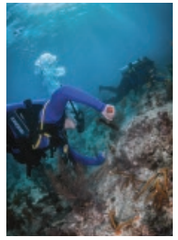
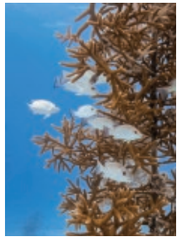
CORAL RESTORATION FOUNDATION

ANNUAL REPORT 2016

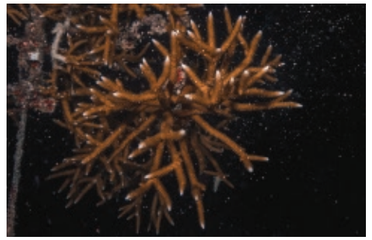


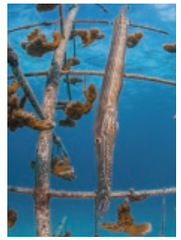



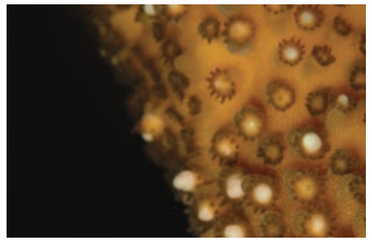

CORAL RESTORATION FOUNDATION

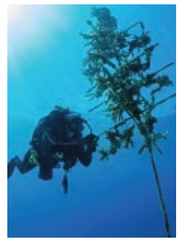










A WORD FROM

THE CEO

As Coral Restoration Foundation looks forward to the new year, I am immensely proud of how our organization evolved in 2016.

Last year, we continued to revolutionize reef conservation, fulfilling our promise to restore coral reefs and working toward our goal of a restored ocean. Coral Restoration Foundation continues to be recognized as an innovator of coral nurseries and outplanting techniques. This year, we set ambitious, new goals to improve the scientific relevancy of our restoration work, and to elevate our presence within the marine-conservation community.

In 2016, we made tremendous progress in reaching our objectives. We expanded our scientific collaborations in order to gain a deeper understanding of our restoration techniques. We also created sophisticated data collection procedures and analyses to enhance our knowledge base. Our innovative approach of anchoring restoration within a large-scale experimental design was rewarded with the receipt of a three-year, $2.1 million grant from the National Oceanic and Atmospheric Administration (NOAA). This transformational grant provides us the opportunity and resources to advance reef restoration on an unprecedented scale.

While I take great pride in how far we progressed in 2016, I am even more excited by where we are going and the upcoming opportunities in 2017.

Scott Winters
CEO

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RESTORING THE FUTURE OF THE MARINE ECOSYSTEM

"Our work with the Coral Restoration Foundation will expand coral restoration efforts at an unprecedented scale across the Florida Reef Tract. Their work, planting reefs with two coral species listed under the Endangered Species Act, will help NOAA make progress toward its goal of recovering these populations." – Pat Montanio, Director, NOAA Fisheries Office of Habitat Conservation

Coral Restoration Foundation is an international, ocean conservation organization based in Key Largo, Florida. Our proven results in conducting ground-breaking research, developing unique and efficient restoration techniques, educating the public, and restoring coral reefs have made us a world leader in reef restoration. Our work focuses on restoring the rapidly declining populations of two species of branching corals known as staghorn coral (*Acropora cervicornis*) and elkhorn coral (*Acropora palmata*). These critical reef-building species once dominated Caribbean reefs but are now listed as Threatened Species under the Endangered Species Act.

In the past year, Coral Restoration Foundation has grown in size and scope, building awareness with every new initiative. Through our restoration efforts, we reinforce our fundamental belief that a passionate and dedicated group of people can be the catalyst for monumental environmental change.

2016 AT A GLANCE

March 5: MAKING WAVES — Hosted our largest fundraising event of the year, our 4th Annual Gala, where new initiatives such as the restoration of Carysfort Reef were announced.

June 3: CORALPALOOZA — Led over 200 divers in outplanting 1,865 corals in honor of World Oceans Day.

June 18: INTERNATIONAL CORAL REEF SYMPOSIUM — Presented scientific posters and restoration data to internationally-renowned coral scientists in Hawaii.

July 21: NEEMO 21 — Collaborated with FIU and NASA to train astronauts in the construction of underwater coral nurseries at the Aquarius Reef Base.

July 27: DENDROGYRA COLLECTION — Began collection of pillar coral to preserve the genetic diversity of this threatened species.

