

# RECOVERY OF THE GREAT BARRIER REEF

2024



# PLANNING CHECKLIST

## PLANNING CHECKLIST

### 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 at the time your expedition is booked.

### 6 MONTHS PRIOR TO EXPEDITION

- If traveling internationally, make sure your passport is current and, if necessary, obtain a visa for your destination country.
- Bring your level of fitness up to the standards required (see the Project Conditions section).
- Make sure you have all the necessary vaccinations for your project site.

### 90 DAYS PRIOR TO EXPEDITION

- Pay any outstanding balance for your expedition.
- Complete and submit all participation forms.
- Book travel arrangements (see the Travel Planning section for details).
- If planning to dive, ensure you have all necessary certifications.

### 60 DAYS PRIOR TO EXPEDITION

- Review the packing list to make sure you have all the clothing, personal supplies, and gear needed. If you are hiring gear, ensure you have advised your size to Earthwatch staff.

### 30 DAYS PRIOR TO EXPEDITION

- Leave the Earthwatch 24-hour helpline number with a parent, relative, or friend.
- Leave copies of your photo ID and flight reservation number with a parent, 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.



# TABLE OF CONTENTS

NOTE FROM THE PI .....	2
THE RESEARCH .....	4
DAILY LIFE IN THE FIELD .....	8
ACCOMMODATION AND FOOD .....	10
PROJECT CONDITIONS .....	12
ELIGIBILITY REQUIREMENTS.....	13
SNORKELING & DIVING.....	14
POTENTIAL HAZARDS.....	16
HEALTH & SAFETY .....	18
TRAVEL TIPS .....	19
TRAVEL PLANNING .....	20
EXPEDITION PACKING CHECKLIST .....	21
PROJECT STAFF .....	22
RECOMMENDED READING .....	23
EMERGENCY NUMBERS .....	24





# NOTE FROM THE PI

## DEAR EARTHWATCHER

Welcome to Recovery of the Great Barrier Reef, which is jointly supported by Earthwatch and James Cook University. We are very pleased to have your involvement in a challenging yet rewarding field of science that will focus on understanding the ecosystem response to proposed reef restoration techniques specifically removal of macroalgae (i.e. sea-weeding), to reduce direct competition and open space for new coral larvae to settle. This project engages the citizen scientists, providing opportunities to learn about the research, gain field skills, and help collect data.

Coral reefs around the world are under increasing threats from direct human activities and global climate shifts, which together are contributing to accelerating rates of reef deterioration. In Australia, the Great Barrier Reef is fundamental to our nation's economy and a national icon that needs to be preserved to ensure ongoing sustainability of our marine resources. Warming seawater temperatures, ocean acidification, and increased freshwater inputs carrying pollutants onto these reefs all impact on the health of corals, the major group of organisms that build the structural framework of coral reefs. Understanding how these environmental stressors cause declining coral health and cover is critical for preventing the loss of coral reefs and an important step towards preserving them for future generations.

This project will be conducted on Magnetic Island, just off the coast of Townsville in the central inshore section of the Great Barrier Reef Marine Park. The island is home to approximately 3000 people, and hence offers excellent facilities for hosting scientists and participants and provides convenient access to surrounding coral reefs.

Research supported by this Earthwatch program focuses on macroalgae, which have come to dominate the inshore reefs around Magnetic Island, and other inshore reefs throughout the Great Barrier Reef Marine Park. While the direct cause of these benthic community shifts has been debated, it is clear that recent pressures necessitate more direct recovery actions for reef conservation and management to be effective in the future. Macroalgal removal has been proposed as an active intervention measure to aid reef recovery, through reduced competition and increased available substrate for coral recruitment. The baseline information on the effects (both positive and negative) of macroalgal removal on reef community structure and ecology have not been rigorously generated however. This Earthwatch project therefore is focused on quantifying the ecological effects of macroalgal removal on reefs surrounding Magnetic Island through assessing abundance of coral and algal taxa, fish assemblages, coral recruitment levels and the photobiology of coral colonies in permanent replicate quadrats with and without active algal removal. In light of current threats to coral reef systems, it is important to investigate the effectiveness of active reef recovery actions. This is where your help is required; we need to provide the scientific evidence to allow reef managers to make decisions on if macroalgal removal is a good or bad idea for improving reef health.

We look forward to meeting and engaging with you in these scientific activities.

Sincerely,

David Bourne







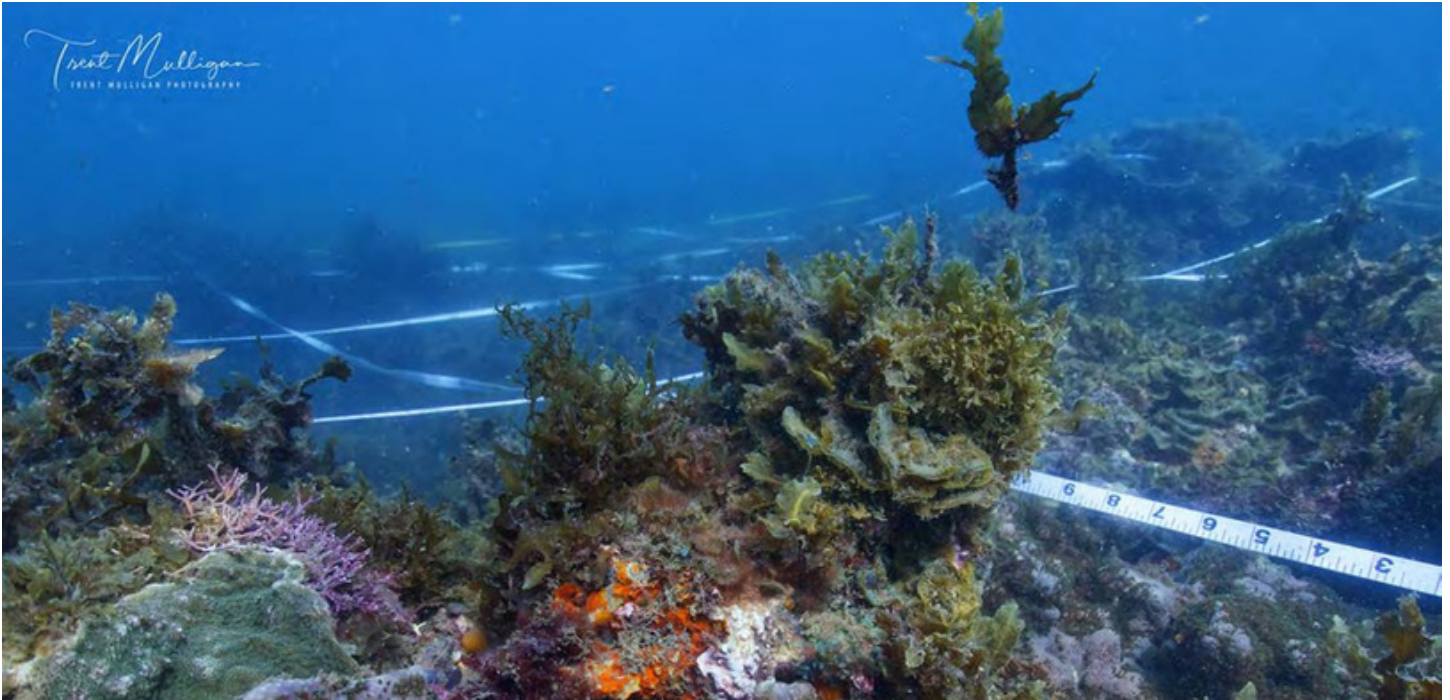
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# THE RESEARCH

