

*Khaled Bin Sultan*

# Living Oceans Foundation



TEN YEAR ANNIVERSARY EDITION

*2010 Annual Report*

## Message From the Executive Director

By many measures, 2010 was a notable year for the Khaled bin Sultan Living Oceans Foundation. This year, the Foundation turned ten years old. From the perspective of the age of our oceans, ten years is only a blink in time. From the perspective of one fish in the sea, it could be a lifetime. From my perspective, the first ten years of the Living Oceans Foundation represented the organization's first generation. This was a time of formation, discovery, learning experiences, capacity building and refining of capabilities. The Foundation is now poised to embark upon its second generation.

2010 marked a transition in the Foundation's life. We recently completed a four-year program of intensive exploration and surveying of the rich coral reef ecosystems spanning the entire Red Sea coastline of Saudi Arabia. My staff has been intensively engaged in the business of processing reams of data and turning data into useful knowledge. We created 25,000 sq km of high-resolution habitat maps of the Saudi Arabian coral reefs, which will be invaluable to coral reef management activities now and in the future. Our hope is that the resultant products from our Red Sea research program will have substantial impact on marine conservation efforts in the Kingdom of Saudi Arabia.

By the time you read this annual report, the Living Oceans Foundation will be embarked on its most ambitious program to date: the Global Reef Expedition. This five-year circumnavigation of the globe is designed to rapidly survey and characterize coral reef ecosystems around the world. Our overarching objective is to gain deep understanding of coral reef ecology in order to improve man's ability to sustainably manage this valuable ocean resource. We believe that our role in closing some of the significant knowledge-gaps in coral reef science will be critical in the race to preserve these threatened ecosystems. Throughout this ambitious program, we will continue to embrace our Science Without Borders® program by engaging local scientists, educators, and resource managers in all of our operations, educational programs and research activities.

These are exciting times for our Foundation and I hope you will join us "on-line" throughout the Global Reef Expedition. Your portal to our research and adventures can be found on the Internet at [www.globalreefexpedition.com](http://www.globalreefexpedition.com). We need your interest, your concern and your involvement to protect our living oceans!



CAPT Philip G. Renaud, USN (ret)

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# Decade in Review: Looking Back to Look Forward

## Ten Year Anniversary of Living Oceans Foundation

In September 2010, the Khaled bin Sultan Living Oceans Foundation celebrated its first ten years of scientific and educational accomplishments. In 2000, His Royal Highness Prince Khaled, founder and chairman, was inspired to establish the Living Oceans Foundation after hosting world-renowned oceanographers aboard his research vessel, the *M/Y Golden Shadow*. Prince Khaled incorporated the Foundation in the United States to help advance his vision of Science Without Borders,<sup>®</sup> which is the overarching theme of the Living Oceans Foundation.

Mediterranean  
Sea and Mapping  
Research Expedition

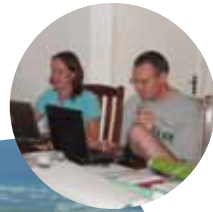
Sea of Cortez Ocean  
Health Research  
Expedition

U.S. Virgin Islands  
CASI Habitat Mapping  
Expedition

Living Oceans  
Foundation Fellowship  
Program (2001-2010)

Senegal Fisheries  
Laboratory of  
Aquatic Animal  
Health, University of  
Cheikh Anta DIOP

Coral Ecotoxicology  
Laboratory at the  
Bermuda Institute  
of Ocean Sciences  
(BIOS) 2004-2007



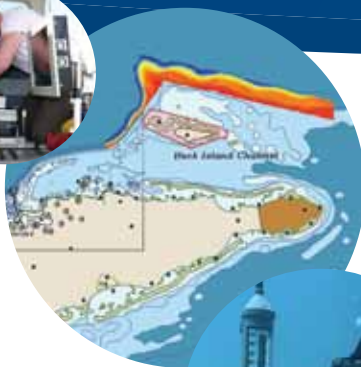
2001

2002

2003

2004

2005



Second Bilateral  
Conference between  
Russia and the  
United States,  
Shepherdstown,  
West Virginia



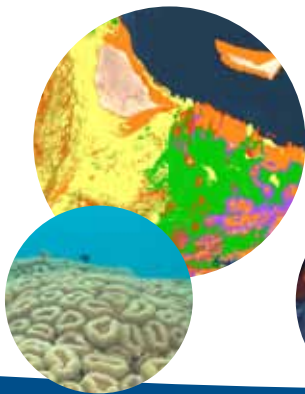
Seychelles Coral Reef  
Research Expedition

Post-tsunami  
Coral Reef Rapid  
Assessment  
Survey in Sumatra,  
Indonesia

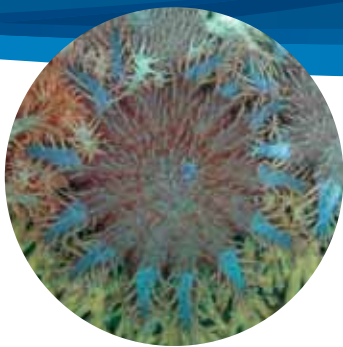
*“During the past decade, the Foundation has supported projects to study, survey, and map coral reefs worldwide, and to educate the public about the need for protection and conservation of coral, knowing that healthy reefs are a crucial measure of the vitality of the earth itself.”*

—HRH Prince Khaled bin Sultan

Farasan Islands, Red Sea Coral Surveys



2006



2007



Project SeaCAMEL (Classroom Aquarius Marine Education Live)

Bahamas Biodiversity Study and Planning for New Marine Reserves

Ras Qisbah, Red Sea Coral Surveys

Co-sponsor, 11th International Coral Reef Symposium



Al Wajh and Yanbu, Red Sea Coral Surveys



2008



2009



Third Bilateral Conference between Russia and the United States, Shepherdstown, West Virginia

Geographic Information Systems Data Portal

Farasan Banks, Red Sea Coral Surveys

Immersive educational program in the Bahamas

Atlantic and Gulf Rapid Reef Assessment (AGRRA) surveys in the Caribbean Sea, Cayman Islands, and Bonaire.



2010



## Science Without Borders®

Science Without Borders® is the overarching theme of the Khaled bin Sultan Living Oceans Foundation. Its purposes are to provide financial sponsorship of marine conservation programs and scientific research, and to promote public awareness of the need to preserve, protect and restore the world's oceans and aquatic resources.

First use of this service mark by the Living Oceans Foundation in the United States was recorded on December 3rd, 2000. The service mark "Science Without Borders®" was officially registered on September 9, 2003, with the United States Patent and Trademark Office under Reg. No. 2,760,882. The mark is also registered with the Registrar of Trade Marks in Australia as Trade Mark No. 1092400 and with the European Community as Trade Mark Reg. No. 4756797. Protection of the trademark has also been registered in the Kingdom of Saudi Arabia.

