



MANAGING MANGROVES AND CAPTURING CARBON IN KENYAN COMMUNITIES



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Expedition Briefing 2012

EVERYTHING YOU NEED TO KNOW BEFORE YOU GO

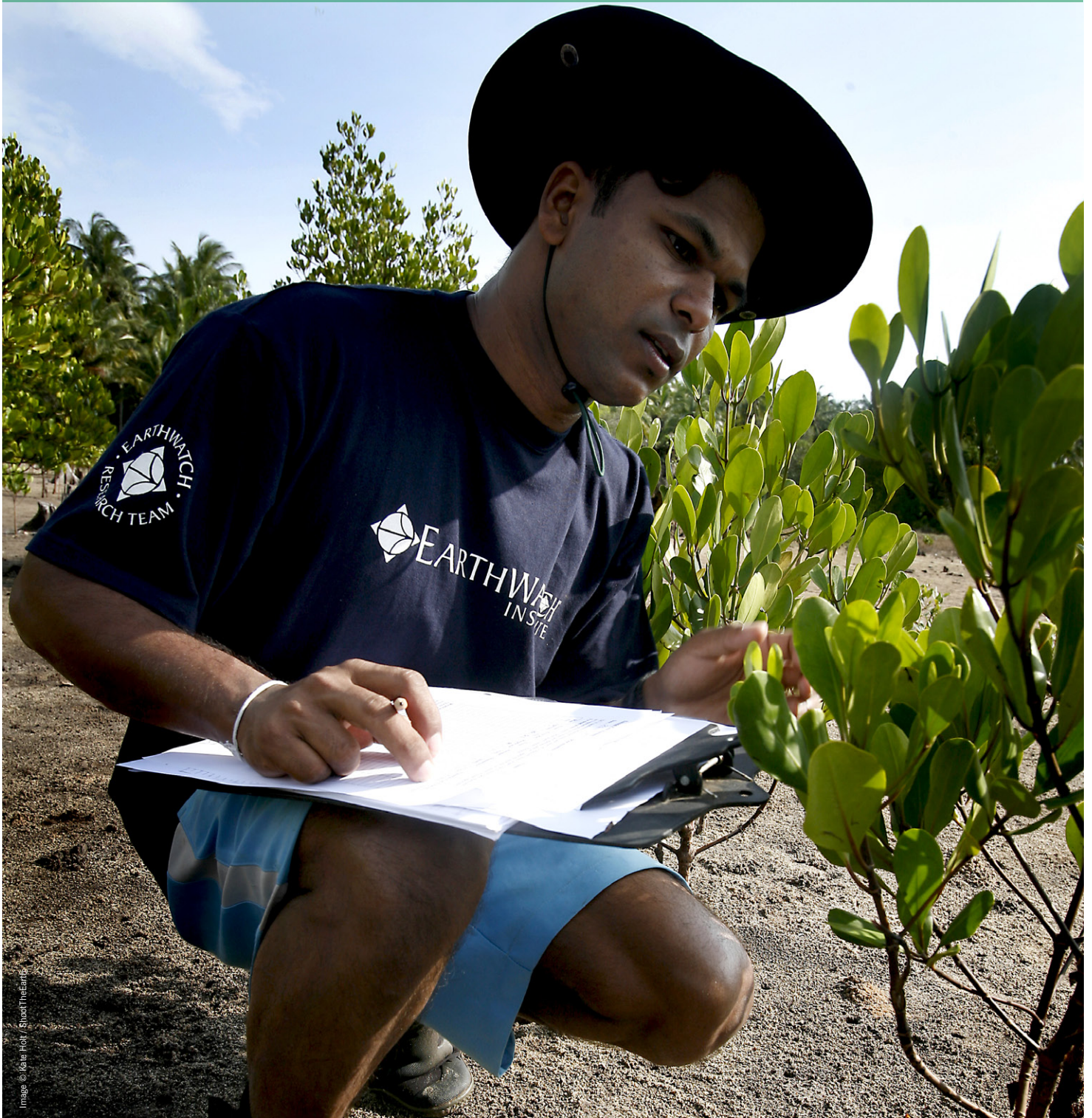


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Timeline and Checklist

In preparing for your upcoming Earthwatch expedition, please ensure that you:

Immediately

- Read this Expedition Briefing and all enclosed materials thoroughly.
- Book an appointment with a doctor; you will need him or her to sign the Health section of your Earthwatch Participation Form.
- Make sure you understand and agree to Earthwatch policies and participant responsibilities.

At least 90 days prior to your expedition start date

Complete and return your volunteer forms. **Below are the specific forms required for this expedition:**

- Earthwatch Participation Form for Adults
- Travel Form

European volunteers can download forms on: earthwatch.org/europe/volunteerforms

US/North American volunteers can download forms at: earthwatch.org/volunteerforms

Australian volunteers can download forms on: earthwatch.org/australia/expeditions/volunteer_forms/

Japanese volunteers can download forms on: earthwatch.jp/getinvolved/condition/formdownload-i.html

- Pay any outstanding balance on the minimum contribution for your expedition.
- Book travel arrangements (see the *Rendezvous* section for details).
- If you plan to purchase additional travel insurance, note that some policies require purchase when your expedition is booked (see the *Insurance* section for more information).
- If traveling internationally, make sure your passport is current and obtain a visa for your destination country, if necessary (see the *Passports and Visas* section for more details).
- Make sure you have all the necessary vaccinations for your project site (see the *Health Information* section).
- Purchase a guide book for your destination country.
- Bring your level of fitness up to the standards required (see the *Project Conditions* section).

At least 60 days prior to your expedition start date

- Review the packing list to make sure you have all the clothing and any special equipment needed.
- Obtain any necessary prescription medications that will be needed for your travels.

Up to 30 days before you leave for the expedition

- Read any required reading or websites recommended by the Earthwatch scientist(s) for your expedition.
- Make sure you have enough personal funds for your expedition (see the *Travel Planning* section).
- Leave the Earthwatch emergency contact number with a friend or relative (see the *Emergency Contacts* section).
- Leave a copy of your passport, visas and airline tickets with a friend or relative.
- Confirm your travel arrangements.

Note: If you have signed up for an expedition within 90 days of the start date, you must return your fully completed volunteer forms as soon as possible.

Managing Mangroves and Capturing Carbon in Kenyan Communities

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General Information

Project title	Managing Mangroves and Capturing Carbon in Kenyan Communities	
Earthwatch scientists	Prof. Mark Huxham , Professor of Research and Teaching, Edinburgh Napier University Dr. James Gitundu Kairo , Principal Research Officer, Kenya Marine and Fisheries Research Institute Dr. Martin Wiggers Skov , Research Fellow, Bangor University, Wales, UK Dr. Bernard Kirui , Research Officer, Kenya Marine and Fisheries Research Institute	
Expedition Dates	Team 1: June 2, 2012 – June 12, 2012 Team 2: July 14, 2012 – July 24, 2012 Team 3: July 28, 2012 – August 7, 2012	
Expedition length:	11 days	Minimum age of participation: 18 years of age*
Team size max:	7 participants	
*Note: It may be possible for 16- and 17-year-olds to participate on standard teams if accompanied by a parent or guardian. Contact Earthwatch for more information and see <i>Volunteers Under 18 Years of Age</i> in the <i>Passports and Visas</i> section for traveling advice for minors.		

Emergency Contacts

Emergency contact number at Earthwatch headquarters in the US: +1 (978) 461-0081 +1 (800) 776-0188 Note: The 800-number works as a toll free call <i>only</i> for calls placed within the US. After business hours, leave your message with our live answering service. State that you have an emergency communication and leave a clear message with the name of the field program, your name, location from which you are calling, and if possible, a phone number where you can be reached. An Earthwatch staff person will be contacted and will respond to your call within one hour.	Emergency medical and evacuation assistance provider: To contact International SOS in the event of an emergency, dial: <ul style="list-style-type: none">• For assistance within the US: ISOS Philadelphia, +1 (215) 942-8459• For assistance outside the US: ISOS London, +44 (0) 208-762-8008• For assistance within Australia: ISOS Australasia, +61 (0) 2-9372-2468 State that you are on an Earthwatch expedition. The following information must be provided: <ol style="list-style-type: none">1. The Insured Person's name2. The Assured is EARTHWATCH, the Certificate No: GP 0010214 and SOS reference #14ACPA0000753. The telephone number and facsimile number where the Insured Person can be reached4. The Insured Person's address abroad5. The nature of the emergency
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EXPEDITION UPDATE

March 15, 2012

Dear Earthwatch Volunteer,

We are writing to let you know about important changes to the insurance coverage, the emergency medical assistance, and the evacuation assistance that is included in your Earthwatch expedition. We have changed the insurance provider for all included coverage and all volunteers from Axiom, brokered by Sutton Winson, to Axis, brokered by Willis. We have also changed emergency medical assistance providers from International SOS to CEGA Medical, and emergency evacuation assistance providers from International SOS to Henderson.

Please take the time to familiarize yourself with the details of this coverage, which you can find on our website.

For volunteers who signed up through the US office: earthwatch.org/insurance

For volunteers who signed up through the UK/Europe office: earthwatch.org/europe/insurance

The information below provides some general information about these changes, and replaces the information found in the *Emergency Contacts* and *Insurance* sections of your Expedition Briefing.

EMERGENCY CONTACTS

Medical and Security Assistance Helpline Numbers (for assistance while in the field)

When calling any of the helplines, please mention Earthwatch and policy reference number 560020011200.

CEGA Emergency Medical & Travel Assistance:

+44 (0) 20 3059 8770

You may call this number collect or reverse charges if necessary in a medical emergency.

Henderson Risk Security Assistance and Advice:

+44 (0) 20 3059 8772

axisenquiries@hendersonrisk.com

INSURANCE

MedEvac assistance, advice, and insurance are included in the contribution you pay to Earthwatch. This covers trip cancellation and your travel medical risks, including medical expenses and emergency medical evacuation, while you are traveling. This coverage is valid in the country of your Earthwatch expedition (**Note:** For US volunteers, as long as the expedition is over 100 miles from your place of residence) and during travel to and from your expedition. Please see the Earthwatch website for more information on insurance provision.

