



HELPING ENDANGERED CORALS IN THE CAYMAN ISLANDS



DEAR EARTHWATCHER,

Welcome to the Helping Endangered Corals in the Cayman Islands expedition!

You may have heard that coral reefs around the world are threatened. Between 1999 and 2004, bleaching and disease caused the live coral cover to drop to an average of 14% in Little Cayman. The good news is that unlike many other reefs, those around Little Cayman experienced full recovery within seven years, raising the question: What conditions lead to coral recovery and how can we use this information to improve coral reef health? This is a critical question when taking into account that Little Cayman is home to the "Great Eight"; that is, eight EDGE (Evolutionarily Distinct and Globally Endangered) coral species including the once-dominant, but now IUCN Red-Listed critically endangered, staghorn and elkhorn corals.

The question of coral reef resilience is of particular importance each year following the high seawater temperatures that typically occur between July and October. Caribbean corals, including those in Little Cayman, bleach when ocean temperatures exceed 87°F for a prolonged period. Little Cayman experience moderate-to-severe bleaching in these conditions, but our hope is that the corals continue to show strong resiliency. You can be part of a critically important time in modern coral history!

We have several ongoing projects related to coral reef resiliency and its interrelationship with reef biodiversity. Volunteers can help on a broad suite of projects depending on seasonality, weather, and urgency.

We monitor the health of corals on the reefs and in the lagoons before, during, and after bleaching events to document resiliency. You can help us document which corals are resistant to bleaching, which are susceptible but are likely to recover, and which will not survive.

We give reef recovery a "boost" by transplanting nursery-reared staghorn and elkhorn corals to the wild. We need to monitor these outplants for at least five years until they start reproducing on their own. We also need to track which reef creatures are the pioneers on these new homesteads. You can help record coral survival, health, and growth as well as fish and invertebrate behaviors associated with the new coral colonies.

To understand recovery, we also have to understand those processes which impact recruitment of new corals that are needed to replace those which died during the bleaching event. The biggest competitors are algae, which take up space on the reef, leaving limited room for baby corals to settle. You can help with quadrat surveys that measure coral recruitment and algal competition. We are also testing new coral settlement on old, dead corals and recruitment plates. You can help track recruitment and new growth.

Corals have natural allies on the reef including sea urchins, parrotfish, and other herbivorous "grazers" of the competitive algae. You can help record sea urchin and fish populations and locations. You can also participate during our lionfish dissections by taking body measurements and analyzing stomach contents to see how these invasive fish may be negatively impacting our coral champions.

But the above projects just scratch the surface. We need to learn everything we can about the Great Eight in order to protect them around Little Cayman, the Cayman Islands, and the Caribbean. You can help us map the distribution of EDGE corals around Little Cayman, which will tell us where they thrive naturally and which corals they prefer as nearest neighbors. Perhaps we will find natural refuges where corals escaped the high temperatures. Together, these projects could lead to the discovery of why Little Cayman corals are capable of positive trajectories, and perhaps even change the future of coral reefs throughout the Caribbean and around the world.

We look forward to having you on our expedition.

Sincerely,

Dr. Carrie Manfrino

TABLE OF CONTENTS

GENERAL INFORMATION	2
TRIP PLANNER	3
THE RESEARCH	4
DAILY LIFE IN THE FIELD	6
ACCOMMODATIONS AND FOOD	8
PROJECT CONDITIONS	10
SAFETY	12
TRAVEL TIPS	13
EXPEDITION PACKING CHECKLIST	14
PROJECT STAFF	15
RECOMMENDED READING	16
LITERATURE CITED.....	16
EMERGENCY NUMBERS	17



GENERAL INFORMATION

HELPING ENDANGERED CORALS IN THE CAYMAN ISLANDS



EARTHWATCH SCIENTISTS

Dr. Carrie Manfrino, President and Director of Research,
Central Caribbean Marine Institute

RESEARCH SITE

Little Cayman, Cayman Islands

EXPEDITION DATES

Team 1: April 10–April 16, 2017 (GROUP)

Team 2: July 30–August 5, 2017 (PROJECT KINDLE)

Team 3: October 8–14, 2017

**Complete travel information is not
available in this version of the briefing.**

**Please contact Earthwatch
with any questions.**



TRIP PLANNER

HELPING ENDANGERED CORALS IN THE CAYMAN ISLANDS

TRIP PLANNER

IMMEDIATELY

- Make sure you understand and agree to Earthwatch's [Terms and Conditions](#) and the [Participant Code of Conduct](#).
- If you plan to purchase additional travel insurance, note that some policies require purchase when your expedition is booked.

90 DAYS PRIOR TO EXPEDITION

- Log in at earthwatch.org to complete your volunteer forms.
- Pay any outstanding balance for your expedition.
- Book travel arrangements (see the Travel Planning section for details).
- If traveling internationally, make sure your passport is current and, if necessary, obtain a visa for your destination country.

60 DAYS PRIOR TO EXPEDITION

- Make sure you have all the necessary vaccinations for your project site.
- Review the Packing Checklist to make sure you have all the clothing, personal supplies and equipment needed.

