

The Centre for Ocean Research and Education

THE YEAR IN REVIEW: 2018



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December 2018

Dear Friends of CORE,

Wow. There is no other way to start this letter as a prelude to our very first annual review.

At this exact moment last year, I sat at my dining table with just a website and an idea, feeling a little terrified and unsure of myself and my ability to make CORE happen. The anticipation of how 2018 would evolve, shape and define this organisation was impossible to predict or calculate, and was, in its entirety, unknown.

For me personally, this journey has been one of steep learning, catharsis and a level of profound contentment, as I witness this organisation transition from a concept, to what we have today – A fully functioning, tangible and recognisable 'brand', with a mission so deeply engrained in our philosophy, CORE is already synonymous with not just excellence in research and education, but community service and outreach.

Among the many achievements and impacts CORE has had this year, we have put together a tremendously skilled and diverse board of full time directors, have been issued with our Articles of Incorporation, and more recently, received our 501(c)(3) approval from the IRS, making CORE, a legitimate public serving, nonprofit research and education foundation.

The support of our directors, donors, collaborators, students, community leaders, interns, technicians, friends, family and all other advocates for this organisation have been critical in our success. As we look to 2019 and the ambitious agenda I have carved out for CORE, we will continue to serve the community, and with your continued support we will Make Waves...

With warm regards,

Owen R. O'Shea, Ph.D. **Executive Director & Principal Research Scientist**



Meet Our Interns



Enrique Bethel 21 years old Gregory Town Mattheo Albury 16 years old **Gregory** Town



How did you first get involved in CORE?

I had heard about Owen's intention to establish a research centre, initially through some mutual friends, but I had never really met Owen before. I reached out to him and before long I was enlisted in the renovations for the field station back in January of 2018.

Why did you get involved in CORE?

It seemed interesting to me and my career choices in life I knew had something to do with the ocean, and so I figured this would be a good start.

What has been a highlight for you since joining the intern team?

Really, it has been taking out various groups to the seagrass meadows and teaching people what we are doing and why we are doing it. It really is about being socially active also.

How do you think working with CORE has changed your perceptions about our environment and its conservation?

Working with CORE, I think has taught me to conserve the environment more and to encourage others to do the same.

Christina Darville 25 years old Harbour Island

How did you first hear of CORE?

I first heard about CORE from intern Katelyn Cambridge in the summer of 2018. I then heard about CORE again shortly later from Dr. Heather Mason-Jones, my former professor from the University of Tampa.

What led you to working with CORE?

Dr. Mason-Jones introduced me to Dr. O'Shea one day after assisting her with her seahorse research in Sweetings Pond, Eleuthera. I explained my background in marine science and expressed my interest in getting involved with the great work I heard CORE had been doing. The first thing I became involved with at CORE was assisting post-doctoral research fellow Olivia Rhoades with the Smithsonian seagrass study in Bottom Harbour.

Why do you think that COREs mission to educate young Bahamians in *important?*

It is so important to educate the Bahamian youth in marine and environmental science and conservation if we are to have a community that respects and protects our environment for future generations to enjoy. I grew up as the daughter of a fisherman, who on weekends would take us all out to explore the ocean. These experiences allowed me to start learning about marine life, and develop an appreciation for the natural world at a young age. I would love it if all Bahamians could grow up with positive interactions with the marine environment and develop their own connections to our islands. Even though we see the ocean often, if not daily, many students grow up not understanding its importance and some even fear it. Teaching students about our marine ecosystems and marine wildlife, and helping them become confident in the water can empower them and inspire them to take action to conserve.

What is your highlight of working with CORE so far?

One highlight from 2018 while working with CORE would have to be seeing students light up when they learn something they find fascinating about the marine environment. Inspiring the youth of the island through active inquiry and participatory education allows them to form a deeper bond with their natural community and encourages them to become stewards of the environment.

How did you come to work with CORE?

My grandma told me about a marine biologist called Owen renting one of her properties in the heart of Gregory town, and my love of the ocean and its creatures led me to walk down to meet Owen one day. Owen had been told by my grandma of a time I caught and killed stingray to feed my family, and all she said to me was 'Owen wants to talk to you'. So, I met Owen and instead of him being mad, he simply said 'if you work with me, we can create change in people's minds about these creatures'. And it went on from there.