If you have additional vacation time before and/or after your Earthwatch expedition that forms part of your overall time away from your place of residence, this additional vacation time is not covered under this policy. If you are in any doubt as to whether your travel plans before and/or after your Earthwatch expedition constitute additional vacation time, please contact the insurance provider.

This insurance policy is secondary to your existing health insurance policy (e.g. the NHS in the UK).

If you signed up through Earthwatch UK/Europe, or Earthwatch Japan:

Details of the included insurance policy can be found at earthwatch.org/europe/insuranceinfo.

Please refer any queries regarding this policy to Earthwatch's Operations Department at +1 978 450 1232 or insurance@earthwatch.org

You can find information about additional insurance available to UK residents for coverage before or after your Earthwatch project at earthwatch.org/europe/insuranceinfo. Should you have any questions about whether you require coverage for your travel plans, please review the policy summary and the FAQs at the website above.

If you signed up through Earthwatch US:

Details of the US insurance policy can be found at earthwatch.org/insurance.

Please refer any queries regarding this policy to Earthwatch's Operations Department at +1 978 450 1232 or insurance@earthwatch.org

You can find information about additional insurance available for coverage before or after your Earthwatch project at earthwatch.org/insurance. Should you have any questions about whether you require coverage for your travel plans, please review the policy summary and the FAQs at the website above.

Emergency Medical and Evacuation Assistance (For All Volunteers)

Emergency medical and evacuation assistance is available for all Earthwatch participants from CEGA Medical, a twenty-four-hour international emergency medical and evacuation service. Please see the contact information on the *General Information* page.

For non-emergency information from CEGA, such as advice on visa and vaccine requirements, you may call the CEGA Non-Emergency Medical & Travel Advice helpline at **+44 (0) 20 3059 8770**.

If you have questions as you prepare for your expedition, contact the appropriate Earthwatch office:

Australia Office

T: +61 (0) 3-9682-6828

earth@earthwatch.org

Japan Office

T: +81 (0) 3-3511-3360

info@earthwatch.jp

UK Office

T: +44 (0) 1865-318-831

info@earthwatch.org.uk

US Office

T: +1 800-776-0188

info@earthwatch.org



Dear Earthwatcher,

Welcome to Earthwatch! We greatly appreciate your decision to contribute to hands-on environmental science and conservation. As an Earthwatch volunteer, you have the opportunity to create positive change. Each year we connect thousands of people just like you with research projects—approximately 65 projects in more than 35 countries—where they can participate in the fieldwork necessary to understand and help an array of species, habitats and cultures. These projects focus on: **climate change, cultural heritage, ecosystem services and oceans.**

We are committed to caring for the safety of all those involved in our activities anywhere in the world. Although risk is an inherent part of the environments in which we work, through careful risk management and diligent planning we believe that all participants can have educational and inspirational Earthwatch experiences. We've been providing volunteer field experiences **for 40 years**, so you're in good hands.

It is essential that you carefully read your Expedition Briefing and fully complete the volunteer forms so that you are prepared. Your Expedition Briefing includes important information such as instructions for reaching the rendezvous point, what risks are present on the research project and how to avoid them, what to pack, what immunizations you need, how to physically prepare for your expedition, and more. It also explains the research being conducted on the project, why it's important, and what role you'll play as an Earthwatch volunteer.

Well-prepared volunteers are better able to enjoy the unique and exciting experiences that an Earthwatch expedition offers and will be more helpful to the scientists' important work. Open-mindedness, the ability to work on a team, and a desire to learn are all keys to a successful and enjoyable Earthwatch experience. We hope this expedition will inspire you to get more involved in conservation and sustainable development priorities—not just out in the field but also when you return home. We encourage you to share your experiences with others, and to transfer your skills and enthusiasm to environmental conservation efforts in your workplace, community and home.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Ed Wilson", with a large, stylized flourish extending from the end of the name.

Ed Wilson
President and CEO

Professor Mark Huxham
School of Life Sciences, Edinburgh Napier University, 10 Colinton Road, Edinburgh, Scotland

Dear Earthwatch Volunteer,

Welcome to the *Managing Mangroves and Capturing Carbon in Kenyan Communities* expedition. We are delighted that you have chosen to join us. You will be helping to maintain and restore a vital ecosystem, as well as investigating some fundamental questions in ecology. And you will be doing this by working with the local community in a peaceful and picturesque Kenyan village.

My name is Mark Huxham, and I am the lead Earthwatch scientist on this project. My background is in marine and theoretical ecology. Like many other academic ecologists, I have become increasingly concerned about how we can use science to answer real questions of major importance to people, especially those who rely most directly on natural resources. This, combined with the fantastic opportunity to collaborate with people from Kenya and around the globe in a fascinating environment, is why I am working on this project.

There will be three other Earthwatch scientists working with us. Dr. James Kairo has 20 years of experience replanting mangroves in Kenya and throughout the world. As a resident of Gazi, our field site, James has pioneered community involvement in mangrove restoration there, and ensures our work has the full cooperation and support of the village. Dr. Martin Skov studied for his Ph.D. on the Tanzanian island of Zanzibar, where he investigated the ecology and physiology of the crabs that form an important part of the mangrove ecosystem. His expertise in these organisms, as well as his general experience working in mangroves, is invaluable to this project. Dr. Bernard Kirui, who will also be joining us, completed his Ph.D. working on the Earthwatch mangrove restoration project at Gazi. He specializes in mangrove ecology, and has interests in remote sensing and the carbon. Besides James, Martin, and Bernard, we will be joined by Joseph Langat, a Ph.D. student working on this project, as well as by other local and international colleagues interested in our work.

I hope the information contained in this Expedition Briefing will answer any questions you might have about the project. If you need further information concerning the logistics and organization of the expedition, please contact Earthwatch. However, if you have questions regarding the science of the project, feel free to contact me.

I look forward to working with you.

Best Wishes,



The Research

Managing Mangroves and Capturing Carbon in Kenyan Communities

Human life depends on the goods and services that ecosystems provide, such as timber, fish, the generation of soil, and the purification of air. Typically, the relationship between the number of species in an ecosystem and that ecosystem's ability to function is unknown. Given the loss of species in ecosystems around the world, the impact of reduced species diversity on ecosystem function is an issue of urgent importance. In the last decade, ecologists have been investigating the relationship between diversity and function in a range of habitats. Investigations in marine systems, however, are rare, and most experiments are conducted at a very small scale, which can make interpreting the significance of their results difficult.

Mangroves have one of the highest rates of degradation of any global habitat—exceeding one percent of total mangrove area per year. Therefore, understanding their ecology and restoration is an international conservation priority. The *Managing Mangroves and Capturing Carbon in Kenyan Communities* project runs long-term and large-scale experiments that will measure a range of ecosystem functions in replanted mangrove stands, and record data on which species survive and grow best in the harsh conditions of these restoration sites. This information will be used to help with future restoration efforts.

The project's main experiment involves three tree species growing in mixed and monospecific stands. It has long been recognized that intercropping (mixing two or more species) in terrestrial agriculture can enhance productivity. Such effects may also occur in terrestrial forestry and have been inferred, but never tested, in mangroves. This study serves as an experimental test of intercropping in mangroves, and examines the effects of mixing species on the soil and fauna, including crabs and fish, present in the stands.

One of the most important functions associated with mangroves is their ability to trap and sequester carbon. This function is shared with all trees, but we think mangroves are particularly efficient carbon sinks because of their high productivity and the long-term stability of below-ground carbon stores (usually in the form of peat) that they develop. This project involves collecting data on all aspects of the carbon cycle in mangrove forests, with the aim of demonstrating the potential importance of mangroves as carbon sinks.

The local people at Gazi are heavily dependent on the mangroves for direct economic uses, such as firewood and building poles, as well as for ecological services, such as nursery provision for offshore fish. The extractive uses of the mangroves present a threat to their survival, but also an opportunity for community involvement in their conservation. Previous community reforestation schemes at Gazi (led by Earthwatch scientists) have proven successful. The current project will help to sustain the supply of mangrove goods and services by involving the local community in the replanting campaign. In particular, our project is pioneering the use of carbon credits as a new way to fund mangrove conservation and social development in the area. Earthwatch volunteers are essential to the success of these efforts; volunteers are involved in the whole range of tasks that we undertake, including tree planting, measuring biological and physical variables, and analyzing data.