## RECOVERY OF THE GREAT BARRIER REEF



### THE STORY

The Great Barrier Reef (GBR) supports one of the most diverse marine ecosystems on the planet and also provides large economic benefits through fisheries, tourism and other marine-related industries. However, a long-term reef-monitoring program has shown that coral cover on the GBR has halved in the last three decades. Some of the largest identified contributors to the decline of GBR corals are storm-derived physical damage, bleaching and disease. Whether coral reefs damaged by severe disturbance events undergo coral recovery (i.e. the restoration of abundance and composition of coral communities) or a phase shift to ecosystems dominated by non-coral organisms (e.g. macroalgae) defines the resilience of coral reefs and is often influenced by ecological conditions.

In addition to researching coral disease, previous Recovery of the Great Barrier Reef expeditions on Orpheus Island has helped to understand the recovery of coral communities after severe disturbance and the underlying mechanism of coral recovery. For example, it has been shown that branching corals are quick to recolonize areas, and that areas of high wave exposure have higher density of new coral colonies following disturbances.

These studies have provided invaluable information on the fine-scale processes involved in the recovery of coral reefs, specifically around the dynamics of coral populations that are essential for determining reef resilience following major disturbance. However, we have moved into an era when repeated disturbance impacts (storms, bleaching, disease outbreaks) have resulted in concerning ongoing declines of reef health globally.

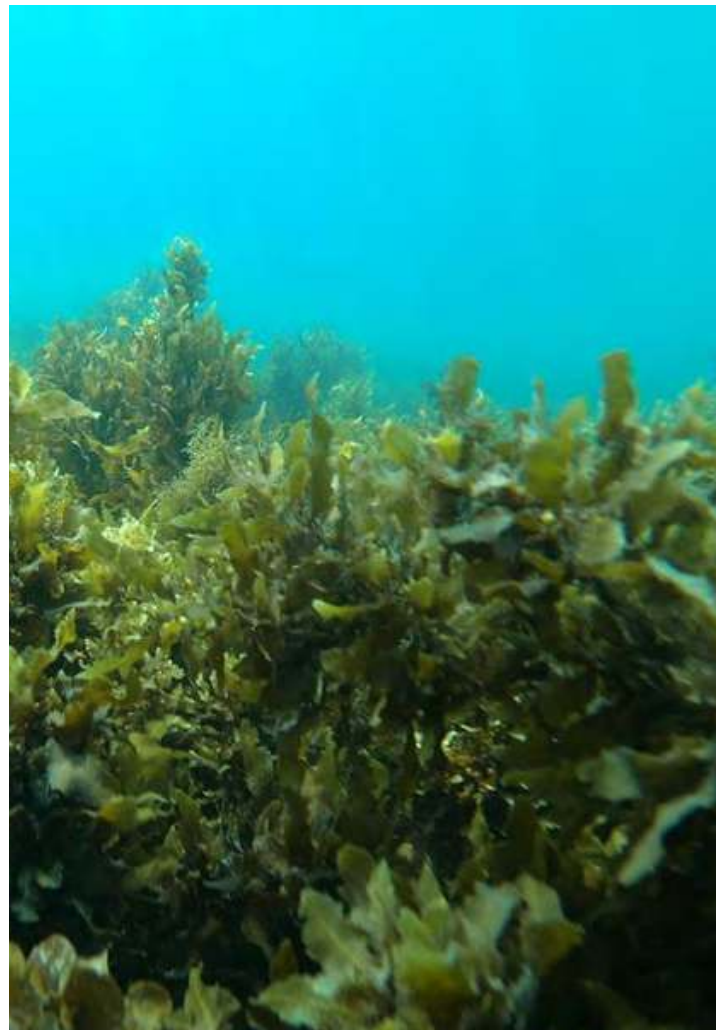
Active management intervention has now become a priority for many reef managers, including the Great Barrier Reef Marine Park Authority (GBRMPA). In July 2018, GBRMPA updated its “Reef 2050” plan, the overarching framework for protecting and managing the reef with practical and novel interventions to improve reef health. The baseline information provided by earlier work that established how reefs recover from disturbance can therefore be used to assess the success of any active reef intervention strategy.

Macroalgae flourishes under conditions where terrestrial runoff, increased sedimentation and nutrient loading creates an environment more conducive to macroalgal growth. However, other disturbance events such as storms, mass bleaching, and even reduced herbivory creates space for further opportunistic macroalgae proliferation, thereby additionally reducing the opportunity for coral recovery. These conditions can prompt a shift from a coral to a less desirable macroalgae-dominated regime. Importantly, the return of coral dominance is rare once newly dominant fleshy macroalgae communities have established. While many of the fundamental mechanisms that underpin macroalgae regime shifts have been identified, their persistence and reasoning for why macroalgae regimes are difficult to reverse back to a coral dominated environment are still poorly understood.

The key drivers of coral decline need to be addressed, however active management options offer potential avenues for increasing reef resilience. Macroalgal removal is one such reef recovery method. By increasing space for growth of existing coral colonies and enhancing available space to facilitate coral recruitment, removal of macroalgae has been proposed as one effective local-scale measure to promote reef recovery.

Nevertheless, like other active interventions it has been controversial. Advocates of active algal removal argue that the continuing degradation of coral reefs is evidence enough for the failure of current passive management actions. The negative effects of macroalgae on corals have been documented and include shading, physical and chemical recruitment inhibition, and abrasion. The removal of macroalgae has been promoted as reducing these negative impacts on corals. Critics of algal removal argue that intervention can harm reef systems both directly, through physical damage caused by the act of removal, and indirectly, through the potential negative impacts on associated fish and invertebrate species. Indeed, in moderate abundances macroalgae are part of healthy ecosystem function, providing food and shelter for a number of species.

