CORAL RESTORATION FOUNDATION™

ANNUAL REPORT

2018

# BUILDING FOUNDATIONS

# RAISE THE REEF

## APRIL 18 2020

CORAL RESTORATION FOUNDATION™
8TH ANNUAL GALA

### CELEBRATING 5 YEARS WITH OCEAN REEF CLUB

Sponsorship opportunities are now available!
Contact Martha Roesler at martha@coralrestoration.org

PLANT A CORAL, RESTORE A REEF

# CORALPALOOZA™ 2020

# WORLD OCEANS DAY

## JUNE 6, 2020

**Sponsorship opportunities are now available!**
Contact Roxane Boonstra at roxane@coralrestoration.org

# BUILDING **FOUNDATIONS**

*Coral reefs are the foundation of biodiversity in the oceans. By restoring reefs, we are re-building an ecological backbone that marine life depends on for survival.*

In a healthy, robust ecosystem all diverse parts are in balance. The actions and impacts of each component serve to support the functions of the ecosystem as a whole.

This is the foundation of an ecosystem's success and survival, and the foundation of its capacity to evolve.

Today, like an interconnected ecosystem, the various components of Coral Restoration Foundation's™ programs work to support each other.

Our holistic approach to coral reef restoration mimics the very ecosystem we are working to recover.

This is how we build the foundation for an effective response to a complex problem. This is how we will prevent the first extinction of an entire ecosystem in human history.

## CONTENTS



*Images thanks to: Alexander Neufeld (AN) & Sara Nilsson (SN)/ Coral Restoration Foundation™*

***FRONT COVER** Two-year old elkhorn colonies thriving at Carysfort Reef (AN)*

***LEFT:** A diver secures a Coral Tree™ in the CRF™ Tavernier Nursery (SN)*

# FROM OUR **CEO**

> Strong foundations are critical for all communities of practice. In 2018 the Coral Restoration Foundation™ consolidated the developments of the past few years, securing a foundation upon which we have already begun to build.

It is a testament to how much Coral Restoration Foundation™ has evolved, that, as 2019 begins, we are welcoming Scott Graves as our new Chief Operating Officer.

The vision that we set for the organization is coming to realization. An inspired strategic approach, coupled with a balanced and integrative program design, is bearing fruit; we are harnessing the power of our programs to support each other. And this is what is helping to propel us closer to achieving our goals.

As we shore up our foundations within the organization, we are also cementing relationships in the wider community as well. Local and international stakeholders are increasingly embracing the mission as their own, contributing extraordinary resources and support. We are now able to share our expertise even more widely; in 2018 we brought together the global restoration community at Reef Futures, and are offering more opportunities for people in Key West to join our mission.

The organization is now moving into the future from a strong and stable core, grounded in best practices, robust collaborative alliances, and an unparalleled reputation in the field of coral restoration. There is hope for coral reefs. We are laying the foundations.

**R. Scott Winters**
Coral Restoration Foundation, Chief Executive Officer



*LEFT: One of the last few natural elkhorn thickets in the Florida Keys, photographed before Hurricane Irma in 2017 (AN)*

**Feburary 14**
***OkCoral* RELEASE**
We release our ground-breaking citizen science app

**April 28**
**RAISE THE REEF 2018**
Coral Restoration Foundation™ 6th Annual Gala

**June 8**
**CORALPALOOZA 2018**
The 4th annual World Oceans Day celebration of restoration

**June 21**
**WE SET A RECORD**
We plant our 12,366th coral; more than in any other year

**July 26-31**
**CORAL SPAWNING**
Scientists visit CRF™ to conduct vital research

**September 22**
**KEY WEST TRAINING**
Our first volunteer orientation in Key West

**October 12**
**BOULDER CORALS**
We outplant our first boulder corals at Carysfort Reef

**December 10-14**
**REEF FUTURES 2018**
The first global symposium dedicated to reef restoration

CORAL RESTORATION FOUNDATION™

# OUR 2018

# CONTACT


www.coralrestoration.org
info@coralrestoration.org
(305) 453 7030


***LEFT:*** *Tom Moore gives the opening address at Reef Futures 2018 (SN)*

# RENEWING HOPE FOR CORAL REEFS AROUND THE WORLD

**In 2018, Coral Restoration Foundation™ co-hosted the first global conference dedicated to coral reef restoration. Our leadership role in the Coral Restoration Consortium is allowing us to use our work to support a radical scaling-up of global action for the restoration of coral reefs.**

Written by Laura La Beur

*"At Reef Futures we were given an opportunity to share local successes and turn them into global solutions.*

### A Climate in Crisis

While immediate and aggressive action on climate change is paramount for the long-term survival of corals, repopulating degraded reefs with resilient, genetically diverse, and reproductively-viable corals is also essential. Now, restoration practitioners are coming together to scale up these vital efforts.

### A Future for Coral Reefs

The first global conference to address coral reef restoration and intervention science took place from December 10th to 14th, 2018 in Key Largo, Florida. It brought together over 550 leading scientists and experts from nearly 40 countries.

### It Takes a Village

This groundbreaking symposium tackled the challenges facing the planet's coral reefs by sharing solutions, new research, experimental techniques, and promoting collaboration between global leaders in the field.

CRF's™ coral conservation and reef restoration interns had a pivotal role in organizing and running almost every aspect of the event. They were also invited to participate as valuable members of the conference. CRF™ intern Kristin Anderson presented her intern project as a poster at Reef Futures. She says, "It was amazing to see so many different scientific perspectives on furthering restoration techniques. It was an honor to be included among them."

### Champions of Change

Despite the scale of the response required to address the crisis, the atmosphere at Reef Futures 2018 was undeniably optimistic. Though we have lost 50 percent of the world's coral reefs in the last 30 years, the attendees at this pioneering symposium represent a highly-motivated community taking tangible action on the front line of the crisis.

Alexander Neufeld, CRF's™ Data Manager debuted our photomosaic initiative at the Monitoring Assessment Technology and Tools concurrent session. He says, "The most rewarding part of Reef Futures was to see the international coral community come together in such a hopeful way. It was inspiring. I am proud to be a part of an organization that played such a large role in making it happen."

Scott Winters, CEO of the Coral Restoration Foundation™ and Co-Chair of the Coral Restoration Consortium, gave some insight into the practical reasons why the energy was so positive:

"Reef Futures took place right next to Key Largo's famous Carysfort Reef – an iconic example of a reef in crisis. But, Coral Restoration Foundation™ is demonstrating that Carysfort Reef could soon become an iconic example of a reef restored, thanks to significant commitments from organizations like Ocean Reef Club and NOAA. With continued collaborations like this, and ongoing support, Reef Futures has revealed that we now have the opportunity to use these kinds of examples to change the game for coral reefs around the world."

Tom Moore, Coral Restoration Lead at NOAA's Restoration Center and Co-Chair of the Coral Restoration Consortium, noted, "The challenge of saving the world's coral reefs is huge. We know restoration and resiliency are part of the solution. We know the challenge is just as much about engineering as it is biology. At Reef Futures we were given an opportunity to share local successes and turn them into global solutions."

*"Reef Futures brought together emerging and established restoration practitioners, researchers, industry leaders, and students all working in this field. As a community of practice we are able to work together to push this field forward and work towards large-scale solutions for a large-scale problem."*

**JESSICA LEVY**
CRF Restoration Program Manager & Planning Committee Co-Chair

The Reef Futures 2018 Symposium was presented by NOAA and RRAP, hosted by the Coral Restoration Consortium, Coral Restoration Foundation™, and Ocean Reef Club, and sponsored by Iberostar Hotels & Resorts, The Henry Foundation, The Ocean Foundation, The Nature Conservancy, Coral Restoration Foundation™, Paul Allen Philanthropies, International Society for Reef Studies, Mote Marine Lab, SECORE International, Herbert W. Hoover Foundation, Ocean Reef Club, and others.