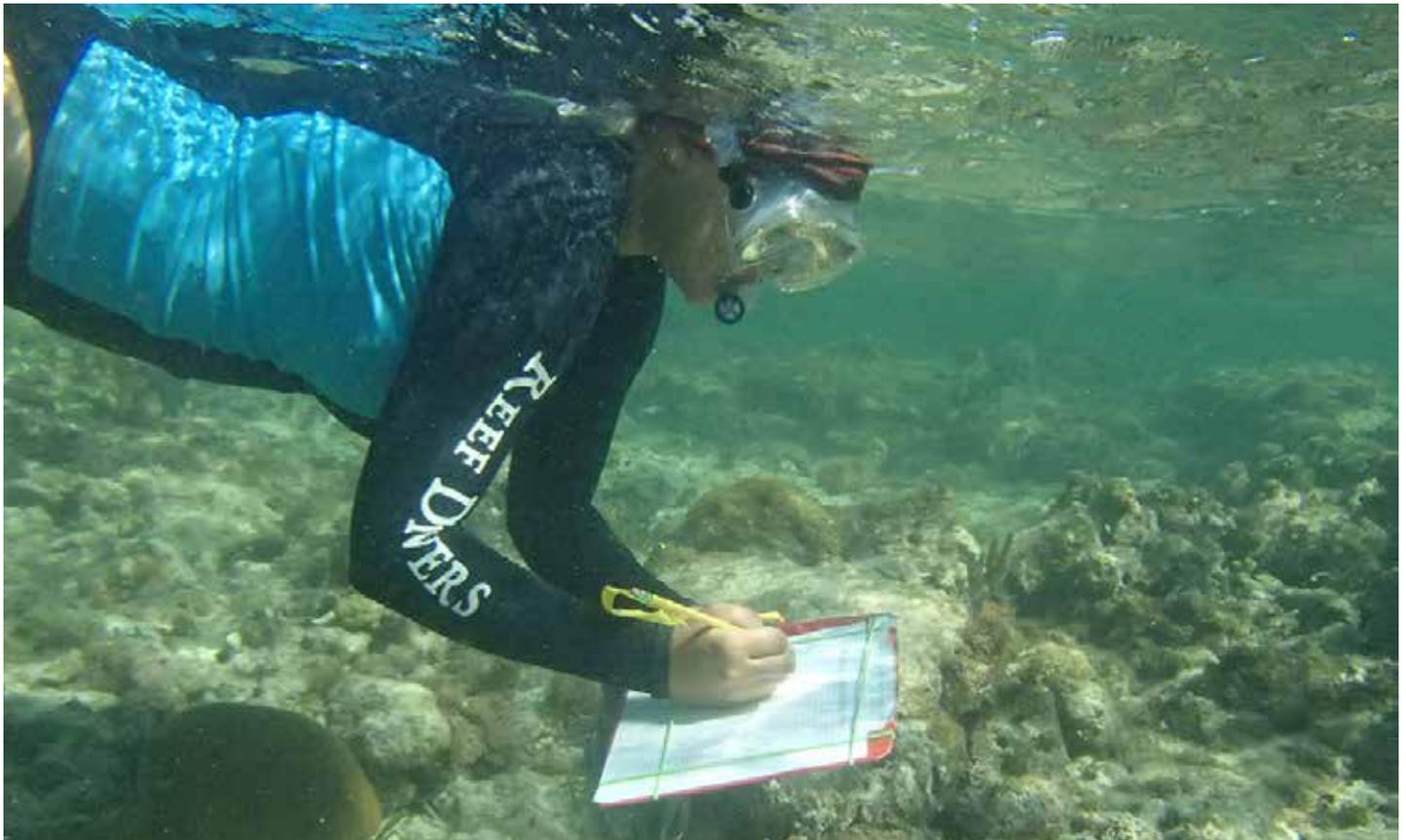
30 DAYS PRIOR TO EXPEDITION

- Leave the Earthwatch 24-hour helpline number with a relative or friend.
- Leave copies of your passport, visa, and airline tickets with a relative or friend.

Read this expedition briefing thoroughly. It provides the most accurate information available at the time of your Earthwatch scientist's project planning, and will likely answer any questions you have about the project. However, please also keep in mind that research requires improvisation, and you may need to be flexible. Research plans evolve in response to new findings, as well as to unpredictable factors such as weather, equipment failure, and travel challenges. To enjoy your expedition to the fullest, remember to expect the unexpected, be tolerant of repetitive tasks, and try to find humor in difficult situations. If there are any major changes in the research plan or field logistics, Earthwatch will make every effort to keep you well informed before you go into the field

THE RESEARCH

HELPING ENDANGERED CORALS IN THE CAYMAN ISLANDS



THE STORY

Global stressors such as climate change and ocean acidification are impacting coral reefs around the world, prompting debates about whether reefs will survive beyond 2050 (Knowlton and Jackson 2008; Pandolfi et al. 2011). 1998 was a record-breaking El Niño year, warming parts of the ocean and destroying coral reefs around the world, including those in Little Cayman. But unlike many other regions, the coral colonies surrounding this island bounced back.

Scientists have yet to understand what made these reefs so resilient. Little Cayman's unexpected coral recovery provides researchers with a unique opportunity to examine why some reefs recover from stressful events while others do not (Manfrino et al 2003; Coelho and Manfrino 2007; Manfrino et al. 2013).

By studying the secrets of this resilient reef, researchers will help to inform management plans to protect coral reefs elsewhere in the Caribbean and the world. These strategies may help to provide habitats for fish and invertebrates and increase reef biodiversity (Lirman et al. 2010; Johnson et al. 2011; Keil et al. 2012).



RESEARCH AIMS

The research teams will help to assess how corals rebound and survive following a stressful event such as a bleaching event or intense storm, and in response to longer-term stresses such as ocean acidification and climate change. The teams will work to improve our understanding of what makes a reef resilient—knowledge that will help researchers protect reefs elsewhere in the world.

The project will focus primarily on corals, particularly those known as “EDGE” species – or Evolutionarily Distinct and Globally Endangered. Protecting these unique and endangered corals is a high priority for researchers and policy makers. But corals are not the only reef inhabitants and their survival is dependent upon coral competitors and champions. Teams may also work on coral-related projects involving parrotfish, sea urchins, lionfish, sponges, or even algae.

The research project has the following primary objectives:

1. **Coral Recovery**—Monitor and survey the Little Cayman coral reefs to fully document the extent of recurring bleaching events.
2. **Coral Regeneration**—Return nursery-reared staghorn and elkhorn corals to the wild to help regenerate the reefs and create usable framework for reef inhabitants.
3. **Coral Recruitment**—Study the processes, which impact recruitment of new corals including competition for space and resettlement of long dead, standing coral skeletons.
4. **Cascading Impacts**—Study the species interactions, which influence coral recovery, regeneration, and recruitment including parrotfish, sea urchins, lionfish, sponges, and algae.
5. **EDGE Reconnaissance**—Record the distribution and health of EDGE species around Little Cayman shallow reefs and lagoons.

HOW YOU WILL HELP

As an Earthwatch participant, you will be involved in activities to help achieve CCMI’s scientific objectives. Depending on seasonality, weather, and urgency, you will be involved in a combination of the following (Note: it is highly unlikely that any given team will be involved in all of the following):

- Learn to identify EDGE corals and other common species of coral, fish, invertebrates, and algae.
- Conduct coral health surveys on snorkel to document bleaching resilience. Volunteers will record coral “vital signs” using color charts and underwater photography.
- Measure total linear extension of nursery-reared staghorn and elkhorn coral branches, a common proxy for growth, using rulers or photo analysis.
- Construct new nursery “tree” structures to support the nursery expansion
- Screen underwater video clips for fish and invertebrate behaviors associated with outplanted coral colonies.
- Conduct shallow water quadrat surveys to determine coral recruitment and competitive species cover.
- Measure new coral settlement on recruitment tiles and colony resheeting on coral skeletons.
- Conduct roving fish and sea urchin surveys while snorkeling.
- Observe a lionfish dissection during our weekly cull dissections.
- Conduct snorkel scout surveys to map the locations of EDGE corals and their nearest neighbors.