This debate highlights that a more comprehensive understanding of the positive and negative effects of macroalgal removal is needed to assess its effectiveness. The impacts of macroalgal removal at Magnetic Island have not been assessed, and this work aims to fill critical knowledge gaps which will further the ability of managers to make decisions regarding these active reef interventions.



## RESEARCH AIMS

This project has three themed objectives:

- To test and develop best practices for macroalgae removal on the Great Barrier Reef;
- To elucidate the effects of macroalgae removal on corals by assessing changes in coral and algal cover, photobiology and coral recruitment success;
- To elucidate the effects of macroalgae removal on the abundance and diversity of other reef organisms (i.e. fish and other reef invertebrates).

## HOW YOU WILL HELP

Participants will assist scientists in a number of activities throughout the project and activities can be conducted on snorkel or scuba (or a mix of both) depending on the tide height and participant skills. Planned activities include:

- Establishing replicate quadrats (5X5m) in representative bays around Magnetic Island. This will require fixing star pickets in the hard substrate at sites, marking the sites with underwater buoys and ensuring accurate GPS coordinates and physical maps of the area and plots within the areas.
- Assess the baseline information of abundance of coral, macroalgae, fish and other species within all plots prior to removal of algae.
- Removal of macroalgae from the bottom reef substrate in replicate 5X5m quadrat plots.
- In situ algal height will also be recorded prior to algal removal, and continue in order to evaluate re-growth in treatment plots.
- The whole 5x5m area will be photographed in 1x1m subsections and coral and algal cover will be estimated and monitored for change over the course of the project (for both control and algae removed plots).
- The photobiology of the dominant species of coral colonies will be assessed in each quadrat at each survey time using a diving pulse amplitude fluorometer (PAM).
- Stationary point counts will be conducted to estimate fish diversity and abundance. For each survey the number, species and size of fish observed over 15 minutes will be recorded.
- 'Cryptic crawls' will also be conducted in each plot. Swimming close to the bottom in a grid-like pattern the number, species and size of cryptic and nocturnal species will be recorded.

**NOTE:** Activities may need to be adjusted depending on weather conditions. Your understanding and cooperation is appreciated.

A range of environmental data will also be collected. For example, to assess if removing macroalgae changes sedimentation dynamics for benthic organisms at the sites, sediment trays will be fastened to the substrate for the duration of the project.

Sediment trays will be placed in the control plots, the treatment plots before removal (as macroalgae removal will likely increase displaced sediments) and the treatment plots after removal. In addition, water quality samples will be taken and data loggers recording temperature, will be deployed and retrieved at periods during the study.

## WHY FIELD RESEARCH?

As an Earthwatch participant, you will spend a significant amount of time each day assisting scientists with data collection. Some of this work will be repetitive, but it is fundamental to our scientific understanding of nature. Ecosystems are incredibly complex. The only way to begin to unravel this complexity is by designing good experiments, and carefully collecting as much data as possible.

Without the work of thousands of dedicated scientists, we would know little about climate change, the effects of pollution, the thinning of the ozone layer, the extinction of species, or how to find cures for diseases or improve crops. Without science we would be blind to the world. This is your chance to be part of the scientific effort, to find solutions to pressing environmental and cultural problems, and to enjoy the beauty and diversity of nature as you work.







# DAILY LIFE IN THE FIELD

## PLANS FOR YOUR TEAM



### SAFETY BRIEFING

Before the start of each day's diving activities a toolbox session will be undertaken, to fully explain the aims of the snorkeling and diving activities and how the daily tasks will be performed and achieved. This will include assigning snorkel/dive buddies, work tasks both above and below the water and the expected outcomes. Any potential hazards or dangers will be discussed, especially in relation to updated weather conditions. Participants do not need any prior training in research methodologies. All methods, tasks and use of equipment will be outlined and demonstrated at the beginning of the project. Every evening a summary of activities, including any problems raised from that day will be discussed.

All participants and project staff will wear full wetsuits, dive booties, fins, snorkel and masks. There will be sun exposure risks for all participants whilst in the field, and many visitors underestimate the strength of the Australian sunshine. High factored waterproof sun block should be worn on exposed areas, and hats should be worn while working outside and above water.

Located in the dry tropics, the humidity at the field location can be high - particularly in the wet season. Working in high humidity can be challenging, making you feel even hotter in warm weather and reducing your ability to cool. Techniques on how to manage working in these environments will be discussed.

### TRANSPORT AND DRIVING POLICY

If participants have driven themselves to the project, they may not drive whilst on the project. Participants who ignore this policy and do drive or ride in another participant's vehicle during the project will be doing so at their own risk and will not be covered under the Earthwatch nor James Cook University insurance policy for the expedition.

### GENERAL SNORKEL AND DIVE PROCEDURES

Snorkeling and diving on this expedition carries an inherent risk. Safety procedures are established to minimize these risks and should be adhered to closely. Minimum levels of competence are required for both snorkelers and divers and only participants who meet the minimum health, proficiency and (for divers) qualification set will be able to participate in these activities. In line with these minimum proficiency standards, the research team relies on all scuba divers and snorkelers to be responsible for their own safety and aid others in case of an emergency.

**James Cook University and the research team leading the field activities have the right to exclude anyone from participating in snorkel and dive activities if they fail their checkout snorkel or dive, snorkel or dive unsafely, or place themselves or others in a situation of undue risk.**



# ITINERARY AND DAILY SCHEDULE

## DAY 1 ARRIVAL/TRAVEL DAY

<b>Morning</b>	Meet expedition team in Townsville Travel to Magnetic Island via ferry Settle in accommodation Safety briefing and orientation
<b>Afternoon</b>	Organization of research equipment and dive/snorkel gear Preliminary dive/snorkel to assess ability of all participants
<b>Evening</b>	Free time and showers Dinner with the team Presentation by Dr David Bourne and Hillary Smith, an overview of the project

## DAY 5 TRAVEL DAY

<b>Morning</b>	Breakfast and pack up Depart Magnetic Island and return to Townsville.
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## DAYS 2-4 FIELDWORK DAYS

<b>7:00-8:00am</b>	Breakfast Morning brief on the day's activities
<b>8:00am</b>	Prepare all equipment and supplies and load the boats in preparation for leaving. Travel to the site for that day.
<b>9:00am - 4:00pm</b>	Undertake the day's field activities, which will usually include 2 x 90 minute snorkels/dives with more than 1-hour surface interval. Lunch taken between dives.
<b>4:00 - 5:00pm</b>	Return to accommodation Wash all gear, clean equipment and fill scuba tanks for the next day
<b>Evening</b>	Free time and showers Dinner with the team Summary of the day's activities plus a scientific talk on relevant marine topic

Weather and research needs can lead to changes in the daily schedule. Participants may assist researchers indoors with macroalgae assessments, inspect baby corals through microscopes and more!  
We appreciate your cooperation and understanding.