## THE CRC STEERING COMMITTEE 2018

**R. Scott Winters** (Co-Chair)
Coral Restoration Foundation

**Tom Moore** (Co-Chair)
NOAA Restoration Center

**Tali Vardi** (Coordinator)
NOAA Fisheries Office of Science and Technology

**Jessica Levy** (Coordinator)
Coral Restoration Foundation

**Meghan Balling** (Coordinator)
NOAA Restoration Center

**Luis Solorzano**
The Nature Conservancy

**Dirk Petersen**
SECORE International

**Diego Lirman**
University of Miami

**Ilsa Kuffner**
U.S. Geological Survey

**Monica Borobia and Lucie Labbouz**
UN Environment-Caribbean Environment Programme

**Les Kaufman**
Boston University

**Dave Vaughan**
Mote Marine Laboratories

**Phanor Montoya**
Corales de Paz

**Anastazia Banazak**
Universidad Nacional Autónoma de México

**Andrew Ross**
Seascape Caribbean

**Gabriela Nava**
Oceanus AC

# BUILDING A FUTURE
## FOR CORAL REEFS

We are taking an active, ecosystem-level approach to reef restoration, restoring both abundance and genetic diversity to reefs of the Florida Keys.

- We grow and outplant **genetically diverse, critically endangered** corals to restore reef sites to a healthy state.
- Our outplanted corals are **spawning naturally,** kick-starting the reefs' natural processes of recovery.
- Our **program partners** include government agencies, non-profits, academic institutions, and private enterprise.
- As a result of our program's success, Coral Restoration Foundation™ has become a **resource for other organizations** seeking to implement reef restoration programs in their local waters.
- In 2018, **we provided restoration infrastructre and training** to organizations from more than 40 countries.

## LARGE-SCALE **PROPAGATION**

### CORAL TREE NURSERIES

We invented the Coral Tree™ to efficiently propagate large numbers of corals.

This technology is now considered one of the best methods in the word for growing branching corals.

### ACTIVE RESTORATION

Over the last 11 years, we have planted more than **80,000** corals onto the Florida Reef Tract.

## REGENERATING **ECOSYSTEMS**

### RESTORATION SITES

We are currently working to fully restore eight reef sites along the Florida Reef Tract.


### FACTS & FIGURES 2018

- **23,021** Corals Outplanted:
  - **10,723** Staghorn corals
  - **11,818** Elkhorn corals
  - **480** Boulder corals
- **7** Coral Tree™ Nurseries:
  - 3 Production nurseries
  - 4 Special project nurseries
- **8** Reef Sites
- **720** Coral Trees™

***THIS SPREAD:*** *A CRF™ diver tends the Carysfort Coral Tree™ Nursery (AN)*


# OUR METHODOLOGY

## PROPAGATION

To grow large numbers of corals for ouplanting, we take advantage of the way in which corals reproduce asexually through fragmentation. When a coral breaks, the separate pieces will grow into new, genetically identical colonies. This is known as propagation.

More than a decade ago, we took clippings from wild coral colonies to begin propagating them. Now, our stock is self-sustaining.

## CORAL TREES™

The Coral Trees™ we invented are tethered to the ocean floor and buoyed with a subsurface float.

They float in the water column and are able to move with wave surges and currents. This helps prevent damage to the tree structures and corals by absorbing the wave energy.

Coral fragments are hung from the branches of the trees using monofilament line.

We clean the trees regularly so that the corals do not have to compete with any other organisms for space or food.

Suspended in the nutrient- and sunlight-rich water column, the fragments of *Acropora* corals on our Coral Trees™ grow into colonies that are large enough to be planted onto the reef in just six to nine months.

## REEF READY

After the coral colonies have reached "reef ready" size, they are removed from the Coral Tree™, tagged, and taken to a carefully selected site.

At the site, they are grouped into clusters of around 10 corals of the same genotype. Each cluster occupies the size of a hula hoop.

They are attached directly to the substrate using a two-part marine epoxy.

## MONITORING

Our Science Program then monitors the corals one to three months after outplanting and one year after outplanting.



# DIVERSITY IN OUR NURSERIES

***LEFT TOP:*** *The Tavernier Coral Tree™ Nursery is the largest in the world, covering 1.5-acres of sea floor (SN)*

***LEFT BOTTOM:*** *CRF™ intern, Kristin Anderson, returning staghorn corals to the wild (AN)*

**In order for restoration efforts to be successful in the long term, it is essential that the corals we outplant are genetically diverse. We are currently working with 323 coral genotypes across 11 species.**

Healthy reefs rely not only on a diversity of species but also on genetic diversity within each species. Genetic diversity results in resilience; it is vital in mitigating risks associated with inbreeding, including genetic mutations and the inability of coral populations to adapt to dynamic environmental conditions.

Our nurseries have now become a vital repository of genetic diversity for corals whose populations are in a spiral of decline – our genetic ark comprises the world's largest genetic "bank" of corals. Some of these genotypes can now only be found within our genetic bank, as they have unfortunately been lost in the wild.

## ACROPORIDS

The majority of our nursery stock consists of the reef-building, branching corals *Acropora cervicornis* and *Acropora palmata*.

These were once the Caribbean's dominant reef-building corals. Populations of both have **declined by as much as 95%** in the Caribbean in the last **40 years**, and both species are now listed as "Threatened" under the U.S. Endangered Species Act (ESA), and as "Critically Endangered" on the IUCN Red List of Endangered Species, one step away from "Extinct in the Wild".

## BOULDER CORALS

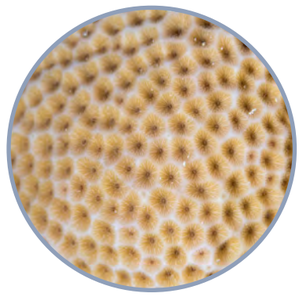
We have scaled up our propagation of the two species of boulder corals: *Orbicella annularis* and *Orbicella faveolata*. Boulder corals are important reef stabilizers. Within the past **20 years**, the boulder star coral has seen more than a **50% decrease** in population and is now listed as "Endangered" on the IUCN Red List.

In 2018, we developed and implemented outplanting methods for boulder corals and began reintroducing them to Carysfort Reef.

## PILLAR CORAL

We are one of a handful of collaborative organizations that that are housing living colonies of pillar corals, *Dendrogyra cylindrus*. This species is now thought to be functionally extinct in the wild in Florida.

We have slowly begun to propagate this species in the confines of the nursery, so that we will be ready to return them to the Florida Reef Tract.



## OTHER SPECIES

Our nurseries also contain populations of *Porites porites* (a finger coral), *Porites astreoides* (a massive), *Occulina diffusa* (a branching coral), and *Siderastrea siderea* (a massive). These species found a home in our nurseries after we undertook some mitigation work in collaboration with the Florida Keys Electric Cooperative in 2016. Populations of all these species are in decline around the world.

# REBUILDING ECOSYSTEMS: BOULDER CORALS

**A devastating disease outbreak is killing boulder corals along the Florida Reef Tract. These important reef stabilizers used to be abundant here, but their populations are now in crisis. We have already begun reintroducing them.**

Written by Laura La Beur

*__ABOVE:__ CRF™ Restoration Associate, Tommy Paige, makes adjustments to a Boulder Coral Tree™. Image: Garrett Fundakowski*

*__RIGHT__: Just one month after outplanting, these little colonies of O. annularis are beginning to fuse together. Image: Dan Burdeno*

*“By the close of 2018, we had 70 Boulder Coral Trees™ in the nursery!*

In 2018, we successfully began reintroducing boulder corals to Carysfort Reef. With the 36 genotypes of both *O. annularis* and *O. faveolata* in our coral nurseries, we can ensure that even if these species are lost to disease and other anthropogenic pressures in the wild, we are now able to reintroduce a genetically diverse population to their native range.

**Restoring Ecosystem Functions**
Research shows that on reefs which host a high diversity of coral species, all species of coral fare better. By adding a third and fourth species to our restoration sites, we are rebuilding reef resilience.

**Innovative Design**
We had to adapt our traditional Coral Trees™ to accommodate these new species. The newly designed Boulder Coral Trees™ have trays suspended horizontally in the water column.

We propagate the boulder corals on cement plugs, so the corals can spread out along the plug, and can be transplanted directly into the reef.

By the close of 2018, we had 70 Boulder Coral Trees™ in the nursery, each with space for 400 plugs of boulder coral.

**What Happens Next?**
Restoration Program Associate Dan Burdeno has been pivotal in driving our boulder coral program forward. He says, “We’re perfecting our nursery growing techniques and structures to be able to meet our restoration strategy of outplanting boulder corals at ecologically significant levels. We are working towards restoring ecosystem functionality.”