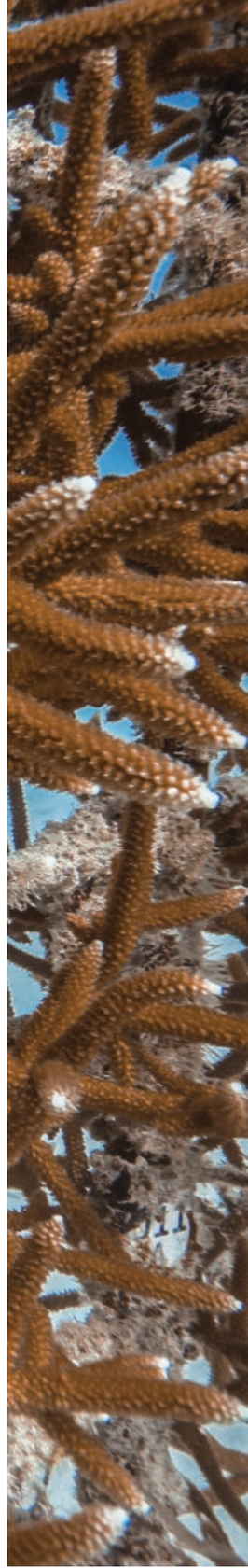
July 29: NOAA GRANT ANNOUNCEMENT — Awarded a $2.1 million grant over the next 3 years to restore eight reefs.

August 22: SPAWNING WEEK — Gathered over 50 researchers in our Tavernier Coral Nursery to observe coral spawning & conduct scientific testing.

September 28: TDC SUPPORTS RESTORATION — Received funding from all five districts of the Monroe County Tourist Development Council for continued restoration efforts across the Florida Keys.

November 14: NOAA WORKSHOP — Led 8 seminars and workshops at NOAA's Workshop to Advance the Science and Practice of Caribbean Coral Restoration.

December 14: FINAL CORAL PLANTED — Outplanted the final corals of 2016, pushing this year's total to 14,341 corals outplanted onto reefs in the Florida Keys.



A YEAR MAKES **AN OCEAN OF DIFFERENCE**

This year's landmark achievements included launching the restoration of Carysfort Reef in North Key Largo and the start of our three year project to restore eight reefs to the levels outlined in NOAA's Acropora Recovery Plan.

- 40,000 corals in offshore nurseries
- 23 research projects and collaborations
- 515 coral trees
- 7 coral nurseries
- 10,024 volunteer hours
- 3,160 dives
- 28 restoration sites with outplanted corals
- 15 interns
- 300 coral genotypes

THE ARC OF **INNOVATION**

Coral Restoration Foundation is widely recognized as an innovator of open-ocean coral nurseries and novel reef restoration techniques. Our ability to innovate comes from a Science Program dedicated to understanding how corals grow and survive. Through our collaborations with universities, nonprofits, and government organizations, we continue to focus on projects that expand our scientific knowledge and lead to more effective restoration practices and long-term survival of outplanted corals.

Conservation biology research conducted during the past decade has shown that the success of field restoration efforts is heavily dependent on the genetic diversity that can be integrated into the restoration efforts. With populations on the decline throughout the Caribbean, Acroporid restoration of any kind must address the looming threats of genetic bottlenecks and inbreeding. To avoid this loss of diversity, Coral Restoration Foundation has developed its first genetic "ark", a nursery that will hold and protect every current and future genetic strain of coral under Coral Restoration Foundation's curation.

Through high-resolution genetic sequencing conducted by partners at Northeastern University, the ark has led to the creation of a unique database of *Acropora* genetics and field observations. This database will be used to incorporate the most advanced genetic knowledge from the scientific community into the field restoration work of reef conservation organizations around the world.

THE POWER OF **SCIENTIFIC COLLABORATION**

Academic partnerships contribute not only to our own work, but also to the work of coral researchers and marine conservationists around the world. Coral Restoration Foundation's nurseries, corals, and knowledge were used in over 20 scientific research projects and were cited by publications in three different academic journals during the past year. Coral Restoration Foundation has become an academic platform and a unique scientific resource for researchers around the world.

In September, a decade-long field study published by NOAA scientist Margaret Miller showed that Coral Restoration Foundation's outplanting strategies were generating significant increases in staghorn coral cover on our Florida Keys restoration sites. NOAA documented that CRF restored sites had as much as 1200% more coral cover than unrestored sites.