## 2010 Projects and Operations

### Global Reef Expedition Education Pilot Project, Nassau, Bahamas

The Foundation held a multifaceted Global Reef Expedition (GRE) Educational Pilot Project in Nassau, Bahamas from April 29th - May 4th. The purpose of the project was to further Bahamian educators' understanding about marine environments and coral reefs, in particular. The participants were provided with the knowledge, skills, and materials needed to effectively teach coral reef conservation issues in their classrooms and programs. Additionally, the program helped to hone the GRE's Education Program capacity, in regards to understanding what ocean science background teachers from island nations, such as the Bahamas, have and need in their science curriculum. Kathleen Frith (Harvard Medical School) headed the project and worked closely with Jen Galvin, Ph.D. (ReelBlue, LLC and producer of *Free Swim*) and Charlene Carey (Bahamas Reef Environment Educational Foundation; BREEF) to gather ten Bahamian teachers

and set the program for the 3-day weekend workshop. The teachers were primarily based in the Nassau area, but a few were able to fly in for the weekend from other islands. Their teaching levels included middle school through college, which gave the program a well-rounded perspective of ocean education in Bahamian schools.

The workshop kicked off with a group dinner at the Nassau Sheraton hotel, followed by an introduction to the Foundation, GRE and personal introductions. The teachers were filled with enthusiasm from the start and brought much-appreciated perspective to the entire weekend's program. Saturday began with a classroom session on coral reef conservation, led by Dr. Andy Bruckner, including topics on coral biology, ecology, and local ocean conservation issues, earning the teachers a PADI AWARE Coral Reef Conservation certification.





The second part of the morning included time to work through new in-class activities that the teachers could utilize in their classrooms. An afternoon pool session gave the teachers the opportunity to refresh their snorkel skills, learn skin diving techniques, and receive a PADI Skin Diver certification after having successfully completed the required skills. Saturday wrapped up with a Flip Video™ UltraHD camcorder session where teachers were divided into 3 groups, wrote scripts, videoed each other speaking, and learned to use Flip Video's™ editing software to create short public service announcements (PSAs) to be shared with their classrooms and local communities. The PSA's demonstrated the teachers' outstanding creativity and passion for the ocean and Bahamian environment. Jen Galvin provided a film screening of *Free Swim*, an award winning documentary film about the paradox of coastal people not knowing how to swim, taking place on the island of Eleuthera in the Bahamas. The film was followed by an in-depth discussion that provided the Foundation with a profound understanding of the fear and/or disinterest of swimming in many coastal communities of small island nations. On Sunday, the final day of the workshop, the Foundation paired with Stuart Cove's dive operation to take the teachers on a snorkeling adventure trip to see coral and fish in their natural environment, an experience some had not had before. The Foundation received useful, positive feedback from the teachers on the value of this educational workshop and it laid the cornerstone for GRE's Education Program. The Educational Pilot Project continued on Monday with a school visit to C.V. Bethel Senior High School, which included grade 11 students in the Marine Science Magnet Program. The time was used as an opportunity for students to ask questions relating to college and marine science careers. A visit to another school, S.C. McPherson Junior High School, was led by one of the workshop participants, Ms. Nicole Williams. Kathleen Frith screened her

award-winning film, *Once Upon a Tide*, which reconnects its audience to the importance of the marine environment for all life on Earth, including human life. Additionally, the students participated in an in-class activity on the importance of sustainable fishing practices, which is something many of these students and their families can relate to living in the Bahamas. Lastly, the students wrote personal "Letters to the Ocean", which allowed them to express their concerns and care for the ocean in writing. Other outreach included two radio sessions with ISLAND 102.9FM in which CAPT Phil Renaud and Dr. Andy Bruckner were on-air with Patty Roker's "Sunday Conversations", CAPT Renaud, Dr. Bruckner, Dr. Galvin, Ms. Frith and Ms. Carey were on-air with Eddie Carter and Danielle Stubbs on the "Morning Boil." "Sunday Conversations" took place while the teachers were still attending the workshop, so they were able to call into the program and discuss the workshop live, on-air. The Foundation and workshop participants were also interviewed by the Nassau Guardian newspaper in order to get the word out about this educational project, the importance of the Bahamians' interactions with the ocean, and the GRE. The 5-day GRE Educational Pilot Project was capped off with an underwater classroom session Tuesday morning, led by Dr. Andy Bruckner, with



students from the College of Bahamas and Leno Davis from the Nature Conservancy of the Bahamas. Dr. Bruckner, CAPT Renaud and Amanda Williams wore Ocean Technology Systems' Guardian Full Face Masks and students wore Buddy Phones attached to their mask strap to listen to the underwater lecture. Dr. Bruckner showed students signs of coral disease and assisted with coral and macroalgae identification, all while speaking through the underwater face mask. The face masks and buddy phones provided a unique opportunity to teach and learn in the field.

While the pilot project represented only a fraction of the Foundation's educational outreach capabilities, it was a productive start to the Global Reef Expedition Education Program. Within 5 days, the Foundation was able to engage with ten local teachers who shared their new understandings with high school and college students, family, friends and colleagues, and representatives from BREEF and TNC, Stuart Cove's employees and countless others via the radio and internet. The Global Reef Expedition Education Program is off to a grand start.

## Coral Disease Rapid Response Training Workshop, Little Cayman Island

Coral reefs throughout their circumtropical range are declining at an accelerating rate due to a number of human and natural causes. Coral diseases are one of the most recently emerging threats, with disease outbreaks contributing to losses of 60-80% of the coral cover in certain Caribbean locations. Coral diseases, first discovered in 1972, now affect over 350 species of coral with reports from more than 100 countries. While these diseases continue to increase in frequency and distribution, definitive causes remain elusive and reef managers are not sufficiently armed to combat this threat. Managers, scientists, and other coral reef stakeholders have articulated a need to establish local response capabilities to investigate coral disease outbreaks. As one component of the Coral Disease and Health Consortium, Dr. Andrew Bruckner and Dr. Cheryl Woodley developed standardized protocol and procedures for field investigations of coral disease outbreaks, and recently released a "Field Manual for Investigating Coral Disease Outbreaks." To complement this effort, Dr. Bruckner has been leading coral disease training workshops in the U.S. Atlantic and Pacific regions.

