

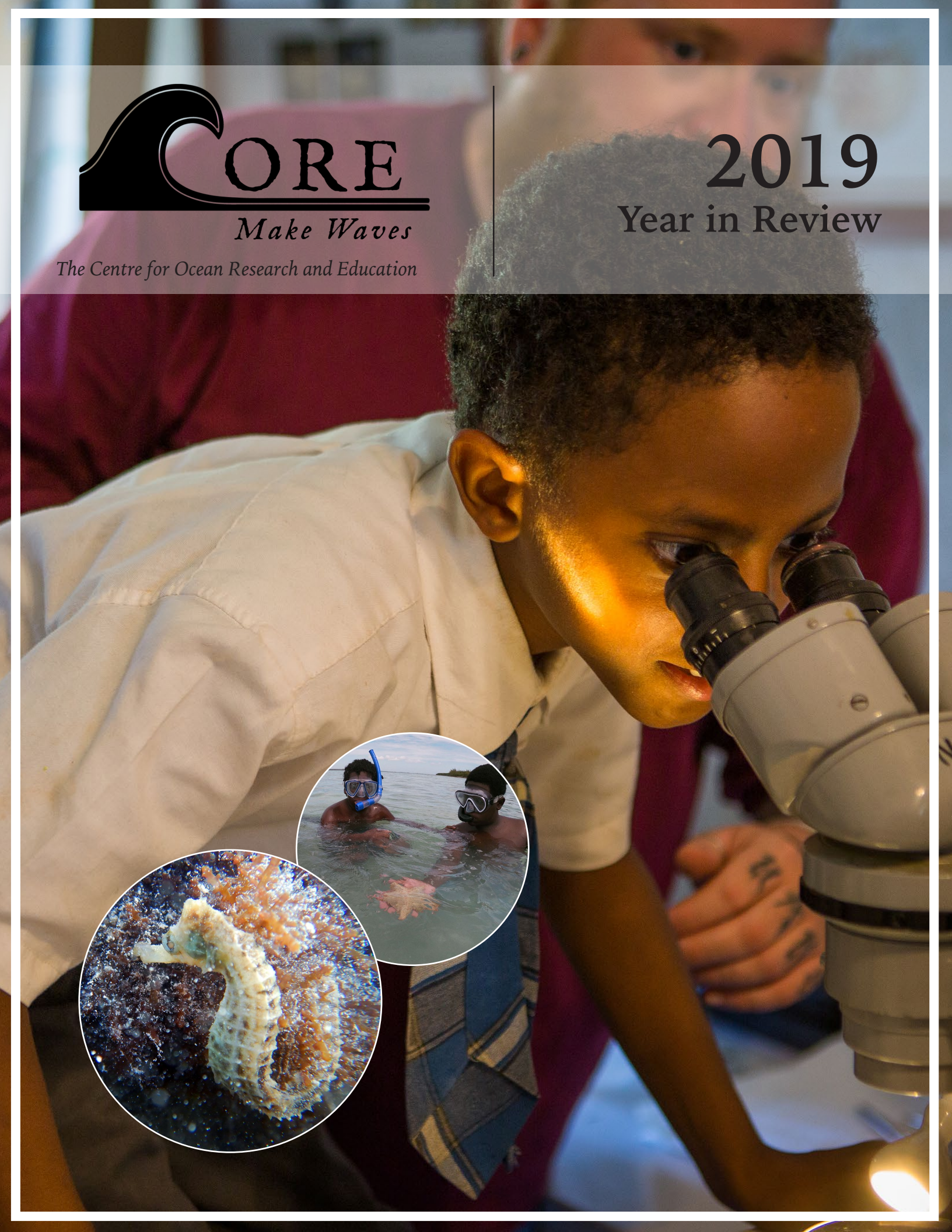


CORE

Make Waves

The Centre for Ocean Research and Education

2019
Year in Review



A Message from the CEO

As the Centre for Ocean Research and Education celebrates its second full year as an organisation, my retrospection on our activities during 2019 is both stimulating and humbling.

After the successes that 2018 brought, we realised that we were walking briskly in the right direction. We had diversified our portfolio of research and associated collaborations, delivered upon our obligation for community education, and so we just needed to keep walking. However, plans often change, and this walk turned into a marathon, for which I am still catching my breath. If 2018 was by all description our foundation year, then 2019 will be remembered for truly defining this organisation as an regionally recognised hub for research and education.

The achievements of CORE throughout 2019 have exceeded all expectation. Including additions to our infrastructure, educational reach among the communities in which we serve, and the diversity of research we conduct and manage, the year has been both demanding and prosperous. Our activities throughout 2019 have resulted in graduate student tenure, community awards for services to education, peer-reviewed publications, the delivery of workshops designed to train Bahamians in applied conservation science, successful grant applications and international recognition through media exposure including the BBC and National Geographic documentaries.

At the very heart of CORE lies our commitment to provide education at zero cost to the communities of this and neighbouring islands, and we have maintained these obligations through residential summer science programs, weekly classes with Gregory Town Primary School, the ongoing training of Bahamian interns and technicians and regular community outreach events hosted at our own field station, here in Gregory Town.

Without your support and belief in these principles, CORE would not exist in its current capacity and it is overwhelming for me when I consider the advocacy that has been imparted to this organisation, and myself over the past 12 months. This report serves not only a detailed insight to the organisation, but it is a celebration of CORE and the journey we are on, and will continue to tread, steadfast and resolute in our mission to **Make Waves...**

Sincerely,



Dr. Owen R. O'Shea | CEO & Principal Research Scientist
The Centre for Ocean Research and Education



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The Year in Summary

2019 CORE Calendar

January

- Owen O'Shea visits University of the West Indies, Cave Hill Campus in Barbados, and met with Professor Hazel Oxenford to discuss current research activities and potential areas of overlap for future collaboration.
- CORE hosted the workshop 'Sharks of the tropical Western Atlantic: biology, ecology and conservation' with Simcoe Divers, Ontario.
- Gregory Town Primary School begins weekly science classes at the CORE field station.

February

- Owen O'Shea and director Stan Burnside head to Sarasota for several days meeting colleagues from Mote Marine Lab, New College, The University of Tampa and the Smithsonian Institution. In addition, director Larry Eger opened his home for 'an evening with CORE' where we were able to showcase the organisation to friends and collaborators and raise funds for ongoing programs.
- CORE hosts intern Will Burchell and M.Sc. student Emily Liang from Wageningen University, NL.