Also in 2016, a publication by the University of Florida's Kathryn Lohr emphasized the importance of genotypic and phenotypic evaluation in coral restoration efforts, based on assessments of the genetic diversity found in Coral Restoration Foundation's nurseries. The study supported the rationale behind CRF's NOAA project: genetic diversity is the key to more successful coral restoration efforts.

PEER-REVIEWED RESEARCH PUBLISHED IN COLLABORATION WITH CRF IN 2016:

Flint M, Than JT. (2016) Potential spawn induction and suppression agents in Caribbean Acropora cervicornis corals of the Florida Keys. PeerJ 4:e1982. https://doi.org/10.7717/peerj.1982

Ladd MC, Shantz AA, Nedimyer K and Burkepile DE (2016) Density dependence drives habitat production and survivorship of Acropora cervicornis used for restoration on a Caribbean coral reef. Front. Mar. Sci. 3:261. doi: 10.3389/fmars.2016.00261

Lohr K, Patterson J. (2016) Intraspecific variation in phenotype among nursery-reared staghorn coral Acropora cervicornis. Journal of Experimental Marine Biology and Ecology. 486 (87-92).

Miller et al. (2016), Reef-scale trends in Florida Acropora spp. abundance and the effects of population enhance-ment. PeerJ 4:e2523; DOI 10.7717/peerj.2523

SCIENTIFIC COLLABORATORS:

- Boston University
- Florida Fish & Wildlife Conservation Commission
- Florida Institute of Technology
- Florida International University
- James Cook University
- National Oceanic & Atmospheric Administration
- Northeastern University
- Nova Southeastern University
- Old Dominion University
- Pennsylvania State University
- Rice University
- The Florida Aquarium
- The Smithsonian Institution
- University of Florida
- University of Texas
- U.S. Geological Survey

GENERATING NEW HOPE

During three nights following the August full moon, Coral Restoration Foundation hosted international representatives from nearly a dozen aquariums, scientific laboratories, and universities at our Tavernier Coral Nursery to experience an amazing natural phenomenon: the annual *Acropora* spawn. Coral colonies spawn just once per year, and species synchronize the release of their sperm and eggs to within seconds of one another. In the pitch-black water of our nursery, clouds of floating egg bundles suddenly engulfed the visiting divers, representing a flash of hope for the natural recovery of coral populations.

This year's spawning event was widely regarded as the largest spawn observed by Coral Restoration Foundation.

- 19 coral genotypes observed spawning in the designated "spawning alley"
- 9 genotypes cryopreserved by the Smithsonian Institution
- 50 individuals from nine partner organizations participating

Cryopreservation: process of preserving organic material such as tissue, organelles, or gametes by freezing, typically for applications involving future technologies.

PRESERVING THE

DIVERSITY OF NATURE

Through our efforts and leadership in the world of non-profit marine conservation, Coral Restoration Foundation believes that large-scale restoration can supplement existing populations of coral, catalyzing natural recovery and returning reef ecosystems to healthy and pristine conditions.

In addition to restoring wild populations of previously-dominant hard corals, the Reef Restoration Program is also working to preserve the genetic diversity of these species. Our nurseries have become an oasis of diversity, housing over 300 genotypes of staghorn, elkhorn, pillar, boulder, and blade fire coral. One of CRF's principal goals is to preserve the genetic richness that has historically existed on pristine coral reefs. Some of the genotypes in our nurseries have become extinct in the wild and now exist nowhere else on the planet.

"Our past, our present, and whatever remains of our future, absolutely depend on what we do now" –Sylvia Earle

REEF RESTORATION PARTNERS:

- Florida Fish & Wildlife Commission
- Florida Keys Community College
- Georgia Aquarium
- MarineLab
- Mote Marine Laboratory and Aquarium
- Nova Southeastern University
- SEA LIFE Orlando Aquarium
- The Florida Aquarium

THE PATH TO

PROGRESS

Our Reef Restoration Program launched an ambitious restoration effort in 2016. In July, Coral Restoration Foundation was awarded a $2.1 million grant from NOAA to restore eight reefs across the Florida Reef Tract over the next three years. This project will result in the outplanting of over 50,000 staghorn and elkhorn corals, increasing their respective populations to levels recommended by NOAA's Acropora Recovery Plan.

