



The Reef Environmental Education Foundation

**Annual Report
2000**

REEF ENVIRONMENTAL EDUCATION FOUNDATION

Our Mission

To educate, enlist and enable divers and non-divers alike to become active stewards in the conservation of coral reefs and other marine habitats.

Our Vision

The oceans have always inspired a sense of awe and wonder. Of even greater importance, the very health and well-being of our water planet depend on the continued health and well-being of the oceans. And yet, the oceans remain one of the last natural histories to be extensively explored. We do know that marine habitats provide some of the world's most diverse ecosystems. Coral reefs support communities comprising many tens of thousands of species; they are unique, valuable, and irreplaceable places of great aesthetic, environmental and commercial value. They are also under increasing threats from human impacts that permanently destroy habitat and deplete resources.

Recreational divers and snorkelers are in a unique position to observe, record and publicize the effects of these threats. Armed with knowledge and the opportunity to become involved, these divers can make significant and ongoing contributions to the conservation of marine habitats.

Our Goals

- To educate and enlist a growing corps of volunteer divers and snorkelers to conduct surveys of marine life.
- To provide the marine science, resource management, and conservation communities with a reliable, geographically broad, and continuing source of marine biodiversity data for practical application in habitat conservation and resource management.
- To encourage the support and implementation of effective marine conservation strategies developed through government, private or public frameworks.
- To educate divers and the general public about threats confronting the marine environment and to encourage them to become active stewards in ocean conservation.
- To promote the diving community as an active partner in the long-term conservation of coral reefs and other marine habitats.
- To work cooperatively with other like-minded people and organizations to effectively and efficiently achieve these goals.



Overview

This report is produced each year in preparation for the annual REEF Advisory Board and Sustainer's event. It represents an overview of current REEF status, activities, programs and financial status*. It also serves as the basis for planning upcoming programs and activities as well as a catalyst for direction.

Executive Director's Message

The much-anticipated new millennium saw REEF develop into the premier volunteer-based environmental organization in the world. Increases in membership, partnerships, survey effort, scientific publications, survey contracts, web presence, special projects and volunteer opportunities boosted us to a new level.

This year proved to be a year of expansion. Regional coverage of the fish survey project was increased to the Northeast US and the Hawaiian Islands. These expansions now complete our coverage of the entire coastal US and Canadian waters, as well as the Caribbean, Gulf of California and Hawaii. Expansion of our data management system and Website, through a strong partnership with NOAA's Biogeography Office, brought accessibility and reporting on the web to a new level. We now receive over 50,000 accesses each month, much of which is from the educational sector. Work with NOAA and other scientific and management collaborations have resulted in numerous scientific publications that utilize Reef's data. A NOAA Technical Report on the status of Fish in the Florida Keys debuted a new way of linking habitat and fish community structure with GIS mapping technology. A report on the status of Jewfish in Florida waters refuted attempts to reopen the fishery and substantiated the continued protection of this magnificent species. Volunteer REEF data played a major role in these works. Increased volunteer opportunities with local partners and increased support for monitoring contracts provided additional opportunities for REEF members to take part in important data collecting projects. REEF increased our staff last year to include a new Education/Outreach Coordinator to work with our local partners as well as the annual Great American Fish Count event. A formal Marine Conservation Internship Program was also implemented, providing opportunities for two internship positions each semester. As always, we continue to find ways to utilize our limited resources and small staff in accomplishing a full schedule of activities. We are, and you are, an active "do something" organization and we are proud to find ourselves making a difference.

*The financial information has been pulled together from computer bookkeeping systems and not compiled in a review or audit. Complete and professionally prepared financial statements will be available by August 01, 2001.

REEF Board, Staff and Advisors

REEF Board of Trustees

Paul Humann, President - Paul is a world renowned underwater photographer, author and naturalist. His three volume marine life identification series has introduced thousands of divers and snorkelers to the underwater world. Paul is a co-founder of REEF.

Ned Deloach, Vice President -Ned is a co-founder of REEF. His photography and writing are known to divers and snorkelers everywhere. His recent book *Reef Fish Behavior* is a landmark compilation of the ecology and behavior of Caribbean fish.

Jim Dalle Pазze, Treasurer - Jim is a tax attorney practicing in Delaware with his own firm. He has worked *pro bono* for REEF since its inception, incorporating the organization in 1990 and gaining its non-profit 501 c (3) status. His diving passions have lead him around the world over the last 20 years.

