Green Guide to the Cayman Islands
Special Publication No. 2: Climate Change & The Sea Around Us
By Dr. Carrie Manfrino
We are the biggest threat to our own quality of life.

Take action–Preserve our Planet!
A message from the Chairman

Preserve our Planet

In this second Green Guide, CCMI launches a campaign in the Cayman Islands to “Preserve our Planet!” Our mission is to sustain marine biodiversity through research, education, and conservation. In partnership with the community, our Green Guides promote a conservation message that will inspire action to preserve our natural treasures.

In 10 years, marine science tells us that 44% of the relative coral cover on our reefs has been lost. However, nearly two thirds of the reefs in the Caribbean are at risk and one third of them are at high risk. (World Resources Institute 2004).

CCMI has embarked on a new and vitally important mission to address major threats facing the Cayman Islands, the Caribbean basin and the world’s oceans. Our two greatest challenges are:

- How will reefs survive rising ocean temperatures and climate change?
- and
- How can we protect what is left?

This Green Guide provides a brief summary of the alarming evidence of changing climate in the Cayman Islands. As we illustrated in our first Green Guide (2008), our lives on these three magical islands are intimately connected to the land and the surrounding sea. Our economy depends on keeping our islands healthy, because our coral reefs, our beaches, our natural heritage, all draw many thousands of overseas visitors to our shores. It is our responsibility, as stakeholders sharing this beautiful environment, to do what we can to minimise our impact upon it.

Sadly, after ten years of research exploring coral reefs, we have learned that our marine environment continues to suffer from human neglect and from climate change. Fish stocks worldwide are declining, and pollution, human population pressure, global warming and simple carelessness have stressed our oceans. Some of this cause and effect is already being felt in our islands, and is impacting on our spectacular coral reefs.

In many ways, the sea is the link between our past and our future. We hope that this Green Guide to the Cayman Islands, focused on climate change, will help you to appreciate and understand the ways in which we can all work towards protecting our wonderful island environment for future generations. Ogier has once again generously sponsored the Green Guide, and are helping us to preserve the natural and cultural heritage of our islands. We are asking for each and every company, individuals, and guests to follow their leadership and take steps toward conserving the diversity of life on our islands.

Peter Hillenbrand
Chairman
Central Caribbean Marine Institute

About our Chairman:
Peter Hillenbrand has been visiting the Cayman Islands since 1973 and moved to Little Cayman in 1995. He was instrumental in helping CCMI become established in the Cayman Islands. He continues to support our efforts to build the Little Cayman Research Centre and to empower our youth to be conservation oriented. He provided the logistical support and joined the diving team in the first survey of the reefs around Little Cayman and Cayman Brac in 1999. Peter is continuously exploring renewable energy designs for his Little Cayman resort, the Southern Cross Club.
introduction

Shaping our Islands: Sea Level, Storms, and Changing Climate

Anyone who was in Cayman during such recent events as Hurricane Ivan, Gustav or Paloma knows how powerful Mother Earth’s natural forces can be. The seemingly endless ebb and flow of the sea has shaped our three small islands over millions of years. Science shows us that changes in sea level over the millennia are revealed by deep notches carved in the coral reef walls by the crashing of the waves. In summer 2008, CCMI scientists using a submarine ROV (remotely operated vehicle) discovered notches at 120 m below sea level along Bloody Bay Wall, probably dating from what geologists call the Last Glacial Maximum. This was the last time that ice covered a large extent of the northern hemisphere—more than 18,000 years ago. Just as melting glacial ice is causing sea levels to rise today, expanding ice sheets during the Last Glacial Maximum resulted in lowered sea levels around the islands.

Such discoveries show us that we live on a dynamic, continuously changing planet. This Green Guide is a brief summary of the spectacular evidence of changing climate in the Cayman Islands. We also want to show how our daily lives can interrupt the delicate balance the earth maintains. This guide briefly describes some of the tools scientists use to understand both ancient and modern climate and we propose some adaptive strategies that could make the difference.

Our Cayman Islands community is resilient, and we are smart enough to make good, positive choices. These everyday choices may mean the difference between total environmental collapse and maintaining a wonderful biologically diverse ecosystem—the world in which we live.