# AN ICON IN RECOVERY: CARYSFORT REEF

*ABOVE: Healthy outplanted elkhorn colonies at Carysfort Reef bring new life and color to the degraded substrate (AN)*

*LEFT: The famous lighthouse sits above a reef in crisis (AN)*

**This iconic reef now has a future. In 2018, it was repopulated with 7,541 new corals, including two new, reef-stabilizing species of boulder coral. We have now returned 14,669 corals to Carysfort Reef since 2015, halting and reversing its decline.**

Written by Laura La Beur

*"This site is an excellent example of what restoration goals for the rest of the Keys should look like.*

We are reintoducing more corals to Carysfort Reef than we are to any other restoration site. As a result, it is slowly becoming one of the healthiest reef sites along the Florida Reef Tract.

**A Collaborative Effort**

The ecological impact we are able to make at this famous location is only possible thanks to Ocean Reef Club. Their backing has been pivotal in this vital effort. Through a five-year partnership that directly supports the restoration of Carysfort Reef, Ocean Reef Club has demonstrated a genuine investment in the future of this precious ecosystem. This collaboration means that Carysfort Reef will gain a total of 30,0000 corals by 2020.

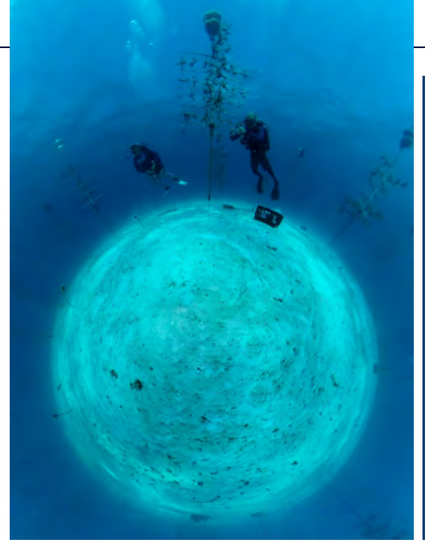
**Boulder Corals Returning**

In a first for Coral Restoration Foundation™, 480 boulder corals were successfully reintroduced to Carysfort Reef in October 2018. After one month, more than 98% of them were thriving, and after 3 months they had begun to fuse together. As a result of this success, we plan on ramping up the numbers of these new species; in 2019 we plan to outplant up to 1,500 more boulder corals to this iconic reef.

**Demonstrating Success**

This year alone, the site has been repopulated with 4,346 staghorn, 2,715 elkhorn, and 480 boulder corals – corals which are healthy and thriving! Overall, the one-month survivorship of corals planted at Carysfort is 90%. Our photomosaic monitoring project is also revealing an increase in coral coverage on the reef.

High survivorship, healthy corals, and fast growth rates mean this site is an excellent example of what restoration goals for the rest of the Keys should look like. With ongoing support those goals are now within reach.



## KEY RESTORATION PARTNERS

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)**
Our 3-year restoration plan is funded by NOAA. The plan coincides with the needs of the NOAA-published Acropora Recovery Plan.

**NOAA RESTORATION CENTER**
NOAA RC has been pivotal in providing guidance, advice, and input on decision-making. Through the CRC, their team helped to run Reef Futures 2018 at ORC.

**THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION (FWC) & THE FLORIDA KEYS NATIONAL MARINE SANCTUARY (FKNMS)**
FWC and FKNMS provde the permits that make our work possible.

**OCEAN REEF CLUB**
ORC has been a key partner in the ongoing restoration of Carysfort Reef, one of the healthiest reefs along the Florida Reef Tract. Ocean Reef Club also co-hosted Reef Futures 2018, and continue to welcome us for our annual gala.

**GEORGIA AQUARIUM**
Our solid partnership with the Georgia Aquarium around our restoration efforts continues, with joint quarterly trips during which we focus on nursery maintenance, expansion, and outplant efforts.

**FLORIDA KEYS COMMUNITY COLLEGE**
Our internship program with FKCC enables three interns to assist in our nursery and restoration operations based in Key West, which include guiding divers, outreach events, and monitoring efforts.

**CORAL RESTORATION CONSORTIUM**
Through our leadership role in the CRC, we have been helping to facilitate information exchange and build on the opportunites presented by this community of collaboration.

**CARIBEE BOAT SALES & MARINA**
Invaluable support for our infrastructure has been provided by the team at Caribee. They helped facilitate the purchase of new engines, and regularly provide routine maintance for our working vessels, free of charge.

***ABOVE LEFT:*** *Our blue planet: Harvesting corals for outplant from the Tavernier Coral Tree™ Nursery - the largest in the world (AN)*

***RIGHT:*** *Our restoration efforts are scaling up thanks to relationships with companies like Petco - sponsors of the mission in 2018 (AN)*

## 2018 HIGHLIGHTS

### OUTPLANT NUMBERS
After Hurricane Irma impacted our nursery stock at the end of 2017, reaching our outplant goal in 2018 was a huge success. Despite the enormous setback, we were able to rebuild, refragment, and regenerate our staghorn stock to support our outplant needs in 2018.

This was possible as a result of a number of critical factors:

- The exceptional standards and processes that had been put in place throughout the last few years
- Having the right team, pulling together
- A larger body of interns and volunteers which enabled us to run more working boats
- Our new focus on eight restoration sites which enabled us to concentrate our time

### CORAL RESTORATION CONSORTIUM
As the hosts of Reef Futures 2018, we established our leadership position within the CRC, and within the world's restoration community as a whole.

### KEY WEST NURSERY OVERHAUL
We fully revamped our Coral Tree™ Nursery in Key West, adding more trees, and more genotypes. This nursery is critical to our efforts in the lower keys. As a result we now have expanded opportunites for multiple programs in this area.

### BOULDER CORALS
One of the biggest milestones of the year was the inclusion of boulder corals to our outplant roster. This was a project that has been several years in the making, as we have been developing new Coral Tree™ structures, and growing out stock. By reintroducing a greater diversity of species, we are taking an ever more holistic approach to coral reef restoration.