Dr. Jim Bohnsack - Jim is a senior fisheries biologist with the National Marine Fisheries Service, based in Miami, Florida. He is recognized around the world for his work in advocating the benefits of marine protected areas. A REEF board member since its inception, his scientific assistance and advice has been essential in developing REEF's monitoring protocols and data application.

Dr. Gina Green - Gina is the Director of the Caribbean and Latin American division of The Nature Conservancy. She joined the REEF board in January of 1998. Her work has focused on specific sites of interest, both terrestrial and marine, in key conservation regions throughout the Caribbean.

David Taylor – David is the Editor of Rodale's Scuba Diving Magazine and joined the REEF Board in 2000. His viewpoints, environmental concerns and actions led to his being honored as recipient of the dive industry's Environmental Award in 2000.

REEF Staff

Laddie Akins, Executive Director - Laddie's background is in the dive industry as a Scuba instructor and Coast Guard licensed Captain. Laddie started working as a volunteer with REEF during its formative stages and became REEF's first Executive Director in 1993.

Dr. Christy Pattengill Semmens, Scientific Coordinator - Christy began her work with REEF as an intern with The Nature Conservancy in 1993. She helped develop the fish survey program during her internship then implemented the program in the Gulf of Mexico during her graduate work at Texas A&M. Christy received her Ph.D. in Reef Fish Ecology in 1998 and joined REEF as our Scientific Coordinator later that year. She has published numerous papers using REEF data and continues to work with new ideas to utilize the survey information. She lives in Seattle with her husband Brice who is also a REEF Volunteer and is conducting his graduate work at the University of Washington.

Leslie Whaylen, Field Operations Coordinator - Leslie began working with REEF as a volunteer in 1995 during fish assessments in the Flower Garden Banks National Marine Sanctuary. She graduated from Texas A&M in 1992 with a degree in Marine Biology and worked for the Texas

Natural Resource and Conservation Commission for 6 years before joining REEF. Leslie's responsibilities include data management, field surveys, assessment contracts and the REEFNotes newsletter. Leslie works out of the Key Largo office.

Julie Dutcher – Julie joined the REEF staff in December of 2000. Her responsibilities include managing the Great American Fish Count Event, REEF's Field Station Program and developing the education and outreach programs.

Caryn McLaughlin, Office Manager - Caryn has worked with REEF for the last three years in the accounting department. She has now taken on the office manager responsibility including membership, orders, answering informational requests and e-mails.

REEF Advisory Board

The members of the REEF Advisory Board are all distinguished members in their fields and contribute their expertise to the REEF board and staff.

Billy Causey, Florida Keys National Marine Sanctuary
Dr. Ken Deaver, Ethnoscience
Kalli De Meyer, Coral Reefs Park program, Coral Reef Alliance
Deena Wells, Florida Department of Environmental Protection
Stephen Frink, Rodale's Scuba Diving/ Stephen Frink Photography
Professor Robert Ginsburg, Univ. of Miami's Rosenstheil School
Dr. Steve Gittings, Marine Sanctuaries Division, NOAA
Wolcott Henry, The Henry Foundation and Curtis and Edith Munson Foundation
William Horn, Florida Fish and Wildlife Conservation Commission
Peter Hughes, Peter Hughes Diving
Dr. Tom Isgar, Seluera, Inc.
Jennifer Lash, Living Oceans Society
Dr. Carol Lorenz, Consultant
Ken Marks, Bytes and Pieces Computer Consulting
Chris Ostrom, Marine Sanctuaries Division, NOAA
Dr Emily Schmitt-Lavin, The Nature Conservancy
Dr Edwin Steiner, Chemist, Dow Chemical, retired
Dr Kathleen Sullivan Sealy, The University of Miami
Anne Walton, Channel Islands National Marine Sanctuary

Working Committees

REEF working committees are made up of dedicated volunteers who wanted to assist REEF staff. They assist on projects and help find solutions to REEF issues within their realm of expertise. Proposed by REEF members, and implemented this year, these committees have made a big difference in many working aspects of the organization.