DAILY LIFE IN THE FIELD

PLANS FOR YOUR TEAM

Participants will receive training in basic coral identifications, with special emphasis on the “Great Eight”. We’ll practice data collection techniques in shallow water where you can easily ask questions. Once the team is comfortable, we’ll conduct our research above the reefs around Little Cayman as we snorkel side-by-side. Participants will collect data, handle equipment, and take in-water photographs. Participants who can bring their own laptops may also help with data entry, image analysis, and video screening.

Teams will learn about the Little Cayman coral nursery and coral gardening techniques. Teams may build new structures for later deployment in the nursery. You can practice fragmenting and simulate outplanting with coral skeletons in our outdoor lab. We will monitor the growth, health, and survival of outplanted and donor colonies in the wild or, if the weather does not cooperate, by comparing time-series digital images.

All teams will get to interact with the scientists, interns, and students in residence at the research center and learn about their exciting projects.

DAILY ACTIVITIES

Your days will start early, with continental style breakfasts between 7:00–8:00 a.m. We take turns doing dishes after each meal and before beginning our activities. On most mornings, you’ll gather up your gear in preparation for in-water tasks. We depart for the field around 8:30–9:00 a.m. Grape Tree Bay is just steps from our patio. Travel to other sites takes 10–30 minutes. A typical morning includes two to three hours of fieldwork. Remember to drink plenty of water and apply lots of sunscreen. We may get a late start on those Thursdays following lionfish culls as we can watch lionfish dissections and learn about these invasive species.

We’ll return to the marine institute around noon, in time for lunch. Teams reconvene at 1:00–1:30 p.m. for the afternoon sessions, which include a mix of fieldwork, data entry, and preparations for the next day.

Volunteers get a break during “free time” from 4:00–6:00 p.m. You can bike ride, jump back in the ocean (teen team volunteers must do so with lifeguard supervision), share your amazing adventures with friends and family via social media, or just relax.

The dinner bell rings around 6:00 p.m. Time to enjoy good food and watch the sunset. On Monday evenings, listen to our Weekly Lecture Series given at a local beach resort. If we are really lucky in July, baby turtles may hatch and we can watch them make their way across the beach to the ocean. Adult teams will also have options for other evenings including island attractions like the Hungry Iguana, and Wednesday night trivia.



EXAMPLE ITINERARY

DAY 1

- Arrive in Little Cayman
- Safety briefing, station orientation

DAY 2

- Morning. research orientation and snorkel check-out
- Afternoon. practice research session, island tour

DAY 3–5

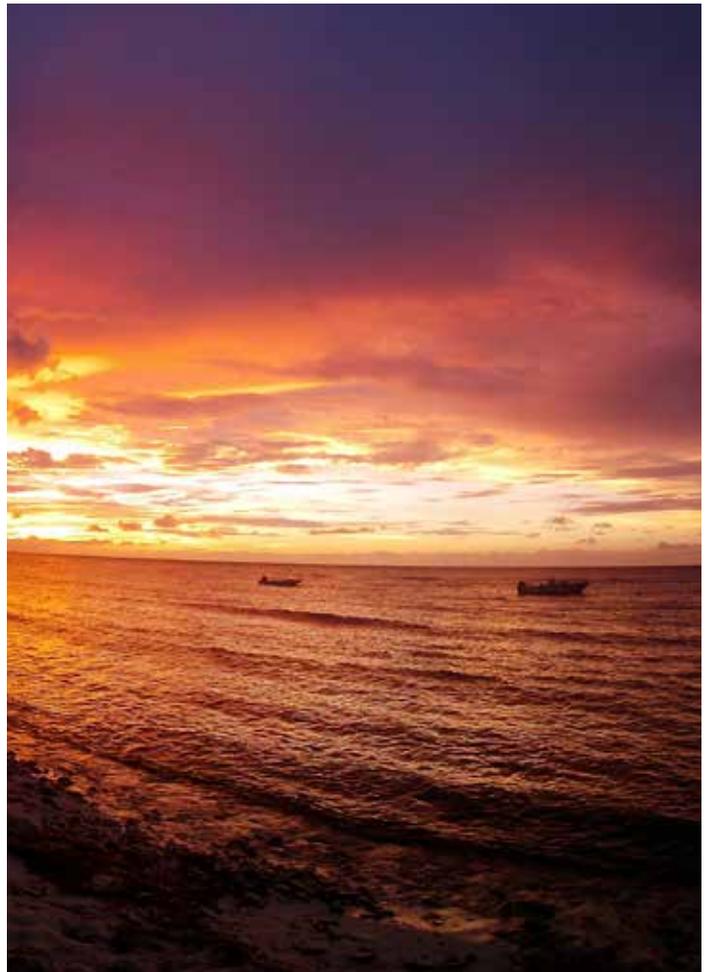
- Fieldwork. Daily activities include
 - Snorkeling surveys of coral reefs
 - Environmental data collection
 - Coral nursery work
 - Data analysis

DAY 6

- Final research
- Beach picnic lunch
- Wrap-up discussion

DAY 7

- Departure



ACCOMMODATIONS AND FOOD

ABOUT YOUR HOME IN THE FIELD



SLEEPING

Participants will stay at the LCRC dorm facility. Dorms are well ventilated with fans and situated to benefit from the local Caribbean breeze. Rooms will be separated by gender, and shared with one or more participants to a maximum of six in bunk beds. Individuals will participate in the daily maintenance of their living quarters.

BATHROOMS

At LCRC, the bathhouse is an off-the grid, solar-powered bathhouse with composting toilets and a grey water garden. The bathhouse is a separate building from the sleeping quarters, requiring volunteers to go up and down two sets of stairs.

ELECTRICITY

You are welcome to bring electrical equipment. All lodging facilities have standard North American electrical outlets, 110–120 Volts.

PERSONAL COMMUNICATIONS

Wireless Internet access is available in the main pavilion of the Little Cayman Research Centre. You may bring your own laptop or tablet for free-time use.

Regular phone calls to and from the Cayman Islands are expensive. The best way to make a phone call from Little Cayman is to purchase a phone card at the airport in Grand Cayman or use a credit card. Foreign phone cards do not work in the Caymans. Some cell phone services work in Cayman with partner companies. Another great way to make calls home is via Skype, using our Internet connection.



Please note that personal communication with outsiders is not always possible while participating in an expedition. Earthwatch encourages volunteers to minimize outgoing calls and immerse themselves in the experience; likewise, family and friends should restrict calls to urgent messages only.

