

REEF Notes



Reef Environmental Education Foundation

An active organization of divers and other marine enthusiasts committed to ocean conservation

Strength in Numbers:

REEF Celebrates 100,000 Fish Surveys

One hundred thousand. It's a gigantic number. You can easily picture a city population of a hundred thousand or a car that's gone as many miles. You can probably even imagine sailing off into the sunset on a nice hundred thousand dollar sailboat. But counting to 100,000? Never. Counting fish, species by species, to reach one of the 100,000? Double never.

Yet that is what REEF's Volunteer Fish Survey Project has done. Since the Project began in 1993, volunteers have conducted more than a hundred thousand fish surveys throughout the coastal Americas, the Caribbean and Hawaiian Islands. Lillian Kenney, a REEF volunteer for 12 years, submitted survey number 100,000 in

September while participating in a monitoring project with REEF in Biscayne National Park, Key Biscayne, Florida. It could just as easily have happened at any one of the ten National Marine Sanctuaries around the country at which REEF has active surveying programs: in the same month that Lillian participated in the Biscayne project, she also volunteered for fish surveying projects at the Florida Keys National Marine Sanctuary and Flower Garden Banks National Marine Sanctuary. That's 45 fish surveys in 30 days!

"I am honored," Lillian told REEF, "There's a limited number of scientists and grant money to survey [fishes of] the world. If you have citizens helping out wherever they are, it adds valuable data that scientists wouldn't have funds or the time to go out and collect. I feel like I'm contributing to science and I'm having a lot of fun!"



Lillian with USS Spiegel Grove artificial reef monitoring members. From left: Bryan Dias, Mike Phelan, Joe Cavanaugh, Dave Grenda, and Brian Hufford.

Lillian's work represents the power of one in the growing field of marine citizen science. With more than 9,000 active surveyors, REEF is a conduit for divers to share their first-hand knowledge of marine ecosystems with resource managers, scientists, and the general public. Volunteer by volunteer, survey by survey, the REEF database has grown into the largest living marine life database in the world. The power of this information is in its sheer volume.

Want to hear from us more often? Sign up for our free monthly e-newsletter, REEF-in-Brief: Visit <http://www.reef.org/enews>



Volunteer Lillian Kenney submitted the 'milestone survey' of the REEF Fish Survey Project.

According to Dr. Steve Gittings, Science Director for the National Marine Sanctuaries Program in Silver Spring, Maryland, "REEF is the single most productive volunteer-based marine data collection program I know. It would be impossible for marine resource managers to put an army of marine biologists in the water that could generate an equivalent amount of data to REEF.

Lillian is no stranger to putting knowledge into action. A retired schoolteacher living in Dunedin, Florida, Lillian taught for twenty-one years in New York City and another thirteen years in Pasco County, Florida. She has been a volunteer at the Florida Aquarium in Tampa for ten years, assisting with diving, caring for birds and doing underwater archaeology. Lillian also works on beach nesting for birds with the Florida State Park Service and Pinellas City Environmental Land Trust and participates in the Audubon Society's annual Christmas Bird

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"Lillian embodies what it means to be a citizen scientist... giving back to society her best gifts. In twelve years as a REEF member, Lillian has conducted more than 500 fish surveys at her own expense in time and travel costs."

—Joe Cavanaugh
Field Operations Coordinator, REEF

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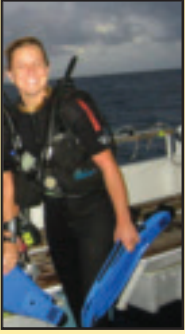
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Field Operations Coordinator

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Director's Corner



Hello from Key Largo!

Ever wonder how many fish there are in the sea? Just ask one of more than 9,000 volunteers in REEF's Volunteer Fish Survey Project. Their collective efforts represent more than 100,000 hours of underwater survey work – that's more than twelve years! That means in thirteen years of existence, REEF has done almost as much work underwater as on land, bringing valuable information to the surface to help scientists and resource managers and to educate the public about preserving marine ecosystems.

To celebrate, we are highlighting the fish-watching career of Lillian Kenney, the 'milestone' volunteer who submitted the 100,000th REEF fish survey scanform. Also in this edition, learn how REEF volunteers actively help the marine environment beyond doing fish surveys. Some assist with research on the Cayman Islands' fragile Nassau grouper population, others gather data on coastal California's invertebrate species, still others, our REEF Field Station partners, host seminars and other public education events as part of the Great Annual Fish Count. One volunteer (and former REEF staff member, we are proud to note) even discovered a new species of fish in the South Pacific!