March

- Director Professor Michael Thorndyke made his annual pilgrimage back to Eleuthera, and while allegedly on holiday, threw himself into CORE's activities with passion, and hosted a microscope workshop for our primary school class. In addition, Michael gave two fantastic presentations on global climate change at the CORE research station, as well as The Cove resort and hotel here in Gregory Town. Michael and Owen also made the trip down to The Cape Eleuthera Institute (CEI) in the south where we met with directors Dr. Nick Higgs and Dr. Nathan Robinson to plan ahead for our imminent 2020 research collaboration.
- Smithsonian Institution Postdoctoral Research Fellow Dr. Olivia Rhoades joins CORE for a week in collecting final data in our 12-month seagrass project and collaboration. This also included the breaking down of the experiments we had established in the verdant seagrass meadows of Bottom Harbour.
- Published our accelerometer paper in the journal Marine Biology.
- CORE's research and education efforts are recognised in the broadcasting of BBC's Blue Planet Live.

April

- Owen O'Shea and CORE field technician Christina Darville head to Ocean Cay in the western Bahamas to undertake a pilot study in assessing shark abundance around a former industrial site that is now being restored. This was in collaboration with the MSC Foundation, Bimini Biological Field Station and the Perry Institute for Marine Science.
- National Geographic were present on site collecting footage and interviews for a three-part documentary to be aired in 2020, detailing the ecological restoration of this former mining site.



May

- Owen O'Shea returns to Bimini and presents the findings of the April study. Together with colleagues from several international research organisations and representatives of The Bahamian government, we spent four days in workshops, detailing the future conservation and restoration efforts at the Ocean Cay MSC Marine Reserve.
- CORE Graduate student Duncan O'Brien from the University of Essex arrives in Gregory Town to begin his two month M.Sc. data collection in Sweetings Pond.
- CORE marketing and media advisor Luke Madden joined us for a week and while assisting us with our scheduled research and education programs, created and delivered two documentary films, highlighting our organisation's activities.
- CORE hosts The University of Tampa as they continue their Sweetings Pond work.

June

- Lycoming College from Pennsylvania spend three days with us in an immersive marine science workshop and education program. This was a highly structured and academically rigorous program, resulting in data collection activities contributing to D. O'Brien's M.Sc. thesis and the presentation of a small-scale independent project to the community during an outreach event.
- CORE takes delivery of its first SCUBA compressor, enabling us to now fill our own tanks. This was purchased through the very generous contributions of three individuals based on our requests from the 2018 annual report.
- The first of our summer marine science programs for local children begins.
- Owen O'Shea visits the Alligator Head Foundation and Marine Reserve in Portland Parish on the northern coast of Jamaica to meet with their scientists and learn of the coral and mangrove restoration work they are conducting. The marine reserve is one of the greatest and most recent conservation successes and it was fascinating to meet this group of highly motivated scientists, making real change in historically degraded marine systems.

July

- July 10th welcomed The Bahamas Independence day and our CEO, Dr. Owen O'Shea was honored at a ceremony at St. Gregory's Church, and presented with two community awards in recognition of the community education carried out by this organisation.
- Summer marine science programs continue.
- Friend and Dean of the Graduate School at Brown University, Professor Andrew Campbell came to visit CORE as we were preparing our young students for their final day of assessments and demonstration of learning. Prof. Campbell was able to watch practice presentations and provide insightful feedback to our young scientists as they prepared for their community presentations.
- Senior field technician, Enrique Bethel and Owen O'Shea were called upon to visit a private island in the central Bahamas to provide some insight into a local sub-population of southern stingrays. This was a great opportunity for CORE to take part in the ongoing, environmental training of Bahamian scientists.

August

- Duncan O'Brien's field work concludes, resulting in an expansive and novel data set.
- The final summer science programs are underway.
- Ongoing field work at Bottom Harbour, using remote videos to record shark and other predator abundances in and around seagrass ecosystems.

September

- Hurricane Dorian devastates the islands of Abaco and Grand Bahama, and so CORE opens its doors and offers shelter to those in need.
- Enrique Bethel and Owen travel back to the Ocean Cay MSC Marine Reserve to continue the multi-collaborative research programs established in April.
- Dr. O'Shea stays in Bimini for a series of workshops with the MSC Foundation, before travelling to Nassau to meet with colleagues from the Bahamas Agriculture and Marine Science Institute (BAMSI), The University of The Bahamas (UB) and Design Elements to discuss collaborative research and education programs for 2020.
- CORE's latest research vessel (RV Daisy) made it successfully through its first sea trials and is now a permanent part of our fleet.

October

- Enrique Bethel and Owen O'Shea are called in by The Cove in Gregory Town to locate a suitable site for coral restoration that CORE will establish and manage as a community education platform.
- Dr. O'Shea travels back to Bimini and delivers a shark conservation workshop to the 150 Bahamian staff for the Ocean Cay MSC Marine Reserve, and takes this opportunity to present the key findings of the technical report on the management of sharks at this site.

November

- PhD student Fee Smulders and Professor Marjolijn Christianen from the Aquatic Ecology Group at Wageningen University, NL joined CORE for a week to collect final data on our 12 month collaboration assessing the impact of grazing on the resilience of seagrass at Bottom Harbour. This also included the successful capture of five individual turtles and the temporary mounting of camera tags to specifically assess their feeding habits and dynamics of their predator encounters.
- CORE hosts Dr. Chris Bogiages from the University of South Carolina for a week of planning meetings for an exciting new collaboration to be unveiled in 2020!

December

- After what has been an absolutely fantastic year, Owen and his team are taking a well-deserved break, and other than regular trips to Bottom Harbour for long-term ecological monitoring, this is our quiet time, allowing the creation of this report and our end of year financial reporting, as we are already planning and preparing for a full and busy January 2020.