Research Area

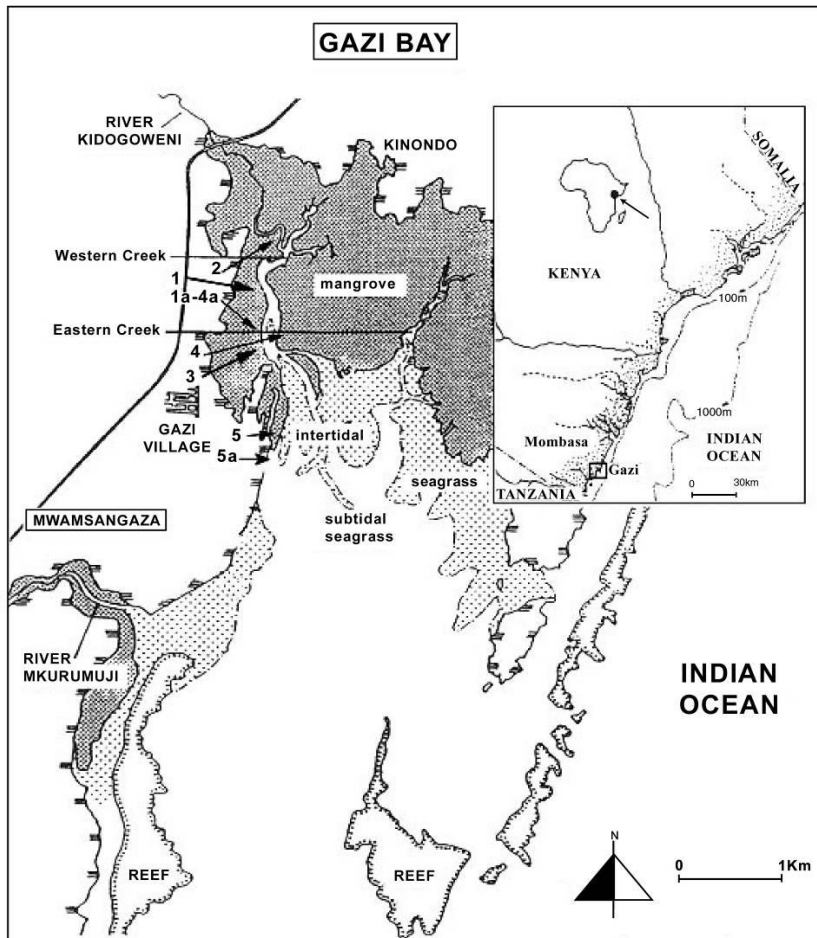
Physical Environment

Gazi Bay, in the Kwale district of Kenya, is located 55 kilometers (34 miles) south of Mombasa. This 18-square-kilometer (6.9-square-mile) bay is sheltered from strong sea waves by the presence of Chale Peninsula to the east, and a fringing coral reef to the south. The reef supports a local subsistence and commercial fishery.

The bay area has beautiful beaches and impressive bird life, including three species of bee-eaters, pelicans, palm vultures, and hornbills. It is near a reserve for the black and white Colobus monkey, the tourist resort of Diani

beach, the Shimba Hills National Park (famous for its elephants), and the Kisite-Mpunguti Marine National Park, with dozens of dolphins, sea turtles, and spectacular coral reef snorkeling. Many sites of historical interest are located along the coastline, including a ruin in Gazi that was once used as a concentration center for slaves before they were shipped to countries in the far east.

Gazi Bay is bordered by 6.2 square kilometers (2.4 square miles) of mangrove forests, which are heavily used by local people as a fishing ground and source of wood for building and fuel. The degradation of these mangroves has resulted in shortages of building poles and firewood, decreased fishery resources, and increased coastal erosion.



Cultural, Social, and Political Environment

Gazi village has a resident population of 1,500 people and is supplied with electricity and clean, potable water. The village is predominantly Muslim, and visitors should avoid drinking alcohol in public, wearing revealing clothing (especially true for women), and displaying affection openly (e.g. kissing). Kenyan culture places an emphasis on respect, especially for elders, so it is useful to know the correct greetings and responses. Women traveling alone can sometimes be the subject of curiosity or harassment. Children may ask you for money, and you are advised against giving it to them in the village of Gazi, since this will encourage soliciting of future volunteers. Your work in the village and the money you will bring to the local economy just by joining the team will be an important contribution to their future.

PROJECT STAFF

Earthwatch scientists

Dr. Mark Huxham is a professor in environmental biology at Edinburgh Napier University, where he teaches a range of undergraduate and graduate courses and has an active interest in the theory and practice of teaching. After earning a degree in ecology, Dr. Huxham went on to complete a Ph.D. on food web theory and estuarine ecology at Aberdeen University. His specialties include ecosystem functions, experimental design and analysis, and macrobenthos and fish community structure. He has two children, and loves watching birds, mountaineering, and swimming in the warm waters of Gazi Bay. Dr. Huxham is responsible for the overall management and logistics of the *Managing Mangroves and Capturing Carbon in Kenyan Communities* project.

Dr. James Kairo is the principal research officer for the Kenya Marine and Fisheries Research Institute, and specializes in the areas of mangrove ecology, restoration, and management. He lives in Gazi village with his wife and three children. Dr. Kairo is responsible for organizing the project's accommodation and laboratory space in Gazi, and for overseeing the mangrove planting and establishment.

Dr. Martin Skov is a research lecturer with the School of Ocean Sciences of Bangor University (UK), where he works on ecosystem services of mangroves and salt marshes. He is particularly interested in how these systems provide coastal protection, carbon sequestration, and a habitat for biodiversity, including birds. Martin has researched mangroves since the 1990s, specializing in the ecology of invertebrates, the ecophysiology of crab nutrition, and experimental population ecology. He is responsible for the project's faunal component.

Dr. Bernard Kirui is a research officer at Kenya Marine and Fisheries Research Institute. He completed his Ph.D. working on the Earthwatch mangrove restoration project at Gazi, and so has extensive experience with working in Gazi with volunteers. He specializes in mangrove ecology, and also has interests in remote sensing and the carbon cycle.

Earthwatch field staff

Mr. Joseph Langat (research assistant) has a degree in natural resources management. He is currently studying for a Ph.D. at Edinburgh Napier University, and focusing on the carbon impacts of harvesting mangroves. He will assist volunteers in the field and laboratory, and will benefit from their help with his work.

Mama Nico (cook) has worked with the project for the last five years, creating a fantastic range of meals from fresh local ingredients. She always cooks more than enough, and is happy to share her expertise and to swap recipes with volunteers. She lives with her husband in the nearby town of Msambweni.

Staffing Schedule (Subject to Change)

Staff Member Present	Team 1	Team 2	Team 3
Mark Huxham	√		
James Kairo	√	√	√
Martin Skov		√	
Bernard Kirui			√
Joseph Langat			√

Daily Life in the Field

VOLUNTEER TRAINING AND ASSIGNMENTS

Training

The team will receive the following introductory lectures and onsite training:

- *The ecosystem function/biodiversity debate*: A brief introduction to the field of biodiversity research, how biodiversity may be linked with ecosystem function, and how it is being lost. This training provides conceptual background for the research.
- *Introduction to Gazi village*: A guided tour around the village, including discussion of the ancient slave trading remains.
- *Introduction to mangrove ecology*: Discussion of mangrove zonation, ecology, and physiology, as well as an introduction to the species found at the site.
- *Measuring physical and chemical variables*: Training in how to measure physical and chemical variables such as sediment size and greenhouse gas fluxes.
- *Rationale and practices of mangrove restoration and management*: This training includes a practical session on mangrove reforestation and nursery establishment.
- *Mangrove animal ecology*: Introduction to mangrove species, their specific adaptations, and their influence on mangrove ecosystem function.
- *Climate change and carbon storage*: A brief overview of the carbon cycle, climate change, and the potential of mangroves in carbon sequestration.

The Earthwatch scientist will give the team a more detailed onsite project briefing when you arrive.

Assignments

The project work will consist of four main activities:

- Planting trees as part of experimental studies and/or for general conservation and restoration purposes. At the least, we intend for all teams to plant enough trees to offset the carbon pollution caused by traveling to the site.
- Monitoring the experimental stands already established in order to measure how the trees are growing and surviving, and how the restored habitat patches are developing; measurements will include faunal surveys and measurements of the fluxes of greenhouse gases from the sediment surface.
- Conducting a range of different but related experiments; for example, measuring the amounts of carbon deposited below ground by different species of trees.
- Working on aspects of our project related to social development and community involvement, like helping to survey local opinion or organize educational events for local schoolchildren.

Each team will be involved in at least three of these activities, although the amount of time allocated will depend on how the field season is progressing, as well as on the tide and other logistical issues.

Useful skills and attributes for volunteers to possess include good general fitness, group work skills, data analysis experience (such as working with Excel), and the ability to speak Kiswahili. The team will work together or in a maximum of two groups operating at the two different sites. Volunteers and project staff will share accommodations and meals, and evening events will be arranged for all team members.

TEAM ITINERARY AND DAILY SCHEDULE

Please be aware that weather and research needs can lead to changes in the daily schedule. Should this situation arise, your cooperation and understanding are appreciated.

Day 1

Pick-up, followed by a welcome tour of the village and introductory talks about the local environment, health and safety, and the restoration project.

Day 2

“Mangrove Marathon”: a guided tour of the main mangrove habitats at Gazi, with an introduction to the trees, crabs, birds, and other fauna present.

Day 3-5

Sampling and planting in the field, and sample sorting and analysis at the lab.

Day 6

Recreational day with an optional group excursion to Kisite-Mpunguti Marine National Park to snorkel on a coral reef, watch whales and dolphins, or just relax (this will cost around US\$90 per person for park fees, transport, and boat hire. Please note that recent increases in fuel prices might lead to increases in this fee. This fee is not included in your general contribution to Earthwatch).

Day 7-9

Sampling and planting in the field.

Day 10

Finish sampling and laboratory work.

Day 11

Pack up and return to Mombasa.

An example of a typical research day is given below. Most days will consist of at least three hours of work in the field, but the timing of this work will depend on the tides. We’ll spend more time in the field early in the research season because of the tree planting, and more laboratory work will be done later in the season because of the higher numbers of samples/observations collected. There may also be some night work required. Most afternoons or evenings will include lectures by the staff or invited speakers on subjects ranging from scientific research to life in the village. Typically, each team will participate in at least one social event involving the village.

Time of Day	Activity
7:30 a.m.	Breakfast
8:15 a.m.	Daily briefing
8:30 a.m.	Travel to the field site for fieldwork
2:00 p.m.	Return to Gazi for lunch, rest, and lab work
3:00 p.m.	Further fieldwork or lab work and lectures/talks on mangrove ecology
7:30 p.m.	Dinner
8:00 p.m.	Debriefing, any necessary discussion of the evening’s activities, and volunteer presentations about your home country, work, hobbies, or obsessions

Other organized activities include a football (soccer) match with the local school, a trip to a local bar/dance-hall, and presentations by volunteers. Unorganized activities which might take place during recreational time include reading, bird watching, walking on the beach, and trips to the local town for shopping and Internet access. On most days we work in the field during the morning before a late lunch, and then have some volunteers to help with laboratory work while others relax. The tourist beaches at Diani are 20 kilometers (12 miles) away. They are beautiful but can be dangerous, especially after dark. Volunteers should not go to these areas alone or after dark. Swimming in some areas of the bay may be dangerous, and is not recommended without first taking advice and letting staff know where and when you will be swimming. Also, be considerate of your hosts and do not return late from local bars, bring alcohol to the village, etc.