FACILITIES AND AMENITIES

The Little Cayman Research Centre is a field education and research station. It has labs, a classroom, and dormitory-style living accommodations to support researchers and students. Some of these may be in use by other groups when your Earthwatch team is at the center.

There is one small general store on Little Cayman. Food is extremely expensive. If there is something that you like to have every day, we recommend that you bring it with you.



DISTANCE TO THE FIELD SITE

The distance to the field sites varies from right outside the door to a 15–30 minute van ride.

FOOD AND WATER

A fully equipped commercial kitchen and screened-in dining area can easily accommodate 30 visitors. It is open for three meals per day when groups of four or more are residing. The screened community dining area provides an excellent place for visitors to reflect on the day's events while enjoying dinner. Meals are designed to be healthy and hearty, with a variety of local cuisine. Meals are taken in the dining pavilion overlooking the ocean.

The following are examples of the types of food you may enjoy on this project. Availability of certain items is subject to change, so please maintain a flexible attitude.

TYPICAL MEALS

BREAKFAST	Cereal, toast, bagels, yogurt, fresh fruit
LUNCH	Fresh vegetables or salads, pasta salad, potato salad, sandwiches, and cooked options such as fish or chicken fingers
DINNER	Baked ribs, spaghetti Bolognese, baked chicken, plus a vegetable or salad, and a starch.
DESSERT	Key lime pie, brownies, chocolate cake
BEVERAGES	Fresh juice, water

SPECIAL DIETARY REQUIREMENTS

Please note that due to the limitations of island supply, CCMI may not be able to accommodate kosher, halal, vegan, paleo, or other special diets. Please alert Earthwatch to any special dietary requirements (e.g., diabetes, lactose intolerance, vegetarian, nut, or other food allergies) as soon as possible, and also note them in the space provided on your volunteer forms.

PROJECT CONDITIONS

THE FIELD ENVIRONMENT

The peak tourist season in Cayman is during the winter, from mid-November to April. During this time there is little rain, brilliant sunshine and a constant cool sea breeze—however this breeze can often pick up enough to create non-ideal snorkeling conditions.

May to November is the rainy season, but unless there is a tropical depression sitting over Cayman, the rain is normally only heavy for a few hours and then stops for the rest of the day. It is not uncommon to have heavy rain in one part of town while it remains dry nearby. Snorkeling conditions are ideal at this time of year.

GENERAL CONDITIONS

HUMIDITY: 75%–85%

TEMPERATURE RANGE:

July: 85–90°F (29–32°C)

December/January: 81°F (27°C)

RAINFALL:

July: 6.6 in (16.7 cm)

December: 3.2 in (8.1 cm)

January: 0.7 in (1.8 cm)

ALTITUDE: Sea Level

WATER CONDITIONS

Water conditions should be relatively benign, since we work in a sheltered lagoon. Surface current or surges may be encountered occasionally.

TYPICAL WATER TEMPERATURE DURING PROJECT: 25°C (78°F) to 29°C (85°F). Note that a 3mm wetsuit is recommended for November–February groups.

TYPICAL WATER VISIBILITY: 10 m (33 ft.) to unlimited

SNORKEL SITE TYPE: Sheltered lagoon or coral reefs

ANTICIPATED DEPTH OF SNORKELS PER DAY: 0 m (along shoreline) to 15 m (50 ft.)

SNORKEL ACTIVITIES WILL BE INITIATED FROM: shore

TIMING OF SNORKELING ACTIVITIES: day

EGRESS INTO WATER: from shore

ESSENTIAL ELIGIBILITY REQUIREMENTS:

All participants must be able to:

- Follow verbal and/or visual instructions independently or with the assistance of a companion.
- Wear all protective equipment recommended or required by industry standards.
- Learn to make and record observations of coral species and habitats.
- Be comfortable snorkeling in open water (two to three hours a day) where they are unable to stand on the bottom, and be comfortable using snorkeling gear (mask, fins, snorkel).
- Arrive with previous snorkeling experience, comfort swimming without the aid of a flotation device, and ability to “duck dive” (hold one’s breath and dive below the surface of the water for short periods, to depths of 1–2 meters) in order to do the coral outplanting, measuring, scouting, and photography work on this project.
- Enter and exit the water from shore.
- Work on or near shore for about two to three hours per day with limited break options (e.g., no bathroom except for the ocean).
- Maintain a seated, upright position within van during transit, which can sometimes be bumpy along unpaved roads. This can be uncomfortable for individuals with back problems.
- Hike or walk along rocky shoreline (and potentially mangrove) study sites, which can range from ankle-deep to hip-deep water, on very uneven and unstable surfaces.
- Enjoy being outdoors all day in all types of weather.
- Endure tropical (hot and humid) work conditions.
- Be tolerant of the presence of bugs and lizards.