Dr. O'Shea presenting at shark workshops in Bimini - October 2019



University of The Bahamas students and CORE colleagues working on BRUV data at Ocean Cay



Presentations for summer program completion with young Eleuthera students

CORE Education Projects for 2019

Simcoe Diving – Ontario, Canada

Sharks of the tropical western Atlantic: biology, ecology and conservation

MSC Foundation

Sharks of the tropical western Atlantic: biology, ecology and conservation

Gregory Town primary School, Eleuthera, The Bahamas

Weekly applied environmental science classes

The Cape Eleuthera Island School, The Bahamas

Seagrass ecosystems of the tropical western Atlantic

The Lyford Cay Foundation, Nassau, Bahamas British Ecological Society, UK

Field methodologies for environmental monitoring in tropical marine ecosystems

Out of sight, out of mind

Exploring the taxonomic diversity of Pittman's Cove, Gregory Town, Eleuthera

Lycoming College, PA, USA

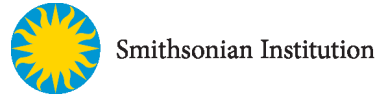
Field methodologies for environmental monitoring in tropical marine ecosystems



LYFORD CAY FOUNDATIONS
Inspired Philanthropy for a Better Bahamas



CORE Research Projects for 2019



The Smithsonian Institution - Fort Pierce, FL, USA
Florida International University – Miami, FL, USA

The tropicalisation of western Atlantic seagrass ecosystems

Dr. Justin Campbell
 Dr. Olivia Rhoades

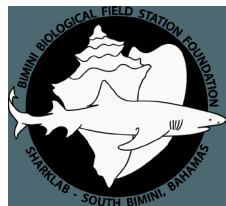


The University of Tampa – FL, USA
The University of Essex – UK

Community conservation of an anchialine ecosystem in northern Eleuthera

Drivers of Octopus briareus abundance and habitat preference in a saltwater lake from The Bahamas

Prof. Heather Masonjones
 Duncan O'Brien



Bimini Biological Field Station, The Bahamas
The Perry Institute of Marine Science, FL, USA and **The Bahamas MSC Foundation**, Geneva, Switzerland

An assessment of the elasmobranch fauna associated with the Ocean Cay MSC Marine Reserve

Dr. Matt Smukall
 Dr. Craig Dahlgren



Wageningen University – The Netherlands
Florida International University – Miami, FL, USA

The impact of turtle grazing on the resilience of a tropical seagrass ecosystem

Feeding associations and frequency in green turtles: A comparative study between Eleuthera, The Bahamas and Bonaire, Dutch Antilles.

Dr. Marjolijn Christianen
 Fee Smulders, Ph.D. Student
 Dr. Justin Campbell

CORE's home settlement, Gregory Town, is named after English-born John Gregory who was appointed governor of The Bahamas in 1848. He arrived to take up his post in early 1849. By October or so in 1849, the inhabitants of Pitts Cove (now known as Pittman's Cove as seen below) on Eleuthera had petitioned his excellency to change the name of their area to Gregory Town. This small hamlet in the north of Eleuthera is known for its pineapples, vibrant pastel-coloured buildings and friendly residents.



Meet the Directors



**Professor
Michael Thorndyke**

Michael, you are a professor with an outstanding career that has had global reach and serve on the UN climate change panel - so why are you so actively involved in an organisation like CORE?

Easy question to answer. Over my lifetime in marine biology research and teaching, there is nothing quite like the wonder you see on the faces of children when you introduce them to the beauties and fascination of marine organisms. In The Bahamas there is a great need for offering opportunities in marine education to Bahamian children that would otherwise not have access to the delights of something that is right on their doorstep. It is pleasure to be part of CORE's program and provide opportunity to these bright and inquisitive young people.

What elements of your experience in research have served CORE in its establishment over the past two years?

I think helping with basic equipment needs and utilising my global network of colleagues has allowed CORE to host and collaborate with visiting scientists from around the world. In addition, I have helped secure grant funding for a range of important research projects that will benefit The Bahamas and its marine ecosystems.

Where do you see global research priority currently?

Clearly this has to be to address the impacts of predicted climate change on marine life, especially those species that are vital for the economy and as food. This is especially important for small, local artisanal fisheries that maybe the only source of income and food for families. Part of this, indeed an integral part of this, is the education and outreach to local communities so that they are aware of the issues and can think about how they might help the sustainability of their resources.

Where do you see CORE's research priorities moving forward for the next three years?

CORE has a very good and developing reputation for expertise in local, Eleutheran and Bahamian marine biology and ecology. There is special expertise in sharks and rays that should continue. Opportunity should also be developed for unique local habitats like Sweeting's Pond. This is already high on the agenda with Prof. Masonjones' international research and that of M.Sc. student, Duncan O'Brien. Another area that could be developed that also provides great outreach and "citizen science" involvement is that of artificial reef deployment. CORE now has good contacts with a number of Dutch scientists who are world leaders in this work. CORE should also continue to develop research projects that reflect local needs. Such projects are important in that will engage the local communities and help them understand the role that CORE plays in their day to day life.

Stan Burnside



You have such extensive, on-ground experience of working in the communities of Eleuthera; how do you perceive the work CORE is doing as a transformative process to the young people of these communities?

What CORE does really well is it listens to the needs of the community. When working with young people, it is natural to have a set of assumptions and a message that you want to deliver. CORE's approach has been different in that it tosses aside assumptions and is able to meet anyone on their level. CORE is just as valuable a resource to a student visiting from Oxford working on his Ph.D. as it is for a little Bahamian boy who cannot swim. This versatility is based on the premise that both needs are important. Learning this is a patient process, because in order to reach this understanding, you need to spend time (alot of time) in a community listening to their needs and CORE has done that.

How did you first become involved in CORE?

I met Owen at the Cape Eleuthera Island School where we both worked. There I worked creating and delivering hands on lessons to Bahamian students on the island. Fall 2015 saw a series of unfortunate events, namely small sharks being trapped in fishermen's pots and subsequently being discarded on beaches local to our campus. And so we took these carcasses as educational tools, and having seen a dissection performed by Owen as a tool for learning, I had the idea to lead shark dissections in the classrooms of local high schools to raise awareness about sharks and marine conservation. I believe that it was during these sessions that Owen merged his passion for teaching and ocean stewardship with his desire to make authentic change. I would like to think that this is where CORE was born.

Once Owen left the Island School to follow his passion, I kept in touch because CORE was and is a model I believe in. I was invested. In the Summer of 2018 CORE held its first Science Summer Camps and I was thrilled to bring a group of young men I mentored to Gregory town to be a part of one of the sessions. CORE coached and molded these boys and delivered an experience that I know changed their lives.

