

2024
FESTIVAL
of seas
Coral Reef

Horizons

Research, Conservation and Education
Creating a sustainable future for the ocean.

www.reefresearch.org



150+

Published scientific papers

50+

PhD, MSc students & internships

70m²

Coral outplanted to the wild

CCMI
Impact

200+

Visiting scientists

150+m

Coral grown

1750+

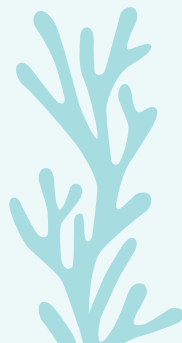
Local scholarships awarded

\$1,000,000

Invested in field research annually

250,000+

Reefs Go Live reach



Coral Reef Horizons

It would be easy to focus on the negatives of ocean health right now, as increasing temperatures from climate change as well as destructive impacts on fish-stocks and precious ecosystems are indeed having adverse effects on the marine environment.

But what makes 'ocean conversation' different from discussions about fossil fuel consumption and international law on the extraction of minerals, which can feel global and out of our control, is twofold:

The ocean is a special place for many humans. What stands us apart from the animal kingdom is the ability to relate, reason and condition our behaviour. A "Thalassophile" is someone who loves the ocean. And the love of the ocean is a strand that can link us all, no matter where you are from or where you live.

Ocean health = our health. We cannot live healthy lives without a healthy ocean. In addition to providing a key food source, an economic source of revenue, and leisure, the entire world's balance is reliant upon our oceans being 'well'.

And there is hope. The ocean can heal itself. Every day, we are learning how we can reduce our impact on marine ecosystems and strike the balance between human needs vs sustainability.

The team at CCMI is working to make a difference. To ensure we protect the ocean for future generations. We are taking responsibility, and by supporting us, collaborating with us and working with us, you too can make a difference.



Together, we can all contribute to brighter coral reef horizons.

Why is the ocean under pressure from climate change?

Super marine heat wave is a new term that has been developed by scientists and published by the US National Oceanic and Atmospheric Administration (NOAA) in response to the records broken by global marine temperatures in 2023^{**}.

Sea temperatures have warmed due to global weather activity, which is linked to a combination of increased greenhouse gas emissions, the transition of El Niño and La Niña events, and a shift in phasing of the multidecadal Pacific-Atlantic-Artic mode^{**}. This is causing the ocean to be warmer for longer, creating havoc for the marine species, as they try to adapt to rapidly heating conditions. Species are dying out at unprecedented rates.

The ocean is also a carbon sink, absorbing excess carbon dioxide (CO₂) through both photosynthesis (of plant-like organisms) as well as via absorption. At sea level, the ocean absorbs CO₂ in response to increased CO₂ in the atmosphere. This increase causes a pressure change – and to balance this out, the ocean absorbs the excess CO₂. In turn, this CO₂ absorption is also changing the chemistry of the water, as the ocean becomes more acidic.

In addition to climate change, the ocean is under threat from over-fishing, pollution (including plastics) and degradation of key habitats.

Coral reefs, which create homes for over 25% of the fish population, are an integral element of ocean health globally. They are the most biodiverse ecosystem in the ocean^{***}, yet they are also one of the most vulnerable.



^{**}<https://www.ncei.noaa.gov/news/super-marine-heatwaves-new-term-growing-concern>

^{***}<https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024GL108369>

^{****}<https://www.unep.org/topics/ocean-seas-and-coasts/blue-ecosystems/coral-reefs>



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Little Cayman – A Beacon of Hope to Understand Climate Change

The importance of Little Cayman

Amongst the coral reef ecosystem devastation across the Caribbean in the last 20 years, there has been a beacon of hope: Little Cayman. Little Cayman has remained one of the healthiest coral reef ecosystems in the region. This success story is not accidental however, and the reefs in Little Cayman have benefitted protection by the following positive actions:

Conservation

The successful Grouper Moon project has protected one of the few remaining Nassau grouper aggregation sites in the Caribbean due to over 20 years of monitoring, research, and collaboration. The partnership of REEF, the Cayman Islands Department of Environment, with support from Scripps Institution of Oceanography and Oregon State University, and the Guy Harvey Ocean Foundation, has contributed to one of the most successful examples of ocean-based conservation in the region, hugely benefitting the local marine ecosystem.



Protection

The Cayman Islands Government, underpinned by the work of the Cayman Islands Department of Environment, ensured we were one of the first countries in the region (and perhaps across the world), to implement Marine Protected Areas (MPAs) and species protection laws. The MPAs were extended to 74.2% in 2021.

World Heritage Site

In 2023, Peter Hillenbrand, the Cayman Islands Department of Environment, and CCMI spearheaded an application to UNESCO to class Little Cayman's MPAs as a natural World Heritage Site. This application has been accepted and marked as 'tentative' as it goes through more rigorous reviews.