# ACCOMMODATION AND FOOD

## ABOUT YOUR HOME IN THE FIELD



### FACILITIES AND AMENITIES

Participants will stay at a beachfront holiday home in Magnetic Island. Participants will have access to the kitchen and recreational facilities offered there (e.g. swimming pool). Those requesting a single room can do so at no extra cost, however, the location may vary based on demand. Each room is equipped with a ceiling fan, air conditioner, and has screened windows. Bed linen (flat and fitted sheet, pillow and pillowcase) is provided. There are 4 bathrooms throughout the house. These shared facilities offer hot water showers and toilets. Participants may wish to bring a pair of sandals for the shower.

### ELECTRICITY

There is 24-hour electricity and all rooms are equipped with working power sockets. Participants are asked to conserve energy wherever possible to help conserve power consumption. Additionally, due to changes in load demand, this may result in low level surges in the power supply. It is recommended that if visitors are using sensitive electronic equipment to bring surge protection boards.

### DISTANCE TO THE FIELD SITE

Participants will be transported to the field locations, and the furthest distance between sites is ~8 km by land. All sites are within the bays of Magnetic Island and so accessible from shore.

### PERSONAL COMMUNICATIONS

There is limited Wi-Fi at the accommodation, and there are no computers so participants will have to bring their own laptop and Wi-Fi dongles should they wish or need to use the internet during the expedition. Mobile phone reception is widely available on Magnetic Island, but is limited at the house location. Telstra Mobile tends to have the best coverage in Australia. Communication between teams of participants on-site may be via VHF radio.

### HOUSEKEEPING

Housekeeping will be shared, with small teams assigned to duties each day. Tasks may include washing and drying dishes, sweeping the kitchen floor, wiping benches, cleaning the bathroom, packing away chairs and tables after meals etc.

### MAGNETIC ISLAND

Magnetic Island is home to ~3000 people, and so the island has shops and amenities available to participants however not all accommodation options are within walking distance of these facilities. In addition, variety and supply may be limited, so participants who require any specialty items (dietary, personal), are recommended to bring them and not expect that they will be available on the island.





## FOOD AND WATER

Earthwatch will provide all food during your stay at the research site. Participants and staff will be responsible for making their own breakfast in the morning and their own lunch at lunch time. Fruit and snack foods will be available as well. Dinner will be a cooked meal and all participants will be expected to participate in the preparation of meals according to a roster. Be prepared to have a little fun with this! The Principal Investigator organizes a friendly “master chef” style competition from the cooking roster, and many participants enjoy this whole-heartedly. Evening meals will be hearty and primarily vegetarian. There will also be one night out at the Arcadia Bay pub for dinner, where meal costs will be covered but any alcoholic beverages will be at participants own cost.

Fresh drinking water will always be available at the accommodation quarters. Magnetic Island is supplied with treated potable town water and is suitable for drinking without treatment. Tea and coffee will also be readily available at the accommodation.

## SPECIAL DIETARY REQUIREMENTS

Please alert Earthwatch to any special dietary requirements (e.g., diabetes, lactose intolerance, nut or other food allergies, vegetarian or vegan diets) as soon as possible, and note them in the space provided on your participant forms. We will try our best to cater for your dietary needs.

## TYPICAL MEALS

The following are examples of foods you may find in the field. Variety depends on availability. We appreciate your flexibility.

<b>Breakfast</b>	Cereal, toast and spreads
<b>Lunch</b>	Sandwich fillings, spreads and salads, cheese, fresh fruit, muesli bars.
<b>Dinner</b>	Pasta, curries, stir-fry, BBQ meat and salads, sauces, etc.
<b>Snacks</b>	Crackers, fruits, sweet biscuits, muesli bars.
<b>Beverages</b>	Coffee, tea, milk, fruit juices / cordial, water



# PROJECT CONDITIONS

## THE FIELD ENVIRONMENT

### General conditions

	April	July	October
Water Temperature	27°C	22°C	24°C
Humidity	70%	60%	70%
Temperature	22-28°C	15-25°C	20-30°C
Actually feels like	Very hot	Cool	Hot

The climate at Magnetic Island is tropical, with the summer (November to April) hot and humid with temperatures in the high 20s°C (mid 80s°F). The rainy months are from December to March with an average annual rainfall of 1200mm (3.9 ft.). Summer winds are variable, with extended calm periods. Cyclones developing in the Coral Sea (November to May) may produce strong winds and heavy rains, but rarely threaten the island. Southeast trade winds dominate the cool, sunny, dry season from June to November. During this period daily temperatures may be variable and a range of attire is recommended with overnight temperatures dropping to 20° Celsius.

Water temperatures range from 22 to 27° Celsius (82 to 86° Fahrenheit) in summer and can drop as low as 20° Celsius (75° Fahrenheit) in winter. Please note: these provided climate condition predictions are general in nature and teams have experienced unseasonable weather at all times of year.



### Water conditions

Water visibility	2-10 m / 6.6-33 ft.
Maximum depths of dives	3-10 m / 9.8-33 ft.
Dive site	Fringing reef, accessed via shore and boats

This fieldwork is conducted on near shore reefs and water visibility may be poor.



# ESSENTIAL ELIGIBILITY REQUIREMENTS

This project is rated strenuous can be very physically demanding. You will be working on water with strong currents and sea swell, in potentially hot and humid conditions. Please keep in mind that conditions may change and the project could potentially be more or less strenuous than these points indicate.

## ALL PARTICIPANTS MUST BE ABLE TO



Swim, snorkel or dive twice a day for up to 2 hours at a time.



Walk for a minimum of 1km on rough/hot terrain



Carry snorkel/dive/research equipment to and from the boat and/or shore. Weighing up to **5kg** over a distance of **500m**.



Be active, including regular bending and lifting, when doing field work and cleaning field gear.



Be comfortable travelling and working on a boat up to 3 hours at a time.



Adhere to the briefing guidelines, be aware of their limitations and apply common sense while participating.

# SNORKELING & LAND-BASED ACTIVITIES

## ELIGIBILITY REQUIREMENTS

Snorkelers should have more than 10 hours snorkelling experience in open water and be able to demonstrate basic snorkel skills including correct mask clearing, ear equalisation and duck diving. Snorkelers should be comfortable swimming in the open ocean with swells and strong currents, able to swim or tread water for 10 minutes continuously and swim at least 200m (650ft) unaided. Snorkelers must be able to demonstrate full control over their breathing at all times. Snorkellers activities included handling in-water gear and swimming with loaded catch bags over distance (up to 200m).

## MEDICAL FITNESS

All participants must be in good physical condition. Individuals with any medical condition that may impact on their safety in the water will be required to provide a medical clearance from their doctor dated within 3 months of the start date of the project stating they are fit to conduct the tasks outlined in this briefing, along with medical management and action plans.