How do you think CORE can realise greater impact in the communities of Eleuthera and Family Islands, particularly for the young people?

I look forward to CORE continuing to act as a resource for north Eleuthera. To impart skills which will last a lifetime, that will push the community and Bahamas towards a more sustainable and compassionate future. In our short history, I have enjoyed watching more and more Bahamians get involved as recipients of the lessons CORE has to teach, but even more so, I have enjoyed seeing the empowerment that comes with these lessons. One of the most astounding traits of CORE is that it encourages young people to feel like they can make a difference, that they can change the world. As a Bahamian who grew up in The Bahamas, I can say that there are few organisations who do this better than CORE and fewer still who do this and are as Baha-centric as CORE is. As CORE continues to make waves, we will be spreading our impact to other settlements as well as family islands.



**The Honourable
Larry Eger**

How has your professional life successfully influenced the research and educational output of this organisation?

My professional life has little to do with research, but a lot to do with education. As a criminal defense attorney and elected public defender for three counties in Florida, I deal with the day-to-day responsibilities of representing our office's clients. But my job goes far beyond just our clients. I have the responsibility of educating the public about our criminal justice system and its impact on everyone in our society. This work has shown me the importance of education and the power of personal contact in bringing about a better understanding of our world.

What events led to your serving on the CORE board of directors?

First, it was my meeting and interaction with our executive director, Owen. Within 15 minutes of discussing his business plan for CORE, I knew I had to be a part of this program in whatever capacity I could serve. From the moment I stepped off a Mackey Airway DC9 in 1974 as an 18-year-old surfer from Florida and made my way to Gregory Town, I've had a deep connection to this place, and it has become a big part of my life. CORE has given me the opportunity to give back to this island and its people, who I love so much.

In the very short history of CORE, what do you see as the greatest achievement for this organisation so far?

The greatest achievement thus far for CORE is what I see in the faces of the children who have been touched by the work that is being done here and who have a new understanding of the beauty of this island and the opportunity to learn and appreciate its ecological importance, fragility and the role they must play in its protection and preservation for now and for future generations. CORE's mission has touched hundreds of students, from elementary school children to Ph.D. candidates.

If someone stopped you in the street and asked about the CORE T-shirt you were wearing, in two sentences, how would you describe what CORE is to a stranger?

CORE is a place where one gets to experience and learn about the marine and coastal environment of Eleuthera and the Bahamas.

Alistair McDonald



As a parent to a young Bahamian man, how do you see future conservation efforts in this country being realised through current educational initiatives?

Education is paramount to the application of successful conservation initiatives. The students and young adults that CORE and other similar organisations touch are key in spreading awareness of environmental issues and in empowering local communities to combat them. It is the youth of the country that are most able and likely to have a significant input in future conservation efforts.

How has your perception of CORE changed in the last two years?

I was not previously aware of the enormous potential there is for CORE to influence the future of Eleuthera and The Bahamas as a whole. The conservation of our marine environments are integral to the well being of The Bahamas and our organisation is literally at the core of that mission.

What demographic of Bahamian students (if any) do you think CORE needs to focus on for its immersive education programs for 2020?

The response from our local school has been encouraging and of course we need to continue to involve all local children in CORE programs whenever possible. We might consider targeting students at the various high schools on Eleuthera as well as those in schools in Nassau and on other out islands where there are not similar programs available. Extending the reach of CORE and giving young people and specifically youth leaders from other communities in The Bahamas opportunity to learn about our marine environment and become directly involved in its conservation are logical steps to take.

What has been the greatest surprise to you, since you joined the board of directors?

I am blown away by how quickly CORE has embedded itself in the local community and at the rate it continues to spread its impact. This is a solid foundation and all involved should take great satisfaction from the performance of the organisation to date. There is no surprise in that the dream is being realised, but rather in how quickly it is happening.



Christian Henry

How did you end up so actively involved in CORE as a serving director?

I was part of the founding team for another educational marine science research institute in The Bahamas 15 years ago. So when I found out about CORE, I knew from experience that any ambitious new effort like this needed people to rally around it. Owen is extraordinarily committed to creating understanding through science right here on Eleuthera, so it was natural to offer whatever help I could to the cause.

What do you see as the greatest challenge in the delivery of education in The Bahamas?

Educating young people everywhere faces a challenge of purpose. Our ways of teaching young people reflect our society's answers to the questions: What is education for? What does it mean to be educated? When our answers value our implicatedness - the connections between us, our oceans, our world, and each other, that is when we begin to properly align. What we teach and how we teach influence the ways in which young people emerge with the competency, confidence, and content they need to be successful. And because teachers everywhere need to see best practices in action to be reminded how to make it happen for their children, CORE can serve as a model of what's possible.

How do you see CORE's evolution moving into 2020 and beyond?

My hope is that others will jump at the chance to protect and strengthen what we have created. Making a difference in research, education, and community engagement depends on building relationships and trust, and in other places I've seen administrative challenges get in the way of key objectives. The systems of organisational 'self-care' deserve attention and resources, and the people impacted by CORE's work deserve a resilient organisation. So I'm excited to help build and advocate for that as a priority among our philanthropic community.

How would you describe CORE to a stranger?

An exciting new venture where people care deeply about science and research as well as educating young people and building capacity at a scale where we can make a difference.



Professor Heather Masonjones

How do you see your engagement with CORE developing over the next 12 - 24 months, considering your prestigious position as Dana Professor at the University of Tampa?

I am looking forward to the opportunity to continue to work with CORE to further develop both its research and education program over the next two years. With expertise in both areas and a very positive working relationship with Dr. O'Shea. I believe that I can contribute to both research and teaching on site in addition to development of programs from Tampa. I am working on writing a field course to deliver with CORE as a home base for undergraduates, and hope to begin bringing a larger number of students to CORE for field experiences in 2021. Through my connections at UT, I will also be helping to identify and secure additional funding streams to support the continued growth of CORE as an institution.

What do you think is the greatest challenge for CORE moving into 2020?

CORE has developed tremendously over the past year, increasing its reach and prestige in the field. However, I see the greatest challenge for CORE this year in developing the funding base to support its programs and continue to grow in its role facilitating research and education on Eleuthera and elsewhere in The Bahamas. In addition, because of its rapid growth, looking towards a larger space to offer programs and house research initiatives will also be crucial to its future in the next few years.