As you may know, a changing of the guard took place over the summer. Founding REEF Executive Director Lad Akins, who stepped down from his position in July to spend time with his growing family, will remain working with REEF on special projects on a part-time basis. We are sad to note that Bryan Dias, Director of Outreach and Education, recently left REEF but we wish him well and thank him for his hard work and dedication.

From all of us here at REEF HQ, we thank YOU for your continuing hard work and support. Wishing you a happy, healthy remainder of 2006 and hoping to see you under water in the coming year . . .

Best 'fishes',

Leda

Leda A. Cunningham
Executive Director



It's Here! 2007 Field Survey Schedule

Join REEF for diving that counts! Field Surveys are a fun way to learn fish ID, give back to the marine environment, and meet like-minded divers. For details, including pricing and booking info, please visit the Field Survey website: <http://www.reef.org/fieldsurvey/> Hurry-these are already filling up . . .

Feb 17-24 – Grand Turk, Turks and Caicos with Blue Water Divers and Salt Raker Inn - Trip leader: Joe Cavanaugh, REEF Field Operations Coordinator

April 14-21 – Tortola, British Virgin Islands with Sail Caribbean Divers and Tamarind Club Resort - Trip leader: Leda Cunningham, REEF Executive Director

May 1-6 – Monterey Bay National Marine Sanctuary, Monterey, California with Cypress Charters - Trip leader: Dr. Christy Patengill-Semmens, REEF Director of Science

May 12-19 – Exumas, Bahamas aboard the Aqua Cat with Ned and Anna DeLoach's Behavior Tour - Trip leaders: Ned and Anna DeLoach, world-renowned marine life authors and naturalists
**** Sorry, Sold Out ****

June – 9-16 – St. Vincent & the Grenadines with Dive St. Vincent - Trip leader: Lad Akins, REEF Special Projects

July 7-14 – Key Largo, Florida with Horizon Divers - Paul Humann's Discovery Tour - Trip leader: Paul Humann, REEF founder and award-winning marine life photographer

July 22-27 – San Juan Islands, Washington with Deep Sea Charters and Friday Harbor Inn - Trip leader: Janna Nichols, REEF volunteer and local naturalist

Aug 4-11 – Kona (Big Island), Hawaii with Jack's Diving Locker - Trip leader: Dr. Christy Patengill-Semmens, REEF Director of Science

Sept 11-16 – Woods Hole, Cape Cod, Massachusetts - Trip leader: Joe Cavanaugh, REEF Field Operations Coordinator

Sept 22-29 – Bonaire, Netherlands Antilles with Buddy Dive Resort - Trip leaders: Ned and Anna DeLoach, world-renowned marine life authors and naturalists

Oct 20-27 – Utila, Honduras with Deep Blue Divers - Trip leader: Paul Humann, REEF founder and award-winning marine life photographer

Nov 3-10 – Anguilla, British West Indies with Anguillan Divers and the Allamanda Beach Club Hotel

Dec 1-8 – Cozumel, Mexico with AquaSafari and Safari Inn - Trip leader: Sheryl Shea, REEF Volunteer and local naturalist

Special Thanks to:

- **Audrey and Ken Smith**, for continuing volunteer help in and around REEF HQ
- **Dr. Michael Coyne**, for continuing assistance with REEF's database programs
- **Eleanor Pigman**, for donated artwork for the 2006 Field Survey T-shirt
- **SeaDoc Society**, for sponsoring free REEF training programs in Washington

- **REEF volunteers**, for assistance with the Grouper Moon Project: **Judie Clee, Scott and Selina Heppell, Brenda Hitt, Brice Semmens, and Leslie Whaylen**
- **Cayman Islands Department of Environment (Phil Bush, Bradley Johnson, Kirsten Luke, and Croy McCoy)** and **Peter Hillebrand**, for ongoing support of the Grouper Moon Project
- Little Cayman Island businesses, for providing generous logistical support for the Grouper Moon Project: **Southern Cross Club, McCoy's Fishing and Diving Lodge, and Little Cayman Beach Resort**
- **Chatten Hayes**, for donating a new LCD projector
- REEF HQ volunteer **Carin Kronheim** from Coral Shores High School, Tavernier, FL
- **Don Buck**, for supporting intern participation at DEMA Show 2006

- **Pat Ayers and Ocean Outreach**, for donating REEF podcast and promotional video
- **Barb Bohnsack and Elaine Morden** for administrative assistance
- **Matt Patterson at National Park Service and Amanda Bourque, Max Tritt, Shelby Moneysmith, Rebecca Cassotis and Charlie Reese at Biscayne National Park**, for logistical and field support during the Biscayne surveys

In Memoriam:

Bill Hoigaard

In memory of his eternal love for the oceans, from Corinne and Holger Fuerst of Sacramento, California.