## BOATING REQUIREMENTS

In order to assist on the research boat, you will need to be relatively fit and agile. Although research boats may have a canopy for shading, sun protection is required for the one-hour surface interval and other field activities. Depending on winds, the trip may be bumpy and participants may feel cold on the return trip after being in the water all day. An all-weather proof or windbreaker jacket is advisable. Those who are prone to seasickness should bring preventative treatments with them.



## LAND-BASED ACTIVITIES

Weather and research needs can lead to changes in the daily schedule. The team may take part in land-based activities, such as assisting with field gear preparation, weighing and sorting macroalgae, inspecting baby corals through microscopes, as well as maintaining, cleaning and preserving coral settlement tiles. Participants may also conduct flora and fauna surveys in the Arthur Bay mangroves or along the Forts Walk (3-5 km, 1-1.5 hrs, Grade 3 walking track), or conduct microplastic surveys during beach clean-ups.



# SCUBA DIVING

## Eligibility Requirements

### DIVE QUALIFICATIONS

To dive on this expedition participants will need to meet the requirements to join the James Cook University Dive Register. At a minimum you will need to hold an internationally recognized Divemaster or higher; OR Australian Occupational (AS2815); OR SISOSCB006 “Perform Diver Rescues” recognized under the Australian Qualifications Framework. **Please email [hello@earthwatch.org.au](mailto:hello@earthwatch.org.au) if you have any questions about your eligibility to dive.**

### DIVE GEAR

If you intend to use your own scuba diving equipment, it must have been serviced within 12 months prior to diving and will be inspected by the JCU Dive Supervisor prior to diving. Evidence to show that the equipment test is current (i.e. service record from the service shop) will be required. The borrowing of equipment is otherwise included in the cost of this expedition. If you intend to borrow equipment from JCU, please email [codonoghue@earthwatch.org.au](mailto:codonoghue@earthwatch.org.au).

### DIVE LOGS

You will be required to provide a copy of your Dive Log Book, with dives countersigned, validating a minimum experience of 40+hrs underwater excluding training dives. You must have logged at least one dive in the last six months prior to the start date of the project and in water similar to those of the planned dive (e.g. temperature).

### DIVE INSURANCE

All divers must hold dive insurance, which provides emergency evacuation service as well as accident treatment cover. DAN dive insurance or equivalent (stating what type of coverage is provided eg Standard, Preferred or Master). See [danasiapacific.org/index.php](http://danasiapacific.org/index.php). \*note: holding a DAN membership does not mean that you have a DAN insurance policy, you must have membership however to purchase insurance.

### DIVE MEDICALS

All divers must hold a current Occupational Dive Medical provided by a certified South Pacific Underwater Medicine Society (SPUMS) Dive Examiner or equivalent from Undersea and Hyperbaric Medical Society (UHMS) certified doctors. This dive medical must state it is conducted to the Australian Standard AS/NZS 2299.1:2015 and have been undertaken less than 12 months prior to the start of the expedition. If you are unable to see a SPUMS or UHMS registered doctor before your arrival in Australia, you will need to organise an appointment in Australia prior to joining the expedition. This medical should be booked well in advance and you will need to arrive in Australia at least one day early to complete this assessment. You will be required to have a chest x-ray and you will need to bring your x-ray and x-ray report (in English) with you. You can find a doctor able to provide Occupation Dive Medicals via the SPUMS Diving Doctors List [spums.org.au](http://spums.org.au) (select “yes” under OCC Diving).

### DOCUMENTATION CHECKLIST

Divers will need to provide the below documentation and have this validated by the JCU team via upload to the register prior to joining the expedition. All divers must ensure they meet, understand and adhere to all safety procedures, environmental rules and regulations, and safe diving limits.

- Dive qualification
- Dive medical certificate  
(Standard AS/NZS 2299.1:2015)
- Dive log book  
(validating a minimum of 40+ hours)
- CPR and O2 provider certificates  
(current within 12 months)
- First Aid Certificate
- DAN insurance



# POTENTIAL HAZARDS

## HAZARD TYPE ASSOCIATED RISKS AND PRECAUTIONS

<p><b>Transportation</b></p>	<p>Some driving may involve rough roads on 4WD tracks. All vehicles are equipped with airbags, seatbelts, spare tires, first aid kit with Emergency Response Plan and mobile phone. Only experienced and suitably qualified project staff will drive vehicles and they will obey all road rules. Passengers and driver will be instructed to wear seat belts at all times whilst the vehicle is in motion. Participants are not allowed to drive (including their own vehicles) while on an Earthwatch team.</p>
<p><b>Working in boats</b></p>	<p>Boats are well maintained, and include VHF radio, life preservers, emergency flares, fire extinguisher, and a first aid kit. Life jackets are available for all passengers. All participants and project staff will be wearing wetsuits, which assist with buoyancy. All participants must be able to swim, and must disclose their swimming ability to project staff in advance. The boat is only used in daylight hours and only when sea state is acceptable to the skipper. The skipper is certified and experienced in driving boats in the area. Boat communications include EPIRB, flares, VHF radio and mobile phones. There is a communications plan with the team outlining boat return time, destination and people manifest.</p>
<p><b>Slips &amp; trips</b></p>	<p>Participants may need to board the boat by the boat ramp or by walking out onto the beach to the closest point where the boat can get in due to tides. Participants are instructed to be careful when embarking and disembarking the vessel and should hold onto the handrail or sides of boat. Participants should always wear their booties when walking out on the reef and boarding the boat.</p>
<p><b>Snorkeling</b></p>	<p>Snorkelling is a physically demanding activity with inherent risks. Safety procedures are established to minimize the risk associated with snorkeling and outlined during the safety briefing prior to commencing the research activities. Snorkels are to use the appropriate technique to equalize as they duck-dive to avoid eardrum injuries and ensure they know how to use the snorkeling equipment (including how to clear masks and snorkel, appropriate techniques for fin use, and outline some tips on safe breath holding).</p>
<p><b>Diving</b></p>	<p>Scuba diving is a physically demanding activity with inherent risks. Safety procedures are established to minimize the risk associated with diving and should be adhered to closely. As with all diving activities there is a risk of decompression illness (DCI). There isn't a recompression chamber on the island; therefore, there will be strict diving restrictions imposed. Only participants who have passed a dive medical, have appropriate insurance, and have provided evidence of significant dive experience can participate on Earthwatch dive projects. A Dive Supervisor is always present with divers. Oxygen is kept on board the boat. Project staff are first aid qualified. Participants are buddied up based on experience. Participants are guided down and up slowly in order to prevent descending and ascending too quickly. There is a diver response plan in place.</p>
<p><b>Heat related illness or dehydration</b></p>	<p>Participants should bring reef-safe waterproof sunscreen and should mentally and physically be prepared to undertake activity in potentially hot and humid conditions. Participants should drink plenty of water throughout the day. If participants start to feel unwell they should notify a project staff member immediately and rest in a shaded area, whilst cooling themselves with water.</p>





