CCMI

IMPACT SUMMARY

COMMITTED TO CORAL REEFS

State of the art research
Impactful and engaging

www.reefresearch.org

WHO IS CCMI?

WE ARE A TEAM OF SCIENTISTS, EDUCATORS AND COMMUNICATORS WHO RECOGNISE THAT CORAL REEFS ARE CRITICALLY IMPORTANT YET THREATENED ECOSYSTEMS THAT REQUIRE IMMEDIATE PROTECTION. WE ARE COMMITTED TO UNDERSTANDING THE IMPACTS OF NATURAL AND HUMAN-CAUSED THREATS TO BIODIVERSITY, INCLUDING CLIMATE CHANGE, IN ORDER TO CREATE A MEANINGFUL PATHWAY TOWARDS MARINE SUSTAINABILITY FOR THE FUTURE.

Research
CCMI has a mission to be a leading research facility in the Caribbean, focusing on the adaptation and resilience of coral reefs. Our research team conducts state-of-the-art experimental research, as well as 20+ years of monitoring and observational studies, to understand how coral ecosystems respond and evolve in the face of climate change.

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 ensure successful, complex restoration can boost wild coral populations and promote biodiversity on coral reef ecosystems, helping to restore populations of threatened coral species across the Cayman Islands.

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. We are inclusive, diverse, cutting-edge and ocean loving people who want to create a brighter future for oceans via partnerships, collaborations and communication.

The team at CCMI have a range of skills, interests and abilities, yet we all have a common goal: we all love the ocean, feel passionately about coral reefs and want to be part of the solution, creating a positive future for coral reefs and the ocean.

WHY DO WE NEED CCMI?

THE MARINE ENVIRONMENT IS THE BIGGEST, MOST IMPORTANT CONTRIBUTOR TO PLANETARY HEALTH. YET THE OCEAN IS NOT BEING PROTECTED OR WELL MANAGED GLOBALLY, AND MANY SCIENTISTS BELIEVE WE ARE AT A CROSSROADS - SAVE THE OCEANS NOW, OR DAMAGE THEM (AND HUMANITY) FOREVER.

The biggest threats to ocean and coral reef health are:

Climate change
Changing climate is decimating coral reefs. Warming oceans (which causes increased disease and bleaching, algal blooms, shifts in migratory patterns, and alterations to recruitment/ reproduction), ocean acidification (which weakens the skeletal structures of many marine organisms), and increased storms (frequency and intensity), all result from anthropogenic induced climate change.

The ocean is being impacted by climate change at a multitude of levels, so investigating how coral reef ecosystems can adapt and become resilient to the impacts of climate change is incredibly important. Whilst the marine environment can adapt, the rate of ocean warming plus increased local stressors (below) is pushing the ocean to a crisis point.

Environmental impacts (non-climate related)
Pollution (including plastic)
Overfishing
Invasive species
Destruction of habitat

The best way to manage the ocean, in the face of climate change, is to reduce all the non-climate related stressors. CCMI undertakes an ecosystem approach, as well as long-term data collection, to ensure we can create tangible policies and protection measures to sustain coral reef biodiversity for the short and long-term. We need to protect marine biodiversity to ensure: healthy reefs; healthy ocean; and a healthy planet.

HOW IS CCMI IMPACTFUL?

Research

CCMI's Reef Ecology and Evolution Laboratory (REEL) is a state-of-the-art research group that investigates how coral ecosystems function, including adaptation to depth, thermotolerance (heat), and resilience, in order to maintain biodiversity in the face of climate change. Understanding how marine life, including fish and corals, adapt and connect within extreme environments is also critical to restoring key ecosystem functions. The team partners with important collaborators all around the globe, ensuring our work is relevant, informed and reaching a broad audience, publishing peer review papers and sharing our findings via interactive webinars, videos, presentations and conferences.

Invasive species – since 2009, CCMI has been researching the invasive lionfish (Pterois volitans) and Dr Goodbody-Gringley also has an extensive background (10+ years) in researching lionfish distributions, impacts to reef communities, efficacy of targeted removal strategies, and development of a sustainable fishery.