Work Committee/Board Liaison – Carol Lorenz

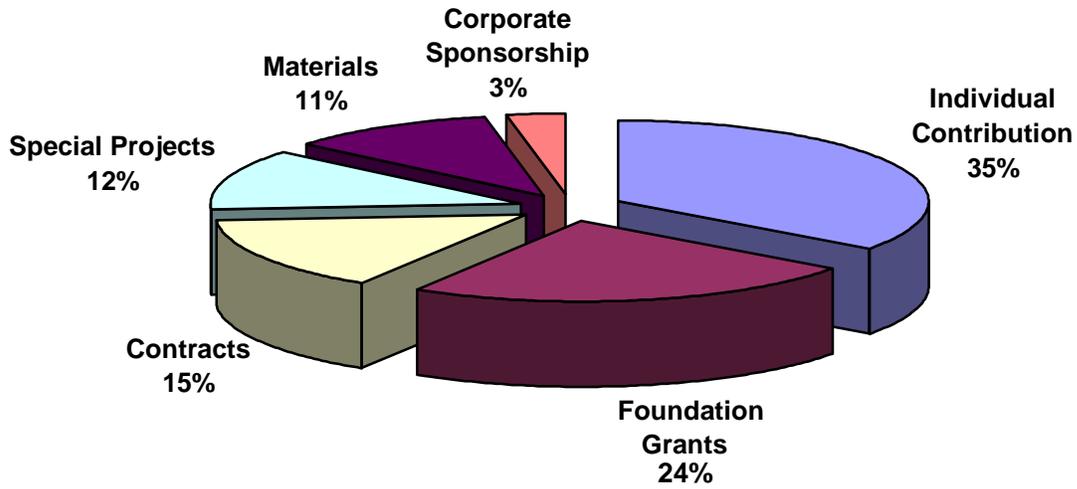
Finance – Chair- Pat Ayers, Steve Gittings, Tom Isgar, Hilton C Smith

Technology – Chair- Clint Whitaker, Carol Whitaker, Ken Deaver, Muns Farestad, Lauren Penner, James Brooke, Mark Kaehler

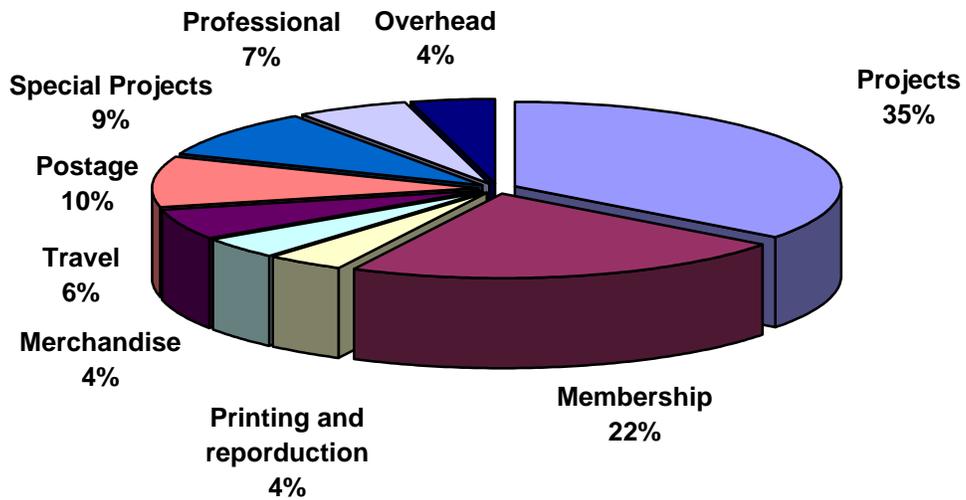
Communication – Chair- Deena Wells, Ed Steiner, Kathleen Sullivan-Sealy, Kitty Phillips, David Preston

Financial

Income – \$385,091.00



Expense - \$ 354,384.00



Major Contributors

In 2000 we were fortunate to have major foundation support as well as the support of our Sustainers. Our sustainers provide a consistent base of funding by committing contributions of at least \$1,000.00 each year. Many sustainers also contribute valuable volunteer and survey time to REEF activities

Foundations

Curtis and Edith Munson Foundation
Henry Foundation
Elizabeth Ordway Dunn
National Fish and Wildlife Federation
Coral Reef Fund of the National Philanthropic Trust
PADI Project AWARE
The Meyer Foundation
The Rohauer Collection Foundation