<p><b>Poisonous and stinging marine animals</b></p>	<p>There is potential for participants or staff to be stung or bitten by some species of marine life present (for example stonefish, sea snakes, stingrays, and various jellyfish). Participants will be required to wear wetsuits, gloves, hoods, flippers and mask, which will provide protection from most stinging wildlife. Participants are instructed not to pick anything up or touch any marine creatures. If participants are stung they should alert project staff and apply first aid according to what has caused the sting. Participants should wear booties or some closed footwear when walking in the water and shallow reefs in the bay.</p>
<p><b>Sharks Crocodiles</b></p>	<p>There is low risk of encountering a dangerous shark or a crocodile on the project. If a shark or crocodile is present nearby and advance warning has been given to the team via the local authorities, then research activities will be cancelled in that location. Sharks will most likely demonstrate aggressive behavior before they strike, however, crocodiles are known to be ‘ambush predators’, and so precautions will be taken when near the water if a crocodile is known to be present in the area. If a shark is spotted and displaying aggressive behavior, all participants will evacuate the water as quickly as possible.</p>
<p><b>Snakes</b></p>	<p>Venomous snakes are found on the island. If participants come across a snake, they should not try to catch it or kill it. Participants should back away from the snake and let it be. Participants will be briefed on snakes on arrival and advised to wear closed in shoes when walking around the island.</p>
<p><b>Coral rubble &amp; sharp shells</b></p>	<p>Participants should not go barefoot when walking around the accommodation or when walking out on the reef.</p>
<p><b>Gas stove</b></p>	<p>Participants will be cooking on gas stoves and the risk of burns is possible. Participants will be briefed about the cooking facilities and warned to take care when using any gas elements.</p>

**EMERGENCIES IN THE FIELD**

The Day 1 trip safety briefing will detail the expedition process to manage emergencies in the field. There is an ambulance (paramedic) service on Magnetic Island, in addition to a medical centre and pharmacy within 25 minutes drive of all activities. A hospital is located in Townsville, approximately 40 minutes away via public ferry (boat). For serious injuries we will be guided by the advice of emergency services.

**PROXIMITY TO MEDICAL CARE**

PHYSICIAN, NURSE, OR EMT ON STAFF: Project staff are not medical professionals.

STAFF CERTIFIED IN SAFETY TRAINING: All James Cook University team members are qualified in CPR and hold a First Aid / oxygen provider certificate. All Earthwatch Team Leaders are qualified in CPR and hold a First Aid certificate.

**NEAREST MEDICAL TREATMENT**

**MAGNETIC ISLAND HEALTH SERVICE CENTRE**  
offers nurse-led clinics  
76 Sooning Street, Nelly Bay  
Magnetic Island 4819 Queensland  
+61 (0)7 4778 5107

**LATITUDE 19 HEALTH**  
68 Sooning Street, Nelly Bay  
Magnetic Island 4819 Queensland  
+61 (0)7 4778 5614

**THE TOWNSVILLE HOSPITAL**  
100 Angus Smith Drive  
Douglas, QLD 4814  
Mailing Address: P.O. Box 670, Townsville QLD 4810  
Telephone: (within Australia) (07) 4433 1111  
(International) +61 7 4433 1111

Travel time from project: 15 km/40 minutes by boat and ambulance



# HEALTH & SAFETY

## RECOVERY OF THE GREAT BARRIER REEF

### MEDICAL CONDITIONS OF SPECIAL CONCERN

Hydrophobia, discomfort in or around boats; uncontrolled inner ear infections, conditions that reduce or limit your ability to equalize pressure in one’s ears; conditions that affect balance, blood clotting issues and/or any condition that interferes with or limits a participants’ swimming or breathing should be considered carefully. If you are pregnant, you should inform your doctor prior to diving. If you suffer from motion or seasickness and intend to treat this with either over-the-counter or prescribed medication, please discuss the use and side effects with your doctor.

**Pre-existing medical conditions can be exacerbated by project’s environmental conditions and activities. It is for these reasons we require a medical clearance from you doctor that they assess you as fit to participate, as well as provide management and action plans.**

### IMMUNISATIONS

All participants should have the following up-to-date routine immunisations: DPT (diphtheria, pertussis, tetanus or tetanus booster if required), polio, MMR (measles, mumps, rubella), and varicella (if you have not already had chicken pox). It is strongly recommended that all participants are up-to-date with COVID-19 and Flu vaccinations.

### PARTICIPANT CONDUCT

Participants are at all times expected to contribute to expedition activities in a manner that is safe and meaningful to the research. Participants are required to follow instructions of the Earthwatch Team Leaders and must;

- Treat all people with respect
- Foster a safe, productive, inclusive and positive environment for learning and research
- Abide by all applicable laws

**Disruptive behavior or verbal, physical, or any other type of abuse, intimidation, harassment, assault or other illegal activity is not tolerated on Earthwatch teams.**

Team leaders will promptly address any violations of the code of conduct and take necessary action to ensure the safety and well-being of all participants, including removal from the team.

### CONDITIONS, CONCERNS AND PRECAUTIONS

<p><b>Pre-existing medical conditions</b></p>	<p>Due to the remoteness of the area and the time it takes to evacuate, those requiring quick access to medical care due to any medical complaints should not take part on this project.</p>
<p><b>Allergies</b></p>	<p>Those with known allergies to dust, grasses, mammals, plants or insects (including mosquitoes and sand-flies) should bring appropriate medications in order to participate on this project. Those with severe allergies with a history or potential for anaphylaxis must bring an EpiPen and carry it with them at all times.</p>
<p><b>Back or neck problems</b></p>	<p>Those with chronic or constant back or neck pain problems should be aware that some days may require travelling on the boat in bumpy conditions. They should reconsider their ability to participate.</p>
<p><b>Knee or ankle problems</b></p>	<p>This project requires bending and lifting as well as participants to walk over uneven and steep terrain. Those with knee or ankle problems should carefully consider their ability to participate.</p>
<p><b>Physical limitations</b></p>	<p>Participants with physical limitations should be aware that the work involved generally requires a good level of fitness and mobility. Participants must be able to navigate stairs and walking over uneven ground without assistance.</p>





# TRAVEL TIPS

## SUGGESTIONS FOR THE ROAD



### YOUR DESTINATION

LANGUAGE: English

TIME ZONE: GMT/UTC +10 hours

LOCAL CURRENCY: Australian Dollar

PERSONAL FUNDS: No funds are required for the expedition, however participants may wish to take some cash (AUD\$) with them to buy snacks and beverages. For those traveling from overseas, airports and most major towns will offer banks and/or ATM's for cash withdrawals (please check with your bank beforehand to see if your cards are compatible with Australian ATMs). In most locations you can use EFTPOS or credit cards for large purchases but smaller purchases are typically paid for with cash. Please also check with your bank in regards to accessing your money within Australia. You may require additional funds while traveling before/after your expedition—MasterCard and Visa are widely accepted throughout Australia; however cash is preferred for small purchases.