Many friends who were born and grew up in the Cayman Islands tell us stories about the rich diversity of life in the sea around us. Historical records tell us that our seas teemed with turtles, groupers, sharks, rays and parrotfish. Lobster and conch were easily found. Like the ebb and flow of the sea itself, such bounty seemed to be an endless resource. Low human population, no industry, and no commercial fishery in the Cayman Islands have largely helped preserve the marine habitats that we enjoy today.

Our island environment is shaped and formed by the ocean.
HAZARD: Today, a growing human population and intensity of development could result in a total collapse of our coral reefs. This Green Guide is written as a call to action for each and every person living, visiting, or running a business here to “Preserve our Planet!”

World Resources Institute, Reefs at Risk in the Caribbean (2004). WRI scientists report that about 9 percent of the world’s mapped reefs are found in the Caribbean region. However, nearly two-thirds of the reefs are at risk and one-third at high risk. The map illustrates the level of risk for the Cayman Islands at medium to high.
The CCMI Green Guide to the Cayman Islands aims to:

- **illustrate** how our everyday life is inextricably linked to the natural environment that surrounds us in Cayman.

- **inspire** each individual to take action and make changes that will have a positive impact on the environment and on our own quality of life.

- **expose** some of the shocking threats to our most critical habitats, species, and to humans.

- **communicate** to businesses, residents and visitors the value of preserving the biodiversity of our islands.

- **offer** some concrete examples of the best green practices that will help Preserve our Planet!

Humans are more vulnerable and more threatened on low-lying tropical islands than almost anywhere on earth. Increasing storm intensity and frequency and rising sea levels are real threats.

Fourth Assessment Report, 2007, Intergovernmental Panel on Climate Change, United Nations Environmental Program
Healthy human populations require healthy environments...

A Walk Back Through Time: Sea Level, Storms, and Changing Climate

Have you ever wondered what the Cayman Islands would be like if you could go back in time 7500 years, and again 18,000 years, and again 125,000 years?...And can you imagine what the islands might be like in the future? Scientists studying the modern and ancient reefs of the Cayman Islands have given us a glimpse of what the islands were like back in time and from this information we can make an intelligent prediction about the future.

125,000 Years Before Present

The ironshore rocks that encircle our islands contain fossils of coral species similar to those living on our reefs today, but radiometric dates tell us they lived 125,000 years ago. These rocks contain fossilised brain corals, finger corals, and massive star corals and are evidence that sea level had to be 6 meters (18 feet) higher than it is now for these ancient reefs to develop. This rise in sea level is recorded globally and represents a time when the earth was warmer than it is today. This caused Northern Hemisphere ice to melt, and yet coral reefs thrived. Then, much of our islands were under water. The entire western side of Little Cayman was a shallow lagoon and much of the interior of Grand Cayman was flooded as well. These dramatic shifts in our climate system provide evidence for geologists to estimate how far sea levels could rise, and to model what might be in store for us.

18,000 Years Before Present

In the Cayman Islands, there is clear geological evidence that sea level was also much lower than it is today. The evidence of lower sea level, well below the reef edge, is seen from the notches carved by breaking waves on the reef walls around all the Cayman Islands. During the last Ice Age 18,000 years ago, massive ice sheets marched deep into the North American and Eurasian continents. Sea level dropped 120 meters (around 400 feet). Our three islands were bigger than they are today with about 25 - 30% more land mass.

7500 Years Before Present

In 2002, a young scientist made an astonishing discovery off the east end of Grand Cayman. He found an ancient ‘forest’ of elkhorn coral, frozen in time and about 7,500 years old. The corals are 20 meters (60 feet) below sea level, much deeper than this coral normally lives. Rapid rises in sea level caused this sudden drowning of the local reefs. As sea level continued to rise new reefs developed landward. These are the reefs that protect our islands today.