REEF Sustainers

Patricia Ayers	Joseph and Linda Meyer IV
Darcy Charlier	David Nank
Mindy Cooper-Smith	Jeffrey Nehms
Ken Deaver	Ole Peloso
Ned and Anna DeLoach	Feodor U. Pitcairn
Mary DeLoach	John Pitcairn
Steve Dingledein	David Preston and Carol Lorenz
Neil Ericsson and Karen Florini	Dennis Schneider
Muns Farestad	William Sheppard
David Herro	Kenneth Sinibaldi
Paul Humann	Hilton C. Smith, Jr.
Tom Isgar	Edwin and Doris Steiner
Mark Kaehler	John Strand
Jose' and Barbara Kirchner	Anne Walton
Bob and Jean Kirkpatrick	Don and Carol Whaylen
Anne Kugel	Clint and Carol Whitaker
Fred McConnaughey	

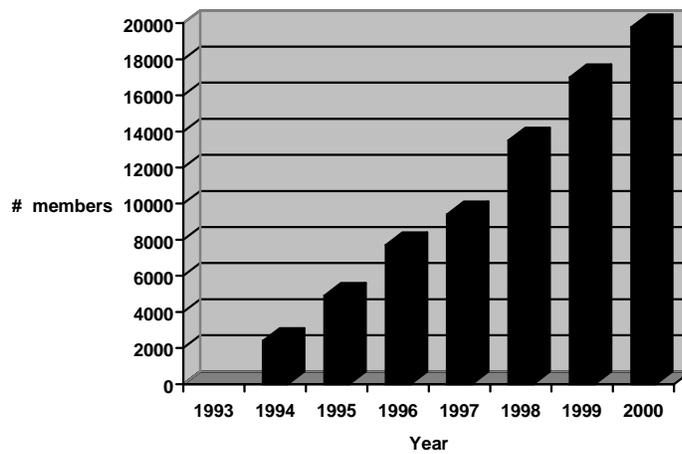
Contracts

Another major funding source for REEF activities and survey work comes in the form of contracts with state, local or federal agencies. In 2000, REEF conducted survey work under contracts with the Florida Keys National Marine Sanctuary and the Florida Fish and Wildlife Conservation Commission. Additionally, a contract with NOAA's National Marine Sanctuary Program partially supports REEF's Scientific Coordinator position to conduct high level analysis with REEF data, work on expansions of the program and serve as a liaison with the sanctuary and scientific communities.

Membership

Members are the backbone of the REEF organization. REEF exists to serve its members and in turn, members provide data, support and motivation to carry out our mission. REEF has always maintained a “no-fee” membership policy. All members are provided with a free membership packet and REEF number. In addition, members receive the quarterly newsletter REEFNotes free of charge and may request free survey report forms at any time. The year 2000 saw another year of increase in our membership, with the adding of more than 4,400 members to the REEF roles. Most members learn of REEF through dive consumer shows, dive magazines, local partners and the Internet.

REEF's Membership Growth



Education and Outreach

Public talks

A major portion of REEF's mission is to educate divers, snorkelers and the general public about marine issues. Our primary method of getting the word out is through public talks. Each year REEF staff and volunteers conduct numerous talks for primary, secondary and university school groups, dive clubs, and other conservation minded groups. These talks include a variety of subjects from fish identification to behavior to basic coral reef ecology, but always include a strong conservation message and focus on measures to help protect our marine resources. In 2000, more than 50 talks were presented to over 2,000 people.

REEFNotes newsletter

Another mechanism for getting the word out about conservation and current marine related issues is through the REEFNotes newsletter. This newsletter is produced and mailed free of charge to all US and Canadian REEF members (over 15,000 households) and foreign contributing members. The current REEFnotes has grown to a substantial size from meager beginnings. In 1994, the first REEFnotes was comprised of only 4 pages. Current issues now include 16 information-filled pages. Each issue of REEFNotes costs approximately \$10,000.00 and over 100 hours to write, edit, layout, print and mail. Volunteer editing teams and articles help ease the work load. Barbara Doernbach's layout contributions and a most generous printing contribution by The Neilson Company in Florence, Kentucky, have reduced the costs of producing each REEFNotes to shipping and postage only. The newsletter is also now available on-line on the REEF Website.