POTENTIAL HAZARDS

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HAZARD TYPE	ASSOCIATED RISKS AND PRECAUTIONS
Transportation	Traffic accidents and injuries are always a hazard of road transport. Every passenger will have a seat, however seatbelts are not commonly available or legally required in the Cayman Islands. Vans will travel no faster than 25 mph on public roads, most of which are unpaved. Volunteers will not drive; only CCMI/LCRC staff will operate vehicles and boats.
Hiking	Hiking is not a requirement of the research activities, but nature trails are available nearby for recreation. Volunteers should wear proper footwear, have good endurance, and at times have protective clothing in the thick bush to avoid cuts and scrapes. Volunteers must make research center staff aware of route and expected time of return.
Cycling	Bicycles are available for recreational use. No helmets are available. Cycling is on rural roads with very few cars. Volunteers must make research center staff aware of route and expected time of return. A maintenance check on all bikes will be conducted before the arrival of volunteers.
Stinging animals (insects, jellyfish, coral, lionfish)	Mosquitoes and sand flies are present on Little Cayman, and repellent or long-sleeved shirts and pants can help protect from stings and bites. Fire coral, sea urchins, lionfish, or jellyfish may be present in the water. All dangerous creatures will be introduced during the training period. Please note that if you have a severe reaction to bee stings you may also have a similar reaction to jellyfish stings—please consult with your doctor.
Sharks and large fish	Attacks by sharks and other large fish are extremely rare. Team members will be instructed to exit the water in a calm manner in the event of an animal acting aggressively.
Climate/ Weather:	<p>Hurricane season is June to November, but most hurricane activity occurs in late August and September. Should a hurricane appear to be heading for The Cayman Islands during a team, the expedition will end and team members will evacuate to a location determined by the airline(s)—Miami, Houston, Jamaica, and Honduras are all possibilities to be considered, based on location and direction of the storm. Project staff will not wait for a hurricane warning to evacuate. Because of the difficulties of getting off islands, staff will take the most conservative approach to ensure that volunteers don't experience undue stress or danger.</p> <p>Dehydration and sunburn are possible. You'll be briefed on proper clothing, sunscreen use, and fluid intake. Project staff sets an example and will monitor participants for symptoms of exposure or dehydration. Take particular care when working during the hottest periods of the day.</p> <p>Because of high humidity, those who use a hearing aid may find it doesn't work properly and may wish to purchase a hearing aid dehumidifier.</p>
Personal Security	Crime on Little Cayman is extremely low but volunteers will be advised to keep valuables hidden and to avoid drunkenness, illegal drug use, and overtly suggestive behavior.
Swimming	Swimming is central to the research you'll conduct and is also possible during recreational time, and typical water-related risks will be present. A certified lifeguard will not be available at all times, but all staff members have boat and dive safety certification. Volunteers may not swim alone.
Snorkeling	<p>Snorkeling has inherent risks, e.g., the effects of environmental conditions, nitrogen (for those who've recently scuba dived), barotrauma, boat traffic, marine life, and risks specific to one's own physical history. When snorkeling, properly control your breathing to reduce the risk of hyperventilation and blackout.</p> <p>You must bring and maintain your own mask, snorkel, fins, booties, and exposure protection. Flotation devices can be provided for those who prefer them or are required to use them. You must ensure that all gear is in good working order and that you are trained in appropriate responses if a failure occurs while in the water.</p> <p>The Earthwatch scientist or support staff will be present in the water at all times with you during research activities. Swimming and snorkeling will only happen in calm seas. No one goes in—staff or volunteers—when an Earthwatch scientist determines that conditions are unsafe.</p>
Distance from Medical Care	<p>While Grand Cayman has extensive medical facilities, Little Cayman has only one small clinic with one nurse and a doctor who visits the island on Wednesdays. The local medical clinic is a 15-minute drive from the field station. If someone becomes seriously ill or injured on Little Cayman, they will need to be airlifted to Cayman Brac (approximately one hour for daytime arrival and transport) or Grand Cayman (approximately two to three hours for daytime arrival and transport). Nighttime evacuation may not be possible, as the Little Cayman airstrip does not have lights.</p> <p>If you have a chronic condition, which could require immediate medical care (e.g., heart conditions, kidney problems, severe asthma), please discuss your participation with your physician.</p>



SAFETY

HEALTH INFORMATION

EMERGENCIES IN THE FIELD

Project staff members are not medical professionals.

STAFF CERTIFIED IN SAFETY TRAINING:

First Aid and CPR: PI FTLs Tom Sparke, Katie Correia

Island Emergency Response: Director of Operations
Peter Quilliam

For emergency assistance in the field, please contact Earthwatch's 24-hour emergency hotline number on the last page of this briefing. Earthwatch is available to assist you 24 hours a day, 7 days a week; someone is always on call to respond to messages that come into our live answering service.

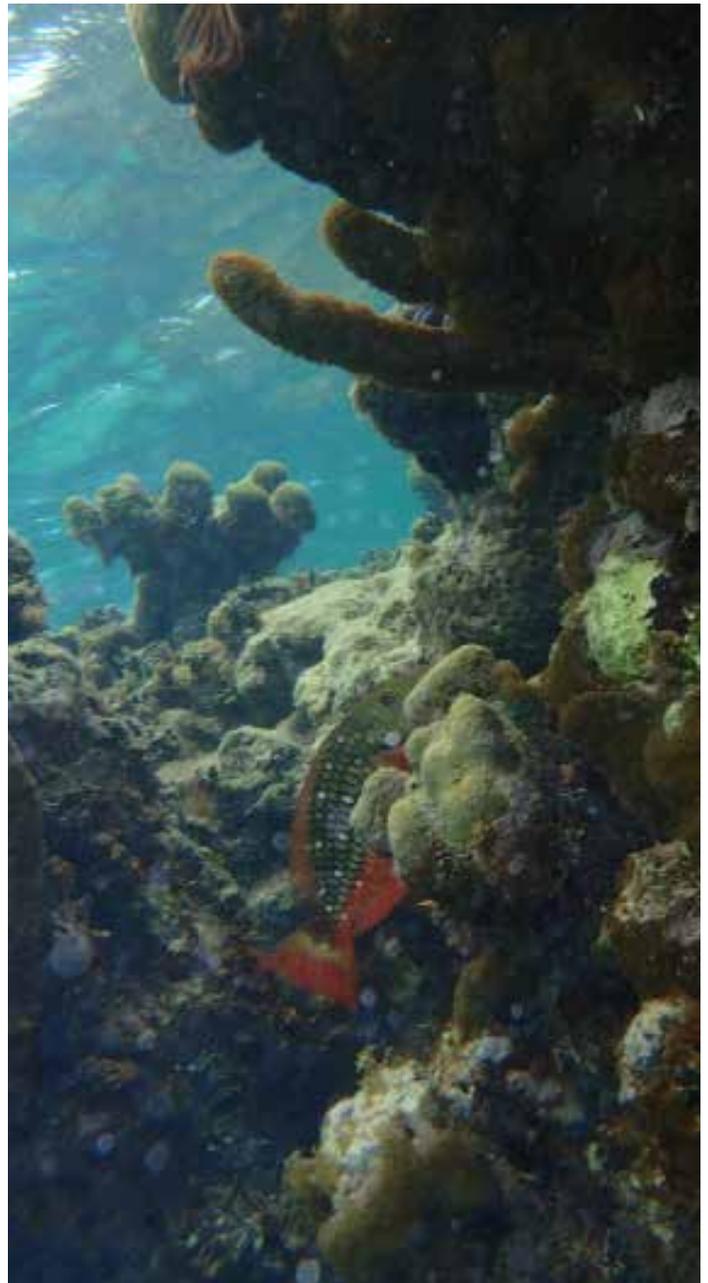
IMMUNIZATIONS

Please be sure your routine immunizations are up-to-date (for example: diphtheria, pertussis, tetanus, polio, measles, mumps, rubella and varicella). Medical decisions are the responsibility of each volunteer and his or her doctor, and the following are recommendations only. Visit the Healix Travel Oracle website through the "Travel Assistance and Advice" page in your Earthwatch portal, cdc.gov or who.int for guidance on immunizations.

PROJECT VACCINATIONS

REQUIRED: If traveling from countries or region where yellow fever is endemic, you must have a certificate of vaccination.