Earthwatch Recreational Time Policy

Earthwatch will generally accompany participants from the rendezvous to the end of the expedition with the exception of recreation time.

- For days when no research activities are scheduled, referred to as recreational days, Earthwatch scientists will offer either a planned team activity or a range of recreational activities that have been vetted and comply with Earthwatch standards. Participants will also have the option of remaining at camp or project accommodations to rest.
- Participants who are determined to pursue options other than those recommended by the project staff will be required to sign a release before doing so. If there is a period of time during a regular research day when no research activities are scheduled, adult participants may have the opportunity to leave the project site on their own; they will be asked to sign out of the project giving their intended destination. Not appearing for the next scheduled activity will trigger the Emergency Response Plan (ERP) regarding missing people. Earthwatch will assess the general risks of adult participants leaving the project site on their own at night after work hours, but cannot guarantee participant safety or an awareness of all issues.
- In some cases, due to local conditions, it may be advisable to restrict adult participants to the project camp or accommodation after dark. This will be clearly communicated in the on-site safety briefing. However, if the local conditions are such that adult participants can go out at night under their own recognizance, there will be a sign-out process through which participants should state their proposed destination and estimated return time. Participants will be given twenty-four-hour contact information for project staff should assistance be needed. The sign-out is informational only and will not be used to enforce a curfew on adult participants. Adult participants should understand that unless contacted for help, project staff will not start a search for a missing participant unless he or she fails to appear the following morning or for the next scheduled research activity.

ACCOMMODATIONS

Sleeping

Volunteers will be accommodated in one house in Gazi village. The house contains four rooms with two standard single beds in each (see image at right). Each room will be shared by two volunteers of the same gender. Mosquito nets to hang over the beds will be provided, as will sheets, but please bring your own towels. It should be possible for couples to share a room provided they inform Earthwatch in advance.



Bathrooms

There are at least two showers and two flush toilets. You will need to do your own laundry by hand, or else pay a villager a small amount to wash it for you. Project staff will arrange this, and it usually costs around 20 Kenyan shillings (US\$0.33) per item. Please bring clothes that are easy to wash.

Electricity

The houses are supplied with electricity, although it can be unreliable; Kenyan power is 240 volts with UK-style three-pin plugs (tlc-direct.co.uk/Main_Index/Necessities_Index/Plugs_Tops/index.html).

Internet and Communications

Wireless Internet (via the mobile network) is available, but can be unreliable and expensive. You can connect with a wireless USB adaptor. Mobile phone coverage is good in the village; you might need to arrange with your network provider before you leave home in order to get access. Alternatively, many take this option: if you have an unlocked phone, you can buy a local SIM card very cheaply for one of the local networks, such as Safaricom. There are Internet cafes 20 km (12 miles) away, in the local town.

Facilities and Amenities

You will live in a Kenyan village, well off the beaten track for tourists. You will likely find your stay pleasant and the people welcoming. The facilities are comfortable, but basic. There are not the facilities associated with a commercial hotel.

Distance to Field Site

The village is two kilometers (1.2 miles) from the closer field site and six kilometers (3.7 miles) from the more distant site. Team members will walk to the former and usually drive to the latter, although it may be necessary to walk on occasion.

Services and Restaurants in Walking Distance

Plenty of clean, potable water is available at the accommodations, although you may also choose to drink bottled water that will be available for purchase from the local village stores. There are no restaurants within walking distance of the village; all of your food will be provided from within the village. The team will arrange to visit local amenities during the trip.

FOOD

Project staff will live and eat with volunteers. Most meals will be prepared by the project kitchen staff and served in one of the project houses. Volunteers will not need to prepare food, but will help with washing up after meals. Mama Nico, the excellent project cook, will prepare the evening meal. The team may bring lunch into the field, which will consist of locally bought snacks. Because of the hot climate, lunch is usually a light meal. Beef, goat, chicken, beans, and fish are mainstays of the local diet. Vegetarian alternatives can easily be provided.

Below are examples of the foods you might expect in the field. Please bear in mind that variety depends on availability. This list is intended to provide a general idea of food types, but it is very important that volunteers be flexible.

Breakfast: <i>Mandazi</i> (a type of fried bread or doughnut), beans, fruit, bread, eggs
Lunch: Fruit, <i>chapattis</i> (flat pancake-like bread), <i>mandazi</i> , stew, biscuits, cake
Dinner: Soup, rice, beans, stew, fresh fish, maize porridge, beef, goat, fruit
Beverages: Tea and coffee served with evening meal; cold sodas (Coke, etc.) sold in shops
Water: Water from the village well; bottled water is also available from village shop.

Special Dietary Requirements Please alert Earthwatch to any special dietary requirements (e.g. diabetes, lactose intolerance, nut or other serious food allergies) as soon as possible, and note them in the space provided on your volunteer forms. Accommodating special diets is not guaranteed and can be very difficult due to availability of food, location of field sites, and other local conditions. Special note to vegans and strict vegetarians: Please be aware that it can be difficult to accommodate very strict vegetarians and vegans. It is easy to provide delicious meatless meals, including vegan ones, although it may not be possible to guarantee that meals with secondary ingredients (sauce, spices, etc) are totally free of animal products. If this is an issue, then participation on this Earthwatch expedition should be seriously reconsidered.

Travel Planning

Note: Earthwatch Institute’s international emergency medical and evacuation assistance provider, International SOS, has a wealth of useful information available at their website, including visa, passport, currency, medical, etc. information for the country in which this project takes place. See internationalsos.com and enter Earthwatch’s member identification number: **14ACPA000075**. Under “Select Resource” choose “English Country Guide,” and then select this project’s country from the list.

You are encouraged to register your travel itinerary with your embassy. For information on embassies around the world, see embassyworld.com.

- Citizens of Australia may register online at: orao.dfat.gov.au.
- British citizens may register online at: fco.gov.uk/en/travel-and-living-abroad/staying-safe.
- Citizens of the United States may register online at: travelregistration.state.gov.
- Citizens of other countries are encouraged to check with their appropriate embassy or consulate regarding registration.

RENDEZVOUS

The rendezvous information for this project has been removed from this web version of the Expedition Briefing. Please do not make any travel arrangements to join an expedition on this project without receiving full and up-to-date rendezvous information from Earthwatch. Full rendezvous details, including places and times are available from Earthwatch upon request prior to registration for an expedition. Please use the “Contact Us” button on the top right hand corner of our website to get in touch with us and we will be very happy to help you. This information is provided in the printed version of this Expedition Briefing.

PASSPORTS AND VISAS

Visa Information

Citizens of the US, EU, Australia, Canada and Japan **do** need a tourist visa for entry. Citizens of other countries should check with their travel agent or a visa agency for specific visa and entry requirements. Travelers are advised to check visa regulations well in advance of traveling.

Passport Information

Most volunteers traveling from outside the host country will require a passport valid for at least six months beyond the dates of travel.

For Volunteers Requiring Visas ONLY: Essential Information

Type of Visa	Volunteers requiring a visa must get a TOURIST VISA .
Where to Get a Visa	Contact the nearest Kenyan embassy or consulate to find out how to apply for your visa. Please note that this process can take weeks or more. We strongly recommend using a visa agency , which can both expedite and simplify the process. See below for a list of visa agencies.

Required Information	You will need to send your passport (valid for at least six months beyond your stay), a Visa Application and Immigration Form, 2-4 passport-size photos, and payment to the embassy or visa agency (if applicable). Please be sure that your passport is valid for at least six months beyond your stay.
Contact Information	You may be required to list the following contact information on your Visa Application and Immigration Form: This information is available in the printed version of the briefing only
Cost of a Visa	Generally between US\$40-100, but varies from country to country and can potentially cost up to US\$180 . A visa agency will charge an additional fee.

Note: The purpose of your visit is for vacation, holiday or travel. Foreign immigration officials do not always understand the concept of a “working vacation” or “volunteering.” Words such as “working,” “volunteering,” “research,” or “scientific expedition” can raise questions concerning the country’s foreign labor laws and/or prompt questions about official scientific research permits and credentials, etc., to which volunteers on their own will not be equipped to respond. All required research permits for the project are in place and have been approved by the proper authorities.

Visa Agencies

In the United States	In Europe	In Australia
Trivisa* 290 5th Avenue, 4th Floor New York, NY 10001 Tel: (212) 613-2223 Fax: (212) 613-2287 Hours: 9:00 AM to 5:00 PM EST Web: trivisa.com (*See the website for additional offices)	CIBT, Inc.-UK 25 Wilton Road Lower Ground Floor Victoria SW1V 1LW Tel: 0844-736-0211 Fax: +44 (0) 207-828-5411 Calling from Europe outside UK: +44 (0) 207-802-1000 Email: info@uk.cibt.com Web: uk.cibt.com (has alternate address for urgent requests)	Ask your travel agency if it can send your visa application on your behalf.

Volunteers Under 18 Years of Age

Entry to Foreign Countries

It may be possible for 16- and 17-year-olds to participate on standard Earthwatch teams *if* accompanied by a parent or guardian. However, in an effort to prevent international child abduction, many governments have initiated procedures at entry/exit points to protect minors. Thus, if a minor will be traveling with only one guardian, or if for any reason they will be traveling alone (such as for a Teen Team), it may be necessary to have a notarized letter from all legal guardians stipulating that they may travel unaccompanied or in the presence of a single guardian. This letter must give an explanation for why only one parent or someone other than a parent is signing the letter. For example, if one parent is deceased, only one parent has legal guardianship, or someone other than the parents are legal guardians, the letter should state that.