Photo: ©2008 CourtneyPlatt.com
Time Capsules

Geologists measure the magnitude of rising and falling sea level using reefs and other evidence in the rock record. We use this information to estimate the potential future fluctuations in sea level. Along with tracking rising and falling sea level, and melting ice, we use rocks and fossils to map increases in aridity (or desertification), increases in storm frequency, and changes in ocean and atmospheric temperature. In particular, changes in the concentration of carbon dioxide (CO₂) can be measured from tiny bubbles frozen in ice cores, and changes in the amount of ice covering the earth is measured from tiny plankton recovered from the great depths in the ocean.

When we begin to reconstruct the climate history of the earth, we realize that humans are having an unprecedented effect on our atmosphere by producing massive volumes of so-called greenhouse gases like carbon dioxide (CO₂) and methane (CH₄). Throughout the Earth’s 4.6 billion year history greenhouse gases have been important to maintaining the temperature of the earth. They form a vital barrier in the upper atmosphere which shields us from the harmful effects of the sun, and also help insulate the earth. But today, the volume of CO₂ being pumped into the atmosphere and into the ocean is so great that we can measure the increase on an annual basis.

The Tipping Point?

What’s in store for Cayman? Has the intensity and frequency of storms in this decade increased because of measurable rises in ocean temperature? Precisely measuring the changes in the ocean as our climate changes is vital to forecasting and predicting future climate impact. We will need to adapt, make changes, and attempt to fix the problem.

MALDIVES—A RADICAL ADAPTATION STRATEGY: Averaging just 3 feet above sea level, the islands of the Maldives are especially vulnerable to rising sea levels. Recognizing that rising sea levels threaten their existence, the newly elected President of the Maldives is looking for a new home for the 400,000 citizens of his country. Sea walls almost ten feet high have already been constructed around the capital city, but Maldivians already feel the imminent danger and are making dramatic plans. Using some of the income from tourism, the Maldives’s president has established a savings fund which might allow the islands to buy dry land in another country if the islands become submerged as the Indian Ocean rises.

Will Caymanians need to establish an insurance policy like the Maldivians?

This graph illustrates that atmospheric carbon dioxide concentrations are rising at a rapid rate. We see measurable increases in just the last 5 years. Graph from NOAA, December 2008.
Ocean Acidification

35% of carbon dioxide released by human activities is being dissolved in the ocean. The ocean has become 30% more acidic in the past 150 years. Simple chemistry suggests this will have a negative effect on skeletal producing marine organisms. As oceans become more acidic, marine organisms like corals and snails are predicted to have problems making their own shells and skeletons.

Coral Disease, Bleaching, and Mortality

We know that 44% of the relative amount of coral cover in the Cayman Islands has been lost between 1999 and 2007. Our reefs on average had 26% coral cover in 1999, but this has now dropped to about 14%. Losses are even higher elsewhere in the Caribbean and in many other parts of the world.

Wave Energy

Why should we worry? Because 80% of wave energy from approaching storms is dissipated by the reef structure. As reefs decline structurally, our beaches will erode, and threats from flooding to homes and businesses will increase.
threatened lifestyles

Top Threats to Healthy Lifestyles

As sea level continues to rise, humans will need to adapt. Waste and water resource management, sewage treatment, and urban plans will require major adjustments as our climate changes and storms increase and reefs decline.

Good adaptive planning for coastal communities will consider:

- Sewage Treatment
- Waste Management
- Urban Planning
- Increased Storm Activity
- Declining Coral Reef Habitats

Acidic Oceans

Declining coral reef structures:

Until now, the ocean has been buffering climate change by storing as much as 35% of the carbon dioxide (CO₂) that has been emitted into the atmosphere. However, as CO₂ dissolves in the ocean it reacts with seawater and makes it more acidic (by decreasing the pH). Since industrialization, the burning of fossil fuels and harvesting of wood products has led to these increases. The ocean has become 30% more acidic. Scientists are measuring the effects on skeletal organisms, like corals and encrusting calcareous algae. It is the tiny skeletons of these creatures that are needed to build a coral reef and cement it together into a solid structure. As ocean acidification continues, researchers predict that reefs will become dominated by non-skeletal producing, soft tissue organisms, like anemones.

Ocean acidification is a threat to corals and skeletal organisms. Some scientists are predicting that on reefs of the future anemones will replace stony corals.