By employing a science-based approach and placing an emphasis on genetic diversity, the project combines traditional restoration practices and the most current academic knowledge, generating a wealth of information on coral genetics and survivorship statistics that will allow for a more dynamic and pragmatic understanding of restored coral growth, health, and survivability. In addition to being a massive restoration effort, the work done under this grant will produce a unique dataset for researchers to use for years to come.

Florida Keys - Reef Restoration Sites

CARYSFORT REEF:

A KEY INITIATIVE

As recently as 40 years ago, Carysfort Reef exhibited thriving populations of both elkhorn and staghorn corals, a premier coral haven. A photograph of the reef was the first underwater image to grace the cover of National Geographic Magazine. But today, the site is a shadow of its former self, with crumbling ledges of dead coral and few remaining *Acropora* colonies.

In conjunction with Ocean Reef Club, Coral Restoration Foundation has launched a project to restore this iconic Florida reef. Over the next five years, we will be outplanting 30,000 staghorn and elkhorn corals across Carysfort Reef in an effort to return the site to its historical state. Once complete, this project will provide an internationally recognized example of how a concerted restoration effort can fully restore a degraded reef.

WHY CARYSFORT?

- **Historical importance:** The first underwater colored photograph to grace the cover of National Geographic magazine was taken at Carysfort Reef.
- **Documentation:** Photos and first-hand accounts of the reef in its original pristine state are readily available.
- **Accessibility:** Carysfort is conveniently located offshore from north Key Largo.
- **Reef Structure:** The existing reef topography and layout are optimal for restoration efforts.

CORAL RESTORATION FOUNDATION

OCEAN REEF CLUB®
A UNIQUE WAY OF LIFE
KEY LARGO, FLORIDA

EXTENDING OUR GLOBAL REACH

Coral Restoration Foundation recognizes that the natural range of our corals extends well beyond the Florida Keys and that degradation and extinction threaten reefs in the Caribbean and across the globe. With these concerns in mind, we are working to promote reef restoration and preservation across the greater Caribbean region.

In 2016 alone, our staff and volunteers installed seven new nurseries in five different countries. With these additions, we have now helped to establish 19 coral nurseries in seven different Caribbean countries or territories.

Coral Restoration Foundation currently works with organizations, governments, local residents, and tourists in Bonaire, Curaçao, the Cayman Islands, Jamaica, Mustique, Roatán, and Saba.

As of December 2016, international organizations maintained and operated nurseries with:

- 4 different coral species
- 183 distinct genetic strains
- 275 Coral Trees

This year, partners in Bonaire and Curaçao joined us during our Coralpalooza event and contributed by outplanting 520 corals to their restoration sites.

A WORD FROM OUR CHAIRMAN

As Coral Restoration Foundation heads into a new year, we are excited about our growth and what 2017 will bring. Over the years, I have watched our organization flourish and achieve a number of milestones with hard work and foresight. As I take over as Chairman, I would like to thank Mike Echevarria for all his hard work and visionary leadership. He has laid the foundation for the organization and we look forward to continuing his vision.

As Chairman, my goal is to develop and expand our Science and Reef Restoration Programs and seek out new opportunities for growth. This will allow Coral Restoration Foundation to explore new methods for helping protect coral reefs around the world. With our expansion in 2017, we will continue to evolve into an organization with the ability to shape an exciting new future for reef restoration.

It is with pride that I take on the role of Chairman and I look forward to working with our partners, staff, and volunteers in creating a better ocean for everyone.

Mike Zimmer
Chairman

EXPANDING AWARENESS

Marine environmental issues are not limited to the Florida Keys, the United States, or the Caribbean Sea and must therefore be addressed on a global scale. This recognition has fueled a more holistic approach to Coral Restoration Foundation's Education Program, in which targeted messages of purpose provide individuals with immersive experiences that facilitate action in their families, communities, and daily lives.

Marine conservation lesson plans developed by our staff teach about the ecology and importance of corals, and also place coral reefs in their proper ecological context, addressing their role in relation to the rest of the ocean's ecosystems. This curriculum has become embedded in local schools and our "Let's Talk Coral" Skype series puts our staff in front of elementary, middle, and high school students around the country. Coral Restoration Foundation's educational work also reaches university-level students, with a growing Intern Experience program that mixes hands-on marine conservation opportunities with professional scientific networking opportunities.

Through our refined active and passive learning programs, as well as a dedicated presence at a variety of community outreach events, Coral Restoration Foundation reached over 4,000 individuals across the country in 2016, promoting a culture of awareness and self-motivated accountability.