REEF Website

Year 2000 saw a much needed revision to the REEF Website. After 4 years of steady service, the site received a face lift, functional revisions and a number of new member sections. Brice Semmens volunteered his time to work on the new site that debuted in mid-year 2000. The site now includes an expanded member forum area, quizzes and galleries for each survey region, an events page, research and monitoring summaries, new REEF products on-line store and of course lots of data. Dr. Michael Coyne of NOAA's Biogeography Office also redesigned the data portion of the site to allow new database administration and reporting. The Website has become one of the most active and efficient ways of maintaining contact with our members and the general public. The site now receives over 5,000 hits each day, over 150,000 each month.

Recognition Certificates

In working to recognize volunteer survey members and their contribution efforts, REEF worked with NOAA's National Marine Fisheries Service to produce award certificates and pins to recognize the survey levels of our volunteers. Members reaching the 25, 50 or 100 lifetime survey levels received a frameable certificate and accompanying pewter fish pin during a June mailing. This program will continue to recognize members achieving these survey levels on a regular basis.

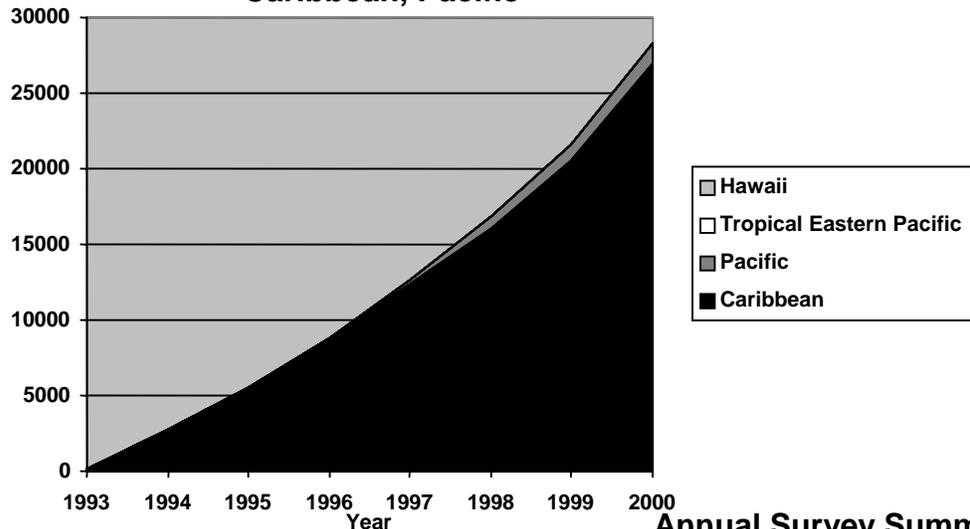
Fish Survey Data

Through the enlistment and education of volunteer divers, REEF has created what is currently the largest database of tropical western Atlantic fish assemblages in the world, and the other regions are following suit! Our program has been successful in engaging the public in an activity that increases awareness and understanding of the marine environment, while providing valid and useful data.

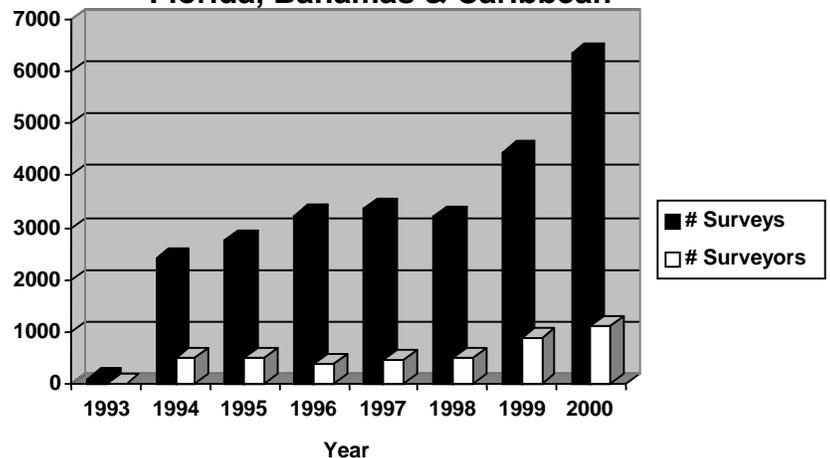
REEF's first data collection took place in 1993 and has now grown to include more than 27,000 volunteer surveys from over 3,000 sites. Each year has seen a steady increase in the number and the rate of survey activity. Volunteer effort brought in over 6,700 individual surveys during 2000. Incoming data are generated through three primary activities; individual member surveys, REEF Field Surveys and special projects and partnership programs with other organizations. Individual surveys account for approximately 50% of all survey data. REEF projects account for approximately 30% and newly established partnerships are providing approximately 10%.