“Scientists from the Carnegie Institution’s Department of Global Ecology have calculated that if current carbon dioxide emission trends continue, by mid-century 98% of present-day reef habitats will be bathed in water too acidic for reef growth. Among the first victims will be Australia’s Great Barrier Reef, the world’s largest living structure.”
Will Corals Survive the Big Bake?

As well as the stress caused by rising sea temperatures, coral reefs are facing challenges from:

- **Disease**
- **Climate**
- **Ocean Acidification**
- **Coral Bleaching**
- **Human Neglect**
- **Pollution**
- **Overfishing**

*Acropora cervicornis*, better known as elkhorn coral (photo 1), was once abundant around the Cayman Islands. Here is a large colony competing with another branching coral. Below it (photo 2) the same colony has died and now is encrusted with algae. Elkhorn coral is now listed as a threatened species and very few colonies can now be found in the Caribbean and around the Cayman Islands.

(Graph showing the major decline in the amount of live coral cover around Little Cayman. Much of the loss happened between 1999 and 2004.)

*(Photo 3, above) Coral showing severe damage due to a disease we call white plague. The causes of many coral diseases are still unknown, but scientists believe that stress factors including increased sea temperatures, sediment and pollution play a key role.*
CCMI’s Scientific Mission

We hope to provide solutions that reduce the human threats to Caribbean coral reefs. We are working to better understand what is causing the decline in the health of coral reefs and what could contribute to a more resilient reef.

Corals are massive living organisms but coral reefs cover far less than 1% of the total area of the ocean’s surface. However, scientists estimate more than 1 million species of fish, invertebrates, marine plants and algae—around 25% of all marine life—make their home on reefs. Many deep sea fish species that humans take for food also use the reefs as spawning grounds or as habitat as juveniles.

Unfortunately, the evidence of severe damage to the health of the reefs around Cayman is already here. Scientists at the Cayman Islands Department of Environment and CCMI scientists have, working independently and using different methods, measured the same major changes on our coral reefs. In 2007, CCMI published a peer reviewed article that revealed a massive decline of (on average) 44% in the relative amount of live coral on our reefs. This decline led us to ask some new questions and to set up some new studies to discover and understand how we might preserve resiliency in our reefs. CCMI is conducting three scientific studies which will provide information on whether reef life is adapting to changes in the reef structure and living conditions.

1) Early History of Coral Reefs
One of CCMI’s studies is measuring the growth of the juvenile coral populations on our reefs to answer questions about their longer-term survival and recovery. Juvenile coral communities represent more resilient but less massive species. Changes in coral communities will undoubtedly result in changes in reef function. Based on preliminary results, reefs in the future are somewhat different to what we have today.

2) Biodiversity Research Project
CCMI is producing a permanent photographic archive of the biodiversity of the reefs in the Cayman Islands. This project was designed to involve volunteer divers as part of our Dive With a Researcher program who help to document the overall composition of the reefs. As our climate changes we want to know how the major reef components are adapting, competing, or disappearing.

3) Intermediate and Deep Reefs
In 2008, we began a new study to explore the potential for Cayman’s deep reefs to provide refuge for corals and to potentially reseed the shallow reefs. Our hypothesis is that those reefs at greater distance from the coastal environment will usually show fewer signs of stress. This project will continue over the next three years.

Good news and bad news: What have we learned so far?

- In spite of losses, corals are regenerating in Cayman. Juvenile corals are establishing new growth.
- Substrate, free of competing algae is available for young corals.
- Sadly, corals at intermediate depths (20 - 30 m) appear to be suffering.
Ideas for Adaptation Strategies

- Assess the Marine Protected areas and the current environment zones to be sure we are protecting the reefs.

- Aggressively identify and then protect areas that are critical to providing larvae for new corals.

- Conduct research to understand why some corals survive and are resistant to disease, bleaching, and mortality, and replicate these assets.

- Ensure that all representative habitats are protected.

Can our Coral Adapt?

With the loss of 44% of Cayman’s relative coral cover since 1999, is it possible for our reefs to reproduce? If not, how long will it be before they are totally gone?

Will corals adapt quickly enough to make a difference to human populations?