FUELED BY A SHARED PASSION

Coral Restoration Foundation strives to involve our volunteers, local divers, and community by offering a volunteer experience that gives everyone the opportunity to make a difference for endangered species and environments.

Whether they lend a hand for one day or for several years, our volunteers and dive program participants are always left with a greater appreciation for the natural world and a better understanding of how they can take action in their own lives to help conserve marine life. And with the development and implementation of our Citizen Scientist Monitoring Program in 2016, volunteers across South Florida can now contribute to our efforts by visiting restoration sites throughout the Florida Keys and submitting information on coral survivorship to our online database.

Our largest volunteer event in 2016 was our 2nd annual "Coralpalooza", when over 200 divers helped our staff clean coral nurseries, monitor wild coral populations, and outplant 1,865 staghorn and elkhorn colonies in a single day. The event was held in honor of World Oceans Day and was coordinated with several of Coral Restoration Foundation's domestic and international partners. The event also coincided with the launch of our Citizen Scientist Monitoring Program and incorporated many new volunteers into CRF's work.

"I chose to volunteer with Coral Restoration Foundation to become fully immersed in the mission for conserving our oceans. I couldn't imagine a better team to be a part of, who are so dedicated every day to helping the oceans and teach me something new every day. I love being a part of that inspirational magic that the ocean has on those that visit and live here." – Katie Howell

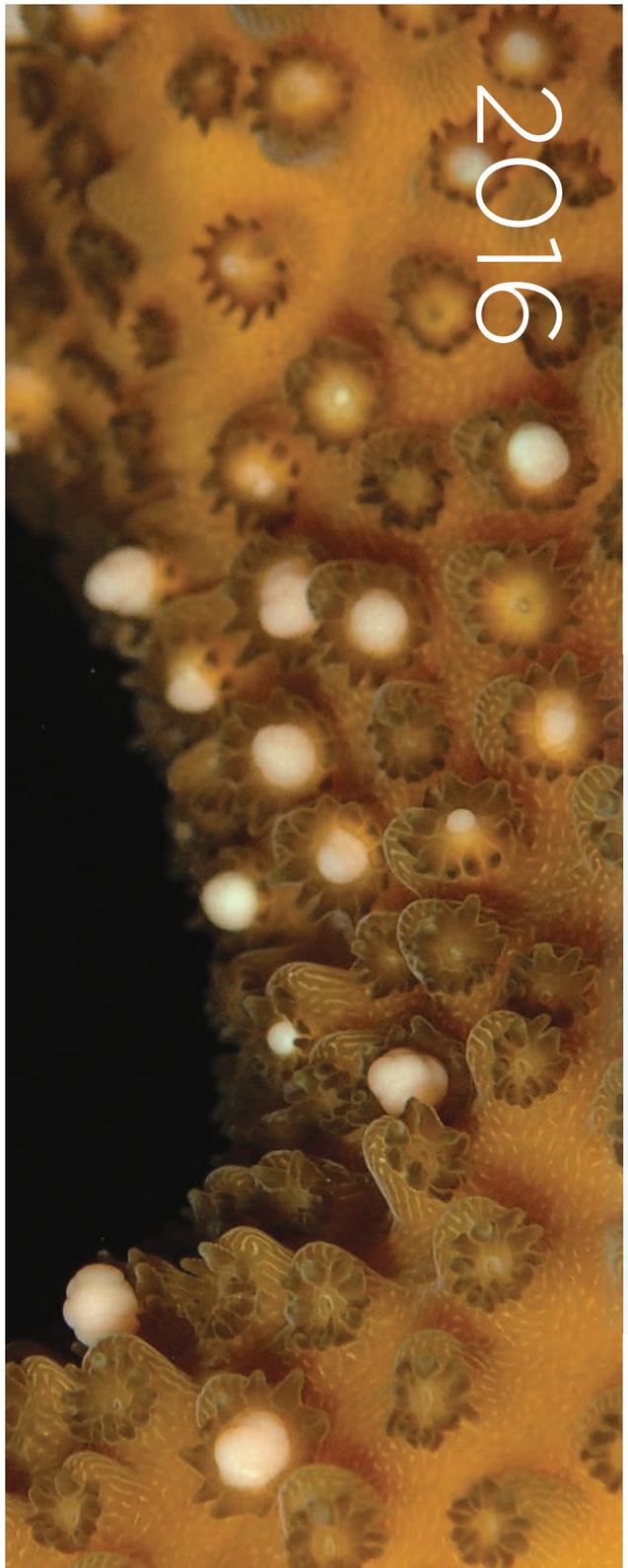
ALWAYS PUSHING FORWARD

In the past four decades, staghorn and elkhorn corals have declined by over 92% in the Caribbean due to a variety of stressors, including climate change, ocean acidification, disease, and pollution. By preserving the genetic diversity of these species and increasing their population levels, we are providing hope for the future of our coral reefs.