What has been the highlight of working at CORE during its first year?

Among all of the amazing adventures that Owen and I have shared this year, the highlight came just last week when we worked with the BBC for an upcoming documentary.

What has been the most profound learning experience during your time working with CORE so far?

All marine life is important to the environment with niches that support their contributions to ocean health. Everything has its place, yet human activity tends to disrupt this balance.

What do you hope will be the greatest professional

development for you in 2019 as a CORE intern and why? I believe that CORE will provide many opportunities for me, as well as the other interns, but I really think I want to be involved more in the community outreach agendas. This is really important to me because through CORE I have found a voice to share with the people of these communities the importance of our conserving our environment, and it allows me the opportunity to develop my public speaking with all the various groups that will come through.

Chris Johnson (CJ) 18 years old Gregory Town



CJ, you work full time in Gregory Town, so why do you think it is important to give up your weekends and free time to help CORE?

I really love the experience to better myself and to learn more about the ocean and how it works. I also enjoy the pool of interns at CORE, and hanging around with likeminded people with common agendas.

What is the single greatest change you think CORE has made to the communities of north Eleuthera?

Inspiring children to learn marine biology by teaching them how to swim because they are surrounded by water, but also to visit their schools and expand their brains to understand what is going around (in the ocean).

What has been the highlight for you working with CORE this year?

Conducting field work, learning different data collection techniques such as BRUVs (Baited Remoted Underwater Video Surveys) and experimental manipulations of the environment to find out about the health of the seas.

What priority areas do think CORE needs to focus on for 2019?

Outreach is absolutely the priority, to not only create an awareness of CORE, but to an awareness of the work we do.



Isabella Hartman 19 years old Gregory Town

What do you think are some of the greatest challenges for conservation in The Bahamas? I think that altering mind sets that are engrained in the younger generation that everything is there for the taking.

How is CORE contributing to these efforts on Eleuthera?

I think CORE is educating these younger generations that the ocean is a finite resource and needs our attention for conservation, rather than its exploitation.

What is the greatest experience you have had working with CORE in 2018?

The exploration of Sweetings Pond and being able to interact and experience the wildlife in that environment. Also, to assist in the conservation efforts that CORE, with its collaborators are striving towards.

If you had \$20,000 to donate to CORE – how would you like to see it used?

I believe that a research vessel would optimize the reach and impact of COREs research activities in the area, and would also increase the portfolio of research that local citizens could be exposed to. Katelyn Cambridge 16 years old Gregory Town



Why did you want to be involved in CORE?

I wanted to be involved in CORE because I saw it as an opportunity to gain experience whilst helping to educate the community about the value of our marine environment.

How has CORE enabled you to achieve your professional goals during 2018?

Being a CORE intern was the start I needed. I've been on numerous research trips studying iguanas, seahorses and turtles and I am now Open Water Certified and Coral Restoration (Reef Rescue) Certified.

Which directions would you like to see CORE head in 2019?

CORE has already exceeded community expectations in its delivery of outreach, however it is so important to see CORE reach its 2019 goals by educating more Bahamians in other settlements. The more educated the people are, the easier it will be to enforce policies.

How important do you think it is that CORE continue to build capacity in the communities of Eleuthera?

I feel as if it is very important, CORE has already taught many kids very important lessons on the marine environment and why conservation is so important.



Sean Wrinkle 22 years old Gregory Town

In what capacity do you assist CORE?

I assist with video production, communications and intern field work.

How has CORE provided you with professional development opportunities?

Making videos for CORE has expanded my portfolio with quality works, and allowed me to network with other industry professionals such as the BBC.

If you had \$1,000 to donate to CORE, how would you recommend it is spent?

The thing about CORE currently, and the way it is run, is that the dollar does stretch, and so \$1,000 would go quite far. However, with the expansion of the organisation, I would want my contribution to go towards the establishment of a much-needed larger space for hosting education groups.

What do you see as the most important element for CORE moving forward into 2019?

To maintain the level of community involvement currently in place. It's vital to keep the information and resources accessible to the public.