Lorrie Yanchek

From the Gateway Hammerheads Dive Club of High Ridge, Missouri



100,000 Surveys — continued from page 1

Count. Besides REEF, she is a member of several environmental organizations, including World Wildlife Fund, the National Wildlife Federation, and Environmental Defense. “Lillian embodies what it means to be a citizen scientist,” said Joe Cavanaugh, Director of Field Operations at REEF. “She believes firmly in giving back to society her best gifts. In twelve years as a REEF member, Lillian has conducted more than 500 fish surveys at her own expense in time and travel costs.”

The REEF database is living testament to the value of volunteers in understanding marine ecosystems. “This organization was founded because we knew divers had a wealth of information to share about coral reef fishes,” said Paul Humann, marine life author and photographer and Chairman of the Board of Trustees of REEF. “When Ned [DeLoach, co-Founder] and I were putting our first book together, we discovered that scientists knew very little about the abundance of most reef fishes at a given location and, to a degree, their geographical range was unknown as well. We thought, ‘there’s no excuse for that!’ With so many divers in the water every day, there ought to be a way to put their bottom time to work.” Thus the birth of fish watching, the Volunteer Fish Survey Project and the REEF database. As interest in the Project grew, REEF added a “Critter Watcher” program to survey invertebrates in the Pacific Northwest and coastal California.

Lillian’s contributions will be recognized at DEMA (the Dive Equipment and Marketing Association, an annual dive trade show) in November. The value of her contributions, and those of all REEF volunteers, will be recognized as long as people continue to learn from, enjoy, and preserve marine habitats. If you haven’t done a fish survey, what are you waiting for? Experience the power of one to the degree of 100,000. And counting . . .



Lillian Kenney hard at work on REEF surveys.

REEF Continues Partnership with National Park Service

While you may be familiar with REEF’s long-term partnership with the National Marine Sanctuaries, you may not be aware of how much is going on with the National Park Service. With more than twenty-five marine-oriented National Parks encompassing more than 1.9 million acres of submerged land, REEF is working closely with the Park Service to identify key sites for development of monitoring and public involvement projects.

Following the very successful two-year inventory project that finished up in September, the National Park Service has contracted REEF to conduct a three-year monitoring project at key sites within Biscayne National Park. The inventory project, which has added more than fifty new species to the park’s biodiversity list, laid the groundwork for the monitoring effort that will compliment a separate “reefs revisited” project being conducted by the National Marine Fisheries Service (NMFS).

The new monitoring project will focus on sites along the sixty-foot depth boundary of the park as well as shallow near-shore patch reefs. Data gathered during both winter and summer seasons will be used to look at changes in the fish community structure and help determine what survey frequency will be most advantageous to better understand park resources. The information will also be used in a NMFS study that is revisiting seven sites in the park studied in the 1970’s.



Bluespotted searobin, one of many unusual species documented by the REEF monitoring team in Biscayne National Park.

Photo courtesy of Carol Grant

The National Park Service’s goal in initiating this effort is to use the project as a model for implementation in other National Parks with marine fish components. Potential locations include Buck Island National Park and the Virgin Islands Coral Reef National Monument, the Dry Tortugas National Park in the Florida Keys, Channel Islands National Park in Southern California, the National Park of American Samoa, Glacier Bay National Park in Alaska and Haleakala National Park in Hawai’i. REEF will continue to work with the National Park Service to design and implement community based projects that include both monitoring and education components.

REEF Adopts Expanded Mission Statement

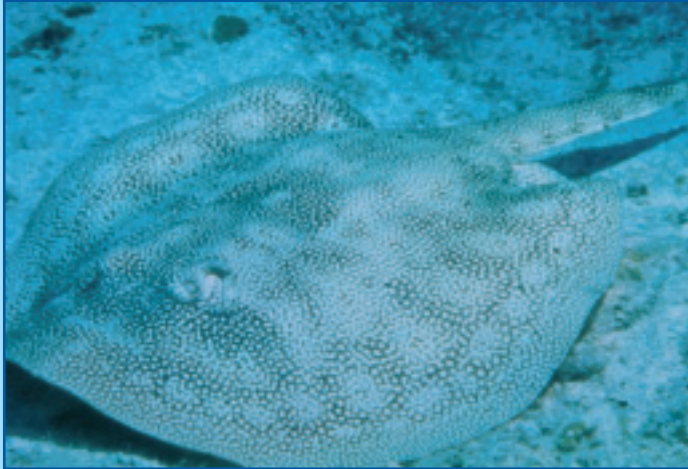
Recognizing the growing scope of REEF’s marine conservation efforts, the Board of Trustees recently approved an expanded mission statement for the organization:

To conserve marine ecosystems for their recreational, commercial, and intrinsic value by educating, enlisting and enabling divers and other marine enthusiasts to become active stewards and citizen scientists. REEF links the diving community with scientists, resource managers and conservationists through marine-life data collection and related activities.

The new language reflects the growth of REEF volunteer programs beyond the Volunteer Fish Survey Project and the potential for including volunteers beyond the dive community. The Grouper Moon Project and the Exotic Species program, for example, provide expanded opportunities for snorkelers and fishermen to actively participate in species-specific data collection.

“REEF has done well by its focused approach on divers conducting fish surveys,” said Leda Cunningham, Executive Director of REEF. “The challenge now is to give our members more to chew on – they’ve mastered fish counts, now what else can they do? And who else is out there besides divers to pitch in? It will take time to answer these questions, but REEF is looking forward to exploring this new path.”

To see the complete new statement of REEF mission, vision, and goals, visit www.reef.org.



The yellow stingray, once thought to be a common resident on Caribbean reefs, has declined significantly in the Florida Keys, according to a study conducted by researchers from Dalhousie University using REEF data. Photo by New World Publications

Putting REEF Data to Work

REEF's database, with 100,000 surveys, represents over 4 million records of fish sightings. Resource agencies and scientists continuously tap into this amazing data resource to address a variety of questions, including evaluating the effects of no-take zones, conducting fisheries-independent stock assessments, identifying areas with especially large varieties of fish, discovering new species and morphological variants of known species, and monitoring populations of non-native fish species. A recent example of how REEF data have been put to work is an analysis of ecological niche, distribution and trends in abundance of yellow stingray, conducted by Dr. Ransom Meyers and Christine Ward-Paige from Dalhousie University. Their work has identified a dramatic decline in this seemingly "common" species at sites throughout the Florida Keys.

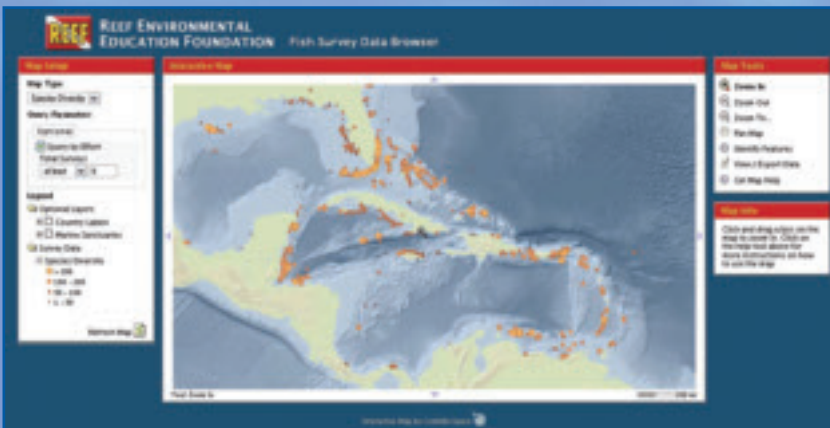
For a complete listing of published papers and reports that used REEF data, visit <http://www.reef.org/data/research.htm>.

Nudibranchs, Urchins, and More!

We are excited to announce that a new program is now available to REEF surveyors in California. Sixty-three invertebrates and algae, representing a broad spectrum of diversity found in California's rocky reefs, are included in the program that will serve as a companion to REEF's existing fish monitoring program in California. Orange Puffball, Spanish Shawl, and Sunflower Star are just a few of the species that are included. Why add invertebrates to a program that primarily focuses on fishes? Invertebrates such as colorful nudibranchs and sea urchins dominate the landscape seen by divers in California. Whereas tropical divers spend most of their time looking at fish seen in front of a backdrop of invertebrates, invertebrates are predominant in cold water. In addition to a desire by California REEF members to increase their survey opportunities, invertebrates can serve as valuable indicators of the health and status of a local environment. An image-based training curriculum on the species included and other training and survey materials standard to REEF's programs have been created. To find out more about this new program, visit <http://www.reef.org/data/pac/inverts.htm>.