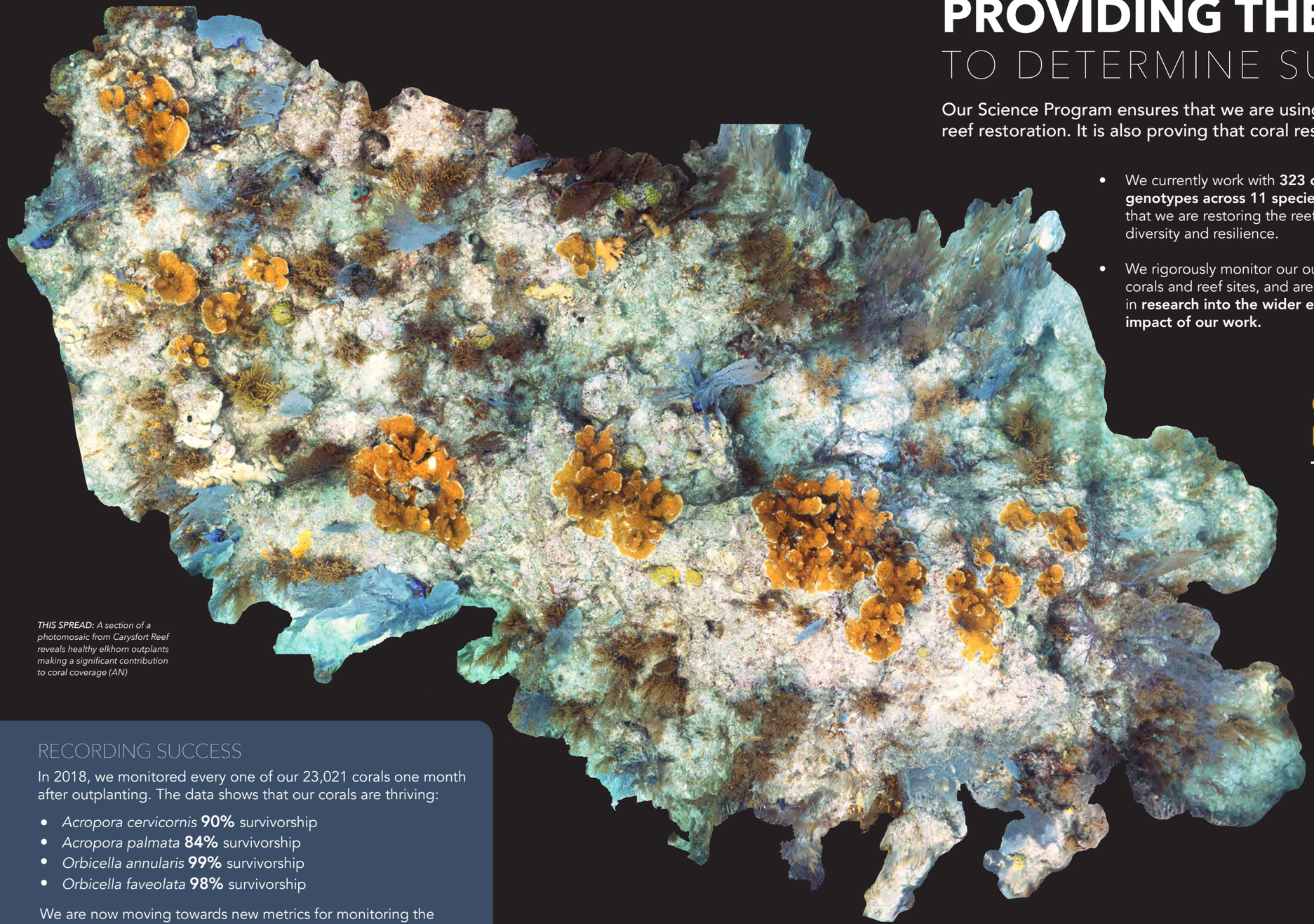
## INTO 2019

- Developing **innovative new outplanting methods** so that we can hit our highest outplant goal to date. We aim to return just under 30,000 viable coral colonies to eight reef sites in 2019.
- **Scaling up our boulder coral restoration efforts,** expanding our genetic bank in order to house more corals from outside our current stock, and reintroducing more boulder corals to more restoration sites.
- Evolving our programs through collaborations with other restoration practitioners through the **Coral Restoration Consortium.**

# PROVIDING THE DATA
## TO DETERMINE SUCCESS

Our Science Program ensures that we are using the best practices possible for reef restoration. It is also proving that coral restoration works.

- We currently work with **323 coral genotypes across 11 species** to ensure that we are restoring the reefs' genetic diversity and resilience.
- We rigorously monitor our outplanted corals and reef sites, and are involved in **research into the wider ecological impact of our work.**
- This data informs our strategic development, and the **research provides a focal point for collaborations** with government agencies including NOAA, universities, NGOs, and others.
- We supply scientists from around the world with a **unique resource for research** into coral reefs.



*THIS SPREAD: A section of a photomosaic from Carysfort Reef reveals healthy elkhorn outplants making a significant contribution to coral coverage (AN)*

### RECORDING SUCCESS

In 2018, we monitored every one of our 23,021 corals one month after outplanting. The data shows that our corals are thriving:

- *Acropora cervicornis* **90%** survivorship
- *Acropora palmata* **84%** survivorship
- *Orbicella annularis* **99%** survivorship
- *Orbicella faveolata* **98%** survivorship

We are now moving towards new metrics for monitoring the ecosystem-level impact of our work.

### GENETIC **BANK**

**FUTURE-PROOFING**

We manage the world's largest ark and database of coral genotypes – some of which have now been lost in the wild.

We have exhaustive genetic information on every coral that passes through our nurseries.

We are working with multiple partners to make this information available to the public through an open source database.

***THIS PICTURE:*** *CRF™ Data Intern, Garrett Fundakowski, swims a transect capturing images for a photomosaic (AN)*

***BELOW:*** *A CRF™ researcher monitors the corals growing on a Coral Tree™ (SN)*

# OUR RESEARCH FOCUS

### 1) CORAL NURSERIES
Data we collect around our coral propagation methodologies for the 11 species we work with helps us increase our efficiency and the number of nursery-raised corals that can be successfully outplanted.

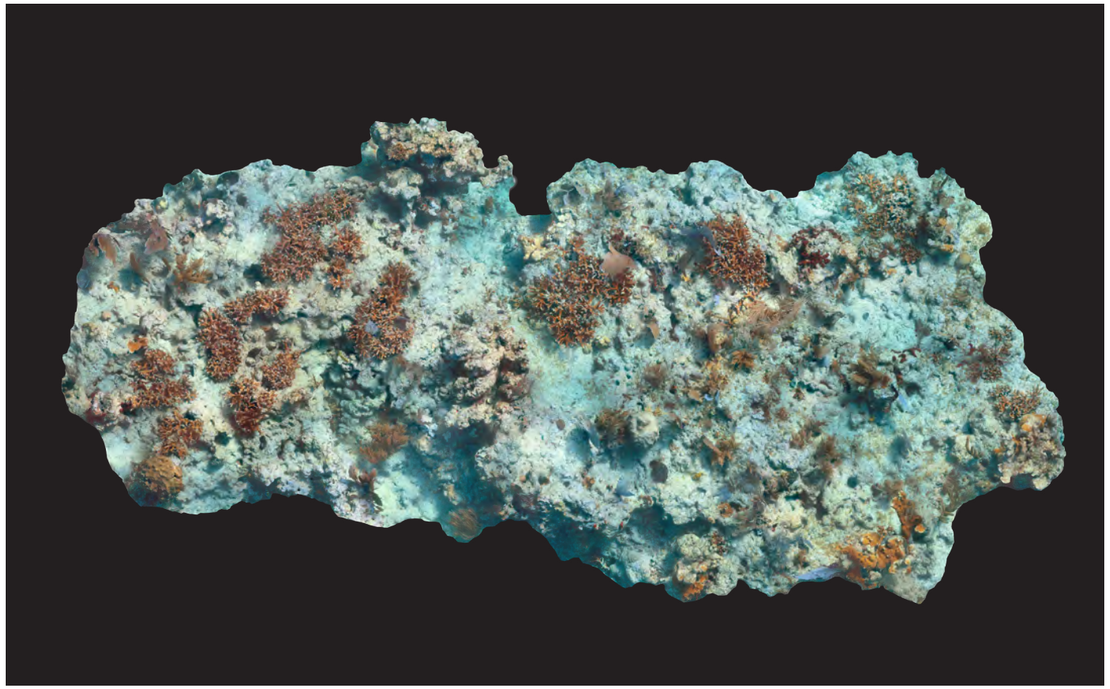
### 2) OUTPLANTING METHODS
We are currently involved in research and development to allow us to move the overabundance of corals we are cultivating into the wild, more efficiently.

### 3) MONITORING TECHNIQUES
We are harnessing the power of technology to drive our monitoring methodology into the future. More efficient techniques are also allowing us to assess the ecosystem-level impacts of our work.

### 4) SUITABLE RESTORATION SITES
Ongoing research seeks to better understand why some sites exhibit a higher survival rate for outplanted corals than others. Identifying increasingly suitable restoration sites is a priority that was highlighted by the Coral Reef Ecosystem Restoration Working Group, during a review of the Florida Keys National Marine Sanctuary management plan.

### 5) GENETIC RESILIENCE
Our research tracks how different coral genotypes (and their associated microbes and symbionts) correlate with growth and condition, and the success of different outplant methodologies.

### 6) COMMUNITY STRUCTURE
The monitoring of our outplanting sites demonstrates how ecology impacts restoration success. Specifically, we can assess how other organisms and reef topography affect the condition of outplanted corals.



# EYE ON THE ECOSYSTEM: PHOTOMOSAICS

***ABOVE:*** *This section of a photomosaic from North Dry Rocks shows how our outplants are providing increased coral coverage (AN)*

**As our corals grow and fuse together, counting the survivorship of individual corals no longer provides relevant data. In 2018, we completed photomosaics for all eight of our restoration sites; these give us a means to assess the area of reef we are restoring.**

*“Photomosaics allow us to scale our monitoring efforts to an ecosystem-level scale, in accordance with our ever-increasing restoration efforts.*

As CRF’s outplanting efforts increase from hundreds to thousands of corals per reef each year, our monitoring efforts must scale similarly.

Old methods of swimming transects and monitoring individual corals are no longer cost-effective, nor do the metrics they capture tell the full story of restoration successes and failures. Photomosaics allow us to scale our monitoring efforts to an ecosystem-level scale, in accordance with our ever-increasing restoration efforts.