What is our favorite ocean creature and why?

Seals. Always loved them since I was a kid. Beautiful creatures and I find it fascinating that while they spend most of their lives in the water, certain life history processes, such as mating, birth and parental care are all terrestrial activities.











Collaborator Profile

Professor Heather Mason-Jones The University of Tampa

Who are you and what is your area of expertise? I am a Professor of Biology at The University of Tampa, and my area of expertise is the reproductive ecology and wild population dynamics of syngnathid fishes (seahorses and pipefish). I am an invited member of the IUCN specialist group for seahorses and their relatives.

How did you hear about CORE and what were the circumstances of your collaboration? I have been excitedly following CORE's launch since early in the idea process as a research colleague of Dr. O'Shea's through other educational initiatives on the island, and happily lead the first research team to stay at the station the first week it opened!

What do you think is the greatest challenge for conservation in The Bahamas? The greatest challenge will be to balance the needs of local people with effective management of these wild spaces and combatting climate change in this island nation.

How can your collaborative relationship with CORE mitigate these challenges? Through education and providing a conduit to the local community, CORE provides opportunities to communicate with critical stakeholders to both share conservation messages but also gain valuable insights into the needs and interest of the local community. In addition, CORE is at the forefront of research and documentation of the effects of changing climate on shallow water ecosystems through their collaboration with the Smithsonian Institution

How do you see your collaboration evolving throughout 2019 and beyond? As CORE grows, its influence will grow, strengthening our collaboration and the opportunity to influence how conservation initiatives develop on Eleuthera and the larger Bahamian archipelago. In addition, I hope the collaboration for long term monitoring of Sweetings Pond and the surrounding watershed continues to grow.

What has been a particular highlight of your working relationship with CORE? My highlight has been working with Bahamian children, to talk about science and marine systems, and get them excited about conservation.

If you had \$5,000 to share with CORE, what resources are essential as they move forward into their second year? One of the biggest issues that is currently limiting our impact and reach is the lack of regular O2 fills for our SCUBA tanks. The only compressors are on Spanish Wells or down near Cape Eleuthera, which dramatically limits how much diving we can do from the area around the station. 5K would go a long way towards helping support an air compressor, which is a vital resource as CORE grows.





2018 Reach and Impact at a Glance

Total Demographics



Total number of visitors (567) to the CORE field station during 2018 broken down by Bahamian and non-Bahamian citizens

Total number of students (412) that have taken part in CORE education programs, including outreach to local schools, hosting local schools and residential marine science programs for 2018

Research Spotlight

Principal Investigator: Fee Smulders **Position:** Ph.D. Student Institution: The Aquatic Ecology Group, Wageningen University, The Netherlands



One of the greatest challenges in the conservation of seagrass ecosystems is human induced disturbance, such as the urbanisaiton and development of coastal and nearshore environments, that can degrade or modify these habitats. Historically, the over-harvesting of macro-herbivores has contributed to deleterious effects among many of these seagrass meadows throughout the Caribbean, including parrot fish and turtles. Large vertebrate fauna have also been demonstrated to influence function – either direct or indirect – on the functioning of seagrasses, for example moderate grazing by turtles can increase plant productivity, but overgrazing can lead to collapses of these meadows. In extreme cases, complete loss of seagrass can occur, exacerbating the recovery of these systems. However, the regulation of these herbivores by apex predators, such as sharks can influence the overall health of seagrasses, and this is particularly relevant in The Bahamas, where sharks are afforded absolute protection, resulting in healthy populations. The absence of sharks and other predators, is likely to induce significant alterations in ecosystem function, and the subsequent services that seagrass ecosystems provide.

Here, we will experimentally exclude turtles using 'exclosure' cages to investigate the role of turtle grazing in service and resilience. In Eleuthera, turtle grazing pressure and shark abundance is high, and so we will use a comparative site on the island of Bonaire in the Dutch Caribbean, where sharks are largely absent. We hope to improve our understanding of marine plantherbivore interaction, and quantify indicators of ecosystem resilience in order to provide much needed data to aid conservation efforts thought the region.