RECOMMENDED FOR HEALTH REASONS: Typhoid, Hepatitis A



TRAVEL TIPS

SUGGESTIONS FOR THE ROAD

YOUR DESTINATION

LANGUAGE: English

TIME ZONE: Eastern Standard Time (EST), UTC/GMT -5 hours. The Cayman Islands do not observe daylight savings time.

CULTURAL CONSIDERATIONS: Casual, modest dress is acceptable nearly everywhere. Tipping restaurant wait staff, taxi drivers, airport curbside baggage handlers, and hotel bellhops is customary.

ELECTRICITY: You are welcome to bring electrical equipment. All lodging facilities have standard North American electrical outlets, 110–120 Volts.

MONEY MATTERS

LOCAL CURRENCY: The official currency is the Cayman Islands dollar (CI\$), permanently fixed at an exchange rate of CI\$0.80 to US\$1 (CI\$1 equals US\$1.25). Cayman dollars and US dollars are accepted throughout the islands, although you'll usually get change in CI\$ even if you pay with US\$. The local currency comes in CI\$1, 5, 10, 25, 50 and 100 notes. All major currencies can easily be changed at any bank. ATMs are easy to find across Grand Cayman. There is also one ATM on Cayman Brac, as well as one on Little Cayman. The bank on Little Cayman is only open on Mondays and Thursdays for very abbreviated banking hours.

PERSONAL FUNDS: \$100–200 should suffice if you'd like to purchase additional food or supplies. Money can be withdrawn from an ATM at the Grand Cayman airport. International volunteers may use credit cards and ATM cards at local banks to obtain currency in Cayman Island dollars if desired.

PASSPORTS AND VISAS

Passport and visa requirements are subject to change. Check with your travel advisor, embassy or consulate in your home country for requirements specific to your circumstances. Generally, passports must be valid for at least six months from the date of entry and a return ticket is required.

CITIZENSHIP	PASSPORT REQUIRED?	VISA REQUIRED?
United States	Yes	No
United Kingdom	Yes	No
Europe	Yes	No
Australia	Yes	No
Japan	Yes	No

If a visa is required, participants should apply for a TOURIST visa. Please note that obtaining a visa can take weeks or even months. We strongly recommend using a visa agency, which can both expedite and simplify the process.

Upon arrival you must keep the immigration card given to you! Visitors are advised to keep it with their travel documents, as you will be required to present it to an Immigration Officer upon your departure.

CONTACT INFORMATION

You may be required to list the following contact information on your visa application and immigration form, or if your luggage does not make it to baggage claim at your destination:

Peter Quilliam

Little Cayman Research Center
North Coast Rd, PO Box 37

Little Cayman, KY3-2501, Cayman Islands
+1 345-948-1094



EXPEDITION PACKING CHECKLIST

WHAT TO BRING

EXPEDITION PACKING CHECKLIST

GENERAL

- This expedition briefing
- Your travel plans, rendezvous details, and Earthwatch's emergency contact information
- Photocopies of your passport, flight itinerary, and credit cards in case the originals are lost or stolen; the copies should be packed separately from the original documents
- Passport and/or visa (if necessary)
- Certification of vaccination (if necessary)
- Documentation for travel by minors (if necessary)
- Signed CCMI Waiver

CLOTHING/FOOTWEAR FOR FIELDWORK

- Earthwatch T-shirt
- Snorkel gear (fins, snorkel and mask that fit you well – we highly recommend strap-back fins with boots for entry along rocky shore)
- Mesh bag or backpack to carry snorkel gear
- Water shoes/booties (ideally can be worn inside fins)
- Swimming suit
- Rash guard (or t-shirts you can wear in the water)
- Rain jacket
- Wide brim hat

CLOTHING/FOOTWEAR FOR LEISURE

- At least one set of clothing to wear outside in the evenings (we recommend a long sleeve shirt and long pants to prevent bites from mosquitos)
- At least one set of clothing to keep clean for end of expedition
- Pair of light shoes or sandals to wear around the accommodations
- Beach towel

FIELD SUPPLIES

- Small daypack to keep your personal items together and dry
- Sunscreen lotion with SPF 45 or higher

- Lip balm with sunscreen
- Field notebook and pencils (cheap mechanical pencils)
- Two one-liter water bottles
- Insect repellent
- Sunglasses

BEDDING AND BATHING

NOTE: all bedding, as well as one bath towel per guest, is provided by the project.

PERSONAL SUPPLIES

- Personal toiletries (biodegradable soaps and shampoos are encouraged)
- Antibacterial wipes or lotion (good for cleaning hands while in the field)
- Personal first aid kit (e.g., anti-diarrhea pills, antibiotics, antiseptic, itch-relief, pain reliever, bandages, blister covers, etc.) and medications
- Spending money
- Flashlight or headlamp with rechargeable batteries (don't forget your charger!)

OPTIONAL ITEMS

- Laptop—can be used for recreational purposes but also to contribute to research activities.
- Binoculars
- Flip flops or sandals for the shower
- Camera, film or memory card(s), extra camera battery
- Hardware for sharing digital photographs at the end of the expedition
- Dry bag or plastic sealable bags (e.g. Ziploc) to protect equipment like cameras from dust, humidity, and water
- Books, games, art supplies, etc. for free time
- Earplugs for light sleepers

NOTE: Do not bring more luggage than you can carry and handle on your own. If traveling by air and checking your luggage, we advise you to pack an extra set of field clothing and personal essentials in your carry-on bag in case your luggage is lost or delayed.



PROJECT STAFF

YOUR RESOURCES IN THE FIELD



DR. CARRIE MANFRINO, President and Director of Research. Carrie founded CCMI in 1998 and has since built CCMI around her dream of sustaining biodiversity through research, education, and conservation. As a professor of oceanography, Carrie has dedicated over 18 years to marine research in Little Cayman. She is a well-published researcher who collaborates with scientists from around the world.

TOM SPARKE, Education and Programme Coordinator and Instructor. Tom learned to dive in Scotland at the young age of 11, sparking his love for all things marine. After completing his B.Sc. in Marine Biology and Oceanography in Newcastle, UK, Tom ventured to Cambodia and the Philippines to conduct coral reef surveys and educate local communities. He returned to the UK to complete his M.Sc. in Tropical Coastal Management, whilst securing a research grant to travel to Bonaire to investigate fish relationships with coral reef complexity at night. Tom joined CCMI in 2014 and uses his experience, passion, and creativity to communicate the wonders of the ocean to elementary, high school, and university students.