At request of the Cayman Island Department of the Environment, Dr. Bruckner conducted a Coral Disease Rapid Response Training workshop in partnership with NOAA (Dr. Woodley) and George Mason University (Dr. Esther Peters) during June, 2010. The workshop provided classroom, laboratory, and in-water training. The emphasis of the course was on the identification of coral diseases, approaches to characterization and quantification of the severity and impacts of a disease outbreak, as well as techniques to sample coral disease and process specimens. Each participant had the opportunity to collect water sediment and coral tissue samples using sterile techniques, and learned how to prepare and process samples for shipment to diagnostic laboratories. The final day of the workshop was devoted to the development of response plans, analysis and interpretation of samples, and development of "quick look" and more detailed reports on the findings. Resource managers from the Cayman Islands government, as well as dive operators, graduate students, local scientists and a newly formed Coral Reef Monitoring Club from St. Matthews University participated in the training.



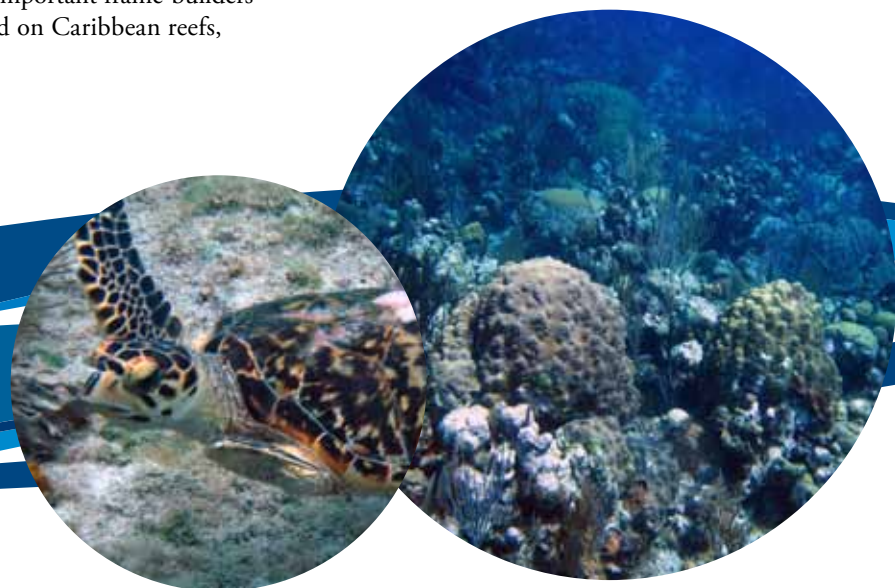


## Caymans Research Mission, June and December, 2010

During June 2010, a team of seven marine scientists, led by Dr. Andy Bruckner, surveyed 41 shallow Caribbean reefs located off Little Cayman, Cayman Brac and Grand Cayman. The team used a rapid assessment protocol to assess reef health and characterize the ability of these reefs to persist and rebound following impacts associated with climate change. The surveys were conducted in consort with a coral disease training workshop. A primary reason for selecting these sites was to assess impacts from a recent mass bleaching event. During the fall of 2009, these reefs were bathed in unusually high sea water temperatures (30°–32°C). The stress associated with high sea water temperatures caused the corals to expel their symbiotic algae (zooxanthellae) and turn stark white through a process known as “bleaching.” Corals have the potential to recover from bleaching provided conditions return to normal relatively quickly. If high temperatures persist, the corals will slowly die, because they have lost their most important source of food—the sugars produced through photosynthesis by the zooxanthellae, which is shared with the coral animal. By winter, temperatures on these reefs had returned to normal, and at the time of our surveys most corals had regained their green, brown, and golden brown coloration, a sign that the animals had taken up new zooxanthellae. Yet things were not normal. The reefs were threatened by an unusually severe outbreak of coral disease: a condition known as “white plague.” This disease first emerged on reefs in the Florida Keys in 1996, and has spread throughout the Caribbean affecting over 40 species of corals (two-thirds of all Caribbean corals). We call it white plague because it starts at the base of the colony and looks like wildfire going through a forest. It forms a band that spreads across the coral, moves up over the coral and kills it relatively quickly, on the order of one to two centimeters per day. It is probably the greatest threat to Caribbean reefs today, as basketball sized corals that are 25-50 years old can die in about a week. What was of even greater concern, the most important frame-builders and the dominant species found on Caribbean reefs,

mountainous and boulder star corals (*Montastraea annularis* complex) were hardest hit. These corals can be 3-5 m in height or larger and often reach ages of 500-1000 years. Their longevity is attributed to their resistance to many of the stressors affecting reefs. For example, these corals produce a very strong, massive skeleton that is rarely damaged by hurricanes, while branching corals like elkhorn coral and staghorn coral can be detached, pulverized and removed from a reef during a storm. Further, these long-lived corals are known as “bet-hedgers.” Reproduction occurs annually during a mass spawning event, however, decades can pass without a successful recruitment event (settlement and survival of coral larvae). The disease outbreak witnessed by the Caymans research team is not a new phenomenon. Similar conditions were observed during 2005 in the eastern Caribbean, including Puerto Rico and the USVI. This disease, which is seen throughout the Caribbean, is most likely caused by environmental stressors brought on by bleaching of coral colonies late last year. Already weakened by the bleaching, the corals become less resistant to harmful bacteria that can move in and further damage the reef. In Dr. Bruckner’s study sites off Puerto Rico, the star corals were the dominant corals; these bleached in the fall of 2005 but began to regain coloration by December. A few months later an outbreak of white plague spread throughout these reefs, eliminating 60-80% of the living cover of these corals.

The initial findings of our team were worrisome. Of the three islands, Little Cayman was the least affected by the disease, and Grand Cayman was the worst. Sites in the north and east of Grand Cayman with large colonies of star corals saw the biggest impact, having recently lost up to 50 per cent of their tissue, and the diseases were continuing to kill.



Over the three weeks, Dr. Bruckner examined close to 10,000 corals at 48 sites, and the rest of the team characterized the reef fish community, motile invertebrates like lobsters, octopus and sea urchins, and cover of various organisms (corals and other invertebrates and algae) that are permanently attached to the bottom. While other stressors were also noted, such as an unusual bloom of a type of fleshy macroalgae on some of Cayman Brac reefs, there were many promising signs as well. Other corals were in much better shape and there were high numbers of newly settled and juvenile corals. Fish that keep fleshy macroalgae in control (herbivores) were fairly abundant and many large predatory fishes, such as grouper and snapper, were quite common. The research team had the opportunity to return to the Cayman Islands in December 2010 to fill some gaps in survey coverage. These surveys showed further signs of coral recovery. The white plague outbreak that was rampant in the summer had disappeared and most of the remaining colonies of star coral looked healthy. Fleshy macroalgae, which is known to outcompete and overgrow corals and also prevent settlement of new

corals, was less common as well. These and other observations suggest that the reefs of the Cayman Islands are highly resilient and exhibit the potential to rebound after major disturbances.