Conservation

In 2012, CCMI launched the first ever coral nursery in the Cayman Islands. We don't just grow endangered corals, we have an in-situ, long-term research study that looks at how we can grow more robust and resilient corals, so they can withstand disease, heat and storms, whilst repopulating the wild reef.

Our methods have improved outplanting success rate to 89% (normally >10%). The team also investigates reef complexity and the impacts of restoration on fish communities, creating insight into how we can promote sustainable reef ecosystems. Our 20+ year dataset indicates that Little Cayman's reefs are 'healthy' and the trends over 20 years show a pattern of reef health and increased coral cover. CCMI's work seeks to support local policy development, especially the biodiversity action plans for key species.

Education & Outreach

In addition to hosting over 200+ local students and 200+ international students each year, CCMI has an extensive, diverse scholarship and internship programme that supports under-represented early career scientists and students, to ensure our future generations are engaged with marine sustainability. To our knowledge, outside of formal education, CCMI operates the biggest scholarship programme (100+ participants) in the Cayman Islands. Our new Ocean Science Scholar intern programme supports up to 8 interns per year. CCMI also provides ocean literacy digital resources for students and teachers, including the Reefs Go Live programme, which reaches 40-60k participants a year.

WHAT MAKES CCMI UNIQUE?

- Firstly, our lab is situated in Little Cayman, which has limited local anthropogenic stress, so we can research the impacts of (and solutions to) climate in a focused, uninterrupted way. Few coastal locations offer this opportunity to understand corals and the marine ecosystem in a nearly pristine state as stressors caused by human development is increasing.

- We conduct year-round science in situ. The team are on the ground and our projects are underpinned by a 20+ year dataset. Not only can we respond quickly to localised issues, like disease outbreaks, but the team have an abundance of local knowledge that is critical to understanding the marine environment. We partner with amazing specialists to improve our skills and application to the issues we are investigating.

- CCMI's facilities are sustainable and high tech. We are a remote marine field station, so we will never be as well-equipped as government or university laboratories, but for the immediate needs in the field, we have what we need to conduct state-of-the-art science.

- Research, conservation, education - this a deliberate, strategic approach to encompass three key areas of activity. This approach means our research connects to outreach and education efforts, effectively and immediately, having greater impact and living beyond the academic sphere.

- CCMI has always supported women, under-represented minorities and provided opportunities for young scientists who need financial help to progress. We are a diverse and forward-thinking organisation, with a collective love of the ocean.

- CCMI communicates. Our work is translated into useable and engaging content, via our digital and face to face outreach programmes. This is the only way to create long-term change, by engaging everyday people, via a multi-faceted communications approach to protecting reefs for the future.

WHERE DO WE WANT TO GO IN 2022 AND BEYOND?

Covid-19
The impacts of the global pandemic are still impacting everyday life at CCMI, as well as our long-term planning. Border closures, social distancing measures in the Cayman Islands, the inability to travel internationally and changes in education protocols are challenges that we don't see going away in the short-term. A priority for CCMI is to continue to effectively adapt to the chaos of a world being impacted by Covid-19.

Engagement
Developing a sustainable future for the marine environment is going to take a concerted effort by an international community. CCMI will continue to develop and broaden our outreach and education to ensure high quality and current information is available for everyday people to engage with. We will also progress our programmes that target under-represented minorities, women and early-career scientists.

Expansion
Our facilities in Little Cayman are at capacity. In 2022 and beyond, we plan to expand our accommodation, labs, human resources and facilities to ensure we can conduct research, conservation and education simultaneously.

REEL
CCMI's Reef Ecology and Evolution Laboratory is supported by a US National Science Foundation grant (2020-2024). In 2022, we plan to expand the theme of understanding how corals can adapt to extreme environments, as record global temperatures reiterate that this work is timely and urgently needed.

Impactful Output
Via CCMI's restoration projects and REEL, CCMI plans to expand our collaborative network and raise the profile of CCMI and the Cayman Islands internationally. Working with the best scientists, conservation managers, communicators and educators is absolutely essential to CCMI's impact.