Can we engage the Cayman community in time to reverse the damage to our Islands?
Solutions: Build Resiliency and Redundancy into Coral Reefs

The scientific evidence for global climate change is here: melting ice sheets, measurable rises in sea level and atmospheric temperature, measurable increases in ocean acidity, and massive coral mortality. Changes to the natural climate cycle will lead to numerous other negative effects on our daily lives: increased frequency and intensity of storms, more rapid surges in sea level and long term rises in sea level. Coupled with stress factors such as unmanaged waste (sewage), this is a sure recipe for catastrophe.

Scientists believe that there is a strategy to give coral reefs a level of ‘insurance’. This means evaluating whether each type of reef habitat has an appropriate level of protection from threats like harvesting and depletion because of pollution or overuse. If all the representative habitats are protected then the risk of losing any one set of organisms with a specific function within the ecosystem is reduced.

To build resiliency we must start by:

• Protecting critical areas (such as fish spawning sites).

• Increasing Marine Protected Areas to preserve reef larval connectivity across entire regions. This strategy requires that we understand how spawning corals, fish and other larvae move around the region. Networks of Marine Protected Areas that connect the flow of reef dwelling organisms at their early stages of development will reduce extinctions. Fish, invertebrates and coral larvae are carried over huge distances from their spawning grounds by ocean currents. Some reefs are thought to be self-recruiting which means they should be capable of replenishing themselves.

Working with our partners, CCMI plans to develop clear strategies that will build resiliency into our reefs.
Lead the Way...Preserve our Planet!

We can reduce the human threats to Caribbean coral reefs

How? By better understanding:

- How reef organisms are responding to environmental stress (climate change/human impact).
- What is causing the declines in the health of reefs?
- What could contribute to a more resilient reef?
- How are our reefs connected locally, regionally, globally?

What are we doing?

Installing a state-of-the-art Ocean Observatory is paramount to our work in the Cayman Islands.

In collaboration with NOAA (National Oceanic and Atmospheric Administration) we are installing an Integrated Coral Observing Network (ICON) station—this will help understand how environmental changes in the physical ocean and atmosphere are related to changes we see in the ecology of the reef. Understanding the connections between man and the environment will help Park Managers establish the best protection strategies for coral reefs. It will also help educators, reef scientists, climate change modellers, and social scientists to promote realistic solutions to the current problem of coral reef decline.

Knowledge gained from this research will be effectively communicated to the public and institutions that can use the data to help make the changes that will reduce the decline of our reefs.

Photos Above: Integrated Coral Observing Network (ICON) pylon installed off Little Cayman to measure environmental conditions on coral reefs.

Photo Left Page: CCMI and NOAA are partnering to install an Integrated Coral Observing Network pylon like this one to the north of the Little Cayman Research Centre to monitor the environmental conditions around our coral reefs.
Cayman Environmental Laws and Policy

Open and Closed Seasons:

The protection of the beautiful and diversified natural resources of the Cayman Islands is vital. For this reason there are some guidelines to follow. Please seek guidance from the Cayman Islands Department of Environment for a complete set of environmental laws and if any of the following limits, seasons, restrictions, or general rules are unclear. Fishing Licenses are required—except for catch & release!