These surveys shed new light on many of the factors threatening the vitality of The Cayman reefs and also highlighted many of the positive attributes that are likely to help ensure their future. The team's findings also emphasize the need for new conservation and management actions to address some of the stressors affecting the reefs, especially stressors related to man's activities such as overfishing, pollution and sedimentation associated with coastal development. Findings also emphasize the critical role divers can play to help the reefs recover by observing, monitoring and reporting anything unusual and by ensuring responsible behaviors both underwater through proper buoyancy and on land by minimizing consumption of vulnerable reef creatures that are key in sustaining healthy reefs such as grouper and parrotfish.

## Bonaire Coral Reef Resilience Research Mission, July 2010

In July, 2010 the Living Oceans Foundation and several partners from National Oceanographic and Atmospheric Administration's (NOAA) Office of Habitat Conservation conducted a detailed assessment of the condition of coral reefs on the leeward side of Bonaire. Bonaire, part of the Netherlands Antilles, is a Dutch territory that lies 30 miles from Curaçao and 50 miles north of Venezuela, outside of the Caribbean hurricane belt. Bonaire has earned the reputation for being one of the most environmentally conscious islands in the Caribbean. The waters surrounding the entire island are protected as a marine park, all dive sites have well-maintained mooring buoys to prevent damage from anchors, and spearfishing is outlawed. SCUBA divers and snorkelers pay a small fee that helps support the Bonaire Marine Park, and each diver also must participate in an educational dive briefing before entering the water.

Bonaire and the neighboring uninhabited island known as "Klein Bonaire" (Little Bonaire) are both surrounded by fringing coral reefs located meters from the shoreline. Because the reefs are accessible from shore or by boat, the island has become known as a diver's paradise. Also, partly as a result of their emphasis on sustainable ecotourism, Bonaire boasts what are reported to be the healthiest reefs remaining in the western Atlantic. As you read this, you are probably thinking "I've heard this all before about other Caribbean destinations..." The rapid assessment protocol the Living Oceans Foundation is implementing around the world is designed to characterize the health and resilience of reefs and is a suitable survey method to verify this.

Over the next ten days, the Bonaire team assessed the population structure and condition of important









reef-building corals, condition of the bottom with emphasis on the cover of invertebrates and plants (*algae*) that are beneficial for the reef as well as those that are indicators of degraded conditions, abundance of pest species and invasive organisms, and the numbers and sizes of reef fishes. The team also looked at factors that can enhance the resilience of reefs as well as factors that degrade resilience. Resilience refers to the ability of a coral reef to withstand changes from disturbances associated with climate change, and also the likelihood for that reef to recover from impacts while maintaining its structure and normal functions. This includes unusual temperature extremes that result in mass bleaching events (where the corals shed their symbiotic algae and become stark white) and ocean acidification due to the absorption of carbon dioxide produced by burning fossil fuels. Corals live at the limits of their environmental tolerance and a minor increase in temperature, if it persists for prolonged periods, can result in death, while acidic conditions prevent the coral from producing a rigid skeleton and can ultimately cause the coral reef to dissolve.

The findings of the Bonaire team supported most of the claims: Bonaire's reefs appear to be the healthiest in the Caribbean today. Cover of living coral was high on all reefs (approximately 50%) with exception of a few sites impacted by white plague outbreaks and shallow areas scoured by strong waves during previous storms. Cover by fleshy macroalgae was generally low, as compared to reefs in other Caribbean localities, although some deeper sites did have high cover of fleshy brown macroalgae and cyanobacterial mats were prominent in several locations; these algae occasionally carpeted the margins of coral colonies and were competing with living corals. The mountainous and boulder star corals (*Montastraea annularis* complex) were the dominant corals, in terms of living cover, abundance and size, occupying approximately 20-25% of the bottom and making up over 50% of the total live coral cover. Many dead corals were identified, and some of the larger corals had lost a substantial amount of their tissue, but these losses

were offset by the unusually high levels of settlement and survival of coral larvae. Dead skeletons of corals were covered with juvenile corals of nearly every species of coral found in Bonaire, and these appeared to be flourishing.

While most of Bonaire's reefs appear to be highly resilient and are showing promising signs of recovery from recent impacts, there is still reason for concern. Some reefs are being plagued by disease, and nuisance species such as certain damselfish, coral eating snails, bioeroding sponges and other highly competitive invertebrates are progressively killing certain corals. Like other Caribbean localities, star corals are not among the corals that are successfully recruiting and elkhorn and staghorn corals are virtually extinct. These stressors highlight the need for additional management and conservation actions, all of which are possible and relatively inexpensive.

Bonaire, by virtue of its location outside the hurricane belt, low population density, low amount of rainfall and runoff, and minimal fishing pressure currently supports some of the healthiest reefs in the Caribbean. Bonaire has the opportunity to maintain these reefs in a healthy state and the potential to restore sites that have been degraded through simple, low-tech ecological restoration approaches. Recreational divers can help through responsible dive practices and environmental conscious decisions when purchasing curios or seafood. The Living Oceans Foundation seeks to educate coral reef stakeholders and the public on the importance of coral reefs and actions that can be taken to protect these critical resources. The surveys undertaken in Bonaire provide the tools and information needed to understand the status and trends of these reefs and develop proper strategies to enhance conservation and management of these resources.



## Global Reef Expedition Case Statement

To discover and explore a pristine coral reef, alive with color and diversity, is to witness nature's most vital forces at work. Here is the sustainer and nursery of our life-giving oceans: a privilege to explore, a necessity to preserve. Present and future generations across the globe will continue to depend on these beautiful and threatened life-support systems. Today, the livelihoods and subsistence of nearly 500 million people depend on coral reef ecosystems. Coral reefs are intricately connected with our own health and the health of our planet in ways we do not yet fully comprehend.

The urgency to better understand and preserve coral reefs has reached an acute stage. Our generation is witnessing the worst coral reef crisis on record with coral reef ecosystems around the world, which are undergoing rapid and dramatic deterioration of health and vitality as a direct result of human and climate change stressors.

The Khaled bin Sultan Living Oceans Foundation, dedicated to the preservation and restoration of living oceans, is launching a bold, five year global coral reef research and education initiative to address these critical reef research and conservation issues. This Global Reef Expedition offers a rare opportunity to research and document the foundations of life itself and direct the research towards immediate conservation and restoration activities.

Using the state-of-the-art research vessel, the Motor Yacht *Golden Shadow*, to serve as a host platform for world-renowned marine scientists, the Global Reef Expedition (GRE) will systematically document and research the world's most remote and pristine coral reef ecosystems. His Royal Highness Prince Khaled bin Sultan's generous donation of the research platform and infrastructure for the expedition, valued at about \$25 million dollars, enables unique scientific access to remote coral reef ecosystems that are relatively unaffected by human-induced stressors. As a result, this applied science expedition will be able to deliver the scientific knowledge necessary for decision makers to develop effective reef management policy and to implement successful conservation strategies.