It can be difficult to envision how restoration efforts can prevent the seemingly inevitable loss of the world's coral reefs. It is an uphill battle, certainly. Reef ecosystems require centuries to build, but can suffer rapid decline due to disease outbreaks, bleaching events, or rapid changes in ocean water chemistry. However, at Coral Restoration Foundation, we are committed to fighting this battle and we can see the positive results of our efforts.

Even though global coral stressors are a growing threat, our coral nurseries have proven to be a sanctuary where coral colonies can thrive and our outplanting efforts provide reefs with the spark needed to jump-start a long-term recovery. We are taking the necessary steps in a truly rewarding process where each success brings fresh hope and energy. This has been a year of incredible collaboration and support, and we look forward to 2017 bringing us one year closer to a world of thriving corals, reefs, and oceans.

"Our planet's alarm is going off, and it is time to wake up and take action" –Leonardo DiCaprio



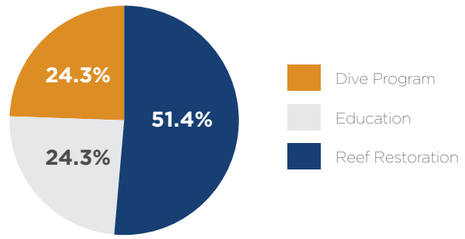
FINANCIALS

Coral Restoration Foundation is a 501(c)3 non-profit organization working to restore coral reefs, educate others on the importance of our oceans, and use science to further research and monitoring techniques.

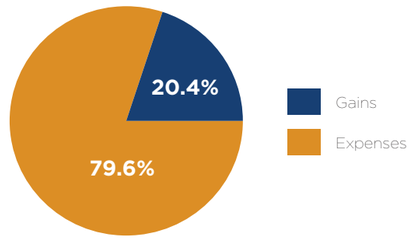
Help preserve the legacy of our reefs. To make a gift, including those of stock or a bequest, please contact Martha Roesler at *(305) 453-7030* or *martha@coralrestoration.org*.

Revenues	
Foundations	$573,376.00
Corporations	$433,976.00
Government	$395,227.00
Individuals	$153,621.00
Other	$131,590.00
Total Revenue	*$1,687,790.00*
Expenses	
Program Expenses	$909,929.00
General & Administrative	$233,707.00
Fundraising	$200,594.00
Total Expenses	*$1,344,230.00*
Gains/Losses	$343,560.00