Has your association with CORE benefitted you either personally or professionally since you joined the board in 2019?

I always love the opportunity to talk science and conservation, and CORE team members form and engage with a vibrant community. Professionally, I have been able to reinforce my deep commitment to the community of Eleuthera and the larger Bahamas through the increased reach and visibility that my involvement with CORE has provided. Most directly, CORE and its interns, students and staff have helped engage the community on issues relating to the proposed Seahorse National Park project, providing a more consistent source of dialog on the island for community members concerned about the impacts of the proposed park than I could offer with only a few trips a year.



Research Spotlight

Duncan O'Brien is a graduate student from the University of Essex who has come back to work with CORE after spending three months with Owen and his team as a Smithsonian Institution intern during the summer of 2018. His main research interest is the study of evolutionary-ecological feedbacks, where animals' behaviour changes the world around them.



The Centre for Ocean Research and Education has been steadily collaborating with The University of Tampa, focusing on the unique ecological dynamics of the Sweetings Pond ecosystem of North Eleuthera. Sweetings Pond is an anchialine ecosystem, meaning it is a marine lake isolated from the wider marine environment. While minimal exchanges of water do occur through subterranean aquifers in the porous limestone, this pond has largely been left to evolve on its own for around 10,000 years, giving rise to a unique community that is genetically, behaviourally and even morphologically – that is physical appearance - distinct.

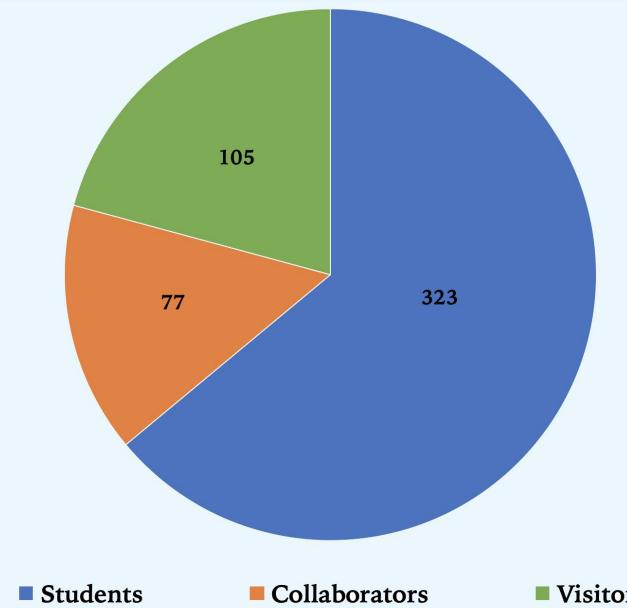
2019 saw the return of CORE Research Associate and University of Essex MSc student, Duncan O'Brien to Eleuthera, to take up where he left off last summer in his work in this fascinating environment. Once more, in collaboration with Prof. Heather Masonjones from The University of Tampa, the aim was to assess the contemporary abundance and density estimates of the Caribbean reef octopus in Sweetings Pond – a population thriving without natural predators, due to its isolation. Secondary to this, parallel projects involved using the survey data to mathematically predict what parts of the ecosystem (prey quantity, depth, habitat etc.) are likely to drive octopus abundance across Sweetings Pond, and night-time baited remote underwater video surveys (BRUVS) to provide clues on the unreported food chain behaviours occurring after dark.

These objectives were achieved by conducting SCUBA surveys and by deploying artificial dens to exploit the octopuses' natural instinct to colonise holes and crevices to improve the chances of encountering octopus in the field. In an ecosystem first, octopus were seen sharing artificial dens, suggesting that the high density of octopus may be improving their tolerance towards each other, away from their traditionally cannibalistic nature. Nocturnal video surveys further showed unique behaviour by spider crabs 'fishing' in the water column, whereby they were observed grabbing fish directly from the water. Large schools of false pilchards were also observed, likely providing the prey resources for many of the larger predators in this lake.

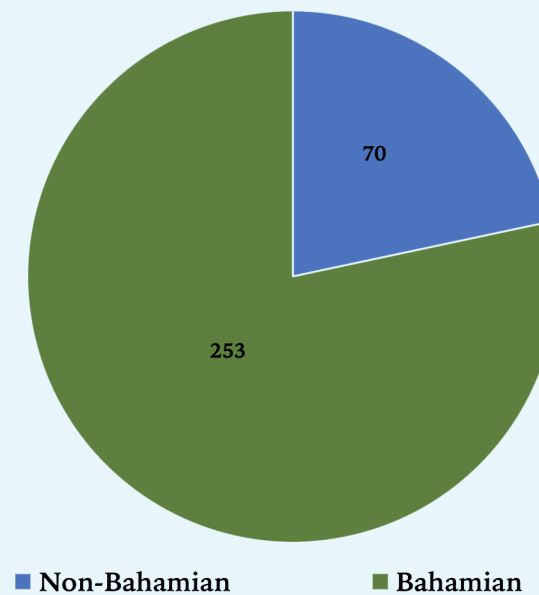
These data describe octopus abundance estimates for the first time since the population was initially described in the mid 1980s, which, when combined with the identification of variables that drive octopus distribution, provides a valuable resource in the decision making and management frameworks involving this entire environment. Simultaneously, these projects provided educational platforms, whereby CORE engaged with the local community and its young people to interact with this environment and make positive contributions to the conservation strategies that underpin CORE's research portfolio.

2019 Reach & Impact

Total Demographics at a Glance



Total number of visitors (**505**) to the CORE field station during 2019



Total number of students (**323**) that have taken part in CORE education programs. This includes local schools, community outreach and residential summer marine science programs as well as international university programs.