<https://www.worldheritagesite.org/tentative/id/6690>

<https://whc.unesco.org/en/tentativelists/6690>

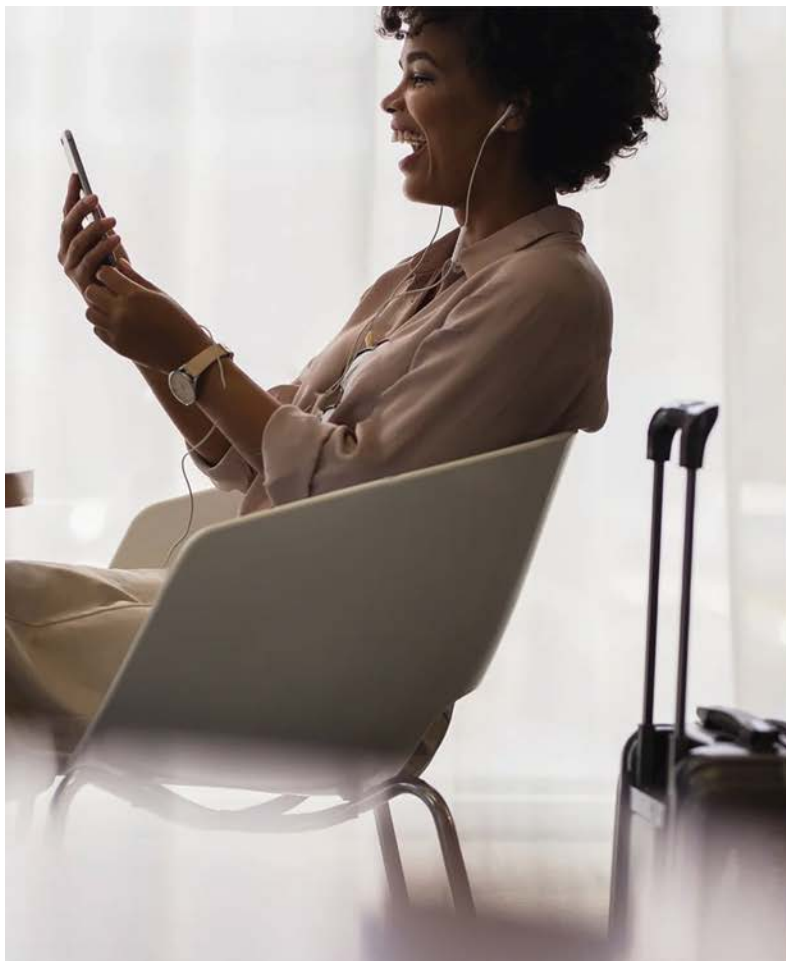
Mission Blue Hope Spot

In 2020, CCMI nominated Little Cayman as a Mission Blue Hope Spot. The combination of the protection in place, the work across the community, agencies and organisations to promote conservation and the work of CCMI to document and further understand how the local ecosystem is fairing in the face of global pressure, resulted in a successful designation as a Hope Spot.

Knowledge & Communication

The work taking place in Little Cayman is shared, locally and globally. In addition to the projects mentioned above, CCMI has been monitoring and publishing data on coral reef health trends for over 25 years, creating empirically based evidence to reef health, that is shared widely. Hundreds of thousands of viewers join CCMI's Reefs Go Live programme as we join the dots between research, education, and outreach to promote a sustainable future for the ocean.

Yet the marine heatwave in 2023 saw a reduction in coral cover in Little Cayman that is unprecedented.



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How Does CCMI Contribute to Coral Horizons?



Research: CCMI has a mission to be a leading research facility in the Caribbean, focusing on the adaptation and resilience of coral reefs in the face of climate change. Our research team, directed by Dr Gretchen Goodbody-Gringley, working with some of the best collaborators in the field, conducts state-of-the-art experimental research, combining large-scale in situ ecological surveys with small-scale laboratory experiments, and molecular ecology, to understand how coral reefs can become resilient to a changing climate. Working at depth, to discover uncharted ocean secrets, CCMI's researchers are pushing the boundaries of science to unlock the secrets of resiliency.

Conservation: Using our understanding of coral biology, CCMI maintains one of longest running coral restoration research programmes in the region. We develop empirically verified methods to understand the role of restoration and resilience. Paired with 25 years of monitoring and the results from our research projects, CCMI contributes to local and region changes in conservation laws and protection, such as the Cayman Islands Biodiversity Action Plan.

Education & Outreach: CCMI takes current research findings and pairs it with immersive and engaging education and outreach initiatives, bridging the gap between research and education. We provide a range of learning and training opportunities for local and international students, including a scholarship programme that supports 100+ students per year, from primary to tertiary level. This three-tier approach to understanding how coral reefs can adapt to changing climate and become resilient is what stands CCMI apart as an organisation.

How Can you Help?

Positively contributing to a sustainable ocean can feel overwhelming.