**Proving the Method**

To evaluate this new method, we had our photomosaics and science datasets independently analyzed. The results showed that our photomosaic technique was able to capture the survivorship of our corals to within 5% of the value achieved by our traditional method while only using half the number of dive hours.

The software used also created maps of 2D coral cover on the reef and generated maximum and minimum diameter measurements for each coral in a transect. This allows us to start recording increases in coral coverage - a much better metric for our mission.

**Efficiency and Collaboration**

Swimming 2000m$^2$ for each of our restoration sites is physically demanding. In 2019 we will be incorporating DPVs (Diver Propulsion Vehicles) into the process for aquiring full-size reef mosaics.

The most time intensive part of the process is computer stitching the images to create the mosaics. We are in talks with various academic institutions and companies like Microsoft to obtain access to more computing power and cloud storage.

**Looking Ahead**

In 2019, we will be establishing photomosaics as the primary method for monitoring our outplanted corals. We will also be creating a Standard Operating Procedures Document that will be made publicly accessible as a white paper, so that other restoration practitioners around the world can benefit from lessons we have learned.

LONG-TERM SUCCESS

**Michael Stoskopf**
**North Carolina State University**
Michael Stoskopf investigated markers of transport stress on different staghorn coral genotypes. This project established metabolic fingerprints of genotypes in the nursery and then compared them after transportation. This pilot study may help us find ways to reduce transport stress on our corals, improving survivorship.

**Joana Figueiredo**
**Nova Southeastern University**
Joana Figueiredo utilized a high resolution model to estimate larval dispersal and connectivity patterns in the Florida Reef Tract and then developed a tool to assist reef managers in selecting optimal sites for restoration.

**Scott Graves**
**Florida Aquarium**
Scott Graves and partners participated in a large-scale spawning effort in CRF's Tavernier Nursery. Using CRF broodstock corals, the teams harvested gametes and reared the coral recruits in land-based facilities. These sexual reproduction efforts help to increase the genetic diversity of these endangered corals.

SPAWNING

**Bill Hoffman**
**Smithsonian Marine Station**
Bill Hoffman and the Smithsonian Marine Station introduced different genotypes of staghorn coral into an Atlantic coral reef model ecosystem in an effort to attain viable larvae with existing staghorn corals.

**Matz Indergard**
**University of North Florida**
Matz Indergard looked at acclimatization ability of corals and its effect on outplanting success. He wanted to determine if outplanting success can be increased by administration of short-term heat stress prior to outplanting. The survival of the outplanted coral fragments is being monitored for one year.

CORAL NURSERIES

COMMUNITY STRUCTURE

**Les Kaufman**
**Boston University**
Les Kaufman is monitoring ecological processes on restored versus unrestored reef habitats. The primary goal of this study is to understand the value added by restoring branching and massive corals together. Secondary goals include assessing community structure, ecological function, and ecosystem service flow of restoration efforts.

# RESEARCH COLLABORATIONS

**We work with leading researchers, universities, scientists, and other organizations to help answer the questions that will advance our coral restoration goals.**

We are in the unique position of being able to provide investigators with corals from our nurseries, as well as limited field support, for experimental work that is aligned with our research priorities.

In the past year, we have worked to facilitate collaborations with these 15 research partners.

SUITABLE RESTORATION SITES

**Elizabeth Brown**
**Florida Institute of Technology**
Elizabeth Brown visited 50 outplant sites to collect depth profiles, as well as conduct roving coral surveys of wild populations for model validation. She analyzed survivorship data in combination with environmental and methodological data across various reef sites to evaluate the most suitable outplant sites.

**Dana Williams**
**National Oceanic and Atmospheric Administration (NOAA)**
Dana Williams evaluated the microbiome signatures that help us identify disease-resistant corals among nursery raised coral outplanted to natural reef habitats over time and at multiple reef sites. She will also be integrating environmental data collected by sensors deployed on the reef sites to accompany microbiome analysis.

**Ilsa Kuffner**
**United States Geological Survey (USGS)**
Ilsa Kuffner is calculating calcification rates for elkhorn corals over spatial and temporal scales. This data can help us understand why some sites may be better suited for restoration activities than others. Four monitoring sites were selected throughout the Keys, and outplants will continue to be monitored.

INNOVATION

**Raquel Gilliland**
**Stetson University**
Raquel Gilliland developed a series of maps to answer geographic questions relating to Coral Restoration Foundation™ monitoring data. In particular, she investigated pre- and post-Hurricane Irma data to analyze the effects of the Category-4 hurricane on CRF's Coral Tree™ nurseries.

**Jon Wilker**
**Purdue University**
Jon Wilker is testing the efficacy of using biological adhesives for bonding coral outplants to reef sites using materials modeled after the glues manufactured by shellfish to stick to their respective substrates. This study will provide insight into innovative outplanting technologies and provide alternatives to traditional outplanting methods.

**Jamie Quirke**
**Galway-Mayo Institute of Technology**
Jamie Quirke is assessing the survivorship of outplanted staghorn and elkhorn corals across our eight reef restoration sites, and across 100 different genotypes of coral. He is also investigating whether outplanter skill level plays a role in colony survival over time.

*ABOVE: Coral Restoration Foundation™ Science Program Manager, Amelia Moura, prepares broodstock corals for research*
*Image: Florida Aquarium*

# SEEDING REEFS: CORAL SPAWNING

**Spawning corals show that natural recovery is possible. By giving evolutionary processes a helping hand, we can assure a future for the reefs of tomorrow.**

Written by Laura La Beur

We have come a long way from the first recorded spawning of outplanted corals in 2009 at our "Wellwood Site" off Molasses Reef. Since then, we have recorded spawning at multiple outplant locations – strong evidence that our methods are working! Our broodstock corals in the nursery also spawn every year, and provide a unique opportunity to study this extraordinary event.

In July 2018, scientists from Florida Aquarium, Georgia Aquarium, SEZARC, Mote Marine Lab, SeaWorld, Nova Southeastern University, University of Florida, and Horniman Museum and Gardens visited us in Key Largo to collect coral gametes in collaboration with CRF™ and Keys Marine Lab.

### Synchronized Spawning

Every year, corals within the genus *Acropora* synchronize broadcast spawning. Across Florida and the Caribbean, these animals simultaneously release clouds of gametes into the water on evenings surrounding the late-summer full moon. This process is vital for the health of wild coral populations as it creates new genetic strains and expands the geographic distributions of these critically endangered species.

### Nursery Prep

While most spawning research has to rely on corals spread out across reefs in the wild, our nursery is unique in that we have a reliable group of broodstock corals that spawn every year. We also have comprehensive genetic information about the corals in our nursery, which is valuable to spawning researchers interested in creating new genetic strains.

We use novel techniques to determine coral spawning readiness. By dissecting our corals, we determine gamete maturity, which allows us to predict when spawning will occur.

### In the Lab

In 2018, we loaned large broodstock corals to our partners stationed at Keys Marine Lab, allowing scientists to observe spawning in a controlled setting.

Supplementing field spawning in the laboratory reduces transport stress for gametes and allows us to observe spawning even in poor weather conditions. Researchers are guaranteed a collection of coral gametes.