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<th>CLOSED SEASONS &amp; LIMITS</th>
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<tr>
<td><strong>Conch and Lobster:</strong> Closed Season 1st May - 31st October - open season catch limit is 5 conchs per person/10 per boat, which ever is less.</td>
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<td><strong>Echinoderms:</strong> May not be taken from Cayman waters at any time.</td>
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<td><strong>Lobsters:</strong> 1st March - 30th November (CLOSED) - open season catch limit for lobster is 3 per person/ 6 per boat, which ever is less.</td>
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<td><strong>Nassau Grouper:</strong> No fishing in designated spawning areas from 1st November through March 31st. Additionally no one may spearfish or set a fish-pot within a 1 mile radius of any designated grouper spawning area from 1st November through March 31st. No Nassau Grouper may be taken by speargun. Size limit of 12 inches minimum applies year round.</td>
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<td><strong>Sharks:</strong> No feeding or attracting of any type of shark allowed.</td>
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<td><strong>Other Protected Fish:</strong> Goliath Grouper, Tilefish (whities), Filefish (Pipers), and Angelfish (including grey, french, and queen fish) may not be taken at any time. A Fish Size limit of 8 inches minimum on all other fish, except goggle eyes, herrings, anchovies, and silversides applies.</td>
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<td><strong>Turtles:</strong> Closed 1st April - 31st October. Only a handful of remaining traditional Caymanian fishermen are eligible and require a license from the Marine Conservation Board. Additional rules apply and are strictly enforced. No more than 4 turtles can be caught between the months of November and March. Only Green and Loggerhead Turtles may be taken. Turtle over the maximum allowable size of 24 inches Curved Shell Length and under 16 inches CSL shall not be taken. The use of any spearing device, or any net which is affixed to any object in any manner (e.g. ‘swing’ or ‘set’ net) is prohibited. Turtles shall not be taken along West Bay Beach or in the George Town Harbour, or in any of the Bays. Possession of turtle eggs is strictly prohibited.</td>
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<td><strong>Whelks:</strong> Closed 1st May - 31st October - Open season catch limit 2.5 gallons in shell limit or 2.5lbs of processed meat.</td>
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<td><strong>Chitons, Bleeding Teeth and Periwinkles</strong> may not be taken from Cayman waters at any time.</td>
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cayman islands marine parks

know the marine park signs
- Designated Grouper Hole
- Sand Bar - No Scuba Diving Zone
- Wildlife Interaction Zone
- Environmental Zone
- Marine Park
- No Dive Zone
- Replenishment Zone
**General Rules**

- Damaging coral by anchor, chains, or any other means anywhere in Cayman waters is prohibited.
- No taking of any marine object alive or dead while on scuba.
- No taking of any coral, sponge, etc. from Cayman waters.
- Wearing gloves while diving or snorkeling is prohibited.
- Export of live fish is prohibited.
- Fishing with gill nets, poison, or any noxious substance is prohibited.
- Dumping anything into Cayman waters is prohibited.
- Export of conch shells & black corals requires a CITES permit.

**Violations in Cayman may incur severe penalties**

- Violation of any of these laws is an offence carrying a maximum penalty of CI$500,000 fine and one year in jail.
- Upon conviction, forfeiture of the vessel or other equipment may also be ordered.

**Marine Parks**

Marine parks abound in the Cayman Islands. While visitation is encouraged, there are many rules and regulations to follow depending on which type of park you intend to visit. Pay close attention to where you are and refer to your Marine Conservation Brochure (available at www.doe.8m.com).

**Adaptation and Mitigation Initiatives by the Cayman Islands Government**

The Cayman Islands National Climate Change Adaptation Working Group was first assembled in December 2007. This group was established to provide information on climate change issues and initiatives that would assist in developing a national climate change adaptation strategy. Their plan will ultimately link into a sustainable development strategy for all three islands. The plan includes preserving the biodiversity of the Cayman Islands, reducing the impacts by hurricanes, assessing the islands’ vulnerability and assessing climate impacts to tourism.

Mitigation initiatives include developing a National Energy Policy and an Environmental Management System that is currently being piloted at seven properties across all three islands as a public-private sector partnership to reduce environmental impact.
conservation: a call to action

We have a real—but rapidly narrowing—window of opportunity in which to take decisive action. We must immediately:

- Cut CO₂ emissions by lowering our carbon footprint and ask our policymakers to commit to low carbon economic growth.

- Eliminate open access fisheries in coral reef ecosystems. Establish and enforce regulations on user rights, total allowable catch, individual catch quotas, non-destructive gear and other sustainable fisheries regulations.

- Protect coral reef herbivores, including parrotfish. Ban the harvesting of these species for sale and commercial consumption.

- Establish and strictly enforce networks of Marine Protected Areas that include No-Take Areas. Consult with local communities and authorities on design and benefit sharing to maximize returns and build sustainability into the process in order to protect marine biodiversity and restore vital fish stocks.

- Effectively manage the waters in between Marine Protected Areas. The enforcement of coastal zoning, environmental impact assessments and “polluter pays” regulations can help control marine and land-based sources of pollution, while strategic environmental assessment can effectively manage coastal development and tourism.