Expansion of the REEF survey program has also grown steadily as increased demand for the program comes from new regions. The program now encompasses the entire Caribbean, the Southeast US Atlantic coast, the Gulf of Mexico, the entire West Coast of the US and Canada, and the Gulf of California through the Galapagos. New expansions to Hawaii and the Northeast US and Canada have just been completed in very early 2001.

**Cumulative REEF surveys:
Caribbean, Pacific**



**Annual Survey Summary:
Florida, Bahamas & Caribbean**



Reef Field Surveys

REEF's Field Survey Program consists of week-long programs with our members conducted at various locations throughout our survey regions. Each survey includes seminar time as well as dive time and has allowed large-scale, focussed data collection at key sites and regions. Through our Field Surveys, we have built a core group of interested and very experienced survey members. The location of our projects at key locations around the Caribbean and Gulf has also allowed us to focus attention at marine protected areas, helping to establish baselines and continued monitoring for use by park managers and scientists.

The focus of our Field Surveys in 2000 was in beginning to fill gaps in the spatial context of our database. A number of locations were surveyed for the first time in an effort to boost survey numbers for those areas. This effort will continue over the next two years as REEF works on the development of a tropical western Atlantic Distribution Atlas. Over 150 divers joined in on 10 projects providing more than 1,700 surveys.

REEF Field Survey Summary 2000

Field Survey	Date	# Participants	# Surveys	# Sites	# Species
Dominica	6/00	19	207	20	230
Little Cayman	7/00	14	171	15	179
Tobago	7/00	16	140	16	212
Grand Turk	8/00	14	208	11	189
Florida Keys (week 1)	9/00	14	156	21	221
Florida Keys (week2)	9/00	11	197	17	212
Flower Garden Bank	8/00	18	181	8	142
St. John	9/00	10	108	16	195
Bonaire	11/00	18	216	16	221
Cozumel	12/00	18	170	12	194
TOTALS		152	1,754	152	

REEF Science

One large part of the REEF mission is our education/outreach and volunteer opportunities, however, a major goal of this work is to provide valuable data for use by the scientific and marine management communities. To this end, REEF's Scientific Coordinator, Dr. Christy Semmens, works as liaison between the volunteer activities and the science information. This work includes the development of REEF's fish survey database and reporting functions as well as high level analysis of REEF generated data for scientific publication and application. Following is a summary of year 2000 science activities and publications. Full documents and publications from previous years are listed on the REEF website at www.reef.org/data/research.htm and complete documents may be downloaded from the site in .pdf format.

Scientific Symposia and Projects

- Attended FKNMS Zone Monitoring Performance meeting in Marathon in February, presented REEF's AAT 99 summary report
- International Coral Reef symposium in Bali. Three REEF papers were presented at this prestigious conference that takes place every four years.
- Attended Society for Conservation GIS annual meeting (will be presenting in 2001)
- Bridge Data site (www.vims.edu/bridge/datatip.html). This site based out of the Virginia Institute of Marine Science (VIMS) used REEF data as the highlight of on-line curricular materials. The tip for the month of September focused on data from three National Marine Sanctuaries and how fish composition relates to the characteristics of each site.
- Biodiversity Expedition in Andros, Bahamas. REEF staff conducted the fish component during a two week expedition sponsored by the American Museum of Natural History to document marine biodiversity of the largest Bahamian Island.

Year 2000 publications

B.X. Semmens, J.L. Ruesink, and C.V. Pattengill-Semmens. in press. Multi-site multi-species trends: a new tool for coral reef managers. International Coral Reef Symposium, October 2000.

This is the first large scale trend analysis done using REEF data. The paper looked at 21 sites throughout the Florida Keys National Marine Sanctuary. Analysis methods were modified from those applied to the Breeding Bird Survey in order to detect sites with multi-species declines. A sub-set of sites were identified and potential management options were discussed.