Yet, effective scientific research and conservation tools are, in and of themselves, insufficient. The scale of the Global Reef Expedition is unprecedented and calls for an equally bold educational goal. Global Reef Expedition's Education Program will leverage the potential of new learning technologies to effectively deliver the urgent message of coral reef conservation to millions of learners around the world. The Education Program will create an active awareness of the direct contributions reefs make to human lives regardless of where they reside. The educational goal is simple: Reefs matter to you and you need to be informed and involved in their conservation.

The Global Reef Expedition has both the capacity and commitment to deliver cutting-edge applied research holistically with motivational hands-on learning that will provide pathways to significantly improving the health and future of global coral reefs.



## Education and Outreach



### National Ocean Sciences Bowl: Chesapeake Bay Bowl

The Living Oceans Foundation was a proud “Manta Ray” sponsor of the 2010 National Ocean Sciences Bowl (NOSB), conducted by the Consortium of Ocean Leadership in Washington, D.C. As in previous years, the Foundation’s support helped NOSB to expand students’ knowledge of the oceans, enhance public understanding and stewardship of the ocean, and encourage some of the country’s best and brightest students to consider the ocean sciences as a career. Since its inception in 1998, more than 22,000 students and teachers have participated in the program. The NOSB holds an annual competition in various locations throughout the country, with questions on topics ranging from marine policy, geology, and physical oceanography to technology. More than 2,000 top students from over 300 schools participated in the finals in St. Petersburg, Florida. This year, the Chesapeake Bay Bowl, a regional competition of the NOSB, sponsored a Share-a-Thon at American University in Washington, D.C., which focused on marine technology. The Living Oceans Foundation’s emphasis on technology was demonstrated by the Foundation’s Marine Science GIS Analyst, Amanda Williams, who showed students how mapping of the ocean floor and remote reefs can produce data for researchers and management agencies and be used to track the impact of natural disasters, and other events. This regional Share-a-Thon provided a venue for teachers, families, event volunteers and students to get information on ocean and water-related academic resources, scholarships, field trips, undergraduate programs, and family activities that are available in the surrounding area.



### Washington Academy of Sciences: Capital Science 2010

The Living Oceans Foundation awarded a grant to the Washington Academy of Sciences for sponsorship of their 4th biennial conference held in March in Arlington, VA. Over 20 Affiliates participated with scientific presentations, seminars, tutorials and talks. These pan-Affiliate Conferences underline the fact that the Washington, D.C. area is not only the political capital of the country, but also the nation’s intellectual capital, with several major universities and government laboratories. Showcasing the diversity and the excellence of scientific investigation in the Washington, D.C. area, the conference highlighted joint plenary sessions with titles ranging from “Science Policy Debate08—Where are We Now?”, “Growing up with Science at PBS”, and “New Advances in Forensic Science Research & Investigation.” The Academy believes that “showcasing the intellectual muscle of the area will help provide the support needed to continue to build and keep the United States at the forefront of scientific achievement.”





## Blue Frontier Campaign: Third Annual Peter Benchley Ocean Awards

The Living Oceans Foundation has enjoyed a close relationship with the Blue Frontier Campaign, and has generously supported its cause for the past five years. This year, the Foundation sponsored the Peter Benchley Awards Ceremony, which took place in June at the California Academy of Sciences in San Francisco. These awards recognize outstanding achievements leading to the protection of our coasts and oceans, as well as the communities that depend on them. The awards provide an opportunity for leaders and innovators in different aspects and sectors of ocean work to meet and acknowledge each other and to celebrate the people who protect our oceans. The first awards were given at the 2004 Blue Vision Conference in Washington, D.C., where Peter Benchley gave the keynote speech. His widow, Wendy Benchley, a grassroots environmental activist, now hosts the awards in his name. This year, the Blue Frontier honored Cynthia Sarthou, Executive Director of the New Orleans-based Gulf Restoration Network.

## Fellows



### Renata Ferrari Legorreta

Working with Dr. Peter Mumby at the University of Queensland, Renata Ferrari's research involves understanding how herbivory varies with fore-reef rugosity. It studies the effects of coral-algae competition on the growth rate and mortality of coral colonies of different species and sizes. It also includes the influence of herbivory and season on the spatial and temporal change of macroalgal patch dynamics. The emphasis of Renata's research is to produce data that can be used for management and conservation of coral reefs. Thanks to the support from the Khaled Bin Sultan Living Oceans Foundation, Renata's Ph.D. had an extensive fieldwork component (12 continuous months), which produced a unique data set, combining high-frequency sampling over a prolonged experimental period. These data are being incorporated into coral population models and will enable management recommendations to be made for Glover's Reef Atoll Marine Reserve, Belize.

*“Being an LOF Fellow has enabled me to grow professionally while contributing to coral reef conservation and science in a unique manner. It is working with experts that truly care about the accomplishment of our conservation goals that makes all our hard work worth it.”*

—Renata Ferrari Legorreta



## Sonia Bejarano Chavarro

Also under the direction of Dr. Peter Mumby at the University of Queensland, Sonia Bejarano is currently investigating the status of the communities of herbivorous reef fish in three Micronesian countries (Palau, Guam and Pohnpei) and quantifying the levels of exploitation exerted by spear-fishermen on the different fish species.

Sonia is also examining the behavioral and cultural aspects of Micronesian spear-fishermen that determine their harvesting selectivity. Sonia is linking these 3 layers of information with the known ecological role of different fish species within the grazing process, in order to identify the most serious threats of overfishing as crucial contributors to reef resilience. Not only does grazing by herbivorous fish play an important role in determining the coral-algae dominance in reef ecosystems, but several species are key components of the fisheries of several tropical countries around the world. Therefore, designing successful management and conservation practices for herbivorous reef fish is a complex task that needs to encompass a wide spectrum of ecological as well as social concepts. During the Global Reef Expedition, program on-board the *M/Y Golden Shadow*, Sonia will extend the geographic scope of her present work, aiming to generate or improve the existing knowledge to adequately manage herbivorous fish populations.

