

**MARINE RESOURCE DEVELOPMENT****ISLAND SOLID WASTE MANAGEMENT -- A MARINE PROBLEM?**

- *Twenty-nine out of 35 waste disposal sites in the Eastern Caribbean are coastal salt ponds, mangrove lagoons, and beaches. Because of this, island coastal areas are in jeopardy.*
- *Artificial reef emplacement using solid waste materials can enhance fisheries ... Montserrat, Barbados and the U.S. Virgin Islands are in the lead with this strategy.*
- *If effective solid waste management programs are to be developed by island governments, some difficult structural, legislative and managerial changes will be required.*

These are some of the findings of a comprehensive IRF study recently completed under contract to the U.S. Man and the Biosphere (MAB) program.

Within smaller Eastern Caribbean islands, solid waste disposal has traditionally been viewed as a public health problem, largely dealt with by Ministries of Health as a peripheral, adjunct activity. However, as the volume of solid waste has increased in the last decade, planning procedures and disposal practices have become more complex, requiring technical skills, equipment and funding approaches not customarily available within any single ministry.

Regional initiatives have been undertaken by PAHO, CARICOM, and UNEP, but individual island programs continue to suffer from:

- limited land space (sufficiently remote from population centers, ground water aquifers, important natural areas, and tourism industry nodal points);
- a shortage of technical personnel skilled in solid waste management, planning, and environmental monitoring;
- limited awareness regarding waste recycling and energy saving options;
- the low priority afforded solid waste management by traditional bilateral/multilateral assistance agencies and institutions in the region.

The solid waste report, prepared by IRF president Edward Towle, will be published by U.S. MAB as a part of its miscellaneous publication series. Xerox copies are available, at cost, from IRF in the interim (62 pages plus appendices and maps).

## BOATING IMPACT SURVEY

### *YACHTING, CHARTER BOAT ACTIVITY AND MARINA SERVICES HAVE BECOME A MAJOR INDUSTRY IN MANY PARTS OF THE CARIBBEAN.*

Recognizing the importance of the boating industry to its economy, but lacking quantitative data on the waste disposal practices of vessels utilizing its harbors, anchorages, and marinas, the Government of the U.S. Virgin Islands recently contracted with IRF to assist in the development of a vessel waste control and management plan for the territory.

Under the direction of Werner Wernicke (a sanitary engineer and former director of the V.I. Coastal Zone Management Program), an IRF team was assembled, including Clarence Cuthbertson, Ed Towle and others. They have, since December, been evaluating current vessel waste practices by surveying vessel owners/operators and marinas.

Concurrently, a review and inventory of extant legislation and management programs is being completed, and final analysis and recommendations to Government for a vessel waste management program will be provided by 1 April.

Since the boating industry, in all its complexities, has emerged as a significant factor within the framework of insular economies in the Lesser Antilles, this planning effort by the U.S. Virgin Islands Government is important to others in the region confronting similar issues of "development versus regulation" for an expanding marine industry.

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### IRF PROGRAM ASSOCIATES ... NEWS BRIEFS --

- ▶ **DR. MELVIN GOODWIN** of Environmental Research Projects (ERP), St. Lucia, recently mounted an artisanal fisheries workshop for Caribbean fisheries officers at the Gulf and Caribbean Fisheries Institute sessions which were held in the Bahamas. His work with a Montserrat artificial reef project and St. Kitts-Nevis fisheries development continues, under the aegis of the Caribbean Conservation Association and with the support of CIDA and others. ERP and IRF have jointly developed an artemia (brine shrimp) mariculture assessment strategy, focussing on utilization of West Indian salt pond ecosystems.
- ▶ **MR. RANDOM DUBOIS**, former (1979-1980) IRF staff associate, as an environmental impact and sand mining specialist and, more recently, consultant to U.S. AID, IIED, IUCN, NPS, and IRF on coastal zone issues, has prepared a useful summary paper on "The Importance of Managed Development in Tropical Coastal Areas" (published in AID-NPS *Natural Resource Technical Bulletin*, No.3/1982). It is accompanied by an annotated bibliography on coastal resources management, emphasizing mangroves, sea grass beds, coral reefs, and marine pollution. Copies available from IRF.
- ▶ **MR. DOUGLAS WHITE**. When ENDA (Environment and Development in the Third World), in cooperation with St. Lucia's Caribbean Research Centre and others, organized a grass roots, appropriate technology workshop last year at Anse La Raye, St. Lucia, IRF and Doug White joined forces to video tape the proceedings and demonstration projects, which focussed on low cost housing and energy strategies, solar-drying techniques, bee keeping, bamboo/cement water tank/cistern construction, and other topics. IRF shipped its entire video system to St. Lucia where salient portions of the week-long hands-on workshop were taped. IRF is now seeking funding to produce a 30-minute television summary.

## ISLAND DEVELOPMENT PLANNING: WHAT'S AHEAD?

ALDO LEOPOLD once reflected, "One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is invisible to laymen."

Unfortunately, in the special case of offshore oceanic islands, much of the damage is invisible to almost everyone -- laymen, politicians, planners, scientists, alike. Insular remoteness much too often obscures from all but a few the burgeoning impact of contemporary continental pressures on small and fragile insular systems. Islands need special attention and require customized resource management approaches which they seldom receive.