The San Diego Dorid is one of the 63 species included in REEF's new California Invertebrate and Algae Monitoring Program. Photo by Steve Lonhart/MBNMS



New Internet Mapping Application provides a visual summary of REEF data and supports several different query types. Species diversity for all sites with at least 5 surveys is represented in this map.

Online Mapping – A New Data Tool

One of the advantages to enlisting volunteers in data collection is that the spatial scale of effort is typically much greater than what could be accomplished otherwise. REEF's citizen science program is no exception. To date, REEF volunteers have conducted marine life surveys at over 7,000 sites along the coastal regions of North and Central America, the Caribbean and Hawaii. Visually summarizing this data on maps has been a long-time goal of the REEF program. With support from a NOAA Coral Reef Conservation Program grant, REEF enlisted CommEN Space, a geographic technology company, to develop an Internet mapping tool. The first phase of the application is complete and is available on the REEF website. Users can dynamically explore species distributions, patterns of richness, and REEF survey effort from the western Atlantic region (other regions coming soon) using a map interface with several query options, including date ranges, minimum survey effort, and REEF member number. This new offering complements the existing tabular data summary tools, and is accessible at <http://www.reef.org/fishmaps>.





Lionfish have become established from the Bahamas to Bermuda and all along the U.S. east coast.

Photo by Peter Winans, Bahamas

Illegal Alien Invaders

REEF is playing a pivotal role in assessing and addressing exotic/invasive species in our marine waters. In response to the ever-increasing invasion of the Indo-Pacific lionfish (*Pterois volitans*) along the east coast of the U.S. and throughout the Bahamas and Bermuda, REEF will be collaborating with NOAA researchers in Beaufort, NC, to collect sightings and behavior data as well as samples of specimens to help determine genetics, population dynamics and reproductive capacity of the fish. Lionfish have now been reported as far north as Rhode Island (juveniles) and as far south as Long Island in the Bahamas. These fish have become alarmingly abundant at certain sites and efforts are underway to collect samples for laboratory analysis and initiate plans for removal in certain areas.

Similarly, REEF has forged a new partnership with agencies and scientists in the Pacific Northwest to help document and potentially control the spread of a less charismatic, but potentially more threatening, group of invasives - tunicates. With support from the Russell Family Foundation, REEF is working with Washington Sea Grant and other members of the Washington State Tunicate Response Advisory Committee to coordinate outreach and education, as well as targeted monitoring, on three invasive tunicate species (*Didemnum sp. A*, *Styela clava*, and *Ciona savignyi*).

Discussions are underway to form a three-way partnership between REEF, NOAA and the U.S. Geological Survey (USGS) to initiate programs of data collection, early warning and notification, education and outreach and invasive species removal. To find out more about REEF's Exotic Species program, visit <http://www.reef.org/exotic>.

Conserving a Threatened Species : REEF's Grouper Moon Project

REEF's successful conservation science program, the Grouper Moon Project, continues to expand in scope and effect. Over the last year, REEF staff and volunteers, along with collaborators from the Cayman Islands Department of the Environment (CIDOE) and researchers from Oregon State University (OSU), have initiated several new components of the project. These new efforts aim to 1) better understand juvenile Nassau grouper habitat preferences and densities, 2) evaluate reproductive behavior in mature Nassau grouper in areas with no known spawning aggregation, 3) evaluate fertilization success and genetic linkages, and 4) understand behavioral mechanisms necessary for successful spawning. The Grouper Moon Project was initiated in 2002 after the discovery of one of the last remaining large spawning aggregations in the Caribbean. Following discovery, fishermen harvested over 4,000 fish from the approximately 7,000 that were initially present before protections were put in place by the Cayman Islands government.

A team of divers from REEF and the CIDOE has annually visited the aggregation site and nearby reefs each winter in order to monitor and study the aggregation. In 2005, an electronic tagging project was initiated on Little Cayman Island to follow the movements of grouper as they migrate to and from the aggregation site, taking advantage of some of the latest advances in marine acoustics and telemetry in order to characterize the reproductive behavior of Nassau grouper.

Nassau grouper are icons of the Caribbean — they are a social and ecological cornerstone of the region's coral reefs. Reports from the 19th century describe Nassau grouper as an abundant species on Caribbean reefs and a critically important component of commercial fisheries. By the 1990's the number of Nassau grouper had dropped so significantly that they became the first Caribbean reef fish to be listed as endangered by the International Union for the Conservation of Nature (IUCN). REEF is proud to be helping to better understand and preserve this imperiled species.