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

Research@CORE

2018 list of Hosted Institutions and Associated Projects



The Smithsonian Institution | Fort Pierce, FL, USA The tropicalisation of western Atlantic seagrass ecosystems **hosted three times*



The University of Tampa | FL, USA Community conservation of Sweetings Pond **hosted three times*



The University of Alberta | Edmonton, Canada Exploration of the cryptic sponge *Phorbas amaranthas*



Memorial University | St. Johns, NL, Canada From individual to ecosystem: evaluating the effects of the stone crab (Menippe mercenaria) fishery process using simulated fishery scenarios in the laboratory



The University of Essex | Colchester, England An assessment of the social interactions of Octopus briareus within a tropical anchialine lake



Wageningen University | The Netherlands The impact of turtle grazing on the resilience of a tropical seagrass ecosystem







Education@CORE

The Cape Eleuthera Institute and Island School | Eleuthera, Bahamas Community engagement and capacity building using experiential marine research as a platform *Hosted five times

The Bahamas Plastic Movement | Eleuthera, Bahamas Bahamas summer plastic camp, Tarpum Bay, Eleuthera

Space2Create | Eleuthera, Bahamas Bahamas summer plastic camp, Tarpum Bay, Eleuthera

Central Eleuthera High School | Eleuthera, Bahamas Coral reef ecology guest lecture series

Deep Creek Middle School | Eleuthera, Bahamas Residential marine science summer camp, Gregory Town

Gregory Town Primary School | Eleuthera, Bahamas Full-time collaboration with weekly lessons hosted at CORE field station

The Royal Bahamian Police Force | Harbour Island Division, Bahamas Residential marine science summer camp, Gregory Town

The Lyford Cay Foundation | New Providence, Bahamas Residential marine science summer camp, Gregory Town *two programs, funded by

St. Mildred's-Lightbourn School | Oakville, ON, USA Tropicalisation of western Atlantic seagrass meadows

Camp Dudley | New York, USA Community engagement and capacity building using experiential marine research as a platform

Exeter University | UK Stingray anatomical demonstration

Sail Future | St. Petersburg, FL, USA The impact of turtle grazing on the resilience of a tropical seagrass ecosystem

2018 list of Institutions and Associated Programs

Education Spotlight

Project Title: Ecosystems of backyard Eleuthera
Education Leaders: Owen O'Shea and guest scientists
Funding: Public donations
Duration: Two hours every Monday at 1400 hrs
Students: 13 students from Gregory Town Primary School
Ages: 8 - 11 yrs



Our latest and most exciting educational collaboration has successfully been implemented over the past five weeks, where CORE has hosted 13 amazing young students from Gregory Town Primary School. The primary topic of our initial classes has been ECOSYSTEMS, and which ecosystems are local to us here in Gregory Town, why they are important, what threats they face and why we should care. Further to this very special collaboration, we have been tremendously fortunate that in each one of these classes, CORE has also been hosting visiting collaborators, and so each week we have had guest scientists teaching about their areas of expertise! What an amazing treat for these young people.

In week one, Heather Mason-Jones was on site, and assisted with our very first class assessing coral reefs of the Caribbean; week two saw Fee Smulders of Wageningen University (NL), where we learnt all about seagrass ecosystems, and week three we had Pedro Salazar from Colombian non-profit organisation *Amigos del Mar* who held a marine plastics workshop, linking in this persistent threat into our ecosystem learning. However, it was our fourth and fifth weeks that really made the 'headlines', where we hosted the BBC's Blue planet film crew to document CORE's capacity building in Gregory Town.

This was truly an amazing experience, because having spoken to the head teacher of the local primary school – Miss Minnis – we were told that the students' had exams that week, and were unable to attend our regular programming. So, after a brief discussion about the very special guests we had lined up to join us, Dr. O'Shea was advised to write a letter to the district superintendent for education, and ask for special permission to change the school exam schedules, to allow these young scientists the opportunity to work with such a prestigious broadcasting corporation – and she said yes and we made it happen. We spent the first day learning about mangroves and recapping all of our knowledge from the previous weeks' learning, and then on day two, we had our very first field trip where we led students into Pitman Cove a mere 200 feet from the CORE research station where the CORE interns and local volunteers went snorkelling to find common creatures and plants from our very own saltwater backyards. We had an aquarium set up and every 5 minutes or so, a new creature would appear and start a new dialogue.