Jeffrey, C.F.G, C. Pattengill-Semmens, K. Buja, J.D. Christensen, M. Coyne, M. E. Monaco, and S. Gittings. in press. Benthic habitat associations of reef fishes in the Florida Keys: Coupling of benthic habitats and fish distributions via GIS technology. Proc. International Coral Reef Symposium, October 2000.

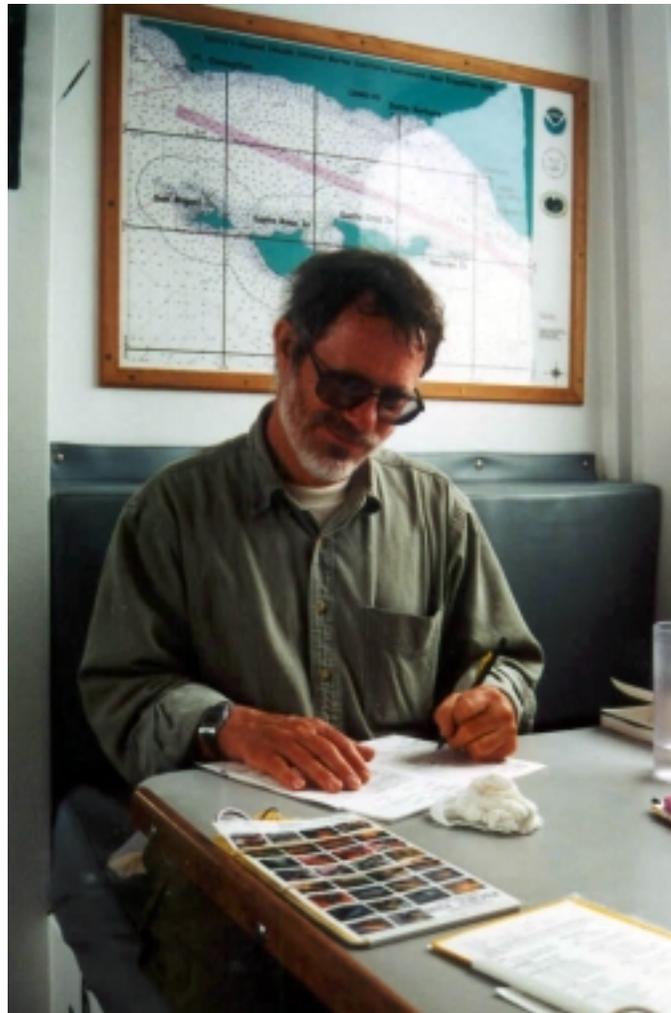
This study analyzed spatial trends and correlations between habitat diversity and fish community, using REEF data from the Florida Keys that were overlaid onto benthic habitat maps using GIS.

Pattengill-Semmens, C.V., S.R. Gittings, and T. Shyka. 2000. Flower Garden Banks National Marine Sanctuary- A Rapid Assessment of Coral, Fish and Algae using the AGRRA Protocol. NOAA Conservation Series Tech. Report.

The results of an AGRRA expedition to the Flower Garden Banks are summarized in this technical report. A total of 117 fish species were recorded during the expedition, and REEF surveys documented a new record for the banks, a sharptail eel.

Pattengill-Semmens, C.V. and B.X. Semmens. in press. The status of reef fishes in the Cayman Islands (B.V.I.). Atol Research Bulletin.

This paper is the result of a 1999 AGRRA expedition to the Cayman Islands coordinated by the Marine Education and Environmental Research Institute (MEERI). The paper uses the REEF database (over 1,200 surveys from the Cayman Islands) and the AGRRA fish data to provide an updated species list for the Islands, a comparison between islands (Grand Cayman and Little Cayman) and sites (33 sites), and an analysis of the relationships between herbivorous fishes and algal cover. Thanks to the REEF database, 44 species were added to the list of fishes known to occur on the Islands. A site's location (windward or leeward) appeared to be an important factor in community composition. Additionally, many species had significantly higher abundance on Little Cayman, including groupers which is probably an indication of the difference in anthropogenic impacts between the two islands.