KATIE CORREIA, Science and Society Coordinator. Katie joined CCMI in February 2016, bringing with her over seven years of field and research experience throughout the Atlantic and Caribbean. Katie carries with her a B.Sc. in Marine Science and Coastal Geology and is currently working to finish up her M.Sc. in Marine Biology and Coastal Zone Management. She has worked for a variety of organizations including Mote Marine Labs-Tropical Research Station, the Florida Fish and Wildlife Conservation Commission-Research Institution, and the CIEE Research Station, Bonaire. Although her background has up until this point been mainly research oriented, Katie came to CCMI with the hope of gaining valuable teaching experience while getting to conduct outreach events with the local community. She is excited for the opportunity to be such an integral part of a growing research station, and looks forward to all that her future with CCMI has to offer!



An **EARTHWATCH TEEN TEAM FACILITATOR** (TEEN team only) will accompany the teen team from the time you step off the plane for the rendezvous until the end of the expedition. If you have any questions or problems, such as issues with another participant, homesickness, or an emergency back home, please talk to your facilitator. Follow your facilitator's advice on safety and personal conduct. All facilitators have experience teaching and leading groups of teenagers. Remember, your facilitator is there for you. (Teen: Facilitator ratio is approx. 6:1)

NOTE: Staff schedules are subject to change.



RECOMMENDED READING

YOUR RESOURCES AT HOME

RESOURCES

ARTICLES

- Manfrino C., C.A. Jacoby, E. Camp, T.K. Frazer. (2013) A positive trajectory for corals at Little Cayman Island. PLOS ONE 8(10): e75432. <http://www.plosone.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pone.0075432&representation=PDF>
- Eakin, C.M., Manfrino, C., Yusuf, Y., 2010, Caribbean Corals in Crisis: Record Thermal Stress, Bleaching, and Mortality in 2005, PLoSOne. 10.1371: e 13969. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0013969>

Additional articles and student posters can be accessed from CCMI's website www.reefresearch.org/publications

BOOKS

- **HIGHLY RECOMMENDED:** Coral Reef Identification, Florida Caribbean Bahamas, 3rd ed. Paul Humann and Ned Deloach

- Caribbean Acropora Restoration Guide: Best Practices for Propagation and Population Enhancement <http://rjd.miami.edu/wp-content/uploads/2013/09/Johnson-2011-Acropora-Restoration-Guide.pdf>

PROJECT-RELATED WEBSITE

- Central Caribbean Marine Institute website: <http://reefresearch.org/>

EARTHWATCH SOCIAL MEDIA

FACEBOOK: [facebook.com/Earthwatch](https://www.facebook.com/Earthwatch)

TWITTER: twitter.com/earthwatch_org

INSTAGRAM: [instagram.com/earthwatch](https://www.instagram.com/earthwatch)

BLOG: earthwatchunlocked.wordpress.com

YOUTUBE: [youtube.com/earthwatchinstitute](https://www.youtube.com/earthwatchinstitute)



LITERATURE CITED

LITERATURE

- Coelho, V. and Manfrino, C. (2007) Coral Community Decline at Remote Caribbean Islands: Marine No-Take Reserves Are Not Enough, *Aquatic Conservation: Mar. Freshw. Ecosyst.* 16:1–20.
- Johnson ME, C Lustic, E Bartels, IB Baums, DS Gilliam, L Larson, D Lirman, MW Miller, K Nedimyer, S Schopmeyer (2011) Caribbean Acropora Restoration Guide: Best Practices for Propagation and Population Enhancement. The Nature Conservancy, Arlington, VA.
- Kiel C, Huntington BE, Miller MW (2012) Tractable field metrics for restoration and recovery monitoring of staghorn coral *Acropora cervicornis*. *Endangered Species Research* 19: 171-176.
- Knowlton, N., & Jackson, J. B. C. (2008). Shifting Baselines, Local Impacts, and Global Change on Coral Reefs. *PLoS biology*, 6, 6.
- Lirman, D, Bowden-Kerby, A., Schopmeyer, S.A., Huntington, BE, Thyberg, T., Gough, M., Gough, R. Gough, Y. Gough (2010a) A window to the past: documenting the status of one of the last remaining 'megapopulations' of the threatened staghorn coral *Acropora cervicornis* in the Dominican Republic. *Aquatic Conservation: Marine and Freshwater Ecosystems* 20 (7) p. 773-781 <http://doi.wiley.com/10.1002/aqc.1146>
- Lirman, D., Thyberg, T., Herlan, J., Hill, C., Young-Lahiff, C., Schopmeyer, S., Huntington, B., Santos, R., Drury, C. (2010) Propagation of the threatened staghorn coral *Acropora cervicornis*: methods to minimize the impacts of fragment collection and maximize production. *Coral Reefs* 29:729-735.
- Manfrino, C., Riegl, B., Hall, J.L., and Graifman, R. (2003) Status of Coral Reefs of Little Cayman, Grand Cayman & Cayman Brac, British West Indies in 1999 & 2000 (Part 1: Stony Corals & Algae), J.C. Lang (ed.), Status of coral reefs in the western Atlantic: Results of initial Surveys, Atlantic & Gulf Rapid Reef Assessment (AGRRA), *Atoll Res. Bull.* 496:204–225.
- Manfrino, C., Jacoby, C. A., Camp, E., & Frazer, T. K. (2013). A positive trajectory for corals at little cayman island. (S. Lin, Ed.) *PLoS one*, 8(10), e75432. doi:10.1371/journal.pone.0075432
- Pandolfi, J. M., Connolly, S. R., Marshall, D. J., & Cohen, A. L. (2011). Projecting coral reef futures under global warming and ocean acidification. *Science (New York, N.Y.)*, 333(6041), 418–422.



EMERGENCY NUMBERS

AROUND-THE-CLOCK SUPPORT



EARTHWATCH'S 24-HOUR EMERGENCY HOTLINE

Call Earthwatch's 24-hour on-call duty officer in the U.S.:

+1 (978) 461.0081

+1 (800) 776.0188 (toll-free for calls placed from within the U.S.)

After business hours, leave a message with our live answering service. State that you have an emergency and give the name of your expedition, your name, the location from which you are calling, and if possible, a phone number where you can be reached. An Earthwatch staff member will respond to your call within one hour.

TRAVEL ASSISTANCE PROVIDER: HEALIX INTERNATIONAL

+44.20.3667.8991 (collect calls and reverse charges accepted)

U.S. TOLL FREE: +1.877.759.3917

U.K. FREE PHONE: 0.800.19.5180

E-MAIL: earthwatch@healix.com

You may contact Healix International at any time. They can assist in the event of a medical or evacuation emergency or for routine medical and travel advice, such as advice on visas and vaccine requirements.