For more information, visit <http://www.reef.org/groupermoon>



Aggregating Nassau grouper at the Little Cayman spawning site. Photo by Scott Heppell



Outreach & Education Update

REEF engages in numerous outreach and education activities. We continue to attend dive shows, conferences and symposia, participate in the U.S. Coral Reef Task Force Outreach and Education Working Group, expand the REEF Field Station Program, and develop a formal classroom curriculum based on REEF data.

Our biggest outreach event continues to be the Great Annual Fish Count (GAFC) over the month of July every year. The 2006 GAFC marked the event's fifteenth anniversary and boasted tremendous participation, with more than 2,200 marine life surveys submitted. GAFC is a great way for new volunteers to get involved by taking a free REEF Fish ID course and participating in organized survey dives. It's also an event that re-energizes veteran volunteers and allows people with shared fishwatching interests to meet, dive and socialize together.

With support from the National Fish and Wildlife Foundation, REEF organized a series of Regional Capacity Building Seminars beginning in 2005. Locations included Nicaragua, South Florida, and Bermuda and were designed to bring stakeholders together to learn about and discuss the Volunteer Fish Survey Project. The highlight of these seminars - which include the delivery of a fish identification class, a presentation on REEF, and an in-water surveying component - is the discussion session where ideas and thoughts are exchanged on how best to make REEF work in a given location.

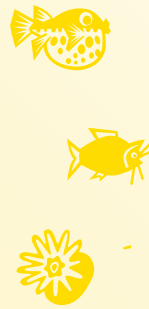
“Outreach and Education are critical components of REEF programs. They form the basis of how we deliver our message and achieve our mission.”
— Bryan Dias
Director of Outreach and Education

The Field Station Program continues to be a core program for the organization. Dive operators, non-profit organizations and academic institutions are at the heart of this program and serve as a critical link to individuals and their local communities. Since expanding the Field Station program to include Non-Profit/Academic Field Stations (NAFS) in late 2005, seven new organizations have joined the fold.

REEF also continues with its e-newsletter, *REEF-in-Brief*, that reaches thousands of individuals each month. If you don't get *REEF-in-Brief*, visit our www.reef.org to sign-up – it's free!



Local volunteers and staff from Parque Nacional Arrecifes de Cozumel during in-water survey training component of Regional Capacity Building Seminar in Cozumel, Mexico with REEF Director of Outreach and Education, Bryan Dias.



Florida Keys Advanced Assessment Monitoring Team - July 2006.

Advanced Assessment Team (AAT): Advancing the REEF Mission

REEF's Advanced Assessment Team (AAT), made up of REEF surveyors who have achieved Expert Fishwatcher status, enables REEF to fulfill numerous monitoring and assessment projects for resource agencies each year. Thanks to many REEF members for once again making this a stellar year for Advanced Assessment Team (AAT) fish survey projects.

Our 2006 AAT projects included:

- Florida Keys National Marine Sanctuary Marine Zone Monitoring
- Dry Tortugas National Park and Dry Tortugas Ecological Reserve Monitoring
- USS Spiegel Grove Artificial Reef Monitoring for Monroe County
- Biscayne Bay Cryptic Species Assessment for the National Park Service
- M/V Wellwood Grounding Site Assessment for NOAA's Office of Response and Restoration
- Fish Assemblage Monitoring in Gray's Reef National Marine Sanctuary
- Nearshore Fish Assemblage Monitoring in the Channel Islands National Marine Sanctuary
- Assessment of Nearshore Fish and Invertebrate Assemblages for the Olympic Coast National Marine Sanctuary
- Long-term Fish Monitoring for the Flower Garden Banks National Marine Sanctuary

Since August 2005, REEF volunteers have logged several hundred hours on these projects for numerous national, state, and local governmental agencies. These projects represent an essential function for REEF in gathering data used in conservation and management decision-making by multiple organizations. In the case of the *Wellwood* Restoration site, for instance, monitoring provides critical data on both the effectiveness of restoration modules and the time period needed for coral reef fish populations to reestablish on a restoration site.

As important as the data collected on REEF AAT projects, the diversity in partnerships forged by these projects offer tremendous value to REEF and the community where these projects occur. AAT projects reinforce the value of citizen science in providing critically needed data to governmental agencies and illustrating to the general public the importance of community involvement in monitoring the status of our marine environments. Without the support of REEF members in time and expense, many governmental monitoring projects would be prohibitively expensive to run and simply would not exist. These projects also provide incentive to our new members to conduct fish surveys and work through our experience level program to eventually become AAT members themselves.