Education Spotlight

Summer Marine Science Camps

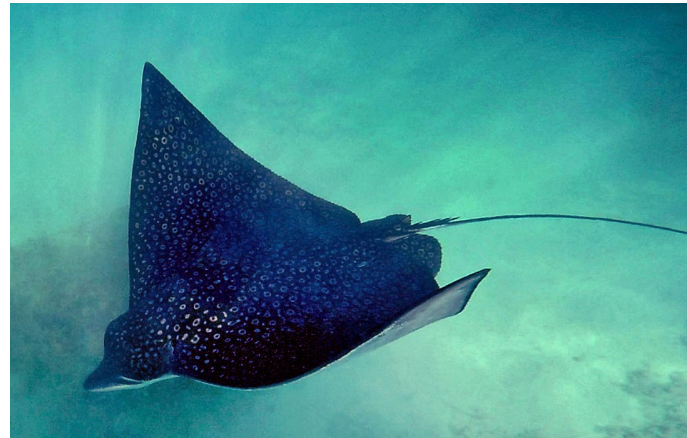
Project Title: *Out of sight out of mind: Assessing the ecological value of Pittman's Cove, Gregory Town through a photographic journey*

Education Leaders: Duncan O'Brien, Enrique Bethel & Owen O'Shea

Funding: Lyford Cay Foundation & The British Ecological Society

Duration: Two Months

Reach & Impact: 77 individuals, including students, teachers and local citizens



This year was intense, emotionally and physically demanding (on the instructors as well as the students!) and as academically rigorous as 2018. We were also gifted with a whole new demographic of students as we expand among a wider range of communities and islands, including one young man who came all the way from Jamaica to take part in one of our programs.

While we had the capacity to run two independent projects this year, the Sweetings Pond research that was carried out as part of Duncan O'Brien's M.Sc. research that involved much of our community education this year has been highlighted previously. With this consideration, here we have chosen to highlight a much smaller and experimental project that is currently ongoing and that seemingly has far reaching impacts to the communities of north Eleuthera.

For the second year running, we were fortunate to receive funding from the Lyford Cay Foundation to run our community education programs during the school holidays. In addition to this, we were also awarded a community outreach grant from the British Ecological Society, enabling us to diversify our agenda and establish a project that not only resonated with the young people of Eleuthera, but a project that could be contextualised within the local community and one where we could truly build capacity.

This project was once more underpinned by the same curriculum as last year - that being a firmly structured and highly demanding academic foundation – including scientific method, communication, biological drawing and workshops for students to learn basic software such as Microsoft Word, Excel and PowerPoint, allowing the creation of their own portfolios of work, culminating in community outreach events where the students shared their projects and results with the wider community.

This project was a really interesting exercise that wholly brought the community together, and the gasps of awe and exclamations of surprise that were heard during our outreach presentations still echo in our small field station. As Baba Dioum famously said, *'In the end we will conserve only what we love; love only what we understand; and we will understand only what we are taught'* and this quote, like the audible exhalations this summer, resonated with this project. Pittman's Cove is the main access point to the water in Gregory Town and is a focal point of the community. It is where fishermen clean their catch, boats are serviced, it is where the fishermen enter and exit the wider marine environment, and inevitably due to its proximity to a small population center, experiences high use. And so, this small little cove that provides so much inspiration and beauty tends to be overlooked for anything other than a transit point.

Education Spotlight (continued)

The main objective of this study was to begin cataloguing the plants and animals of this little embayment, with the aim of showing the wider Gregory Town community the inherent beauty of its underwater seascape, and therefore its conservation value. We were able to provide the training to our students so they could design their own sampling designs, in two teams and during these snorkel surveys they were able to photograph every living fish, plant, alga and invertebrate. Not only this, but several of our students had never snorkelled before, and so further 'in-water' training was necessary!

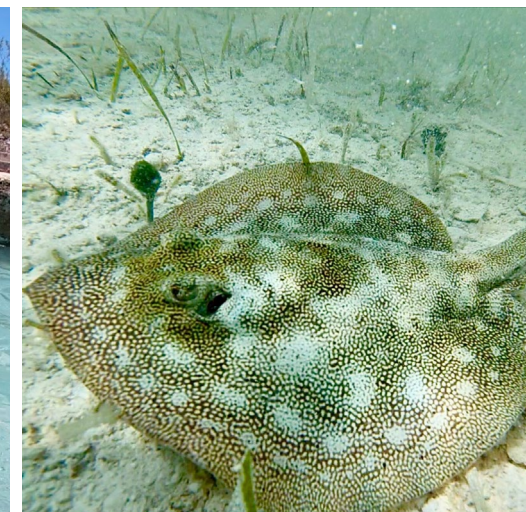
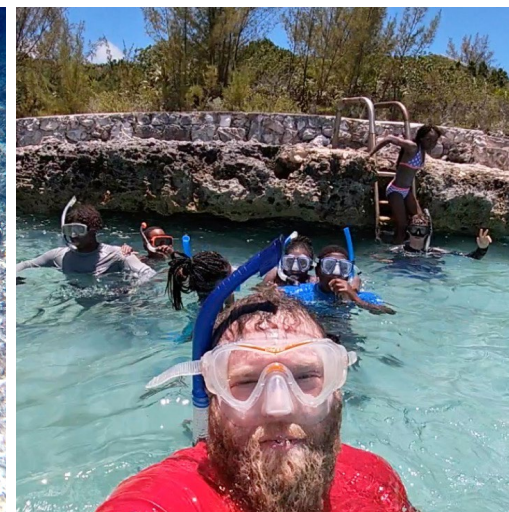
Back in the field station, all images were downloaded onto a laptop, and we spent many hours, poring through books identifying everything we could to species level – both common name and scientific. This then formed the basis of the students' demonstration of learning, where they then developed their very own presentations, and in front of their friends and family, Gregory Town residents and the whole CORE team and its supporters, shared their findings.

Who would ever suspect that there were nine different species of coral, two different species of seagrass, eight different species of algae, nine species of invertebrate, 19 species of fish and more species of sponge than we could count or identify, that call Pittman's Cove home? We certainly didn't, and the Gregory Town community certainly didn't!

These education programs are at the very center of what we strive to achieve as an organisation – the provision of environmental education at zero cost to the community, to further our understanding of sensitive ecosystems and to promote the conservation of biodiversity among the communities of Eleuthera. We cannot achieve these goals without the support of our donors and we would like to once more extend our appreciation to the Lyford Cay Foundation and The British Ecological Society for allowing us the opportunity to establish these programs.

We would like to continue this research as one of our 2020 keystone projects for our future education programs. It is our intention to then publish a small ID guide that will be available to purchase throughout Gregory Town, and of course the CORE field station, with 100% of proceeds going back to the community.