IMPACT HIGHLIGHTS

45m²
Coral outplanted to the wild

50+
PhD, MSc students and internships

100+
Published scientific papers

100+
Published scientific papers

100+
Visiting scientists

1500+ km
Coral grown

1500+
Local scholarships

200,000+
Reefs Go Live reach

$1,000,000
Invested in field research every year

TIMELINE

1998 – CCMI was founded by Dr Carrie Manfrino as a US non-profit. CCMI began our coral reef monitoring programme that tracks changes in coral reef and fish health.

2002 – CCMI was incorporated as a registered Cayman Islands Charity (#NP-3)

2003 – CCMI was determined as a US 501 (C) 3 (#22-3609293)

2004 – CCMI was incorporated as a UK registered charity (#1104009)

2005 – HRH The Earl of Wessex, CCMI's Royal Patron, breaks ground on the Little Cayman Research Centre, which has been developed into an award-winning research facility specialising in coral reef resilience.

2007 – A flourishing research and education programme was established, including visiting scientists and groups from Dartmouth, University of Florida, Welsley College, Rutgers University, Keane University, University of North Carolina etc. CCMI was awarded our first $500k multi-year grant.

2009 – CCMI partnered with the United States National Oceanographic and Atmospheric Administration (NOAA) to launch the Coral Reef Early Warning System (CREWS) as part of the Integrated Coral Observation Network (ICON). CCMI launched our Ocean Literacy programme.

2012 – CCMI was awarded a US National Science Foundation facilities grant to develop the climate change labs at the Little Cayman Research Centre. CCMI also established the first ever coral nursery and coral restoration research programme in the Cayman Islands in partnership with the Cayman Islands Department of Environment.

2016 – CCMI held the "Can we Save Coral Reefs" International Symposium in London, convened by HRH The Earl of Wessex, hosting scientists, policy makers and advocates from all over the world. HRH The Earl of Wessex also visited the Little Cayman Research Centre.

2017 – CCMI attended the Fourth International Workshop on Bridging the Gap between Ocean Acidification Impacts and Economic Valuation, in Monaco, hosted by Prince Albert II of Monaco. CCMI also held a Navigator event, hosted by our Royal Patron, HRH The Earl of Wessex, at Windsor Castle.

2018 – CCMI launched our Reefs Go Live programme, teaching students from under the ocean. 2018 also saw a 20-year coral reef monitoring follow up study across all three of the Cayman Islands. We celebrated the International Year of the Reef via a range of public outreach events, including a Royal hosted event at St James's Palace, London.

2019 – CCMI hosted HRH The Prince of Wales at the Little Cayman Research Centre, including a Reefs Go Live broadcast. CCMI also launched the Women in Ocean Science Award (WIOSA), to support early-career professionals. CCMI launched Vision 2025, as part of our strategic planning.

2020 – CCMI hired new Research Director, Dr Gretchen Goodbody-Gringley, to further establish and develop CCMIs research and education strategy, expanding our work on climate change and reef resiliency. Dr Goodbody-Gringley was awarded a National Science Foundation grant, CCMI's first as lead PI/ Institution. CCMI championed Little Cayman as a Mission Blue Hope Spot, as well as seeing 89% success with a new coral restoration outplanting concept.

2021 – CCMI provides the most local scholarships in one year since our inception and expands the Reef Ecology and Evolution Lab (REEL). CCMI's reef monitoring indicates 27% coral cover in Little Cayman, indicating a 'healthy' reef ecosystem that can be resilient to changing climate, with limited anthropogenic impact.

GET INVOLVED

Donate

Become a Navigator

Volunteer

Engage with the Healthy Reefs outreach programme

Share Reefs Go Live

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www.reefresearch.org

GUIDESTAR PLATINUM TRANSPARENCY 2021

CCMI is a US 501 (C) 3 non-profit (22-3609293), a Cayman Islands registered charity (NP - 3) and a UK registered charity (114009).