### COUNTRY AND PROJECT ENTRY REQUIREMENTS

Entry visa requirements differ by country of origin, layover, and destination, and do change unexpectedly. For this reason, please confirm your visa requirements at the time of booking and, again, 90 days prior to travel. Please apply early for your visa (we recommend starting 6 months prior to the start of your expedition). Refunds will not be made for participants cancelling due to not obtaining their visa in time to meet the team at the rendezvous. You can find up to date visa requirements via the following site: [www.travisa.com](http://www.travisa.com)

If a visa is required, participants should apply for a TOURIST visa. In most cases, this can be done online through Australia's Electronic Travel Authority. For more information, please see: <https://immi.homeaffairs.gov.au/visas/getting-a-visa/visa-listing/electronic-travel-authority-601>

Generally, passports must be valid for at least six months from the date of entry and a return ticket is required.

### CUSTOMS AND QUARANTINE

Australian customs are highly regulated, especially when it comes to importing items and products. Whether you're arriving in Sydney, Melbourne, or any other Australian city, there are strict rules in place. Any food plant material and animal products must be declared.

**Any prescription medication brought into Australia needs to be accompanied with a letter from your doctor for Customs Inspection purposes.**

### 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:

[Elizabeth Irvine, Head of Programs](#)

Suite G-06, 60 Leicester St

Carlton VIC 3053

Australia

Email: [earth@earthwatch.org.au](mailto:earth@earthwatch.org.au)

Ph.: +61 (0) 3 9016 7590



# TRAVEL PLANNING

## RENDEZVOUS AND DEPARTURE INFORMATION

RENDEZVOUS
C Bar, The Strand, Townsville
Team 1: 13 Feb 2024
Team 2: 22 Jul 2024
Team 3: 21 Oct 2024

DEPARTURE
Magnetic Island Ferry Terminal
Team 1: 17 Feb 2024
Team 2: 26 Jul 2024
Team 3: 25 Oct 2024

### HOW TO MEET YOUR TEAM

C Bar is located at the end of Gregory Street Headland on the Strand. Participants will meet at 12:00 pm. on Day 1 of the expedition on the grass out front of C Bar. The Earthwatch scientists and team leaders will be there to meet you. From here, participants will travel via mini bus to the Magnetic Island ferry terminal, for transfer to Magnetic Island. You do not need to purchase a ferry ticket, as this is included in the cost of the expedition.

To get to the C Bar from the airport you can take a taxi, which will cost approximately \$30. Although Earthwatch can often suggest resources to help with travel planning, please remember that you are responsible for making your own travel arrangements to the rendezvous site and that airline information is subject to change. You are encouraged to register your travel itinerary with your embassy.

### ARRIVING EARLY

If you do choose to arrive in Townsville prior to the rendezvous, there are many sites and activities to keep you busy. There are a number of accommodation options located very close by the rendezvous site. The Strand in Townsville offers a wide range of accommodation from hostels and backpackers resort to high end hotels. Please refer to travel booking websites for further accommodation options.

### ARRIVING LATE

It is essential to the success of the expedition that you do not plan to arrive late or leave the expedition early. Please do not reserve a flight that arrives after your team's scheduled rendezvous time. If your flight is delayed and/or you miss the rendezvous, call Earthwatch Australia on +61 (0) 3 9016 7590 during office hours or call Earthwatch's 24-hour emergency hotline at +61 (0) 3 8508 5537 after office hours. Participants who arrive late will need to organize their own travel to the project site. Any costs incurred due to late arrival (e.g. transportation, accommodation, meals) will be at the participant's expense.

NOTE: Early departures from the expedition are discouraged (except in cases of emergency), due to the logistical need to divert vehicles and the disruption to the field research and other participants. Any participant departing early will be required to sign an Earthwatch release form. We can, however, easily accommodate an early departure on the last day of the expedition (Day 5) to meet departing flights - please discuss this with Earthwatch in advance to allow us to make the necessary travel arrangements. The departure point for the trip is the SeaLink passenger terminal in Townsville. If arranged in advance, we can drop participants at the Townsville airport, or a location within central Townsville city.



# EXPEDITION PACKING LIST

## WHAT TO BRING

### EXPEDITION PACKING CHECKLIST

#### GENERAL

- This expedition briefing
- Your travel plans, rendezvous details, and Earthwatch's emergency contact information
- Passport and/or visa (if necessary)
- AUSTRALIAN RESIDENTS ONLY: Please bring your Medicare card and (if applicable) your private health insurance and ambulance cover policy numbers

#### SNORKEL AND DIVE GEAR

- Dive booties, thick soled for walking across the reef
- Full wetsuit (long arms and legs). For July trip, 3–5mm is recommended.
- Fins, Gloves, Hood
- Mask and snorkel (snorkel only)
- BCD (diver only)
- Regulator (diver only)

NOTE: We recommend you bring your own dive and snorkel gear. However, the cost of the expedition includes the hiring of snorkel and dive gear. Email [hello@earthwatch.org.au](mailto:hello@earthwatch.org.au) to advise your sizes so that we can have your gear ready for when you arrive.

#### PERSONAL SUPPLIES

- Personal toiletries (biodegradable soaps and shampoos are encouraged)
- Antibacterial wipes or lotion (good for cleaning hands while in the field)
- Medications
- Spending money

#### FIELD SUPPLIES

- Small daypack and dry-bag or plastic sealable bags (good for protecting equipment such as camera from dust, humidity, and water)
- Insect repellent spray
- Water bottle(s)
- Reef-safe waterproof sunscreen with SPF 30 or higher
- Beach Towel

#### CLOTHING/FOOTWEAR FOR FIELDWORK

- Long-sleeved shirt or rash guard for sun protection on the boat, and to wear under wetsuit
- Warm wind/waterproof jacket
- Wide-brimmed hat
- Swimsuit(s)
- Sunglasses (polarized lenses are best)—neck strap recommended

#### CLOTHING/FOOTWEAR FOR LEISURE

- Comfortable clothing
- Footwear for walking around the island (thongs, sandals or sneakers)
- Pajamas or other sleepwear (please see the temperatures anticipated on your team to determine how warm your sleepwear should be).