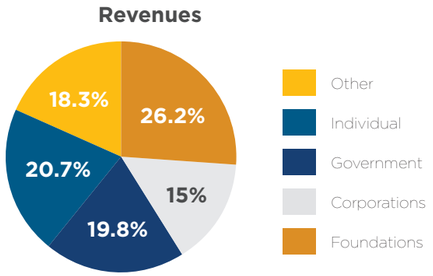
Expenses by Programs

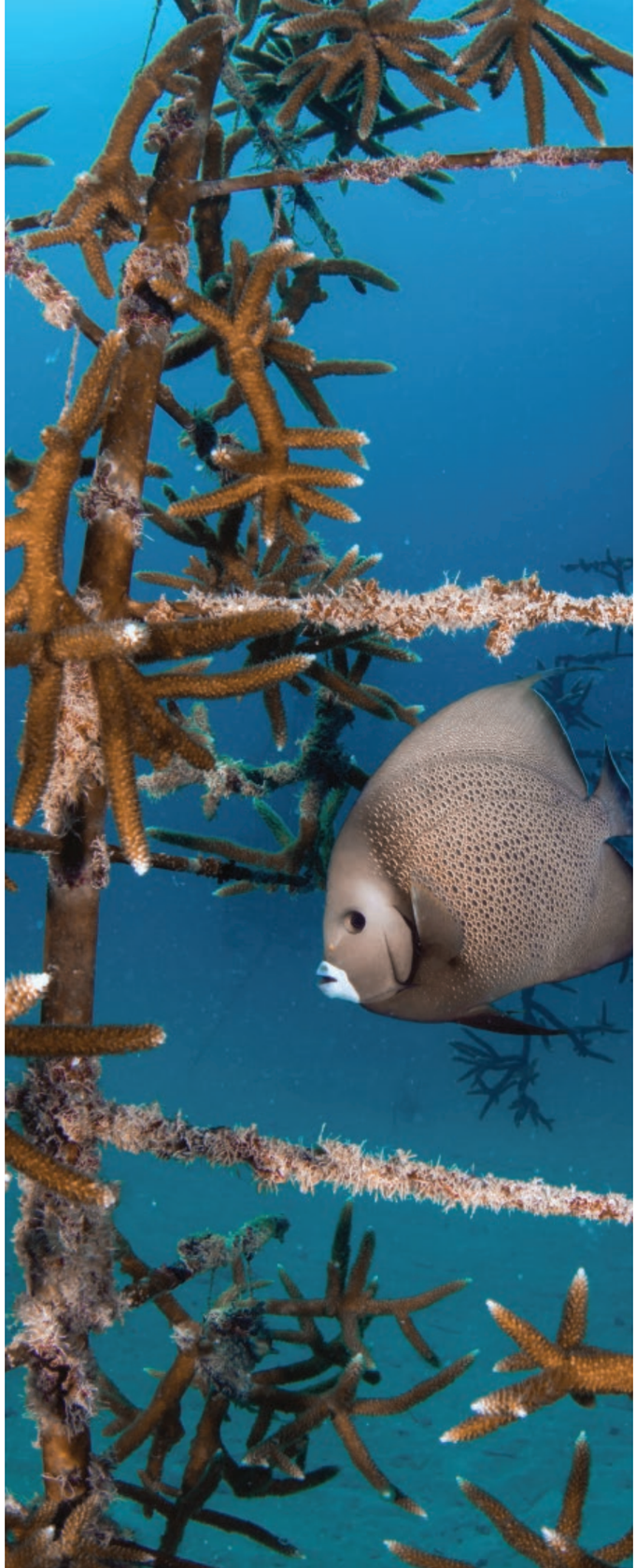


Gains/Losses



Revenues





TO THOSE WHO MAKE OUR WORK POSSIBLE

THANK YOU

We could not accomplish our restoration goals without the generous support of individuals, corporations, and foundations.

Although space does not permit the listing of every donation, each contribution makes a crucial difference for our reefs. Thank you to the following supporters, who have made gifts of $500.00 or more between January 1, 2016 and December 31, 2016.

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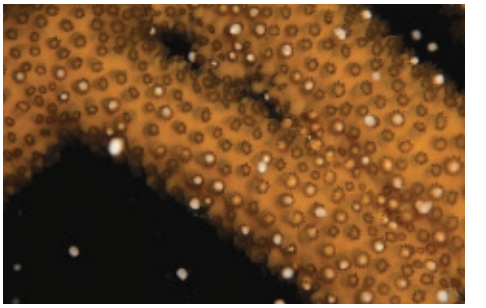



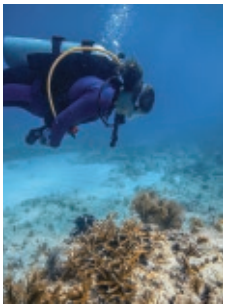


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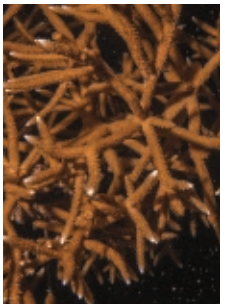
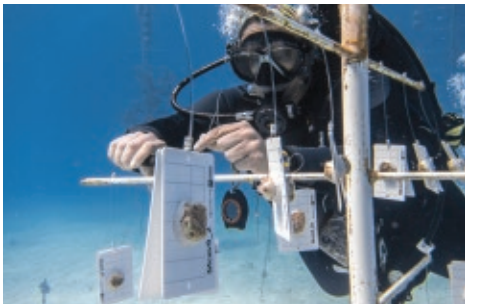




Make A Difference, Restore A Reef

coralrestoration.org | (305) 453-7030 | 5 Seagate Boulevard, Key Largo, FL 33037

Email for more information: info@coralrestoration.org