We had hermit crabs, conch, other marine snails, brittle stars, a baby grunt (fish), a sailor's eyeball! (the world's largest unicellular alga), decorator crabs and much more. Not even the December weather could deter our intrepid marine explorers and this was one of the 2018 highlight for CORE. We will continue this program with the same students in 2019, and hope to expand to a second class at some stage.

A huge thank you to Miss Celestine Bethel, Miss Cheryl Minnis and to the Eleuthera district superintendent for education, in recognition of our mission and to collaboratively foster new education goals for these young scientists.



Finances at a Glance for 2018



Revenue Sources

Our fundraising campaigns for 2018 were incredibly successful with \$18,302 raised, that allowed us to fully transition from concept to physical and refurbished facility. We were also able to generate almost the exact amount of revenue from collaborator contributions. The grants we received allowed the delivery of our marine science programs and contributed to our equipment needs, which, when combined with our equipment gifts made, have provided us with the tools and infrastructure to deliver on our mission with far more efficiency in 2019 and beyond. The organisation was also fortunate enough to be called upon to provide advice and services for a range of international organisations, as well as our media appearances that generated location fees, further contributing to our overall revenue.

In terms of expenditure, considering it was our first year, the majority of funds raised went towards securing the premises for our first 12 – month period, as well as utilities and all other facilities including the full refurbishment and refit of the premises. Salaries and stipends were allocated during field work and residential marine science programs, which totalled 113 days during 2018.

| Gifts and Grants | | | Earned Revenue | | |
|------------------|------------------------|----------|----------------|----------------------|----------|
| | Cash gifts | \$8,822 | | Research support | \$17,974 |
| | Campaign | \$9,480 | | Consultancy | \$9,740 |
| | Grants | \$6,400 | | Merchandise | \$450 |
| | Equipment gifts | \$6,100 | | Total Earned Revenue | \$28,164 |
| | Total Gifts and Grants | \$30,802 | | | |
| | | | | Total income | \$58,966 |

Expenses

| Program expenses | |
|------------------------------|----------|
| Salary & stipends | \$12,115 |
| Fundraising expense | \$98 |
| Rent, utilities & facilities | \$17,952 |
| Equipment | \$3,000 |
| Total expenses | \$49,042 |
| Net Activities | \$9,92 |
| | |

* Statement of activities – preliminary and unaudited from 1st November 2017 – 31st December 2018 Having raised \$30,802 for 2018 and considering that we now have an established field station, it is our goal to raise the same amount for 2019, where we can then apportion funds towards our community education and research goals, instead of start-up costs. It is anticipated that if we can reach this goal, we can fund further marine research projects to use as platforms for our education programs, including the inclusion of Bahamian graduate student supervision. While we are still a young organisation, our dollars do stretch, and so we have some specific gift requests for 2019, that will see us effectively double our services to the community.

| Your gift of | will make it possible to pro- |
|--------------|--|
| \$500 | Operational costs – fuel, field stipen |
| \$1,000 | US based fundraising events, new sr |
| \$2,000 | Outboard engine for research vessel |
| \$5,000 | Compressor for SCUBA operations, |
| \$10,000 | SCUBA equipment for PADI courses |
| \$20,000 | New vehicle(s) for field station |

It should be noted that we can provide our education programs at a cost of \$60 per student per day, and so the above line items will also be used for the continued provision of these programs. Of course, there are other ways in which contributions can be made, for example, hosting a reception or event, visiting us here on Eleuthera, connecting us with potential supporters and students or volunteers.