If you would like be involved or to make a contribution to this exciting and ongoing project to create the very first plant and animal guide for this ecosystem, please contact us.



Collaborator Profile

Dr. Justin Campbell

Florida International University
Department of Biological Sciences
Center for Coastal Oceans
Institute of Water and Environment



Who are you and what is your field of expertise?

My name is Justin Campbell and I am an assistant professor in the Department of Biological Sciences at Florida International University. I'm a marine ecologist interested in the effects of climate change on the structure and function of coastal habitats.

What do you consider as conservation priority in developing nations throughout the Caribbean region?

The natural capital of the world's ecosystems has been valued at nearly \$33 trillion per year. Throughout the Caribbean, coastal habitats (mangroves, seagrasses and coral reefs) provide a number of critical ecological services, ranging from food production to nutrient cycling to carbon sequestration. These are some of the most valuable systems in regards to conservation, and should certainly be targeted as a priority for future initiatives.

What do you see as the greatest challenge for global and regional conservation awareness and action?

Bringing about conservation awareness and action is certainly a challenge, in and of itself. I believe the greatest hurdle is one of communication, as we need to ensure that we are conveying a clear and concise message about the importance of our coastal habitats to the proper audience (officials with the ability to enact effective conservation measures). In addition, we further need to ensure that we are properly negotiating the delicate balance between the needs of the local community and the enforcement of effective management policies.

What is your relationship with CORE?

I have been working with CORE for over a year on a large-scale seagrass project. It has been an amazing collaboration, which has led to other novel and interesting side projects with mutual colleagues. I am extremely excited at continuing this relationship, and further studying the ecological dynamics of the coastal habitats near Eleuthera.

How important is collaboration to you and how do you see this collaboration maturing?

In my opinion, collaboration is the only way to successfully address novel questions about our natural environment. By working with others, we can vastly expand the power of our research by collaborating with those who have complementary skillsets. I see my work at CORE maturing in several ways. First, we have already initiated a series of follow-up experiments with other mutual colleagues at CORE. This work is closely linked to our prior seagrass project, and specifically characterizes the spatial structuring of plant-herbivore interactions across Eleuthera's shallow seagrass meadows. Second, as I have recently started a new faculty position at Florida International University, we have many students interested in addressing other ecological questions on Eleuthera, and I anticipate establishing a strong CORE – FIU relationship moving forward.

If you had \$10,000 and 12 months gifted to you to share with CORE, what project would you establish with us considering the community education goals of CORE?

I am grateful to have already developed an amazing collaboration with CORE. In the past, we have conducted a year-long manipulative experiment examining the effects of environmental change on coastal habitat functioning. Through this, we were able to work with many members of the local community, both from a practical and educational standpoint. If provided with the opportunity again, I would certainly seek to continue this research and establish new projects based upon questions that have been gleaned from our prior work. As we have done in the past, local community-based education will always serve as a critical component.

Media & Communications

Published Research Articles

Orrell, D., Schneider, E., Eisenbach, O., Garg, A., Bigelow, B., Hauptmann, H., Simon, F., Cartwright, J., **O'Shea, O.R.**, McGaw, I.J. and Van Leeuwen, T.E. (2019). From individual to ecosystem: evaluating the effects of the stone crab (*Menippe mercenaria*) fishery process using simulated fishing scenarios in the laboratory. *Caribbean Naturalist*, 63

Ward, C., Bouyoucos, I., Brooks, E. & **O'Shea, O.R.** (2019). Novel attachment methods for assessing activity patterns using triaxial accelerometers on stingrays in The Bahamas. *Marine Biology*, 166 (5), 53

Submitted Research Articles

Schwanck, T., Schweinsberg, M., Lampert, K.P., Guttridge, T., Tollrian, R. and **O'Shea, O.R.** Linking local movement and molecular analysis to gain insights into philopatry and population connectivity of the southern stingray *Hypanus americanus* in The Bahamas. *Journal of Fish Biology*

Meadows, M.H., Wigglesworth, E., Newton, J., **O'Shea, O.R.** Hawkes, L.A. Novel insights into the diet of Southern stingrays and Caribbean whiptail rays. *Marine Ecology Progress Series*.

MacNeil, M.A., Chapman, D., Heupel, M. et al. Global Status and Conservation Potential of Reef Sharks. *Nature*

CORE was featured in the BBC one Blue Planet Live project this year, and included an educational video that was broadcast to 6,000 schools in the UK.



Last year's Call of The Blue was published and is available [here](#)

CORE has once more been recognised for its community education programs and will feature in the 2018 Lyford Cay Annual Report as a two-time funding recipient.

Long term friend and media expert Luke Madden further developed our collaboration with two short documentaries about our research and education programs. Watch the education video [here](#)

and the research video [here](#)

CORE will feature in a three part National Geographic documentary in 2020 due to the continued engagement of our CEO with ecosystem restoration and conservation projects in The Bahamas.





Dr. Heather Masonjones of the University of Tampa during one of her early morning dives in Sweetings Pond to research the population biology of lined seahorses.

2019 Fundraising

Throughout the course of 2019, we have been extremely fortunate to have received gifts and donations through fundraising activities that have been established not only by ourselves, but through the generosity of some of our supporters, hosting their very own 'CORE Awareness' events. This has allowed us not only much needed funding to continue our community research and education programs, but raising awareness of our organisation and our ambitious agendas to build capacity in the communities of Eleuthera and neighbouring Family Islands.



New Year's Eve 2018

North Eleuthera winter residents and long-term friends and supporters of CORE, The Jacob Family have not only donated several dozen hours of their time in assisting us with our field research activities, but hosted a fundraising event at their home in New Jersey over the New Year period. A wonderful celebration of friends and family gathered at their home and donations were made towards our organisation, enabling our continued ability to provide the educational services to the community at zero cost. This wonderful family and their friends were able to raise \$230 for us, which in turn, facilitated ongoing education programs for the young people of Gregory Town!