#### BEDDING AND BATHING

NOTE: Sheets, pillows and towels are provided on this expedition. Team 2 will have cooler overnight weather and participants on that team may wish to bring a blanket or a sleeping bag for additional warmth.

#### OPTIONAL ITEMS

- Personal first aid kit (e.g., anti-diarrhoea pills, antiseptic, itch-relief, pain reliever, bandages, blister covers, etc.)
- Earplugs for light sleepers
- Books, games, journal, art supplies, etc. for recreational/rest time and travel
- Underwater camera, film/memory card(s), extra camera battery, interface cables for downloading/hardware for sharing photographs at the end of the expedition.
- Binoculars
- Dive Computer or tables
- Visual dive safety signal (an inflatable "safety sausage")
- Dive knife (preferably small and mounted on your body or equipment, as opposed to in a pocket)

NOTE: 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



### **EARTHWATCH SCIENTIST ASSOC. PROF. DAVID BOURNE**

Holds a joint appointment at James Cook University and the Australian Institute of Marine Science (AIMS). Over the past four years his focus has been on developing a research, teaching, and research-training program around macro and micro ecology of coral reefs with a particular emphasis on benthic invertebrates such as corals which build the reef structure. This work extends to understanding how environmental degradation is and will further impact coral reefs globally. His training is in the area of molecular microbial ecology with a strong research focus on investigation of microbial diversity, structure and function in complex marine ecosystems. Although having a broad research profile around impacts on marine ecosystems and coral reefs in particular he has specifically focused research essentially into two areas, the first investigating the normal microbial communities associated with corals and their functional roles in maintaining coral fitness. The second research focus is to elucidate pathogens and mechanism of disease onset in corals and the implication this has on a stressed reef ecosystem in light of climate change being a major driver of coral reef degradation. David is the Principal Investigator on Recovery of the Reef and will be present on all teams.



### **EARTHWATCH SCIENTIST, HILLARY SMITH**

Research Officer at James Cook University focusing on coral biology and reef ecology. After completing her Masters in Marine Biology at James Cook University, her research has been focused on investigating the microbial communities of marine invertebrates, the functional genomics behind coral adaptation, and gene expression in response to stress and disease. Throughout this particular Earthwatch project she is testing local scale reef restoration techniques on the Great Barrier Reef including macroalgae removal (“sea-weeding”) and coral larval enhancement (“coral IVF”). Prior to her career in science, she completed a Bachelor of Fine Arts and worked for several years in the arts. She has a passion for creating conceptual scientific illustrations to bridge the gap between science and art, and to communicate complex scientific ideas with beautifully rendered images.

NOTE: In addition, there will be various Research Assistants joining the expedition. A staffing schedule is still to be announced.

# RECOMMENDED READING

## YOUR RESOURCES AT HOME

### RESOURCES

#### BOOKS

- Introduction to Marine Biology (George Karleskint, Richard Turner, James Small)
- Coral Reefs in the Microbial Seas (Forest Rohwert).
- Corals of the World (Chalie Veron)
- Saving the Reef (Rohan Llyod)

#### ARTICLES

- “Major Reef Building Coral Diseases 2010” <https://www.coris.noaa.gov/>

#### FILMS

- Coral Reef Adventure (coralfilm.com)
- The Blue Planet (BBC)
- Chasing Coral (NetFlix)
- Saving Atlantis (Oregon University)

#### PROJECT RELATED LINKS

- Townsville: [townsville.qld.gov.au/Pages/default.aspx](http://townsville.qld.gov.au/Pages/default.aspx)
- James Cook University: [www.jcu.edu.au](http://www.jcu.edu.au)
- Australian Institute of Marine Science: [www.aims.gov.au](http://www.aims.gov.au)

#### SOCIAL MEDIA: EARTHWATCH AUSTRALIA

- FACEBOOK: [facebook.com/EarthwatchAustralia](https://facebook.com/EarthwatchAustralia)
- TWITTER: [twitter.com/Earthwatch\\_Aus](https://twitter.com/Earthwatch_Aus)
- INSTAGRAM: [instagram.com/earthwatch\\_aus](https://instagram.com/earthwatch_aus)

#### SOCIAL MEDIA: EARTHWATCH INTERNATIONAL

- FACEBOOK: [facebook.com/Earthwatch](https://facebook.com/Earthwatch)
- TWITTER: [twitter.com/earthwatch\\_org](https://twitter.com/earthwatch_org)
- INSTAGRAM: [instagram.com/earthwatch](https://instagram.com/earthwatch)
- BLOG: <https://blog.earthwatch.org/>
- YOUTUBE: [youtube.com/earthwatchinstitute](https://youtube.com/earthwatchinstitute)



# EMERGENCY NUMBERS

## AROUND-THE-CLOCK SUPPORT



### **EARTHWATCH AUSTRALIA 24-HOUR MESSAGING SERVICE**

+61 (0)3 8508 5537

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### **EARTHWATCH US 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.

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# MESSAGE FROM EARTHWATCH

DEAR EARTHWATCHER,

Hello and welcome to the team!

You will soon be embarking on an exciting and meaningful adventure to some of the most spectacular regions of our planet. It's a special place here on Earth, and with your help we are working hard to keep it that way for all life that exists. We unfortunately face a variety of environmental pressures today and by joining this Earthwatch expedition you are not only saying you care, but more significantly, that you are prepared to do something about it. The work you will undertake will help contribute to solving critical environmental issues, help shape policies and behaviours and enhance protection of culture, wildlife and ecosystems. Without your help scientists would need to spend weeks, months or even years collecting the same amount of data you and your team will collect in just a few days!



We can't thank you enough for your choice to take a slightly different holiday this year, and we hope you get out of the experience as much as we do by bringing researchers and participants together to work towards a better future. If you have questions as you prepare for your expedition, please contact our Earthwatch office. Thank you for your support and enjoy your expedition!

Best regards,

Fiona Sutton Wilson  
Earthwatch Australia CEO

**CONNECT**

WITH OTHER  
EARTHWATCHERS!  
FIND US ON FACEBOOK  
AT [FACEBOOK.COM/  
EARTHWATCH  
AUSTRALIA](https://www.facebook.com/earthwatchaustralia)

OR ON TWITTER  
[@EARTHWATCH\\_AUS,](https://twitter.com/earthwatch_aus)  
AND ON INSTAGRAM  
AT [INSTAGRAM.COM/  
EARTHWATCH\\_AUS](https://www.instagram.com/earthwatch_aus)



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[earthwatch.org](http://earthwatch.org)  
Phone: 1-978-461-0081  
Toll-Free: 1-800-776-0188

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[earthwatch.org.au](http://earthwatch.org.au)  
Phone: 61-0-3-9016-7590

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Phone: 81-0-3-6686-0300