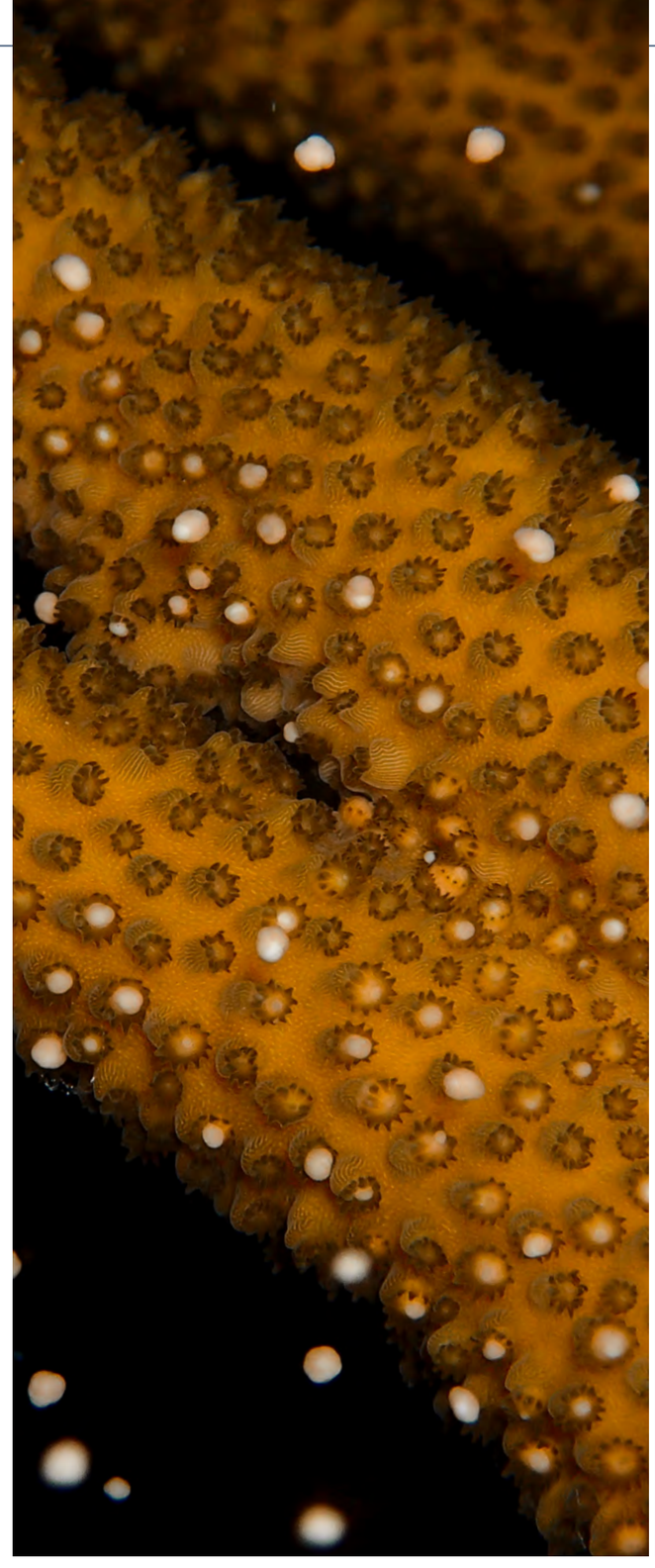
### Spawning Success

Corals raised from gametes collected at our facilities are thriving with organizaitons around the world.

We are now gearing up for the 2019 spawning season, which promises to offer even more opportunities to learn about this extraordinary phenomenon.

> *"We determine gamete maturity, which allows us to predict when spawning will occur.*





*LEFT: Staghorn corals releasing their gametes.*
*Image: Jessica Levy*

# PUBLICATIONS

Our expertise and infrastructure provided critical resources for studies published in five peer-reviewed publications in 2018.

**Marine Ecology Progress Series**
March 29, 2018

*Impacts of fragment genotype, habitat, and size on outplanted elkhorn coral success under thermal stress*

Authors: Rachel E. Pausch, Dana E. Williams, Margaret W. Miller

**Nova Southeastern University**
April 27, 2018

*Toxicological effects of commercial sunscreens on coral reef ecosystems: New protocols for coral restoration*

Author: Emilie C. Johnsen

**Ecology and Evolution**
October 5, 2018

*Coral epigenetic responses to nutrient stress: Histone H2A.X phosphorylation dynamics and DNA methylation in the staghorn coral Acropora cervicornis*

Authors: Javier A. Rodriguez-Casariego, Mark C. Ladd, Andrew A. Shantz, Christian Lopes, Manjinder S. Cheema, Bohyun Kim, Steven B. Roberts, James W. Fourqurean, Juan Ausio, Deron E. Burkepile, Jose M. Eirin-Lopez

**Biological Conservation**
November 10, 2018

*Coral restoration: Socio-ecological perspectives of benefits and limitations*

Authors: Margaux Y. Hein, Alastair Birtles, Bette L. Willis, Naomi Gardiner, Roger Beeden, Nadine A. Marshall

**IUCN/SSC Reintroduction Specialist Group & Environment Agency**
2018

*The Colorado Coralition: Engaging landlocked youth in the restoration of staghorn coral in the Florida Keys, USA*

Authors: Matt Strand, Martha Roesler, Kayla Ripple, Jessica Levy

# USING EXPERIENCE
## TO LEAD THE WAY

Using our work as an example, we inspire others to take action to improve the health of the world's reefs.

We provide everyone with practical, meaningful ways to make a difference, today.

- **Recreational Dive Programs** let all ocean lovers make a difference, while enjoying fun days out on the water working alongside our team.
- **Internships** provide university-level students with **vocational training and experience**. Our interns go on to launch exciting careers in related fields.
- Our new **educational materials complement US state standards**, and can be easily incorporated into teachers' lesson plans.
- **Presentations** at our Exploration Center, or by Skype, can be tailored for any group.
- **Volunteers** drawn from the local community contribute to our daily work, both on and off the water.

***THIS SPREAD:*** *Intern J.D. Reinbott pulls new floats into the Tavernier Coral Tree ™ Nursery as part of our development of the boulder coral section (SN)*

## WORLD-CLASS **INTERNSHIPS**

**VOCATIONAL TRAINING**

We offer vocational training to university-level interns, providing a structured learning environment as well as the opportunity to contribute on a professional level to a thriving, world-class non-profit.

### EDUCATION PROGRAM STATS

In 2018, we engaged a total of **15,642** people with our educational programs:

- **31** Interns
- **200** Volunteers
- **27,248** Volunteer Hours
- **248** Citizen Scientists
- **1,307** Visitors to the Exploration Center
- **1,628** Dive Program Participants

## EDUTAINMENT **IN ACTION**

**CAPTAIN CORAL**

A swashbuckling adventure into marine science takes learners of all ages on an explosive journey into coral conservation.

**DIVE PROGRAMS & VOLUNTEERING**

We have opportunites for everyone to join us in the water and on land, either on a regular basis as a volunteer, or for a single "restoration adventure day".

## COMMUNITY **ENGAGEMENT**

## SHINING A LIGHT: HOLISTIC EDUCATION

*ABOVE: Captain Coral's explosive show gets people excited about marine science (AN)*

**Highlighting an issue is just the first step. At Coral Restoration Foundation™, we are giving learners of all levels the tools and opportunities to allow them to make a lasting, positive difference in the world.**

*"It is essential that we equip learners with the ability to think critically and creatively.*

"In the end we will conserve only what we love; we will love only what we understand; and we will understand only what we are taught." Baba Dioum's words from 1968 are as true today as they have always been.

This adage reflects the heart of our Education Program; we empower people to save and restore coral reefs by giving them meaningful opportunites to engage with the issue. We have created a hopeful, practical, future-focused path of engagement that anyone can join at any stage.

### Creativity & Problem Solving

Effective responses to environmental challenges (such as the collapse of vital ecosystems) will come from people with transferable skills, with the ability to experiment and to problem-solve, to think critically and creatively.

Research published in the *Journal of Microbiology & Biology Education* shows that the key to giving students these tools lies in STEAM-based learning, which unites the fields of science, technology, engineering, and mathematics, with the arts.





## INTERNSHIPS

**We are helping to nurture tomorrow's leading marine scientists.**

We offer vocational training to university-level interns, providing them with a structured learning environment and the opportunity to contribute on a professional level to a thriving, world-class non-profit. Interns can expect to be challenged, mentored, and inspired, working with a dynamic team that is dedicated to helping them find their focus.

In 2018, we extended our intern training program to include training in benthic monitoring protocals (RECON), and an AAUS NAUI Coral Restoration Scientific Diver certifcation.

We welcomed 31 new interns in 2018, all of whom became aspirational role models for hundreds of younger students. Our interns are now well on their way to launching exciting careers in marine science.

### Edutainment: Holistic Education

Our 27-STEAM-based "Learning Labs" follow state standards and can be integrated into any classroom from grades K through 12. In 2018, more than 300 students from pre-school through college were exposed to these "edutainment workshops".

### Captain Coral

Taking edutainment to the next level, the Captain Coral show debuted in 2018. This swashbuckling show takes the audience on an explosive journey into marine science. It has become a hit with audiences of all ages.

### CORAL Club

In 2018, we were able to bring these holistic approaches to education into the inner city. Thanks, in part, to a grant from the Disney Conservation Fund, we began an intensive program with CORAL Club, a determined, passionate group of students from a South Broward high school.