Airline Documentation Requirements

Airlines may also have documentation requirements for unaccompanied minors. Parents of minors are responsible for checking with each airline that their child will be flying to ensure that sufficient documentation is provided. This could include a copy of a birth certificate or a notarized letter stating that the minor has his or her parent’s permission to travel alone or with only one parent.

Note: Requirements by specific countries and airlines vary and change frequently. You MUST keep informed of the requirements on your own to avoid problems at immigration. If a letter is not available, the volunteer under 18 can be refused entry into the country or on a flight. There is nothing Earthwatch Institute can do to help in this circumstance.

Additional Passport and Visa Resources

- For Japanese citizens: rainbowt.jp/travel/visa_top.html
- For Australian citizens: passports.gov.au and dfat.gov.au/visas/index.html
- For US citizens: passportvisasexpress.com
- Travel Document Systems: traveldocs.com/index.htm

INSURANCE

MedEvac assistance, advice and insurance are included in the contribution you pay to Earthwatch. It covers your travel medical risks, including medical expenses and emergency medical evacuation, while you are traveling, as well as trip cancellation and baggage and personal money insurance. It doesn't provide personal liability insurance. This coverage is valid in the country of your Earthwatch expedition and during travel to and from your expedition (**Note:** For US volunteers, the coverage is valid only when the expedition is over 100 miles from your place of residence). Please see earthwatch.org/europe/downloads/Insurance/post15Jan_FAQs.pdf for information about when coverage starts and ends, and answers to other frequently asked questions.

If you have additional vacation time before and/or after your Earthwatch expedition that forms part of your overall time away from your place of residence, this additional vacation time is not covered under this policy. If you are in any doubt as to whether your travel plans before and/or after your Earthwatch expedition constitute additional vacation time please contact Sutton Winson.

This insurance policy is secondary to your existing health insurance policy (e.g. the NHS in the UK).

If you signed up through Earthwatch UK/Europe, or Earthwatch Japan:

Details of this insurance policy are included in your expedition briefing pack and can be found at earthwatch.org/europe/insurance. Please refer all queries regarding this policy to Sutton Winson in the UK at +44 (0) 1444 251 164 or on earthwatch@swib.co.uk.

Information about additional insurance available to UK residents can be found at earthwatch.org/europe/insurance. Should you have any questions about whether you require additional coverage for your travel plans, please contact Sutton Winson. Earthwatch is not authorized by the FSA to give advice on any additional travel insurance you might require.

If you signed up through Earthwatch US:

Details of the US insurance policy can be found at earthwatch.org/insurance. Please refer any queries regarding this policy to Sutton Winson in the UK. From the US, dial 011 44 1444 251 164, or email earthwatch@swib.co.uk. Please note the time difference between the US and the UK and call during UK business hours, which are from 08:45 to 17:00 GMT (from November to April) and GMT +1 (from April to November).

Information about additional insurance can be found at earthwatch.org/insurance. Should you have any questions about whether you require additional coverage for your travel plans, please contact Sutton Winson. Earthwatch is not authorized by the FSA to give advice on any additional travel insurance you might require.

Emergency Medical and Evacuation Assistance (for all volunteers)

Emergency medical and evacuation assistance is available for all Earthwatch participants from International SOS (ISOS), a twenty-four-hour, independently operated international emergency medical and evacuation service. Please see the contact information and card on the *General Information* page. Participants should carry the card with them on the expedition.

ADDITIONAL TRAVEL INFORMATION

Personal Security

The Kenya police issued a warning on January 5, 2012 that a Somali-based Islamist militant group, al-Shabab, was planning terrorist attacks in the capital city of Nairobi in tandem with the al-Qaida network. While we cannot verify the information contained in the warning, **safety is always a top priority at Earthwatch**, and the alert highlights the potential for increased activity from extremist groups in Nairobi and the surrounding areas. Pre-existing travel warnings that pertain to the border area with Somalia and low-income areas of Nairobi are also still in effect.

Earthwatch is monitoring this situation closely through continued consultation with the UK Foreign and Commonwealth Office, the US State Department, Australia Smart Traveler, and our independent security advisor, and we will post updates as necessary.

At this time, please note:

- Travel to Kenya can continue.
- Be prepared for travel delays at transport hubs, government buildings and Western-country embassies due to stringent security measures.
- Carry personal identification documents (i.e. your passport) at all times to ease passage through any security checkpoints, and have photocopies.
- Never use buses or public transportation. Utilize a taxi arranged by your hotel, or at the taxi booth at the airport in Nairobi.
- Avoid all protests and public demonstrations as a basic security precaution.
- Monitor local news media and use local resources like your hotel and your local contacts to ensure that you remain alert to the current situation.
- If involved in an emergency or a serious security incident, contact the security coordinator at your hotel or your embassy for support.
- Register your travel and contact details with your local embassy or state department before you travel so that they can reach out to you and offer assistance in an emergency.
- Be sure to carry your International SOS card with you when you travel. As an Earthwatch member you can call ISOS for advice, information, and assistance at any time before, during, or after your trip.

Luggage

- *General considerations:* Do not bring more luggage than you can carry and handle on your own. If traveling by air and checking your luggage, you are advised to pack an extra set of field clothing and personal essentials in your carry-on bag in case your luggage is lost and/or takes several days to catch up with you.

Many airlines have strict baggage policies. Please check with your airline(s) on baggage weight limits, liquid restrictions, fees for checked baggage, etc.

- *Checking luggage:* Please note that if you will be taking an international flight that has one or more connections within the country of your destination, it will be necessary to collect any checked bags at the airport where you first arrive in the destination country. After proceeding through customs, you will have to recheck your luggage before flying on to your final destination.

Money Matters

- *Local currency:* Kenyan shillings (KES) = 110 US cents. Notes are in denominations of KES 1,000, 500, 200, 100 and 50. See the International SOS website and xe.com/ucc for currency information and exchange rates.
- *Personal funds:* The nearest ATMs and facilities for changing money are located in Ukunda, 20 kilometers (12 miles) from Gazi village. However, you are advised to change a sufficient amount of money into local currency at the airport in Mombasa or Nairobi prior to the rendezvous. The best way to exchange money is using the cash machines/ATMs at the airport. In the baggage hall, after you've cleared passport control, there are two banks where you can change traveler's checks or cash for local currency. There are also two outside the hall, and one, Barclays, has a cash machine that takes Visa and MasterCard. ATMs are also widely available throughout Nairobi and Mombasa, and you can exchange money at most hotels. It is best to have some cash in small denominations as small shops and individual vendors may not be able to give change for large amounts. It is a good idea to bring larger denomination notes in US dollars, pounds sterling, or Euros. Be sure to bring bills that were printed after 2000, and be sure the bills are in very good condition. You can also bring traveler's checks, although there is nowhere close to the field site where you can cash these, so you will need to have cash on you. If you're using traveler's checks, please be sure to bring your receipt with you as you cannot exchange them without it.

Although you will not need much spending money in the village, you may want to buy small gifts, water, and snacks, as well as entry to the local mangrove boardwalk. Project staff will also be arranging evening social trips to local bars and/or beaches, so it is useful to have money for such events; 8,000 Kenyan shillings (about US\$100) should be plenty. The most expensive part of the itinerary is the organized excursion to the marine park. Please bring an additional US\$90 if you wish to join this trip.

In general, be careful with your money, and watch for pickpockets. Body-hugging money belts and/or pockets with zippers are useful.

- *Airport fees and/or departure taxes:* Volunteers may encounter a US\$20 departure tax upon leaving the country. This tax is sometimes included in airfare prices; however, if unsure, contact your airline for more information. Payment is also accepted in Kenyan shillings.
- *Tippling* (at around 10%) is expected in the more expensive hotels and restaurants, but is not required in the cafés used by local people.

Your Destination

- *Language:* English, Kiswahili; the project will be conducted in English.
- *Cultural considerations:* Gazi village is predominantly Muslim. Public drinking of alcohol is frowned upon, as is revealing clothing (especially for women). Please do not wear short shorts, tank tops, tight T-shirts, etc.
- *Electricity:* 240 volts, UK-style three-pin plugs. For additional information, see kropla.com/electric2.htm.
- *Time zone:* GMT/UTC + 3. For time worldwide with GMT/UTC, see worldtimeserver.com.



- *Telephone dialing codes:* When calling Kenya from another country, dial the country's international dialing code, followed by 254 and the number. (If you are calling Mombasa, the city code is 11.) When calling within Kenya, omit the 254. When calling another country from Kenya, dial 000, followed by the other country's country code and the number. **PLEASE NOTE:** you should check with your cell phone provider to obtain any carrier-specific dialing codes you may need; many providers have dialing procedures that may differ in whole or in part from these directions. For additional information [see kropla.com/dialcode.htm](http://see.kropla.com/dialcode.htm).
- *Smoking ban:* Smoking in or within five meters (sixteen feet) of buildings or in public places is prohibited in Kenya. Persons who smoke in public places except for designated smoking areas risk heavy fines or encounters with law enforcement.

Country Information

- UK Foreign and Commonwealth Office: fco.gov.uk/en/travel-and-living-abroad/
- Country information from around the world: countryreports.org
- National Geographic Map Machine: plasma.nationalgeographic.com/mapmachine
- US State Department: state.gov
- Online unit conversions: onlineconversion.com
- Worldwide weather: wunderground.com or tutiempo.net/en
- ATM locator: visa.via.infonow.net/locator/global/ or mastercard.com/atmlocator/index.jsp

RECOMMENDED READING

Below are additional recommended materials for those interested in further preparing for the expedition. Some may be purchased online through popular vendors. See the *Helpful Resources* section for suggested vendor websites.

Books

- Hogarth, P.J. *The Biology of Mangrove and Seagrasses*. Second edition. New York: Oxford University Press, 2007. **Note:** A recent text covering most aspects of mangrove ecology, species biology, and conservation.
- Daily, G.C (ed.). *Nature's Services: Societal Dependence on Natural Ecosystem*. Washington: Island Press, 1997. **Note:** Offers an extensive overview of ecosystem services.
- Tomlinson, P.B. "The botany of mangroves" in *Cambridge Tropical Biology Series*. New York: Cambridge University Press, 1986. **Note:** A great resource on mangrove tree botany with short parts on tree ecology.