*“Being a fellow of the KSLOF has made me part of a unique effort on a global scale, dedicated to better understanding and protecting the valuable resources and services that coral reefs provide to human populations. And this is one of the most rewarding experiences of my career.”*

—Sonia Bejarano Chavarro



## Jeremy Kerr

This year, Jeremy has been preparing for the first phase of the Global Reef Expedition by working with DigitalGlobe to acquire high-quality satellite imagery for Cay Sal Bank, Great Inagua, Little Inagua, and Hogsty Reef in the Bahamas. Besides image acquisition, Jeremy has been developing the workflow for map production using imagery acquired by DigitalGlobe’s new Worldview02 satellite. The satellite improves upon previous satellites by providing a total of 8 spectral bands (up from 4 bands provided by the generation of satellites) and 2-m spatial resolution (up from 2.4-m). As part of this development process, Jeremy recently participated in DigitalGlobe’s “8-band Research Challenge” which

solicited research proposals from users around the world to explore the application of Worldview-02 satellite imagery. His submission, entitled “WorldView-2 Offers New Capabilities for the Monitoring of Threatened Coral Reefs,” was selected as one of five winning papers. In January, 2011, Jeremy presented the results of this study at the Geospatial World Forum in Hyderabad, India. The study’s results will be used in the creation of mapping products for those locations visited by the Foundation during the Global Expedition.

*“Being a Fellow with the Khaled bin Sultan Living Oceans Foundation affords me a unique opportunity to combine my interests in ecology and remote sensing and apply them to conservation while working with individuals who share my passion in these areas. This opportunity would not be possible in other places, and I look forward to embarking on the Global Expedition with the Foundation.”*

—Jeremy Kerr

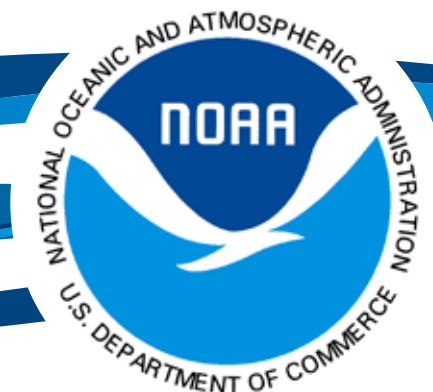
## Awards and Recognitions

CAPT Phil Renaud, Executive Director of the Living Oceans Foundation, received his PADI Open Water Instructor Certification following an intensive course in Key Largo, Florida, which included night dives, CPR, and other necessary skills.

Dr. Andy Bruckner was the proud recipient of a grant from NOAA (National Oceanic & Atmospheric Administration) to partner with the Coral Disease and Health Consortium in organizing and training local teams to conduct coordinated coral disease outbreak investigations. The work will take place during spring and summer of 2011 and will include a five to six day training workshop in the Caribbean to serve U.S. and international countries with coral reef management responsibilities. Congratulations, Andy!

In March, 2010, Andy Bruckner participated in a Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to protest the trade in red and pink precious corals which are threatened by trade activities. As the world’s largest consumer of marine ornamental species, for the aquarium, curio, home décor, and jewelry industries, and importing more than 50-60% of live coral, he argued that the U.S. has an opportunity to promote more sustainable trade and reduce the effects of ornamental trade stress on coral reefs worldwide. We continue to await a favorable decision on this issue.

The Living Oceans Foundation was awarded an ESRI (Environmental Systems Research Institute) Conservation Program Grant on behalf of the Seychelles Island Conservation Society (ICS) as part of the on-going collaboration between the Foundation and ICS.





## Staff Biographies

### Executive Director—Captain Philip G. Renaud, USN (Ret)

Captain Renaud’s career in oceanography began at the Naval Academy where he earned a Bachelor of Science degree in Oceanography and his commission as a Naval Officer in 1979. His distinguished 25-year naval career took him to all corners of the earth. CAPT Renaud was the battle group oceanographer and Officer of the Deck aboard the nuclear powered aircraft carrier, USS Theodore Roosevelt, during Operation Desert Storm. He also served as the lead oceanographer for the Commander, Second Fleet, aboard the Flag Ship *USS Mount Whitney* and his naval career culminated as the Commanding Officer of the Naval Oceanographic Office where he directed over 1000 oceanographers, a fleet of seven oceanographic survey ships, and the Department of Defense’s largest scientific super-computer center. Captain Renaud has earned graduate degrees in Oceanography, Meteorology, Strategic Studies, and an MBA in Technology Management. Since retiring from the Navy in May, 2004, Phil Renaud has been the Executive Director of the Khaled bin Sultan Living Oceans Foundation. At the helm of the Living Oceans Foundation, he has designed and led major research expeditions in the Indian Ocean, Red Sea, and Caribbean Sea. As an accomplished scuba diver, he is the Foundation’s Diving Safety Officer and PADI Open Water Scuba Instructor. Appointed by the Secretary of Commerce, CAPT Renaud has served for the past three years as a member of the Marine Protected Areas Federal Advisory Committee. CAPT Renaud is now focused on leading the Foundation’s most ambitious program, the Global Reef Expedition; a five-year circumnavigation of the globe aboard the Motor Yacht *Golden Shadow* to survey remote coral reef ecosystems for advancement of conservation initiatives.

### Chief Scientist—Andrew W. Bruckner

Dr. Andrew Bruckner is the Foundation’s Chief Scientist. He received his M.S. in Marine Biology from Northeastern University, Boston, MA in 1988, and his Ph.D. from the University of Puerto Rico in 1999. Prior to joining the Foundation, Dr. Bruckner worked for the NOAA Coral Reef Conservation Program as a coral ecologist. He holds a PADI advanced diver certification and was the co-lead person at NOAA’s Coral



Disease and Health Consortium. Dr. Bruckner has numerous peer-reviewed publications, and has been the recipient of several grants and awards. He has worked closely with resource managers and government agencies in the U.S. and internationally in developing conservation, management and restoration actions for coral reefs through legislation, international (CITES) regulations, development of sustainable management guidelines, and on-the-ground monitoring, research and restoration activities. Dr. Bruckner received a bronze medal from NOAA for his work on elkhorn coral (*Acropora palmata*) and staghorn coral (*Acropora cervicornis*) that contributed to the listing of these species on the U.S. Endangered Species Act. He serves as a Councilor of the International Society for Reef Studies, and is a Science Advisor to SECORE, a consortium of over 50 public aquaria and zoos in the United States and Europe.

### **Marine Science Geographic Information System Analyst—Amanda Williams**

Amanda earned her Master's Degree in Marine Science with a concentration in Marine Policy at the University of North Carolina, Wilmington and a Bachelor's of Science Degree in Geographical Sciences at James Madison University, VA. Amanda conducted her Master's research at Boracay Island, Philippines, investigating land use change with satellite imagery and mapping the geographic distribution of coral reefs utilizing SCUBA diving, GPS and video transect collection from 2006-2008. Her work at the Foundation entails synthesizing extensive coral reef data sets and developing GIS tools that will facilitate coral reef management and conservation, managing the video library, and conducting benthic point-intercept surveys during expeditions.