- Maintain connectivity between coral reefs and associated habitats. Mangroves, seagrass beds and lagoons contribute to the integrity of reef ecosystems and their continued production of ecosystem services.

- Report regularly and publicly on the health of local coral reefs. Include assessments of the effectiveness of management and conservation measures.

- Recognize the links between what we do on land and how it affects the ocean. We live on a blue planet—our health depends on ocean health.

- Bring local actors together to develop a shared vision of healthy reefs and a road map for getting there. Engage members of industry, civil society, local government and the scientific community to set ambitious targets and performance indicators.

- Work for change with national management to produce desired outcomes.

Only by taking bold and urgent steps now can we hope to ensure that reefs will survive to enrich life on earth, as they have for millions of years before us. By failing to act we risk bequeathing an impoverished ocean to our children and future generations.

From the 11th International Coral Reef Symposium, 2008 held in Fort Lauderdale, Florida by The International Society of Reef Studies.
Preserving our Planet!

“In 2008 the 11th ICRS assembled some 3000 experts from 75 countries to face some hard truths: coral reefs are teetering on the edge of survival and it is our fault.

High levels of CO₂ in the atmosphere have produced a lethal combination of hotter and less alkaline seawater. Overfishing, pollution, coastal development, and physical damage further undermine reef health, and consequently, that of the people and ecosystems depending upon them.

Coral reefs feed, protect, and provide livelihoods for hundreds of millions of people around the world. They create homes for billions of fish and other animals, buffer coastlines from the ravages of storms, and provide rich economic opportunities through tourism and fishing. Their value to society has been estimated at more than $300 billion p.a. Reefs are the dynamic centres of the most concentrated biodiversity on Earth. Losing coral reefs would rob the world of one of nature’s most precious gifts.

Despite these challenges, it is not too late to save coral reefs. The 11th ICRS gave a renewed sense of purpose and hope for the future. A consensus emerged that society has both the knowledge and the tools to bring coral reefs back from the brink. The only question is—will we act?”

From the 11th International Coral Reef Symposium, 2008 held In Fort Lauderdale, Florida by The International Society of Reef Studies.

Get Involved Locally—Support Local Programs

CCMI’s Ocean Literacy Project has set a major 3 year goal for every child to be ocean aware by the time they are 12 years old. CCMI has distributed copies of ‘Our Ocean Planet’ to teachers in collaboration with the Department of Education and is active in training teachers in the new curriculum.

CCMI’s Dive With A Researcher programme engages recreational divers in field research on the reefs around Little Cayman: www.reefresearch.org

Cayman Islands Department of Environment. Download your own copy of the Marine Park laws and maps. www.doe.8m.com

John Gray Recyclers are a youth-based group raising environmental awareness: www.johngrayrecyclers.org

Cayman Eco. Become more environmentally conscious. Check out their Eco-Tips for the Cayman Islands. www.caymaneco.org

The National Trust Cayman Sea Sense Project is a sustainable sea food guide and education program. www.nationaltrust.org.ky/seasense.html

The Blue Iguana Recovery program is saving one of the earth’s most endangered reptiles, endemic only to Grand Cayman. www.blueiguana.ky

Join the Cayman Islands Chamber of Commerce’s Environmental Pledge. For more information, visit www.caymanchamber.ky

See also www.caymanbiodiversity.com
ideas for action

Consume wisely—consider the following

If 1000 people ate 1 fewer beef meals a week, over 70,000 pounds of grain, 70,000 pounds of topsoil, and 40 million gallons of water would be saved each year (Centre for a New American Dream).

Less than 1% of plastic bags are recycled and the rest of the bags never biodegrade at all.

Each person uses about seven trees’ worth of wood and paper products every year.*

Washing cloths in cold water can save 100 lbs of CO₂ and about $64 on your energy bill every year. Dryers are responsible for 2224 lbs of CO₂ emissions per household per year.*

An elementary school with 250 kids takes out more than 16,000 lbs of lunchroom trash annually.*

Avoiding 20 miles of driving per week by taking the bus eliminates about 1000 lbs of personal greenhouse gas emissions per year. * facts based on the average US consumer.