We need to address the problem of insularity. It is time to look at island areas as a global resource and adjust development strategies to be more responsive to island conservation needs and island resource management requirements for sustainable growth.

E.L. TOWLE, 1982

To examine the development process of oceanic islands more systematically, a group of island specialists was convened in Washington, D.C. in the fall of 1982, under the sponsorship of the U.S. MAB Directorate for Caribbean Islands, William S. Beller, chairman. IRF was represented by its president, who also served as rapporteur, and by program associate, Ivor Jackson.

The final recommendation from the planning group called for an international conference on islands, to be organized and convened, tentatively, in 1985. The proposed conference, on the opportunities and constraints for development in small oceanic islands, will be preceded by a series of planning studies and workshop activities, in which IRF will participate.

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○WHAT MAKES ISLAND SYSTEMS DIFFERENT?

○ARE CONSERVATION AND DEVELOPMENT COMPATIBLE IN AN INSULAR ENVIRONMENT? HOW?

○WHAT CAN BE LEARNED FROM ONE ISLAND AREA'S EXPERIENCE WITH RESOURCE MANAGEMENT THAT WOULD BE INSTRUCTIVE TO OTHER SMALL ISLAND SYSTEMS . . . , especially those in the Caribbean with recurring growth, planning, resource development, and environmental management problems?

A recent annotated bibliography of source materials (prepared by IRF) focuses on these questions, specifically on the experience of the U.S. Virgin Islands as a community adjusting to rapid growth and change.

The U.S.V.I. has, for over two decades, spent hundreds of thousands of dollars a year on environmental planning and development studies and had access to additional external counsel and professional expertise, all resulting in a veritable mountain of documentation which, when viewed *in toto*, constitute a formidable investment in information and an impressive planning base for a small Caribbean island area of fewer than 100,000 persons and less than 150 square miles.

The U.S. MAB program recently provided funding for IRF researchers to compile and annotate the existing U.S.V.I. data base, placing it within its Eastern Caribbean context but looking toward its use by other oceanic island areas.

Entitled *CARIBBEAN ISLAND RESOURCE MANAGEMENT: AN ANNOTATED BIBLIOGRAPHY*, the document is available from the Foundation for \$2.00 US (postage and handling charges only). 40 pages.

## HISTORIC SITES: AN UNDERUTILIZED DEVELOPMENT RESOURCE?

THE ISLAND OF DOMINICA's least developed and most outstanding natural and historical attraction is the CABRITS, a spectacular peninsula on the northwest coast which includes the buildings and ruins of a once impressive West Indian military fortification complex -- similar to Brimstone Hill in St. Kitts or Shirley Heights in Antigua.

The Cabrits has, for several years, been the focal point of an "eco-development" strategy which combines the resources of both local and external agencies (including IRF) and which attempts to link the area's unique natural/cultural features to sound economic development. In 1979 IRF prepared a preliminary Cabrits Historic Site Development Plan and an interpretive guide/brochure for use at the site.

Recently IRF was asked by the Eastern Caribbean Natural Area Management Program (ECNAMP) to provide a follow-up architectural assessment and preliminary stabilization plan for the more than 45 historic structures located at the Cabrits. Both activities were carried out by IRF's historical architect, Douglas White, whose assessment included planning recommendations within the overall framework of the development options being considered for the area.

Additional inventory work is anticipated at the site in the near future, as well as actual stabilization efforts utilizing Dominican masons.

THE EASTERN CARIBBEAN NATURAL AREA MANAGEMENT PROGRAM, IN COOPERATION WITH THE CARIBBEAN CONSERVATION ASSOCIATION, THE UNIVERSITY OF MICHIGAN, AND OTHERS, HAS PRODUCED A SERIES OF "DATA ATLASES" ON EACH OF 25 ISLANDS OR ISLAND GROUPS IN THE EASTERN CARIBBEAN. EACH ATLAS PRESENTS DATA (ON SEPARATE MAPS) REGARDING RAINFALL, LAND USE, COASTAL OCEANOGRAPHY, TRANSPORT SYSTEMS, POLLUTION, AND OTHER RELATED TOPICS. COPIES ARE AVAILABLE AT \$3.00 U.S. PER ISLAND ATLAS (PLUS POSTAGE) FROM MR. ALLEN PUTNEY, ECNAMP, c/o WEST INDIES LABORATORY, TEAGUE BAY, CHRISTIANSTED, ST. CROIX, U.S. VIRGIN ISLANDS 00820.

IRF PREPARED THE ANGUILLA MAPS IN THEIR ENTIRETY AND ASSISTED WITH THE MAPS OF TORTOLA, VIRGIN GORDA, AND ANEGADA. ADDITIONALLY, IRF'S CARIBBEAN ISLAND REFERENCE LIBRARY WAS USED EXTENSIVELY BY THE THREE PROFESSIONAL RESEARCHERS FOR THE ATLAS SERIES, MR. PUTNEY, MR. IVOR JACKSON AND MR. YVES RENARD.

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