Thanks to all of you from the REEF staff and our partners for making this another successful AAT year!

Partners & Volunteers



Giving Back

Benefactors (\$2,500 +)

Kathleen Aguilar and Toni Ramirez
Jim Dalle Pазze
Ken and Sherry Deaver
Ned and Anna DeLoach
Neil Ericsson and Karen Florini
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REEF is grateful for the generous support of its 'angelfish' contributors. To join this important part of the REEF family, please contact Leda Cunningham at (305) 852-0030 or Leda@reef.org. Gifts received in the last year (September 1, 2005-September 30, 2006) are shown here.

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Maximize your gift! When planning your contribution to REEF, check to see if your employer offers a matching gift program.

REEF'S 2005 Volunteer of the Year: Judie Clee



Judie Clee accepts her award from REEF Co-founder and Chairman of the Board, Paul Humann.

REEF congratulates super volunteer Judie Clee as our 2005 Volunteer of the Year (VOY). Judie is from Bermuda and has been a passionate and dedicated REEF surveyor, teacher, and ambassador since becoming involved with the organization in 2000. "It's a wonderful, wacky world of critters beneath those waves and I love to encourage people to enjoy, understand and protect it," Judie always says.

Judie got involved in REEF while diving with her sister on a live-aboard trip in the Pacific. As fate would have it, REEF Co-founder, Paul Humann, was also on the trip. Judie says she was aware of REEF, having been a long-time volunteer and supporter of the Bermuda Zoological Society, but really decided to take the plunge after she learned more from Paul. She was very excited to take all this back to Bermuda, where she thought the program would prove highly beneficial and fun.

Judie is one of REEF's most active surveyors, having amassed over 1,000 surveys and becoming one of only a few members in the "Golden Hamlet Club" (reserved for those who have reached this remarkable milestone.) She has also participated in numerous REEF Field Surveys and on various Advanced Assessment Team (AAT) Projects. In fact, Judie cites her participation in one of REEF's AAT trips to the Flower Garden Banks National Marine Sanctuary, which happened to coincide with coral spawning, as a highlight of her REEF involvement.

These days, Judie has been active as a REEF "ambassador" serving as a "naturalist on-board" for REEF Week events hosted by the Little Cayman Beach Resort. These went over so well that Judie will be giving a repeat performance with another great REEF Field Station, Deep Blue Resort of Utila, in the Bay Islands of Honduras this fall. During these events, Judie teaches Fish ID, gives talks on behavior, and generally makes herself available to answer questions that resort guests have about the marine environment. Judie tells us that she tries to "keep it fun." She continues, "That it goes beyond identifying fish. It's an opportunity to share and it encourages understanding and drives people to protect the marine environment."

Judie is also working tirelessly to keep REEF active in Bermuda where, amongst other things, she is working on a mapping project that will cover the various marine habitats around the island. The project will, of course, integrate REEF data into the process.

REEF would like to thank and congratulate Judie Clee for all her efforts and great work on behalf of the organization and marine conservation. Cheers to our Volunteer of the Year!



REEF Online Store

Safe, secure, and open 24/7 – our online store has all the fish identification and survey resources you need for "Diving That Counts!" We have a great selection of fish identification guides and other books. We also have all the survey materials and fun stuff, such as educational CDs and t-shirts, you need. Please visit: <http://www.reef.org/cgi-bin/shop.cgi>

Survey Numbers REEF Top 25 Surveyors in Each Region, as of September 21, 2006

TWA Top 25 Surveyors

Peter Leahy (1465)
Linda Baker (1446)
Laddie Akins (1098)
Judie Clee (1027)
Linda Schillinger (926)
Sheryl Shea (826)
Leslie Whaylen (795)
Bruce Purdy (767)
Linda Ridley (707)
Phyllis Blackburn (622)
Jean Kirkpatrick (597)
Dave Grenda (587)
Cathy Coughlin (583)
Jessica Armacost (568)
Joe Thomas (556)
Deena Reppen (551)
Kris Wilk (515)
Rob McCall (502)
Christy Semmens (492)
Lillian Kenney (490)
Joyce Schullke (468)
Carol Grant (454)
Robert Doyle (447)
Monty Doyle (446)
Nathan Gates (430)