Getting serious: green tips

Corporate Recommendations

Telecommute. Use videoconferencing to reduce your company’s carbon footprint. Set a specific travel reduction goal for your company. Use the savings from reducing travel to support a local charity.

Set up a communications network that allows employees to share car rides to work. Make sustainability and Preserving our Planet a leading concern for your business; hire an executive to lead the challenge. Create an EcoPlan for your company with specific goals.

Establish a Green Award to reward employees for reducing your company’s consumption.

Provide educational information for your new employees so they understand the local environmental laws.

Family and Personal Recommendations

Encourage your children to get involved in an environmental project.

Encourage your schools to use less plastic and to stop using bottled water.

Use glass and ceramic instead of plastic for storage.

Use only clear detergents. Boost detergents by using baking soda rather than chlorine-based products.

Buy recycled items and recycle items (clothes, electronics, paper, etc).

Make a plan with your family and set household goals for reducing your carbon footprint.
Make a Pledge to Preserve Our Planet!
Web site: www.reefresearch.org

“We have a real and rapidly narrowing window of opportunity in which to take decisive action. We must act now.”

Through the Ocean Literacy programme, CCMI has made a pledge to work to reduce human impacts on coral reefs by making sure every child is ocean aware by the time they are 12 years old. We also aim to bring attention to the major threats facing the Cayman Islands, the Caribbean Basin and the World’s Oceans.

With your support, CCMI is partnering with NOAA’s Integrated Coral Observing Network (ICON) to install an ocean observatory to monitor and record changes in the environment. We will embark on research with our partners to explore how we might establish more resiliency in our reefs.

You Can Do Something, Too! Please make a tax deductible* contribution and help fund our Coral Reef Research, Education, and Conservation.

Coral Reefs are important and we are taking immediate action.

I’d like to join CCMI and Preserve our Planet’s most important ecosystem by sponsoring research, education and conservation!

Please find my check made out to CCMI enclosed, or charge my credit card.
I would like to become a member at the following level:

Explorer___ Mariner___ Conservator___ Navigator___ Eagle Ray___ Loggerhead___ Grouper___

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PLEASE ACCEPT MY CONTRIBUTION: ($)__________________________

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(Master Card & Visa only)

AUTHORIZED SIGNATURE ____________________________

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Send your contribution to:

Central Caribbean Marine Institute or to USA: CCMI
Caribbean Office: PO Box 10152
Grand Cayman KY1-1002
Cayman Islands Tel: 345.949-1938

Cayman Islands PO Box 1461
Princeton, NJ 08540
US Tel: 609.933-4559

* Contributions are tax deductible in the US and UK.
CCMI Membership Levels & Benefits

<table>
<thead>
<tr>
<th>Membership Level</th>
<th>Donation Range</th>
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<tr>
<td>Explorer</td>
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<tr>
<td>Grouper</td>
<td>$100 - $249</td>
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</tbody>
</table>

Benefits of Membership:

All members will receive our quarterly CCMI E-Newsletter which gives up-to-date news on coral reefs and announcements about upcoming programs and events.

Eagle Ray members also receive invitations to the complete Reef Report Series on Grand Cayman.

Become a Navigator and receive the above, plus invitations to attend private Meet the Scientists evenings.

Conservators receive the above plus two advanced reservations to the Annual Festival of Trees.

Mariners are invited to participate in the Dive With A Researcher program at the Little Cayman Research Centre.

Explorers receive all of the above benefits, plus a Private Dinner and Tour at the Little Cayman Research Centre, and an invitation to work side-by-side with the scientists at LCRC.

Contributions are tax deductible in the US and UK.
acknowledgements

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author: Dr. Carrie Manfrino, CCMI President
Carrie Manfrino is the president and founder of the Central Caribbean Marine Institute. She has her PhD from the University of Miami’s Rosenstiel School of Marine and Atmospheric Science in Marine Geology and Geophysics.
Manfrino@reefresearch.org

project manager and editor: Tim Ecott
timecott@hotmail.com

CCMI Director of Development and Communications: Melissa Wolfe
reef@reefresearch.org

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