### Reaching Out

Through social media, we now reach more than 400,000 people a month, giving them access to our growing educational initiatives.

In 2018, Coral Restoration Foundation™ impacted 15,642 leaners of all ages with our tailored education programs, outreach events, and presentations.

These developments mean that our vibrant, informative Exploration Center in Key Largo has seen its highest level of foot traffic to date.

### Building Resilience

As we move into an increasingly unpredictable future, we are supporting the resilience of the next generation. Our oceans should be in good hands.

*TOP LEFT: CRF™ Intern, Raquel Gilliland, leads a public dive program (SN)*

*ABOVE LEFT & RIGHT: Girl Scouts of Southeast Florida get hands-on at the first Captain Coral show in Key Largo (AN)*

*"We now reach more than 400,000 people a month, giving them access to our educational initiatives.*

# THE FUTURE IN YOUR HANDS: DIVE PROGRAMS

**There is no feeling in the world like returning a critically endangered animal to its natural habitat. Thanks to our local dive community, it has never been so easy to come and experience the magic.**

*ABOVE LEFT : Intern Alyssa Reed preps corals for transport (SN)*

*BELOW RIGHT: Restoration Program Associate, Dan Burdeno, moves corals for transportation to the restoration site (SN)*

*"We have been continually evolving the experience based on feedback, to make it as rewarding as possible.*

Our dive and snorkel programs give everyone the chance to become immersed in this world of hope. Now, year-round public programs, set by local dive operators, have made it incredibly easy for anyone to experience a restoration adventure.

**This is Community Support**
Signing up at the click of a button, 1,628 people joined us in 2018. Together, they reintroduced 1,179 corals back into the wild, during a total of 17,000 hours of work.

More than 600 of these people had come back for a second or third chance to help prevent an animal from becoming extinct. This would not have been possible without the operators.

**Perfecting the Experience**
We listened to our participants during 2018, and have been continually evolving the experience based on feedback, to make it as rewarding as possible for participants.

**Private Programs**
We tailored private programs for groups from all over the country. Teachers brought their students, families forged memories, and we ran programs with organizations and clubs like DiveHeart, a scuba club for disabled young people.

**The Core of our Coral Crew**
More of our interns and volunteers – restoration experts – are now trained to guide Coral Restoration Adventures, as "Coral Crew". This is thanks to the expansion of the internship and volunteer programs.

This enriches the program immensely, giving the public a chance to enage with some of the world's most promising young marine scientists.



***THIS IMAGE:** Dive program participants planting corals at Pickles Reef (AN)*

## CORALPALOOZA™

Every World Oceans Day, we take an army of ocean lovers out for the biggest "Restoration Adventure" in the world.

In 2018, **480 divers** from the Keys and across the Caribbean took part in CORALPALOOZA™ 2018. They **outplanted 1,079 coral colonies**, **monitored 1,383 coral outplants** and **cleaned 136 Coral Trees™**.

## KEY WEST

In 2018, we launched **our first dive programs in Key West.** Groups like SNUBA and FINZ have helped us develop relationships with the supportive dive community of Hemingway's old haunt.

We are now working with Captain's Corner dive shop to offer **set dive programs in Key West in 2019.** We now have **more opportunites for volunteers** in Key West to become involved in our work.

# KEY EDUCATION COLLABORATORS

**GIRL SCOUTS OF SOUTHEAST FLORIDA**
Offering Florida's girls a future in marine science and conservation.

**REEF ECOLOGIC**
Working with us to inspire young minds at Reef Futures 2018.

**PROJECT GREEN SCHOOLS & MARINELAB**
Joining forces with these two groups helped us offer the first summer Ocean Ambassador Program.

**CORAL CLUB**
Collaborating with this South Broward after-school club has helped us to engage a new community in our mission.

**THE LOCAL NGOs COMMUNITY**
REEF, The History of Diving Museum, MarineLab, the Wild Bird Rehabilitation Center, and Debris-Free Oceans collaborated with us during CORALPALOOZA™ 2018.

**DISNEY CONSERVATION FUND, OKLAHOMA CITY ZOO & BOTANICAL GARDENS, SEAWORLD & BUSCH GARDENS CONSERVATION FUND**
Grants from these organizations helped to fund our work with CORAL Club and the *OkCoral* app, respectively.

**AMORAY, RAINBOW REEF, & CAPTAIN'S CORNER**
These dive operators began offering the first regularly-scheduled public dive programs in the Keys.

**MARCH FOR THE OCEAN**
CORALPALOOZA™ 2018 was part of the world's first "March for the Ocean" – a new global movement of activism for marine conservation.

**DIVE HEART, DIVING WITH A PURPOSE, & ROAD LESS TRAVELED**
Private programs were bolstered by relationships with these inspiring groups.

***RIGHT TOP:*** *Hands-on outplanting training for dive program participants and volunteers (SN)*

***RIGHT BOTTOM:*** *Volunteers become restoration experts (SN)*

# VOLUNTEERING

Coral Restoration Foundation™ volunteers regularly work alongside our staff and interns, all year round, on land and on the water, to further the overall mission of restoring coral reefs.

Since 2018, the local dive community has been increasingly supportive of our volunteer training, helping our volunteers gain the certifications they need to work alongside us.

Visiting volunteers also made a significant splash in 2018. Visiting volunteers are here for a minimum of three weeks at a time. Over 10 visiting volunteers joined us in 2018, from Switzerland, Germany, Belgium, Singapore and the USA. During their stay they spent almost every single day with us, actively helping to save an ecosystem.

In 2018, our 200 active volunteers accomplished a total of 27,248 hours of work, outplanted nearly 20% of our 23,000 outplants, and ran 40% of our dive programs as "Coral Crew".

# 2018 HIGHLIGHTS

**PLASTIC FREE TREE DESIGN CHALLENGE**
Our first state-wide student challenge (in association with Titan Aquatics, The Reef Institute, and others) saw more than 100 schools download the Learning Labs.

**GIRL SCOUTS OF SOUTHEAST FLORIDA PARTNERSHIP**
A series of 24 badges are now in development with the Girl Scouts of Southeast Florida. By the end of the program, the girls will have received as much training in coral restoration techniques as our interns.

**KEY WEST DIVE PROGRAMS**
We launched regular dive programs in Key West - giving more people than ever before a chance to get involved.

**OkCoral**
More than 250 people downloaded our new citizen science app, OkCoral, bringing fresh new engagement with our mission.

**OCEAN AMBASSADOR PROGRAM**
We held the first Ocean Ambassador Summer Camp, inspiring and educating young minds from around the country, in association with Project Green Schools and MarineLab.

**REEF FUTURES YOUTH WORKSHOP**
Leaving no stakeholder out of the equation, at Reef Futures 2018 we hosted the Youth Futures Workshop, in collaboration with Reef Ecologic.

**THE 4th ANNUAL CORALPALOOZA™**
Nearly 500 people took part in the biggest restoration adventure on the planet.

***BELOW:*** *Interns mastering skills to qualify as scientific divers (SN)*

## INTO 2019

- Expansion of the **internship program**
- More **Captain Coral Shows**
- A **National Design Challenge**
- The **5th Annual CORALPALOOZA™** will be our biggest yet
- **New operators offering regular, public programs:** Rainbow Reef, Amoray, Silent World, Key Dives, Captain's Corner, and more
- More **volunteer training sessions on outplanting and monitoring**
- More **dive programs & volunteer opportunities in Key West**

*THIS SPREAD: The 4Ocean team visits the Tavernier Coral Tree ™ Nursery as part of their sponsorship package (AN)*

# RELATIONSHIP BUILDING

Would you like to help us preserve the legacy of our reefs?

Our work is made possible by committed, mutually-beneficial relationships with other visionary, practical, and passionate people.


**CREDIBLE PARTNERS**

Sponsors and donors can be sure of visible credibility as geniune ocean advocates.

**CAPACITY TO SCALE**

We have the ability to absorb significant funding and put it to work, to produce tangible results, backed by scientific research.

## CAUSE-RELATED COLLABORATIONS

## MEANINGFUL GIVING

To make a gift, including those of stock or a bequest, please contact our Development Department by phone at (305) 453-7030, or send an email to donors@coralrestoration.org.