PAC Top 25 Surveyors

Kawika Chetron (478)
Georgia Arrow (284)
Janna Nichols (271)
Mike Delaney (268)
John Wolfe (250)
Rachid Feretti (227)
Kirby Johnson (216)
Tom Dakin (210)
Carl Gwinn (177)
Claude Nichols (177)
Stanley Kurowski (173)
Alan Dower (159)
Doug Biffard (147)
Matthew Dowell (144)
Valerie Lyttle (134)
Wes Nicholson (130)
Pamela Wade (117)
John Williams (115)
Brian Elliott (101)
Bryan Nichols (96)
Brice Semmens (79)
Mark Dixon (74)
Paul Weakliem (73)
Christy Semmens (73)
Dana Haggarty (71)

TEP Top 25 Surveyors

Richard Baker (477)
Kandie Vactor (172)
Beth Bruton (123)
Walter Briney (85)
Sandra Percell (83)
Brice Semmens (60)
Jeff Holmes (58)
Paul Humann (57)
Chris Ostrom (45)
Martin Levy (40)
Alvaro Segura (38)
Robert Reavis (37)
Neil Ericsson (37)
Karen Florini (36)
Karen Garcia (36)
Warren Hinks III (32)
Janet Earnshaw (29)
Dave Grenda (28)
Janet Eyre (27)
Michael Phelan (27)
John Wolfe (26)
Kevin White (25)
Clive R. Wood (25)
Christy Semmens (25)
Kenny Tidwell (23)

HAW Top 25 Surveyors

Fred Litt (197)
Nanette Harter (195)
Liz Foote (190)
MJ Farr (189)
Patricia Richardson (180)
Janet Eyre (167)
Robin Newbold (138)
Karen Ella Levy (125)
James Vaughn (118)
Michele Vaughn (118)
Neil Rhoads (117)
Lynn Hodgson (102)
Donna Brown (82)
Chatten Hayes (81)
Dave Grenda (70)
Douglas Harder (62)
Michael Fausnaugh (58)
Kayla Serotte (48)
Brice Semmens (46)
Christy Semmens (45)
Carol Grant (44)
Sandra Percell (42)
Kandie Vactor (39)
Kathy Aguilar (38)
Dennis Bensen (38)

REEF Volunteer Discovers New Species of Fish: An Interview with Leslie Whaylen



REEF volunteer Leslie Whaylen surveys near Rose Atoll. Photo copyright Jim Maragos.

While conducting a fish survey with an expedition led by Dr. Jim Maragos with the U.S. Fish & Wildlife Service last year, REEF volunteer and former staff member Leslie Whaylen spotted a species of cardinalfish she had never seen in more than 1,800 dives around the world. The exciting discovery happened while diving near Rose Atoll in the South Pacific during her recent tenure in American Samoa. After a year of analysis, the fish has been confirmed as a species new to science. Dr. Jack Randall, of the Hawai'i Institute of Marine Biology at the University of Hawai'i and the Bishop Museum, recently published a paper in the journal *Aqua* describing the new species, *Ostorhynchus leslie*. REEF caught up with the fish's namesake to learn more about her discovery and its importance to marine citizen science.

What was your first thought when you saw the fish?

"Hmmm... this one looks different." Meanwhile, I'm shoving my head under a ledge into dark crevices, trying to maintain neutral buoyancy, breathing as little as possible (bubbles scare the fish), and hoping that the sharks I saw circling earlier are long gone.

How did this go from an unusual fish sighting to a scientific discovery?

I knew the fish needed to be collected. Greg Sanders (US Fish & Wildlife) managed to transport a dozen live juveniles back to Tutuila where, at first, Jack Randall thought the fish wasn't a new species, but DNA analysis at the University of Hawai'i confirmed it.

What is the significance of this discovery to marine science? Are there implications for conservation?

American Samoa definitely has more fish species waiting to be discovered, as do other locations worldwide that are not heavily dived. It is difficult to conserve what we do not know. I consider my discovery a small step towards broadening what we do know.



The new species: *Ostorhynchus leslie*. Photo copyright Jim Maragos.

How has this affected your approach to diving? To your career in marine science?

Diving provides relaxation, fuels my curiosity, and connects me to Nature. I hope to continue my undersea exploration for many years. This has been the highlight of my 'fish nerd' career. It was a team effort and I am grateful for all of the support.

What would you tell others interested in contributing to marine science?

Develop your excitement and pass it on to others. Contributing to science doesn't always require fancy degrees or titles — sometimes it may only take persistence and passion.

Keep in touch!

Please be sure we have your updated contact information, including email. Visit our Membership Update page at <http://www.reef.org/update.htm>



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