Journals

- Valiela, I., J.L. Bowen and J.K. York. "Mangrove Forests: One of the World's Threatened Major Tropical Environments." *BioScience* 51(10) (2001): 807-815.

Field guides

- Richmond, M. *A Field Guide to the Shores of East Africa and the West Indian Oceans*, 2nd Ed. SIDA, University of Dar es Salaam, 2011. **Note:** An excellent guide with very good coverage of the flora and fauna of these coasts. Includes chapters on mangroves and crabs by Earthwatch scientists James Kairo and Martin Skov.

Project-related websites

- Earthwatch project page: earthwatch.org/expeditions/huxham.html
- International Society for Mangrove Ecosystems: glomis.com/isme

HELPFUL RESOURCES

Please see Earthwatch's Volunteer Resources pages for additional information on:

- Travel agencies with whom Earthwatch volunteers can get preferential rates
- Recommended kit and clothing providers
- Recommended travel booksellers

Volunteers who sign up through our US office, visit: earthwatch.org/volunteerresources

Volunteers who sign up through our UK office, visit: earthwatch.org/europe/volunteerresources

Project Conditions

Please show this section to a doctor when he/she is completing the Health section of your Earthwatch Participation Form. Be sure to discuss vaccination requirements with the doctor well in advance of your departure date. See the Health Information section for vaccination information.

To the doctor:

This patient has volunteered to join a field research team that has specific physical demands of which you and the patient should be aware. **We need your accurate evaluation of this patient's ability to meet the conditions detailed below in order to care for his/her health and safety, and to assess that he/she can participate fully and effectively.**

General Conditions

Both research sites are flat beach areas exposed to the sun. The climate is hot and humid, with average temperatures of around 28°C (82°F), and the greatest rainfall in May and November. The climate is likely to be dry during the teams, although recent climatic changes make it much less predictable than even five years ago. Therefore, tropical downpours are likely and there may be prolonged rainfall.

The weather is expected to vary within the limits below.

Conditions during June, July and August	
Humidity	60% to 95%
Temperature range	21°C/70°F to 32°C/90°F
Altitude	0 m to 100 m (328 ft)
Rainfall	10 cm (4 in) per month

Eligibility Criteria

All participants must, independently or with the assistance of a companion, be able to:

- Follow verbal and or visual instructions.
- Withstand physical activity in a hot, humid environment, and sometimes in full sun, for 3-4 hours at a time.
- Bend, sit, and dig while planting small trees using a spade, taking soils cores, and measuring leaves for approximately 3 hours per day.
- Walk on sandy beaches, muddy soil, and uneven terrain, such as local paths and roads, for up to 6 km/4 mi per day in the potential presence of insects.
- Carry personal daily supplies such as lunch, water, and some small field equipment (10 kg/21 lbs or up to 20 kg/44 lbs on planting days).

Notes on Medical Equipment:

- Because of the high humidity, those persons using a *hearing aid device* may find it doesn't work properly. You should consider purchasing a hearing aid dehumidifier. For example, see shopmash.com/AIDS_TO_DAILY_LIVING/HEARING_ASSIST_DEVICES/HEI400587/product.aspx.
- Volunteers must be able to do without *C-PAP machines* for the length of the project as this project may not have a reliable source of electricity throughout the night.

POTENTIAL HAZARDS

If you feel ill once you return from your trip, make sure you inform your doctor that you have recently returned from a tropical region.

Hazard Type	Associated Risks and Precautions
Transportation	Paved roads may be in good to poor condition. Some roads in and around Gazi are dirt/gravel/corrugated and may be very bumpy and either dusty or muddy and slippery depending on weather conditions. Road hazards include fast, reckless, or drunk drivers, livestock and wildlife, rain/mud, poor or no lighting, and banditry. Traffic moves on the left side of the road. Volunteers will be transported in a nine-passenger minibus; seatbelts are required at all times. Volunteers are not permitted to drive. Taxis from the airport to Mombasa are generally reliable, but we recommend that you agree on a price before getting in the vehicle. Only use official taxis.
Walking/Hiking/ Climbing	Volunteers will be required to walk short distances (not more than 6 km/4 mi) to the field sites and during the initial tours of the habitat. Most walking is on flat sandy ground, but we also work in deep mud which can contain shell fragments and other sharp objects; therefore, it is important to protect your feet with appropriate footwear. Walking in soft sand or mud can be physically demanding.
Snakes	Venomous snakes (including green mambas) are found in the study areas, but sightings are rare. While they are generally very wary of humans and you are unlikely to see one, it is sensible to wear sturdy footwear with ankle protection if you are walking off track. If you do sight a snake, do not disturb, antagonize, or try to handle it under any circumstances. Do not make any sudden movements or loud noises, back away from the snake very slowly, and inform a member of project staff right away.
Marine Animals	Stonefish, which have highly toxic spines, and jellyfish, though rare, may be found in the coastal waters. Project staff will instruct volunteers on their identification and avoidance. Use caution when snorkeling/swimming and do not touch reef animals.
Climate/Weather	You may be exposed to heat, humidity, and direct sunlight for many hours at a time. The risk of sunburn is particularly high due to the combination of being near the equator and working for long hours near or in the water. The reflection off the water results in greater sun exposure than when on land. You must take care to avoid dehydration, sunburn, heat stress, etc. You must drink plenty of water throughout the day and be sure to get enough to eat. Protecting yourself from the sun with a wide-brimmed hat, lightweight long-sleeved shirts, sunglasses, and sunscreen and lip balm with SPF 30 or higher are essential. Do not overexert yourself and inform a staff member right away if feeling tired or ill.

Political/Social/ Cultural	After the 2007 elections in Kenya, demonstrations took place in market centers and other public places. Some of these gatherings turned violent, and people have been displaced from many areas of the country as a result. There may be political rallies or groups demonstrating in market centers during your time in Kenya. Please avoid such gatherings while in Nairobi and other areas of the Central Province and the Rift Valley. Project personnel will avoid such gatherings if encountered, but such rallies and demonstrations should not be an issue while you are at the expedition accommodations or research sites. Note that political violence is very localized and that non-locals are not typically targeted. If traveling before or after the project, it is advisable to avoid the Kenya/Somalia border regions due to political tensions and the possibility of violence. Monitor local media, and always be aware of your surroundings.
Project Tasks/ Equipment	Since work is done in a swampy/ water-logged environment, slipping and falling in the mud is possible. There could also be some bruising from oysters during the “mangrove marathon” (guided tour of the main mangrove habitats at Gazi). You should wear appropriate footwear and take extra care when working in water-logged areas.
Personal Security	Aggressive robbery is generally not a threat in the research area, but is a problem in larger towns and tourist resorts. Volunteers should use common sense in urban centers and when traveling to and from the site. It is best to travel in Nairobi or Mombasa in pairs or groups, avoid displays of money or other valuables, take taxis, and avoid traveling alone or at night. It is always best practice to leave unnecessary valuables at home.
Swimming/ Snorkeling (optional and recreational)	Swimming and snorkeling may be available during your recreational time. Please note that there is no lifeguard on duty, so volunteers will swim at their own risk. Risks (tides, currents, dangerous wildlife and invertebrates, etc.) and strict safety guidelines will be discussed before any swimming or snorkeling. Participants must inform staff when and where they will be swimming or snorkeling. No swimming/snorkeling by team members will be permitted if the project staff determines water conditions are unsafe. Recreational swimming/snorkeling alone or at night is prohibited.
Mosquitoes and insect-borne diseases	Insect-borne diseases in Kenya include malaria, Dengue fever, Rift Valley fever, filariasis, leishmaniasis, onchocerciasis (river blindness), African sleeping sickness, chikungunya fever, and yellow fever. Risks can be reduced by using insect repellent and wearing long sleeves and pants during the hours between dawn and dusk. Mosquito nets are provided and should be used. Mosquito coils/electric burners may also be useful. You will be exposed to chloroquine-resistant malaria, so it is important that you consult a physician on prophylaxis. See the <i>Health Information</i> section for more information.
Allergies to bees, wasps, insect bites	Participants with potential for allergic reactions to insect bites should bring appropriate medication (e.g. antihistamines, at least two Epi-pens as necessary). Participants should avoid insect bites/stings by wearing appropriate clothing (long sleeves, pants), and using mosquito nets and insect repellent.
Traveler’s diarrhea	Traveler’s diarrhea affects 20–50% of all international travelers. Always wash your hands with soap and water or a hand sanitizer before eating, and drink filtered or bottled water. You should also carry an over-the-counter anti-diarrheal medication in your personal First Aid kit. Speak to your doctor about other options for treating traveler’s diarrhea and see the ISOS or CDC websites for advice on avoiding this condition.
Distance from Medical Care	The nearest hospital is 55 km/34m away from the project site, and it may take up to 2 hrs or more due to road conditions to arrange transport and reach the hospital. If you have a chronic condition which could require immediate medical care (e.g. heart conditions, kidney problems, severe asthma, etc.), or if you are pregnant, please discuss your participation on this expedition with your physician.

HEALTH INFORMATION

See internationalsos.com for information on the current health conditions in Kenya. At the homepage, enter Earthwatch’s member identification number: 14ACPA000075. Under “Select Resource” choose “English Country Guide,” and then select Kenya from the list.

Routine Immunizations

All volunteers should make sure to have the following up-to-date immunizations: DPT (diphtheria, pertussis, tetanus), polio, MMR (measles, mumps, rubella) and varicella (if you have not already had chicken pox). Please be sure your tetanus shot is current.