FOR VOLUNTEERS BOOKED THROUGH THE EARTHWATCH AUSTRALIA OFFICE:

Earthwatch Australia 24-Hour Emergency Helpline

+61.0.3.8508.5537





FIELD WAIVER AND LIABILITY DISCLAIMER

CCMI

THIS DEED OF INDEMNITY AND WAIVER (this "Waiver") is made the _____ day of _____ between

_____ and each of the Little Cayman Research Centre (the "Research Centre"), the Central Caribbean Marine Institute (also known as CCMI), incorporated under the laws of the State of New Jersey and recognized as a federal 501(c)(3) non-profit organization and its affiliates, CCMI, a company limited by guarantee in the United Kingdom, and CCMI, a local company incorporated in the Cayman Islands and registered as a local charity and any of their respective parent companies, subsidiaries and affiliates (together hereinafter called "CCMI").

In consideration of being given the opportunity to participate in a CCMI program (the "Program") at the Research Centre, the Participant hereby acknowledge, agree and confirm as follows: the Participant is aware of the skills needed for, and recognize the risks of injury or harm that may occur as a result of participation in the Program. The Participant assumes such risks on the Participant's own as a condition of being permitted to participate in the Program. To the Participant's knowledge, the Participant has no existing medical condition that could worsen or result in further injury to himself or herself or to others as a result of the Participant's participation in the Program. The Participant understand that neither CCMI, nor the Research Centre nor any of their affiliates nor any of their officers, directors, trustees, agents or employees is responsible for administering any medication required by the Participant and /or any medical care required by the Participant whatsoever (together "Medical Treatment") during participation in the Program. In case of emergency, the Research Centre or any of its officers, directors, trustees, agents or employees is authorized to seek necessary Medical Treatment for the Participant, and the Participant accepts full financial responsibility for all the costs of such Medical Treatment and any associated costs connected thereto

In the event that CCMI or the Research Centre or any of their affiliates or any of its officers, directors, trustees, agents or employees deems it necessary at their sole discretion to evacuate the Participant from the Research Centre for any reason including (without limitation) in the event of a threat of a hurricane or other act of god or to relocate into an alternative building for example (without limitation) a shelter, the Participant hereby authorize CCMI or the Research Centre or any of their affiliates or any of its officers, directors, trustees, agents or employees to take any and all action that they deem necessary ("Emergency Action") and the Participant accepts all financial liabilities related thereto. But nothing contained herein shall oblige CCMI to take any Emergency Action.

The Participant hereby releases and forever discharges CCMI and any of their parent companies, subsidiaries and affiliates, and their respective officers, directors, trustees, shareholders, agents, employees, successors and assigns all in their official or individual capacities ("Indemnified Persons") from any and all actions, costs, suits, demands, claims, damages, losses and liabilities direct or indirect howsoever arising (including without limitation reasonable attorney's fees) of any type or kind whatsoever arising out of or caused ("Loss") by the Participant's participation in the Program, any Medical Treatment or medical care provided or as a result of any Emergency Action taken or in connection with any damage, loss or theft of any of the Participant's personal property, equipment, clothing, or effects. In full awareness of the above and in consideration of the Participant's participation of the program, the Participant agrees to indemnify and hold harmless Indemnified Persons from all Loss that the Participant, his heirs, personal representatives and dependents may have for injury (including injury resulting in death) and for the loss of or damage (however caused) to his personal belongings arising in any manner out of the Participant's presence or activities while participating in a program of CCMI.

The Participant hereby agree to indemnify, defend and hold harmless the Indemnified Persons from and against any Loss of any type or kind whatsoever arising out of or caused by participation in the Program any Medical Treatment or medical care provided or as a result of any Emergency Action taken.

The Participant understand and agree that none of the Indemnified Persons may be held liable or responsible in any way for any injury, death, or other damages to the Participant, or any of their estate, heirs or assigns that may occur as a result of participation in the Program or as a result of the negligence of any party, including the Indemnified Persons, whether passive or active. In consideration of being allowed to participate in the Program, the Participant hereby personally assume all risks of the Program, whether foreseen or unforeseen, that may befall the Participant while participating in the Program, including but not limited to the academics, confined water and/or open water activities including (without limitation) any snorkeling or other swimming activities, or the use of public or private transportation. The Participant further release, exempt and hold harmless the Indemnified Persons from any claim or lawsuit by the Participant, his/her family, or any of the Participant's estate, heirs, or assigns, arising out of enrollment and participation in the Program. This Waiver may be signed in counterpart, each of which shall be deemed an original, but all of which shall constitute on instrument.

The Participant acknowledge and agree that any Indemnified Person may rely on the terms of this Waiver and take the benefit of any of the terms contained herein. The Participant understand and agree that the Research Centre or CCMI has the discretionary right to terminate the Participant's participation in the Program if they conclude further participation would pose a risk to the safety of myself or others or if they conclude the Participant's behaviour is disruptive to the best interests of the Program. Permission is hereby given for the use the Participant's likeness, photographs, statements, video tape, voice, music or articles in the promotion of future programs. The Participant has read, understood and agree to the booking terms and conditions stated on the CCMI's website www.reefresearch.org (Participant initial) _____

This Waiver is governed by the laws of the Cayman Islands and the courts of the Cayman Islands shall have exclusive jurisdiction.

EXECUTED and DELIVERED as a DEED

By _____

Participant or Parent or Legal Guardian if Participant is a minor

Print Name _____

Witness Signature _____

Print Name _____

EXECUTED and DELIVERED as a DEED

For and on behalf of CCMI

Print Name _____

Witness Signature _____

Print Name _____

Return to: CCMI
PO Box 37, Little Cayman
KY3 2501, Cayman Islands

Questions: ccmiapplications@reefresearch.org
Phone 345-948-1094
<http://www.reefresearch.org>

MESSAGE FROM EARTHWATCH

DEAR EARTHWATCHER,

Thank you for joining this expedition! We greatly appreciate your decision to contribute to hands-on environmental science and conservation. It is volunteers like you who fuel our mission and inspire our work.

While at Earthwatch, I've had the opportunity to field on a few expeditions, most recently in Kenya with one of my daughters. Each expedition has touched me deeply, and made me proud to be able to roll up my sleeves alongside my fellow volunteers and contribute to such meaningful work.

As an Earthwatch volunteer, you have the opportunity to create positive change. And while you're out in the field working toward that change, we are committed to caring for your safety. Although risk is an inherent part of the environments in which we work, we've been providing volunteer field experiences with careful risk management and diligent planning for nearly 45 years. You're in good hands.

If you have questions as you prepare for your expedition, we encourage you to contact your Earthwatch office. Thank you for your support, and enjoy your expedition!

Sincerely,



Scott Kania
President and CEO, Earthwatch





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