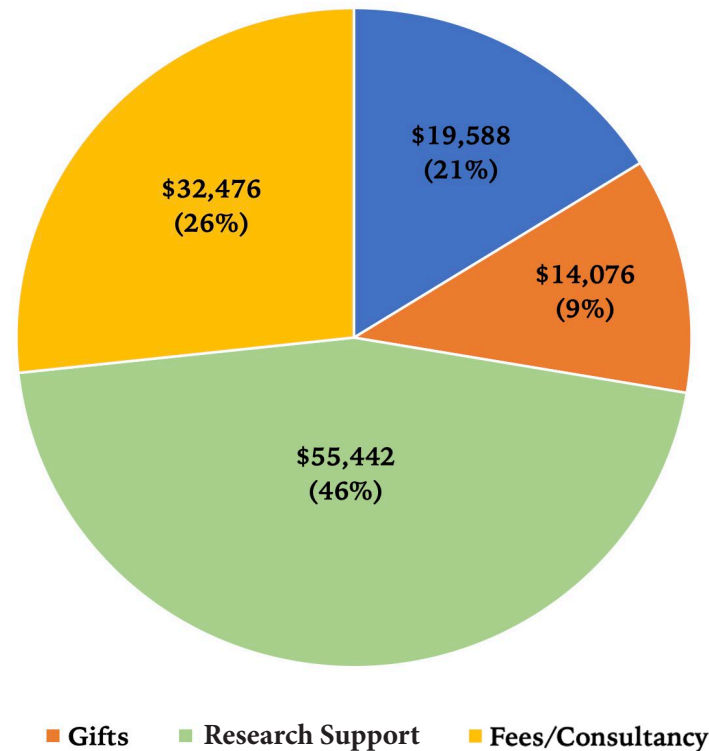
February 2019

CORE director Stan Burnside and CEO Owen O'Shea travelled to Sarasota to support CORE director Larry Eger and his wife Susan, who graciously hosted 'An Evening with CORE' at their home. This event was a complete success, and not only were colleagues and friends of Larry and Susan present, but many people who own second homes in Gregory Town were also able to join us, as Stan and Owen gave rousing talks to around 50 people, interested in supporting our efforts. In addition, we welcomed CORE director Professor Heather Masonjones from the University of Tampa and several of her colleagues and undergraduate students, plus Dr. Justin Campbell of The Smithsonian Institution and Florida International University, Associate Professor of Biology for New College, Dr. Jayne Gardiner and several New College students, including Bahamian student and former intern of Dr. O'Shea, Zachary Carey from Spanish Wells. The evening was a wonderful celebration of our organisation, and we were able to raise \$1,000 as well as establishing a range of new relationships with the science community of southern Florida.

November 2019

Chris and Lorraine Sproule from Simcoe Divers, Ontario, first contacted us in September of 2017 within mere days of CORE officially coming online, looking for a research organisation based on Eleuthera that offered integrated science workshops, with a specific focus on sharks and rays of the tropical western Atlantic, and of course we said yes! This fantastic event took place in January of this year with a group of their friends and clients who were on a liveaboard dive trip to Eleuthera, and our relationship and collaboration has grown immensely over this time. This year, their annual Thanksgiving Fundraising event at their dive shop in Canada was entirely CORE themed, including the auctioning of CORE merchandise and a series of records by acclaimed UK based folk singer/songwriter [Will Cookson](#) who very generously donated his first three albums for auction. This event was able to generate \$1,500 in funds and once more, engaged a whole new demographic of those wishing to support our efforts.

Finances at a Glance for 2019



Revenue Sources

Since establishing our field station in March 2018, we have been able to redirect fundraising efforts to focus on our research programs, community education initiatives and investment in our infrastructure and personnel.

For donations and gifts, we received just over \$14,000 which was marginally lower than last year due to the discontinuation of our Go Fund Me campaign, yet a more concerted effort to apply for grant funding was successful with a 200% increase on 2018, resulting in total grant monies of \$19,588. These grants allowed us to expand our community education programs during the summer of 2019, impacting more students and communities, as well as our weekly science classes with Gregory Town Primary School. In addition, we have been funded for a novel and critically needed study on queen conch that will start in January of 2020, and will be subsequently reported on at a later time.

One of the most distinctive variances between 2018 and 2019 was our collaborator contributions which also increased by 200% to \$55,442. This revenue was largely derived from our international collaborative efforts on joint research programs and educational initiatives as we further establish ourselves as a hub for community based environmental education. In addition, the expertise and experience of our scientists was required by a range of international organisations, facilitating our provision of scientific services and consultation on a range of international environmental projects and programs.

Considering our infrastructure and facilities are now well established, our expenditure this year was higher, yet distinctly different in its distribution. Rent and utilities are relatively stable; however, this year we were able to provide an increase in stipends and salaries for our interns and field technicians that assisted with specific projects and programs. We were also able to invest in lab equipment, research tools and other program infrastructure, further allowing not only the establishment of multiple long-term monitoring programs throughout The Bahamas, but equipping us properly for all of our educational programs.

Income

Gifts and Grants	2018	2019
Cash Gifts	\$18,302	\$14,076
Grants	\$6,400	\$19,588
Equipment	\$6,100	-
Total Gifts and Grants	\$30,802	\$33,664

Earned Revenue	2018	2019
Research Support	\$17,974	\$55,442
Consultancy	\$9,740	\$32,476
Merchandise	\$450	\$800
Total Earned Revenue	\$28,164	\$88,718

Total Income	\$58,966	\$122,382
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Expenses

All Expenses	2018	2019
Program expenses	\$14,989	\$11,550
Salary and stipends	\$12,115	\$34,116
Fundraising	\$985	\$1,487
Rent, utilities and facilities	\$17,952	\$11,317
Equipment	\$3,000	\$63,057
Total Expenses	\$49,041	\$121,527

Net activities	\$9,925	\$855
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* Statement of activities – preliminary and unaudited from 1st January 2019 – 31st December 2019





CORE

Make Waves

The CORE mission is to involve Bahamian students and communities in the data collection process of an *applied scientific marine and environmental research* initiative that furthers our understanding of ecologically sensitive habitats, ultimately promoting the *conservation of biodiversity* through education and outreach in The Bahamas.

If you have any ideas on strategies for our fundraising activities or ways in which to diversify our funding portfolio, then please write to us. If you are interested in hosting your own fundraising event to assist our programs on the island of Eleuthera, please contact us.

The Centre for Ocean Research and Education Foundation
949 Indian Beach Drive, Sarasota, FL, 34234, USA.
1.242.470.0414

CORE is a 501(c)(3) non-profit organisation, Tax ID: 82-4944641



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