Project Vaccinations

Medical decisions are the responsibility of each volunteer and the following are recommendations only. While Earthwatch can provide details regarding suggested vaccinations, we are not a medical organization and decisions about which vaccinations to receive should be made between you and a doctor. Health conditions around the world are constantly changing, so keep informed and consult your physician, a local travel health clinic, the US Center for Disease Control (cdc.gov), the World Health Organization (who.int), and International SOS (see above) for the latest health information for travelers. Please consult a physician for guidance on vaccinations if you intend to travel to other parts of the country.

Vaccination chart available on ISOS member site (English Country Guide, medical summary).

	Required for Entry	Recommended for Health Reasons
Typhoid		X-Recommended for health reasons.
Yellow fever	X - if traveling from countries or region where it is endemic, a Certificate of Vaccination is required.	
Hepatitis A		X-Recommended for health reasons.
Hepatitis B		X-Recommended for health reasons.
Polio		X- One-time booster is recommended for all adults (in addition to an adequate primary series).

Advice Regarding Diseases

- **Malaria: Chloroquine-resistant malaria is present at the research site.** Falciparum malaria (the most serious kind) is endemic along the coast of Kenya. It is very important that you take full precautions against catching this serious disease. These include taking appropriate prophylactic medicines—see your physician or travel clinic prior to joining the team—and taking careful precautions against being bitten by mosquitoes (wearing long sleeves and trousers, using insect repellent, etc.).
- **Rabies:** Volunteers are advised to avoid contact with loose or stray dogs and cats, and to speak with their physician about whether the rabies vaccination is recommended given the length of their stay in country and other activities they might be undertaking. The rabies pre-exposure vaccination consists of three doses over a 28-day period. Please be sure to consult your physician or travel health clinic well in advance to ensure you have time for the full vaccination series. If you have previously been vaccinated, you must have a medical professional check your antibody levels; a booster shot may be required. Rabies is a fatal disease. Treatment after rabies exposure requires immediate care (within 24 hours), and this type of rapid response will not be available to volunteers on this project due to the remote locations. Pre-exposure vaccination does not

eliminate the need for post-exposure medical attention and treatment, but it does provide additional protection against the disease in event of a delay in treatment. In addition, any bites or scratches should be immediately and thoroughly washed with soap and clean water, and a topical povidone-iodine solution or ethanol.

- *Tuberculosis*: The WHO estimates that one-third of the world's population is infected with the bacterium (*M.tuberculosis*) that causes tuberculosis (TB). Incidence of tuberculosis is higher in developing countries, particularly in Asia, Africa, the Caribbean and Latin America. In general, approximately 10% of persons infected with *M. tuberculosis* are at risk for developing active TB during their lifetimes. TB is considered highly treatable with medications that are of relatively low toxicity and cost. Volunteers returning from developing countries are encouraged to have a (PPD)-tuberculin skin-test to screen for potential infection.
- *Dengue fever* is endemic in more than 100 countries in Africa, the Americas, the Eastern Mediterranean, Southeast Asia and the Western Pacific, and can occur throughout the year. Globally there has been a 30-fold increase in the number of reported cases of dengue fever. Dengue fever is a flu-like virus spread primarily by day-biting mosquitoes. It is characterized by fever, headache, rash, vomiting and severe muscle pains. There is no vaccine and mosquito bites should be avoided whenever possible. Insect repellent and long sleeves and pants are highly recommended. There is no treatment for standard dengue fever other than acetaminophen (avoid aspirin), fluids and rest. It is usually resolved after about two weeks. However, hemorrhagic dengue fever, characterized by bleeding and shock, can occasionally occur and requires medical care.
- *Yellow fever*: is a viral infection which people can get if they are bitten by a mosquito carrying the virus. Very rarely, the virus can also spread if someone receives blood from an infected person; only a handful of such cases have been documented. Incubation period is 3-6 days. The majority of people infected with yellow fever develop only mild symptoms and some may not show any symptoms at all. About 5% of people infected develop a more serious form of the disease. Symptoms include sudden headache, fever and flu-like symptoms that can include sensitivity to light, chills, joint and muscle pain, and sometimes vomiting. Most people recover thereafter, though some will develop a severe toxic form of the disease. This can involve jaundice, which turns the skin and eyes yellow (hence the name "yellow fever"), with hemorrhagic (bleeding) symptoms and organ failure. Between 20%-50% of people who have a severe case of yellow fever die from the disease. There is no cure for yellow fever—treatment is supportive. Laboratory diagnosis is via a blood test.

A vaccination protecting against yellow fever is available, given in the form of a single injection. Protection is effective 10 days afterwards and lasts for 10 years. Pregnant women and immunocompromised individuals cannot be vaccinated.

Your home country may require a Certificate of Vaccination for re-entry if you have traveled to an area where Yellow Fever is endemic.

Additional Health Information Resources

- Travel health website: mdtravelhealth.com
- The Travel Doctor: tmvc.com.au
- Australian Department of Health and Aging: health.gov.au
- Hospital for Tropical Diseases: thehtd.org
- Traveller's Healthline Advisory Service Tel: (020) 7950-7799
- MASTA Travelers' Healthline (UK) Tel: (0906) 8-224100 (within the UK)

EMERGENCIES IN THE FIELD

Proximity to Medical Care

Physician, nurse or EMT on staff	Project staff are not medical professionals	
Staff certified in safety training	CPR (Cardiopulmonary Resuscitation): Mark Huxham, Joseph Langat, Martin Skov First Aid: Mark Huxham, Joseph Langat, and Martin Skov	
Nearest hospital and/or clinic	Msambweni District Hospital Msambweni Hospital Road Msambweni, Kenya Tel: +254 40 52 52019 Fax: +254 40 52 52075 Distance from site: 10 kilometers (6 miles), 20 minutes by road.	Aga Khan Hospital Mombasa Vanga Road Kizingo, Mombasa, Kenya Tel: +254 41 222 7710 - 5 Fax: +254 41 231 3278 Distance from site: 55 kilometers (34 miles), less than two hours by road.

COMMUNICATIONS

Emergency Communications in the Field

At least two mobile phones will be available onsite for emergency communications. Mobile phone reception is generally fairly good at the research sites. **The emergency contact number at Earthwatch in the US is +1 (978) 461-0081 or +1 (800) 776-0188 (see *Emergency Contacts* for calling instructions).**

Personal Communications

You may bring your own mobile phone, which may work in the research area depending on your provider (if you have a phone with a SIM card, you can purchase a Kenyan one cheaply at the airport and use it if your own does not work). Landlines are not currently available, but volunteers will have access to wireless Internet at the site at specified times. The nearest phone lines for faxing and emailing are 30 minutes away by public transport in the town of Ukunda.

Family and friends of Earthwatch volunteers should be aware that personal communication with outsiders is not always possible while participating in an expedition. Earthwatch encourages volunteers to minimize outgoing calls; likewise, family and friends should restrict calls to urgent messages only. Measures have been taken to ensure that appropriate communication tools are available in cases of emergency.

All volunteers are asked to remember that Earthwatch expeditions offer a rare chance to escape from hearing ringing phones and others' phone conversations, and to regulate their cell-phone use with respect for fellow volunteers and staff accordingly.

Contact Information

This information is available in the print version of the briefing only.

Earthwatch Institute Policies & Participant Rights and Responsibilities

This document contains important information concerning Earthwatch Institute policies and participant rights and responsibilities for inclusion on an Earthwatch expedition. Please read this document thoroughly and sign the Liability Release section of your Earthwatch Participation Form to indicate that you understand and accept the risks inherent to your expedition and the policies, rights, and responsibilities enumerated in this document. Participants will not be permitted to partake in an expedition until Earthwatch has received the signed release form.

Intellectual Property Rights

It is permissible to share photos, videos, and stories of your expedition with family, friends, local media, and in a public forum. Sharing your new perspectives and experiences is welcomed and encouraged.

However, please recognize that all information, data, and images shared or gathered in the course of your expedition's field work become the intellectual property of the Earthwatch scientist (ES). Co-opting or plagiarism of data, images or information gathered during an expedition for use in a scientific thesis, masters or PhD work, or for profit or for the academic or business use of a third party without the permission of the ES is strictly prohibited. Please be aware that data gathered during the interviewing of local people becomes the intellectual property of the ES. Earthwatch scientists have the right to place additional restrictions on your ability to share data or certain research-related images.

Conversely, an Earthwatch scientist may give written permission to use data and images for academic or profitable activity. Please be sure to ask what is acceptable to the Earthwatch scientist.

Fellows or scholarship recipients are sometimes required to submit a written report reflecting what they have learned on a project, sometimes as a step toward developing a curriculum. Earthwatch scientists have the right but not obligation to review and edit materials involving information gathered on one of their expeditions.

Discrimination

Earthwatch does not discriminate on the basis of race, religion, ethnicity, national origin, gender, sexual orientation, or any other reason prohibited by applicable law and respects participants' right to privacy. However, you must be aware that local laws in countries in which Earthwatch operates may not be anti-discriminatory and that the possibilities exist that local residents may not have an awareness of best practice regarding discrimination.

Discrimination on the basis of race, religion, ethnicity, or sexual orientation will not be tolerated on Earthwatch teams. Disruptive behavior, or verbal, physical or any other type of abuse or harassment will also not be tolerated. Violation of Earthwatch's non-discrimination policy is grounds for expulsion from the program without a refund.

Intimate relationships

Earthwatch scientists, their staff, their colleagues, and their associates are prohibited from becoming romantically involved with participants during the entire duration of the period that the team is in the field. Romantic relationships that may otherwise seem permissible may eventually create an unpleasant or unproductive work environment and are therefore strongly discouraged for the duration of an Earthwatch project.

Sexual Harassment

Please recognize that the relationship that exists between Earthwatch scientists and staff and participants is analogous to the student-teacher relationship. Therefore, please be aware of the following policies.

Sexual harassment of participants by the Earthwatch scientist or Earthwatch staff is prohibited. Likewise, sexual harassment of other participants, Earthwatch field staff, or local people by participants is also prohibited.