# INCOME & EXPENSES

Our work at Coral Restoration Foundation™ is made possible by the generous support of individuals, corporations, private foundations, and government agencies.

The sources and allocation of our funding in 2018 are broken down as follows:

### SOURCES OF INCOME

**Total Income: $2,883,506**

Government **$921,841**

Foundations **$598,471**

Corporations **$474,365**

Individuals **$402,321**

Other **$486,508**

### EXPENSES

**Total Expenses: $2,231,697**

Program Expenses **$1,746,351**

General & Admin **$278,947**

Fundraising **$206,399**

### EXPENSES BY PROGRAM

**Program Expenses: $1,746,351**

Restoration **71%**

Science **3%**

Education **26%**

# THANKS TO OUR CONTRIBUTORS IN 2018

*ABOVE: Young staghorn outplants fusing to become thickets at North Dry Rocks (AN)*

**No contribution is too small to make a difference, and so, while it is impossible to list every contributor to Coral Restoration Foundation™, we thank everyone who has supported our mission.**

**The following individuals and groups contributed gifts of $500 or more to the organization between January 1st, 2018 and December 31st, 2018:**

- 4Ocean
- Diedre and Andrew Agustin
- Alex. Brown, a Division of Raymond James
- Marshal and Amy Allshouse
- Robert Althuis
- Amazon Smile
- American Spirits Exchange
- Paul M. Angell Family Foundation
- Anonymous (32)
- Arizona Community Foundation
- Ayco Charitable Foundation
- The Bailey Foundation
- Baker's Cay Resort, Key Largo
- Bank of America Charitable Gift Fund
- Barrette Family Fund of the New Hampshire Charitable Foundation
- Dr. Sally E. Bauer
- Don & Marta Baum
- Beastly Threads, LLC
- Benevity
- James J. and Mary L. Boilini
- Michael and Karen Brisch
- The Buchanan Family Foundation
- Caribbean Club
- Humberto Casariego and Teresa Carreño
- Lisa and Kevin Cassidy
- Michele Chan
- Cindi Clapp
- Clarendon Partners
- Clif Bar Family Foundation
- Cool Coral and Henry Hittle
- Dallas American Association of Zoo Keepers
- Craig and Cristina Decker and Family
- Debbie and Ken Dewey
- Clarence and Anne Dillon Dunwalke Trust
- Disney Conservation Fund
- EcoBee, Inc.
- Wendy and Michael Esposito
- Facebook
- FeedMe Affinty Energy & Health
- Fidelity Charitable Gift Fund
- The Fikes Family
- Firth-Link Family Foundation
- Sidney Fleck Charitable Foundation
- The Florida Aquarium
- Florida for Good
- Florida Keys Brewing Company
- Florida Keys Electric Cooperative
- Robert and Lisa Forsyth
- Stephen Frink Photographic, Inc.
- The Fund for Charitable Giving
- Glunz Ocean Beach Hotel & Resort
- Goldman Sachs Philanthropy Fund
- William Goodchild
- Stephanie Graeler
- Steve Greenwell
- Fritz Grimm
- David and Patti Gross
- Saul and Jane Gross in Memory of Joshua Gross
- An Anonymous Fund at Gulf Coast Community Foundation
- Hairstory
- Laura & Fred Hartner
- The Henry Foundation
- Dean Howard
- The Hyatt Family Charitable Fund
- Illinois Valley Reef Club
- Islamorada Charter Boat Association
- JetBlue
- Michael & Brittnee Johnson
- The J.P. Morgan Charitable Giving Fund
- JustGive
- Kansas City Zoo AAZK Chapter Kelly Foundation, Inc.
- Andy and Cathy Knudsen
- In Memory of Jake Kosowsky
- Gabriel and Angela Kwentus
- Joe La Magna
- Dorothy L. Lappin Foundation in Memory of Joshua Gross
- Lary Foundation
- Todd and Diane Lary
- Kyle Lauderdale
- Joseph E. Lipscomb and Laura Will
- Little Blue World – Kate Collier and Haley Strom
- Paul D. MacDougal
- Samar Manjeshwar
- The Edward and Gale McBride Foundation, Inc.
- The Meeker Rom Family Foundation
- Megazoo
- Mary and Barry Menne
- Mermaid Alliance
- Kate Messner
- Dr. Steven Miller
- John J. Moller Family Foundation
- Monroe County Tourist Development Council
- Douglas Morrison
- Mark Morro / Levi Brown
- The Mortenson Family
- MountainfilmMIA, Inc.
- The Charles Hazlehurst Moura Family Foundation
- MSC Cruises
- Timothy J. Mullican, DVM
- Bob Murray and Barbara Overton
- Network for Good
- NOAA's Office of Habitat Conservation
- Kevin M. Nuccitelli
- The Ocean Foundation
- Ocean Reef Club
- Ocean Reef Conservation Association
- Oklahoma City Zoo and Botanical Gardens
- Oris Watches
- The Richard Laurence Parish Foundation
- Parrot Heads of Central Florida
- PayPal Giving Fund
- Marc and Diana Pelath
- Petco Animal Supplies
- Pledgeling Foundation
- Laura Pollak and Jeff Petrinitz
- David Puyanic
- Max Puyanic
- Drew Richardson
- Brandon Robinson & The Borosilicate Glass Art Community
- Rochester Area Community Foundation
- Rock the Ocean Foundation
- Royce Family Fund
- Jessinia Ruff
- Bob and Stacy Schmetterer
- Jason Schug
- Schwab Charitable Foundation
- SeaWorld & Busch Gardens Conservation Fund
- Helen and Ritter Shumway Foundation
- The Shumway Fund of the Ocean Reef Community Foundation
- The Silver Foundation
- Sascha and Anka Simon
- Renee Sliva in Memory of Joshua Gross
- Richard and Sharon Slosar
- Frederick M. R. Smith, Jr.
- Split Rock Charitable Foundation
- David Splitt and Laurene McKillop
- St. Killian Importing Company
- Stream2Sea
- Summit Homes Construction, LLC
- Swamp Head Brewery
- Michael and Janice Talbert
- Mark Thomas
- Stephen Tillinghast
- Tom Thumb Food Stores, Inc.
- Kerri Topping of Key Coral Designs
- Tourism Cares
- Richard and Marie Treanor
- Triad Foundation
- Tri-Tech Construction, Inc.
- United Jewish Foundation
- Chris and Stacy Unsworth
- Vanguard Charitable
- Van Swaay Charitable Foundation
- Philip and Betsey Walker
- Wallace Research Foundation
- Washington DC Area Marine Aquarist Society
- Waterfront Fine Homes
- Glenn White
- Wildhorn Outfitters
- The Wilson Family
- The Bill & Ginger Winder Family Foundation
- David and Donna Wing
- Dr. R. Scott and Janice Winters
- The Wong Family
- World Pet Association
- The Woroch/Vobach Family
- YourCause

### In Kind/Service Donations

We are grateful to those who have donated goods and/or services to support our mission between January 1st, 2018 and December 31st, 2018.

- Caribee Boat Sales and Marina
- Current USA
- Dive Rite
- Ecoxotic
- ESHOPPS
- Forever Young Charters
- Stephen Frink Photographic, Inc.
- Georgia Aquarium
- Jacob's Aquatic Center
- John Pennekamp State Park
- Kraken Sports
- Neptune Systems
- The Perry Hotel – Key West
- Quiescence Diving Services, Inc.
- Reef Brite
- Titan Aquatics
- Titan Composites

*We strive for accuracy and are appreciative of the generosity of our many supporters. Please accept our sincere apology for any omissions or errors and feel free to bring corrections to the attention of our Development Department at (305) 453-7030.*


As seen in Forbes, The Guardian, BBC World Service, NBC Nightly News, The History Channel, CNN, National Geographic, NowThis, Yahoo Finance, The LA Times, The New York Times, and The Washington Post.

***WE ARE PLANTING HOPE***
*Life returning: This cluster of newly-outplanted staghorn corals respresents hope for this ecosystem in the Florida Keys. We are building a foundation for reef recovery. (AN)*

# 2018 IN NUMBERS

**700+**
Total number of Coral Trees™ in our nurseries in the Florida Keys

**23,000+**
Number of corals we returned to the Florida Reef Tract in 2018

**80,000+**
Number of corals we have returned to the Florida Reef Tract since 2007