis, Yale School of Forestry, are recording standard forestry measurements within three permanent plots in Fish, Hawksnest, and Reef Bay watersheds.

Geochemistry

Cindy Ginez and Carlos Ramos from the Center of Energy and Environment Research in Puerto Rico are

examining the impact of heavy metals in intermittent streams within guts on St. John and on the marine ecosystems which receive runoff from these guts. They are collecting biological specimens to sample chemicals and minerals entering St. John's waters.

Database Management

Dr. Edward Towle and Bruce Potter from Island Resources Foundation are examining different approaches to handling of data collected during all VIRMC projects. They are evaluating different Geographic Information Systems (GIS) and database management systems appropriate to existing and projected research and resource mapping and long-term monitoring activities focussing on biosphere reserve areas.

Some experimental computer-delivered graphics and spatial display strategies are also being developed, and recommendations for a user-friendly VIRMC, GIS and database management system will be made. A test project with computer graphic display of historic watershed land use data is anticipated.

St. John Salt Ponds

Dr. Maynard Nichols of the Virginia Institute of Marine Science has completed the field work on a pilot core-analysis study of selected salt ponds to assess the sedimentation effects of previous land-use practices and to determine the status of present-day input levels to natural impacts over a 500-year period.

The study will provide geochronology of selected cores and reveal likely historical records of changes in vegetation cover, sedimentation and soil chemistry that can affect coastal systems. The results will provide a possible new research strategy for island resource management and technical recommendations for managing watersheds within the Virgin Islands Biosphere Reserve.

Virgin Islands Biosphere Reserve Center

The NPS has made a strong, highly visible commitment to the biosphere reserve program by supporting the research of the Virgin Islands Resource Management Cooperative and through construction of the Virgin Islands Biosphere Reserve Center on St. John. Completed in January 1987, the Center has four buildings which include offices for Research/Resources Management Staff; housing for visiting scientists, students, and volunteers; a small laboratory, a collections area, and a conference room.

The Center, which was formally dedicated on March 25, is a potential focal point for research, training, education, and cooperative activities in the eastern Caribbean.



Virgin Island Biosphere Reserve Center.