Sexual harassment infringes on an individual's right to an environment free from unsolicited and unwelcome sexual overtones of conduct either verbal or physical. Sexual harassment does not mean occasional compliments of a socially acceptable nature.

Sexual harassment refers to conduct which is offensive, which harms morale, or which interferes with the effectiveness of Earthwatch expedition teams; such conduct is prohibited. Lewd or vulgar remarks, suggestive comments, displaying derogatory posters, cartoons or drawings, pressure for dates or sexual favors and unacceptable physical contact or exposure are examples of what can constitute harassment. No one should be touched in areas that otherwise would be covered by a bathing suit. It is important to realize that what may not be offensive to you, may be offensive to participants, the local population, and Earthwatch field staff.

Any individual who feels subjected to sexual harassment or has any knowledge of such behavior should report it at once to his or her PI or to Earthwatch staff members. All Earthwatch scientists and Field Team Leaders (FTLs) will notify Earthwatch immediately when an accusation of sexual harassment or abuse is made or witnessed.

All reports of sexual harassment will be handled with discretion and will be promptly and thoroughly investigated. Any participant who is found to have engaged in conduct constituting sexual harassment will be immediately removed from the expedition at his or her own expense. If a minor is immediately involved in allegations of sexual harassment, his or her parents will be contacted.

Drugs

Laws on drug use in most countries are severe and may carry lengthy imprisonment or death penalties. I understand and accept that the manufacture, possession, use, purchase and/or sale of illegal drugs or other illegal substances while on an Earthwatch expedition is strictly prohibited. Prescription drugs may only be purchased and used by the individual indicated on the prescription in keeping with their intended use guidelines.

Alcohol

Local statutes, customs, practices, ordinances, and regulations with regard to the use, possession, sale, or purchase of alcohol are applicable to all participants and project staff in Earthwatch expeditions. Participants and project staff on Earthwatch expeditions must comply with the law of the country in which a project is located regarding the minimum age required to consume alcohol. In addition, restriction on the use, possession, sale, or purchase of alcohol may be set by the Earthwatch scientist. Any restrictions on the consumption of alcohol should be clearly outlined by the project staff in the briefing to participants at the start of the project, and in the Expedition Briefing.

Consumption or possession of alcohol or smoking is not permitted on any Earthwatch Teen Team, regardless of local law.

Excessive consumption of alcohol by staff or participants is not acceptable on any Earthwatch project. Intoxication can jeopardize personal safety, in addition to the safety of the team. It can also cause delay, and hinder response in the event of a crisis or emergency situation.

Earthwatch staff and the Earthwatch scientist have the discretion to remove individuals from the project who consume alcohol in a time and manner that endanger the safety and/or productivity of the expedition.

Minors

Earthwatch considers participants under eighteen (18) years of age to be minors. Minors are not permitted to participate on any of Earthwatch's standard teams unless accompanied by a parent or legal guardian in which case the minimum age is sixteen (16). Minors on regular teams do not receive additional guidance or supervision from Earthwatch beyond what is offered to the adult participants. The number of minors on regular teams is limited to two (2) per team. Earthwatch has developed teams specifically for 16 and 17 year olds ("Teen Teams") as well as teams specifically for families ("Family Teams") with children as young as 10 years old. These teams focus on the same research activities and have the same expectations as our regular teams, but with more facilitation and support. Exceptions for some projects are made at the discretion of Earthwatch and the Earthwatch scientist. Due to a more in-depth screening process for certain programs that select candidates based on school year rather than age, there may be 18 year olds fielding on the same team as 16 and 17 year olds. Please be aware that some Earthwatch projects do not allow participation by minors in any circumstance.

Participants and Driving

Participants are not allowed to drive project vehicles or aircraft during an expedition. In select circumstances, participants may be able to drive boats under the direct supervision by project staff. These circumstances are pre-determined by project staff in collaboration with Earthwatch. Participants must respect the restrictions for boat driving in place for each project.

If a project environment is such that participants can drive their own vehicles to the rendezvous, those who have driven themselves to the project may not drive their own vehicles to, from or for project activities, including the transport of project equipment after arriving at the site.

Participants who have driven themselves to the project may choose to utilize their own vehicle during recreational time, but project staff will brief them on the driving restrictions. All driving during recreational time is done at your own risk.

Please be advised that the only exception to the above driving restrictions is emergency situations.

Riding in other participants' vehicles is not covered under the participants' insurance policy for the expedition. Riding in another participant's vehicle is done at a participant's own risk.

In the Event of an Emergency

In the event of emergencies, judgments must be made by Earthwatch field staff and participants. While Earthwatch makes an effort to ensure that qualified people make the most informed decisions possible, occasionally first aid may be administered and other immediate steps taken by expedition participants who are not licensed medical providers.

Each Earthwatch expedition has safety protocols and emergency procedures in place. Earthwatch encourages team members (the field staff and participants) to exercise their best judgment with regard to their own safety and the safety of other team members. Other participants may perform "Good Samaritan" actions, or actions taken to assist fellow participants during emergency situations in the field. However, Earthwatch does not encourage or expect you to jeopardize your own safety or that of others in attempting to rescue or assist your fellow team members.

Right of Refusal

Earthwatch reserves the right to refuse an applicant's participation on Earthwatch projects at any time and to terminate any work being done by a participant and require the participant to vacate the project site if any of the Earthwatch Expedition Team in his or her absolute discretion considers it appropriate. In this event, the participant (and his/ her parent/ guardian, if appropriate) will be responsible for arranging and paying for any accommodation, travel or other arrangements which may be necessary following the termination of a participant's involvement in a project, for whatever reason and may not be eligible for a refund.

Earthwatch and the project staff may not refuse a participant for discriminatory reasons (race, religion, ethnicity, national origin, sexual orientation, or any other reason prohibited by applicable law). However, participants may be denied in the interest of team compatibility. Earthwatch will make reasonable efforts to accommodate participants with disabilities and the organization endeavors to find appropriate expeditions for those participants that have physical limitations. Refusal of a participant is an unusual event and is generally due to either an applicant's failure to meet the essential eligibility requirements of a particular project, or in the interest of team compatibility. In the event that an applicant is refused participation for health reasons, Earthwatch will refund in full any deposit or payment made toward the expedition.

Earthwatch scientists have the right to refuse special requests, such as media visits (film, photography or print), special groups or teams (students, donors, etc.), if they conflict with Earthwatch scientist schedules, safety, research objectives or general performance of the team.

Any participant found in violation of any of the policies described in this document ("Earthwatch Institute Policies & Participant Rights and Responsibilities") is subject to removal from the team at their own expense. By signing the Liability Release section of your Earthwatch Participation Form, participants are indicating that they have read and understand the policies in this document. Removal of a participant from a team is at the discretion of the Earthwatch scientist or Field Team Leader and Earthwatch staff. In addition, Earthwatch will support the right of the scientist to send participants away from a project once in the field should their behavior compromise the safety, research objectives or general performance of the team, or if the participant has violated a stated policy. In the event that a minor is dismissed from a project, Earthwatch will contact the participant's parents or legal guardian prior to their dismissal. Should a participant be removed from a team, he/she is responsible for any or all costs associated with departure from the team and will receive no refund of the share of costs of the expedition nor any expenses incurred in participation on the expedition.

Expedition Packing Checklist

Required Items

- This Expedition Briefing
- 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) (see *Volunteers Under 18 Years of Age* in the *Travel Planning* section)

Clothing/Footwear for Fieldwork

- Be sure to bring your Earthwatch T-shirt and remember to wear it, as appropriate, throughout your expedition
- Lightweight, quick drying long-sleeved shirts
- Lightweight pants/trousers
- T-shirts
- Long shorts
- Tough neoprene diving boots (that come above the ankle) or strong sandals (e.g. Keens, Texas, or Chacos) or trainers/sneakers that will stay securely on your feet even in deep mud
- Sun hat with wide brim to protect face, head, and neck from the strong sun
- Light anorak/raincoat

Clothing/Footwear for Leisure

- One set of clothing to keep clean for end of expedition
- Clothing to cover up in the evening due to mosquitoes

Field Supplies

- Small daypack/rucksack
- Insect repellent spray
- Two one-liter water bottle(s)
- Dark sunglasses and strap to hold them on
- Sunscreen lotion with SPF 30 or higher

Bedding and Bathing

- Note:** Bedding will be provided by the project.
- Towel(s) for bathing

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 personal medications
- Sunscreen lotion with SPF 30 or higher

Miscellaneous

- Spending money
- Camera, film/memory card(s), extra camera battery

Optional Items

- Flashlight or headlamp with extra batteries and extra bulb
- Hardware for sharing digital photographs at the end of the expedition
- Travel guidebook
- Books, games, journal, art supplies, etc. for recreational/rest time and travel
- Flashlight or headlamp with extra batteries and extra bulb
- Pencils and pens
- Items symbolic of your home country. You may choose to bring postcards depicting your country culture, wildlife, economy etc. (Volunteers are invited to give short presentations to schools; you might choose to describe where you come from and show relevant items.)
- Earplugs (The village can be noisy at night, and there is an early morning call to prayer.)
- Snorkeling gear for the optional trip to the marine park (gear can be rented there for less than US\$5, so only bring it if you prefer your own or have particular needs such as a prescription mask, etc.)
- Drybag or plastic sealable bags (e.g. Ziploc) for protecting equipment such as camera from dust, humidity, and water
- Blank CD or DVD for sharing digital photographs at the end of the expedition
- Small gifts for local school (e.g. stationary, calculators, maps, pens, pencils, markers, games, crayons, etc.)

Note: Required and Optional Items lists are accurate to the best of Earthwatch's knowledge at the time of publication.



Our Mission

Earthwatch engages people worldwide in scientific field research and education to promote the understanding and action necessary for a sustainable environment.

We believe that achieving a sustainable future requires objective scientific data from the field—and that the scientific process must engage the general public if it is to change the world. To that end, we involve people from all walks of life directly in global field research.

We invite you to join us.

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