### **Executive Assistant—Melinda Harrison**

Melinda Harrison, the Executive Assistant, has been with the Foundation since its relocation from Lansing, MI to Landover, MD in 2004. She received a Bachelor's of Art in Liberal Arts, followed by a Master's Degree in Education. She taught middle school in New York, Chicago, Paris, France and Frankfurt, Germany. Having spent more than 20 years living in Asia and Europe, Ms. Harrison has brought her international experience and cultural awareness to the Foundation, where Science Without Borders® is the Foundation's overarching theme.



## Board of Directors



### Chairman and President

#### His Royal Highness, Prince Khaled bin Sultan

Assistant Minister of Defense and Aviation and Inspector-General for Military Affairs; Full General. Educated at The Royal Military Academy, Sandhurst, UK, United States Army Air Defense Artillery School, Fort Bliss, TX, and US Army Command and General Staff College, Fort Leavenworth, Kansas. Distinguished Graduate of Air War College, Maxwell Air Force Base, AL. Co-authored with Patrick Seale, the riveting account of the Gulf War, *Desert Warrior*.



### Vice Chairman

#### General Charles A. Horner, USAF (Ret)

Former Commander In Chief North American Aerospace Defense Command and U.S. Space Command, Commander, 9th Air Force and Commander, U.S. Central Command Air Forces. Commanded U.S. and allied air operations for Operation Desert Shield and Desert Storm in Saudi Arabia (1990-1991). Co-authored with Tom Clancy, the best selling non-fiction novel, *Every Man a Tiger*.



### Executive Director

#### Captain Philip G. Renaud, USN (Ret)

Former Commanding Officer, Naval Oceanographic Office. Board Member of the Blue Frontier Campaign. Member of the Marine Protected Areas Federal Advisory Committee.

*Photos Courtesy of Jan Baldwin.*





## Board of Directors (cont.)



### Chief Financial Officer

**Ian D. Fair**

Chairman of Bahamas Maritime Authority.  
Chairman, Bahamas First Holdings Limited.  
Deputy Chairman Butterfield Bank (Bahamas.)



### Lead Scientist

**Mohamed Faisal, D.V.M., Ph.D.**

Professor of Aquatic Animal Medicine, Michigan State University. Former Executive Director of Khaled bin Sultan Living Oceans Foundation.



### Secretary

**Shawn M. McLaughlin, Ph.D.**

Microbiologist and Curator, International Registry of Coral Pathology, National Oceanic & Atmospheric Administration (NOAA). Recipient of the Presidential Early Career Award for Scientists and Engineers.



### Director

**Professor/Dr. Abdulaziz Abuzinada**

Former Secretary General of the Saudi Arabian National Commission for Wildlife Conservation and Development (NCWCD).

## Advisors



**Douglas Baldwin**

Staff Member, His Royal Highness, Prince Khaled bin Sultan, in Riyadh, Saudi Arabia.



**Ron Gibbs**

Legal Counsel to His Royal Highness. Yachtmaster and Master Scuba Diver.



**William E. Beamer**

Attorney, Beamer, Lauth, Steinley & Bond, LLP, San Diego, CA.



**Dr. John Ind**

London Physician and Medical Advisor to the Foundation.

## Scientific Advisory Council

The work of the Scientific Advisory Council includes project portfolio review, adjudication of grant proposals, and strategic planning for the Foundation. Fellowship applications are reviewed and members participate significantly in the selection process.



### **Sylvia A. Earle, Ph.D.**

Explorer-in-Residence for “National Geographic.” Oceanographer, marine botanist, ecologist, explorer, author, lecturer in more than 60 countries. Scientific Consultant. Participant in numerous television programs concerning ocean research and exploration. Leader of more than 60 research expeditions. Scuba and submersible experience.



### **John W. McManus, Ph.D.**

Professor in Marine Biology and Fisheries at the University of Miami, and Director, National Center for Caribbean Coral Reef Research (NCORE), Rosenstiel School of Marine and Atmospheric Science (University of Miami), Ecosystem Management and Modeling Expert.



### **Peter J. Mumby, Ph.D.**

Professor at the University of Queensland School of Biological Sciences, Brisbane, Australia. Remote Sensing Expert. In 2010, awarded a Pew Fellowship in marine conservation.



### **Bernhard Riegl, Ph.D.**

Associate Professor, Coral Reef Institute, Oceanographic Center, Nova Southeastern University, Dania, FL. Associate Director of the National Coral Reef Institute.



### **Thomas Spencer, Ph.D.**

University Senior Lecturer, University of Cambridge and Director, Cambridge Coastal Research Unit, Department of Geography, University of Cambridge, UK.

### **Mohamed Faisal, D.V.M., Ph.D.**

Professor of Aquatic Animal Medicine in the Department of Pathobiology and Diagnostic Investigation in the College of Veterinary Medicine at Michigan State University. Primary research focus is on pathogenesis of diseases of aquatic animals.

### **Andrew Bruckner, Ph.D.**

Chief Scientist for the Living Oceans Foundation. Conducted research to understand the impacts of natural and anthropogenic disturbance on coral reefs and patterns of recovery following major disturbance events.

### **Abdulaziz Abuzinada, Ph.D.**

Board member of the Living Oceans Foundation, Former Secretary General, National Commission for Wildlife Conservation and Development. Head of the Board of Directors of the Training Centre for Conservation of Natural Resources in Saudi Arabia.

### **Shawn McLaughlin, Ph.D.**

Secretary, Living Oceans Foundation. Curator International Registry of Coral Pathology. Leader of the benthic component of NOAA’s Cooperative Oxford Laboratory’s integrated biotic ecosystem assessment in Chesapeake Bay.



### **Sam Purkis, Ph.D.**

Professor, Oceanographic Center, National Coral Reef Institute, NOVA Southeastern University. Research is focused on status and monitoring of seabed habitat in the Red Sea and Arabian Gulf.







## 2010 Publications

Bruckner, A., Bruckner, R. and R. Hill. 2010 Rethinking restoration approaches for *Acropora palmata*: lessons from the Fortuna Reefer Grounding. Proceedings of the 11th International Coral Reef Symposium Ft Lauderdale, Florida, 7-11 July 2008,1: 1199-1203.

Bruckner, A. and E. Borneman. 2010 Implications of coral harvest and transplantation on reefs in northwestern Dominica. Rev. Biol. Trop. (Int. J. Trop. Biol. ISSN-0034-7744) Vol. 58 (Suppl. 3): 111-127

Bussoletti, E., Cottingham, D., Bruckner, A., Roberts, G., and R. Sandulli. 2010 Proceedings of the International Workshop on Red Coral Science, Management, and Trade: Lessons from the Mediterranean. NOAA Technical Memorandum CRCP-13, Silver Spring, MD 233 pp.

Bruckner, A.W. 2010. Western Atlantic Coral Identification Field Guide. Woods Lithographics, 22 pp.