One of our goals for 2019 is to bring on a full or part-time administrator to assist CORE in the day to day work at the field station in addition to helping with research education and outreach operations within the community. \$15,000 will provide this Bahmanian citizen with a salary that reflects experience and work expectations.



| vide the following for our students and collaborators | |
|--|--|
| ds for interns, insurance, internet, phone, rent and utilities | |
| orkel equipment for students | |
| , IDC to teach Bahamians to dive, conference attendance | |
| SCUBA tanks | |
| 3 | |
| | |
| | |

"Nothing in science has any value to society if it is not communicated, and scientists are beginning to learn of their social obligations" *— Anne Roe*

Media

In December 2018, CORE hosted the BBC's Blue Planet team, for a five-day film shoot in Gregory Town and Cape Eleuthera, with a focus on our community outreach work and ongoing long-term monitoring of stingrays. This truly amazing experience shadowed CORE Founder and Principal Research Scientist, Dr. Owen O'Shea and a team of three CORE interns, as they delivered their weekly science lessons with their Gregory Town Primary School Class including a full afternoon of field work. They then travelled to Cape Eleuthera, where the CORE team, joined up with former colleague Brendan Talwar, and CORE Director, Stan Burnside for three days of filming the intensity of Owen's stingray research.

Shortly after this amazing week with the BBC, Dr. O'Shea flew to Nassau, New Providence, and was hosted by a team of filmmakers at the behest of Condé Nast owned science and technology magazine, Wired. This film shoot is part of an online series called Damage Control, which is a 180-degree immersive series that takes a look at some of the world's most complex life-saving technologies and the wildly kinetic science behind them. The show will air on Wired's YouTube channel and the Google Daydream platform. Owen provided his expertise for a particular episode on emerging technologies that are aimed at providing repellents for wild sharks. This is largely to mitigate any negative interactions with people and sharks, as well as sharks and fishing gear. This is yet another fantastic opportunity for CORE to be promoted, not only as a leader in the immersive scientific training of young Bahamians, but also to maintain its reputation for excellence in marine research in The Bahamas.

Publications

The communication of science is at the very heart of CORE's educational philosophy, but as a research organisation, we continue to meet our obligations by communicating our findings. While CORE is building its portfolio of research that will see many publications in the scientific literature in the years to come, we do have several research papers ready for publication in 2019, that will be the first to associate The Centre for Ocean Research and Education as the main affiliation of Dr. Owen O'Shea.

Media this year inlcuded two remarkable videos that we produced with Communications Director Luke Madden (What is the Centre for Ocean Research and Education?) and CORE Intern Sean Wrinkle (CORE Swim Club Fun!). Both videos, plus upcoming features, are and will be available on the website.





Recently CORE was highlighted in the Lyford Cay Foundation Journal for receiving an education grant of \$5,000 for reach and impact in The Bahamas. The award was followed by the written article in the journal highlighting the work and scope of CORE's impact. The Lyford *Cay Foundation is an educational philanthropic* organisation focusing on educational attainment in *The Bahamas.*



2018 Conference Presentations

O'Shea, O. R.* and Wallace, E. Assessing gene flow using novel next generation sequencing in a cryptic batoid from The Bahamas.

Bahamas National History Conference (BNHC), New Providence, The Bahamas

O'Shea, O. R.* Wallace, E., Schultz, A., Philip, D., Claussen, J., Murchie, K., Burruss, G., Van Leeuwen, T., Cooke, S., and Stein, J. Using acoustic telemetry to develop conservation strategies for bonefish in The Bahamas Bahamas National History Conference (BNHC), New Providence, The Bahamas

Thorndyke, M.* and O'Shea. O.R. Experiential learning through marine research. AcroporaNET Symposium, Leeuwarden, The Netherlands.

O'Shea. O.R.* *Experiential learning through marine research – Two Presentations* Idea Wild Conservation Conference 2018 (Invited Talk), Lyons, Colorado & Rapid City, South Dakota *Presenting Author

In March 2018, Dr. O'Shea and his work with CORE was recognised by internationally acclaimed underwater photographer Philip Hamilton, and Owen was invited to make a contribution to his latest book, launched at the Natural History Museum in London in November 2018. The book features over 300 photos, and profiles of 50 marine biologists across the globe, who are striving to create change, in how we perceive our oceans, and promote its conservation.

Make Waves

The work CORE has been doing on this, and now surrounding islands of The Bahamas, will continue to grow and affect more citizens of these communities as we promote our mission, and with your support we will succeed in delivering free education to the citizens of this fabulous country.

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.

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

*supplementary images courtesy of Shane Gross at shanegross.com

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#MakeWaves...