Special Projects and Partnerships



Great American Fish Count – The annual GAFC event was again a big success in 2000. Over 20 seminars to more than 250 divers were conducted throughout the US, resulting in more than 230 surveys and documenting more than 300 fish species. The event also generated news articles in numerous 15 national and regional media. Beginning in 2000, the event was organized and produced solely by REEF in close association with NOAA’s National Marine Sanctuary Program.

CMC’s RECON- In 2000, REEF staff worked with the Center for Marine Conservation as consultant in the development of a new volunteer program for benthic assessments. The Reef Ecosystem Condition (RECON) program was developed in close coordination with the existing REEF fish survey project. Dr. Christy Semmens served on the Advisory Board for the program, helping to integrate the two assessment protocols. Groundwork was laid for two joint projects to be conducted in 2001 in Puerto Rico and the US Virgin Islands.

Florida Fish and Wildlife Conservation Commission –As part of a contract with the FWCC, REEF staff conducted four regional training seminars during 2000 for the artificial reef program. Seminars targeted county monitoring teams to increase identification skills and familiarize them with the standardized REEF methodology. FWCC officials coordinated with REEF to implement the program in order to help standardize the data collection and reporting procedures throughout the 10 county artificial reef program.

Sustainable Seas Expeditions – Year two of REEF’s work with the Sustainable Seas Expeditions, provided dive opportunities in the proposed reserve areas of the Dry Tortugas. Fish surveys were conducted in both the Sherwood Forest and the Riley’s Hump areas, both now part of the Nation’s largest no-take reserves. Data collected as part of the SSE mission will play a significant role in documenting effectiveness of these reserves in the deepwater regions beyond scuba depths. In addition to the data collected in the Keys, the Hawaii SSE mission incorporated REEF materials into school group education programs.

NOAA Biogeography Office – Working in close association with the NOAA Biogeography Office in Silver Spring, MD, REEF’s fish survey data are being used to help address the relationships between habitat and fish distributions by using GIS mapping technology. The work, focussed on the Florida Keys, is serving as a model for future analysis of habitat relationship patterns in other areas. Results from the first aspect of this project were recently published as a NOAA Technical Report. Our collaboration has also enabled the restructuring of the REEF database and reporting programs.

Oceanwatch Foundation – REEF staff and volunteers worked with the South Florida based Oceanwatch to train local divers in fish identification and the REEF survey methodology. Oceanwatch then sponsored materials and monthly dives to collect baseline fish data from proposed marine reserve sites in the Fort Lauderdale area. Data will be used to help determine the need and substantiate effectiveness of MPAs in the area.

Project SEA-Link, Maui Community College, Coral Reef Network – Working with three Hawaiian organizations, REEF laid the groundwork for the February 2001 expansion of the Fish Survey Project to Hawaii. The three local partners, gathered baseline information, conducted seminars and established the framework needed to implement the fish survey project throughout the Islands.

Sonoran Sea Aquarium- Even though the facility is not yet under construction, the Sonoran Sea Aquarium in Tucson worked with REEF to expand the Fish Survey Project to the Gulf of California. Through a partnership effort, the program debuted at the Desert Dolphins Dive Symposium in early summer. Field Survey Projects to the Gulf are planned for 2001.

Peter Hughes Go Fish – Following an introduction to the REEF program in 1999, Peter Hughes Diving implemented a novel program dubbed “Go-Fish” on all 4 of the Dancer vessels in the Caribbean. Guests were introduced to fish identification and REEF surveying on each trip and raffle prizes were available to those completing surveys. Over 1,000 surveys were generated from the program in 2000.

Audubon Mangrove – Working with the Tavernier office of the Florida Audubon Society, REEF assisted in the development of a Mangrove Fish survey Program. The program will help document juvenile and nearshore species in the key nursery habitats omitted during recreational reef dives. The program can also serve as a model for mangrove areas throughout the Caribbean.

Batfish Recovery Project – After following the sightings of Indo-Pacific batfish on a Florida Keys reef for nearly six years, REEF volunteers documented an increase in abundance that raised concern of Sanctuary officials. REEF worked with the Florida Keys National Marine Sanctuary and the New England Aquarium to remove the exotics from the Keys and place them as an educational centerpiece in the Aquarium’s Caribbean exhibit. REEF continues to track the occurrence of exotic species at this and other locations in the database.



For more information, please contact REEF at P.O. Box 246, Key Largo, FL 33037, 305-451-0312, reef@reef.org, www.reef.org