How can I (just one person amongst millions) make a difference? Well the answer is, you (yes, you) can make a massive difference:

Knowledge – is power. The more you know about the ocean, the more power you have. As we continue to explore and understand the marine environment and all the wonderful creatures that reside there, up to date information is being released every day. By reading and learning, you are creating your own super-power. By supporting CCMI to share current and fact-based knowledge, we can create a network of ocean stewards.

Local - Coral reefs are under local pressure and reducing as many 'other' impacts on the marine environment whilst climate change continues to be wrangled is in fact imperative. Cause, effect, and solutions-based thinking can lead to actions as a local level that make the difference. What goes down your drain leads directly to the ocean. Consider which products you use. Plastic use, disposal, and removal from the ocean is something everyone can get involved with. Reducing your impact on the ocean, whether you have a boat, a property or you swim or dive regularly, you can help by reducing the stress on the environment with every single interaction.

One of the most powerful ways to get involved locally is to vote – use your voice with your local politicians.

Global - Understanding the importance of your local marine environment can contribute to the bigger picture, regarding both climate change and other threats to the ocean. Supporting improved research and collaborative solutions in turn contributes to wider discussion on a global scale – via organisations such as the UN. Raising the discussion on climate change locally, regionally, internationally, can help create awareness. Action is harder to influence but it must start somewhere... you can reduce your carbon footprint. You can advocate for a sustainable future. You can create influence and contribute to change.

You can, alongside millions (and billions) of other humans, become a voice for the ocean and choose to make a difference.



New Horizons for CCoMT?

CCMI has reached capacity at our current site. We have been donated land close to the current facility and we are going to build an 11,000 sq ft facility to enable us to run research and education programmes simultaneously. We will build in three phases – phase 1 will include a dining room, kitchen and students/teach accommodations, which we will begin building in January 2026. The second and third phase will hopefully begin in January 2027.

How can you help?

We need to raise \$1.2 million to complete the first phase – we have already raised \$1.8 million. We need donations to support the Coral Fund, and we have recently launched a 'Buy a Brick' campaign for those donors who want to create a lasting impact, one brick at a time.



Scan the QR code, claim your tile, and leave your mark on ocean conservation.

CREATING FOUNDATIONS FOR Tomorrow



AT DART, we're committed to protecting these islands for generations to come. And that's why we have sustainability in mind in everything we do. Whether it's designing buildings powered by renewable energy, reducing our consumption of precious resources or developing more resilient infrastructure across the Cayman Islands.

Because we believe a better tomorrow starts with the foundations we lay today.

dart.ky



DART

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VOLUNTEER THANK YOUS

We appreciate the support of our Festival of Seas Committee for their hard work in planning tonight's event:

ANNE FRAWLEY | SARA GALLETTY | AMANDA GOODWIN
NICOLA MARTYN | JANE MOON | JACQUI SCOTT
MEGAN WRIGHT

CCMI extends a special thank you to the event night volunteers for making this a memorable evening!

Thank you to the Coral Reefs Horizons Photography Competition judges for selecting the winning photographs:

DOUG ALLAN OBE | AMANDA NICHOLLS | LUANA SORO



CCMT Highlights



25 Years of Coral Reef Monitoring

Since 1998, CCMI has conducted surveys using Atlantic and Gulf Rapid Reef Assessment (AGRRA) methodology. Results from this work helps generate an understanding of the mechanisms that are driving reef resilience in a changing environment.

Supporting Young Caymanians

CCMI has provided over 1750 scholarships since our first big grant in 2007 from the Edmund F. and Virginia B. Ball Foundation. We invest US \$150K per annum in scholarships for local students via residential programmes. Our Young Environmentalist Leadership Course provides dive training, education and job skills to students (ages 16-20) and introduces them to the basics of marine ecology and the importance of coral conservation. Our Marine Ecology Courses support students from ages 10-18 who learn about the marine environment while staying at the Little Cayman Research Centre.

Investing in Research

CCMI now invests circa US \$1million per year in our research programme. We are supported by international governments (US National Science Foundation, UK Darwin Plus Initiative, and the EU Resembid programme), as well as a number of international and local foundations, private trusts, and private donors.

Expanding our Reach

CCMI reaches more than 300,000 people annually on social media platforms. We value this space as an educational podium, a place to share knowledge on important ocean-related topics, and place of interaction. We would love to bring everyone to Little Cayman, to engage with our reefs first hand – but this won't ever be possible, so connecting digitally is a crucial tool in our communications and outreach armoury.

International Science

CCMI collaborates with specialists from around the world, sharing knowledge and skills to create greater impact. We have hosted over 200 visiting scientists and our list of collaborators continues to grow. We also host 250+ college students per annum, expanding our future science leaders, as well as our alumni and a growing professional network.

Supporting early career scientists

CCMI supports early-career scientists through internships and entry-level research positions, providing lab and fieldwork experience opportunities to develop skills in analysis, presentation and writing. We provide a minimum of 10 paid internships a year and support researchers via post-doctoral positions.