Bruckner A.W. 2010 Western Atlantic Health and Resilience cards. Woods Lithographics, 12 pp.

Bruckner, A.W. 2010. Assessing decline in *Corallium* populations: Do existing data meet the criteria for a CITES Appendix II listing? *In*: Proceedings of the International Workshop on Red Coral Science, Management, and Trade: Lessons from the Mediterranean (Eds Bussoletti, E., Cottinham D, Bruckner A. et al.). NOAA Technical Memorandum CRCP-13, Silver Spring, MD pp. 58-71.

Bruckner, A.W. 2010 Population dynamics and life history traits of *Corallium rubrum* populations: implications for sustainable management and trade. *In*: Proceedings of the International Workshop on Red Coral Science, Management, and Trade: Lessons from the Mediterranean (Eds. Bussoletti, E., Cottinham D., Bruckner A. et al.) NOAA Technical Memorandum CRCP-13, Silver Spring, MD pp. 184-194.

Bruckner, A.W. 2010. Quantifying the decline in *Corallium rubrum* populations: Reply to Santangelo & Bramanti (2010). Mar Ecol Prog Ser. 397:317-332

Eakin, C.M., Morgan, J.A., A.W.Bruckner and 53 others. 2010. Caribbean Corals in Crisis: Record Thermal Stress, Bleaching, and Mortality in 2005. PNAS 5(11): e13969. doi:10.1371/journal.pone.0013969

Hamylton, S. (In press) An evaluation of waveband pairs for water column correction using band ratio methods for seabed mapping in the Seychelles, International Journal of Remote Sensing, accepted June 2010.

Hamylton, S. (In press) Estimating the coverage of coral reef benthic communities in the Al Wajh, Red Sea from airborne hyperspectral remote sensing data: Multiple discriminant function analysis and linear spectral unmixing, International Journal of Remote Sensing, accepted March 2010.

Hamylton, S., Spencer, T. & A. Hagan 2010 Coral reefs and reef islands of the Amirantes Archipelago, western Indian Ocean, pp. 99 – 106. *In*: Harris, P & Baker, E (Eds.) 2009 Atlas of Seafloor Geomorphology as Habitat, Elsevier, Chatswood, Australia. 600pp.

Hamylton, S. 2010 The Al Wajh Bank reef system, Saudi Arabia, Red Sea, pp. 28 – 37. *In*: Harris, P & Baker, E (Eds.) 2009 Atlas of Seafloor Geomorphology as Habitat, Elsevier, Chatswood, Australia. 600pp.

Hamylton, S. and T. Spencer 2010 An integrated approach to landscape ecology in marine systems: Remote sensing, patches and spatial statistics. *Continental Shelf Research, Special Issue on Coastal Remote Sensing* (DOI:10.1016/j.csr.2010.02.003).

Hamylton, S. 2010 Spatial modelling of live coral cover using hyperspectral remote sensing data in the Al Wajh lagoon, Red Sea. *Coral Reefs*.

Lumsden, S.E., Hourigan, T.F., and A.W. Bruckner 2010 Deep-sea Coral Ecosystems of the United States. Feature Article 3 *Our living Oceans*, 6th Edition.77-87.

Purkis, S., Rowlands, G. , Riegl, B. and P. Renaud 2010.The paradox of tropical karst morphology in the coral reefs of the arid Middle East. *Geology* 38: 227-230.

Rowlands, G., Goodman, J., Riegl, B., Renaud, P. and S. Purkis 2010 Habitat mapping in the Farasan Islands (Saudi Arabia) using CASI and QuickBird imagery. *Proceedings of the 11th International Coral Reef Symposium*, Ft Lauderdale, Florida, 7-11 July 2008, p 642-646.

Rowlands, G., Purkis, S., Riegl, B., Bruckner, A. and P. Renaud. Novel and unexplored coral reef types of the Red Sea - A synoptic mapping approach Presentation at the 2010 AGU Ocean Sciences Meeting.

Tissot, B.N., Best, B.A., Borneman, E.H., Bruckner, A.W., et al. 2010. How U.S. ocean policy and market power can reform the coral reef wildlife trade. *Marine Policy* 2010, oi:10.1016/j.marpol.2010.06.002

Williams, A. and N. Sappington. 2010 Seychelles Research Expedition Surveys Remote Islands. *Sea Technology*, June 2010. p. 10-13.

# Statement of Financial Position

December 31, 2010

## ASSETS

Cash and cash equivalents	\$ 1,371,276
Pledges receivable, net	2,000,000
Prepaid expenses	36,679
Investment restricted for endowment fund	1,305,937
Furniture and equipment, net	278,779
Deposits	6,466
<b>Total assets</b>	<b>\$ 4,999,137</b>

## LIABILITIES AND NET ASSETS

Accounts payable and accrued expenses	\$ 62,415
Grants payable	70,000
<b>Total liabilities</b>	<b>132,415</b>
<b>Net Assets:</b>	
Unrestricted	
Undesignated	810,776
Board designated to endowment	217,578
	1,028,354
Temporarily restricted	2,750,000
Permanently restricted	1,088,368
<b>Total net assets</b>	<b>4,866,722</b>
<b>Total liabilities and net assets</b>	<b>\$4,999,137</b>



# Statement of Activities

Year ended December 31, 2010

	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
<b>REVENUE AND SUPPORT</b>				
Contributions	\$ 1,920	\$2,550,000	\$ -	\$2,551,920
Other revenue	1,162	-	-	1,162
Investment income	16,491	-	67,249	83,740
Net assets released from restrictions	1,300,000	(1,300,000)	-	-
<b>Total revenue and support</b>	<b>1,319,573</b>	<b>1,250,000</b>	<b>67,249</b>	<b>2,636,822</b>
<b>EXPENSES</b>				
<b>Program services</b>	<b>801,774</b>	-	-	<b>801,774</b>
<b>Supporting services:</b>				
Management and general	363,698	-	-	363,698
Fundraising	19,643	-	-	19,643
<b>Total supporting services</b>	<b>383,341</b>	-	-	<b>383,341</b>
<b>Total expenses</b>	<b>1,185,115</b>	-	-	<b>1,185,115</b>
<b>Changes in net assets</b>	<b>134,458</b>	<b>1,250,000</b>	<b>67,249</b>	<b>1,451,707</b>
<b>Net assets, beginning of year</b>	<b>893,896</b>	<b>1,500,000</b>	<b>1,021,119</b>	<b>3,415,015</b>
<b>Net assets, end of year</b>	<b>\$1,028,354</b>	<b>\$2,750,000</b>	<b>\$1,088,368</b>	<b>\$4,866,722</b>

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Executive Director: CAPT Philip G. Renaud, USN (ret)



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