DEAR EARTHWATCHER,

We are looking forward to working with you in Nicaragua in 2016. We will be building on the results collected by Earthwatch volunteers over the last eight years, and starting some exciting new aspects of the project too.

The aim of this project is to find out how the ongoing degassing from the active crater at Masaya volcano impacts the local environment. We want to understand how the outputs of the volcano change with time and how these affect the environment. We will investigate the processes going on inside the volcano and discover how these relate to the eruptive activity eventually seen at the surface. We will then follow the gases and aerosols into the environment and study how and why they are concentrated within certain flora and fauna. The implications of this work are wide ranging. Our results will feed into global climate change models and, on a local scale, we will be able to evaluate the impact of volcanic pollution.

There are two components to this project, volcanology and ecology, but the most important aspect of the project is that, with your help, we will integrate the two studies. This integration is giving us unique insights into how and why volcanoes affect their local environments, and we hope to develop new ways of predicting the impact of future volcanic events on local populations. With your help, we will enable local people to be better prepared for the next volcanic crisis. Eventually we hope to be able to identify suitable species for use as part of a mitigation strategy against the effects of volcanic pollution. The results we get here will be usable at many other active volcanoes worldwide.

We very much look forward to meeting you and working with you.

With very best wishes,
Prof. Hazel Rymer; Dr. Mike Gillman; Dr Hilary Erenler
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GENERAL INFORMATION
EXPLORING AN ACTIVE VOLCANO IN NICARAGUA

EARTHWATCH SCIENTISTS
Prof. Hazel Rymer, Dr. Mike Gillman, Dr. Hilary Erenler

RESEARCH SITE
Volcán Masaya National Park, Masaya, Nicaragua

EXPEDITION DATES
Team 1a,b: Feb. 14–27, 2016
Team 1b: Feb. 21–27, 2016

Complete travel information is not available in this version of the briefing.
Please contact Earthwatch with any questions.
# TRIP PLANNER

## EXPLORING AN ACTIVE VOLCANO IN NICARAGUA

<table>
<thead>
<tr>
<th>IMMEDIATELY</th>
<th>60 DAYS PRIOR TO EXPEDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Make sure you understand and agree to Earthwatch’s Terms and Conditions and the Participant Code of Conduct.</td>
<td>- Make sure you have all the necessary vaccinations for your project site.</td>
</tr>
<tr>
<td>- If you plan to purchase additional travel insurance, note that some policies require purchase when your expedition is booked.</td>
<td>- Review the Packing Checklist to make sure you have all the clothing, personal supplies and equipment needed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>90 DAYS PRIOR TO EXPEDITION</th>
<th>30 DAYS PRIOR TO EXPEDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Log in at earthwatch.org to complete your volunteer forms.</td>
<td>- Leave the Earthwatch 24-hour helpline number with a relative or friend.</td>
</tr>
<tr>
<td>- Pay any outstanding balance for your expedition.</td>
<td>- Leave copies of your passport, visa, and airline tickets with a relative or friend.</td>
</tr>
<tr>
<td>- Book travel arrangements (see the Travel Planning section for details).</td>
<td></td>
</tr>
<tr>
<td>- If traveling internationally, make sure your passport is current and, if necessary, obtain a visa for your destination country.</td>
<td></td>
</tr>
</tbody>
</table>

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**Read this expedition briefing thoroughly.** It provides the most accurate information available at the time of your Earthwatch scientist’s project planning, and will likely answer any questions you have about the project. However, please also keep in mind that research requires improvisation, and you may need to be flexible. Research plans evolve in response to new findings, as well as to unpredictable factors such as weather, equipment failure, and travel challenges. To enjoy your expedition to the fullest, remember to expect the unexpected, be tolerant of repetitive tasks, and try to find humor in difficult situations. If there are any major changes in the research plan or field logistics, Earthwatch will make every effort to keep you well informed before you go into the field.
THE STORY
When most people picture an active volcano, they probably don’t imagine one like Masaya in Nicaragua. Masaya Volcano is persistently active—that is, it erupts constantly—but it does not spew out molten rock; instead, it releases a steady plume of gas. Persistently active volcanoes may erupt violently—for example, Stromboli in Italy and Arenal in Costa Rica typically explode magma tens to hundreds of metres in the air every 20 to 30 minutes. But for the most part, like Masaya, they emit gases rather than rock.

Just as a violent eruption dramatically alters the landscape around it, Masaya’s plume powerfully shapes its environment. We know that crops often fail downwind of the volcano, but we know less about how the gas emissions from a volcano like Masaya impact local biodiversity, and how persistent volcanic activity might hinder economic development. On the Exploring an Active Volcano in Nicaragua project, you’ll help us address these questions. We’ll study the path and ultimate fate of gases erupted at Masaya, starting with the source magma and moving through the gas plume into soil, water, and, ultimately, plants and animals. When we know how volcanic pollutants travel and where they end up, we can help local people live more harmoniously with Masaya volcano — by cultivating more acid-tolerant crops, for example, and developing safer evacuation policies for themselves and their livestock.
RESEARCH AIMS

While scientists have done some work around Masaya Volcano, our study is the first to systematically analyze it. With the help of Earthwatchers, we collect data there every year, with the following objectives:

• To identify the physical and chemical signatures associated with persistent activity and changes in these signatures through time;

• To understand how the local ecosystem responds to persistent volcanism, and how it regulates volatile pollution levels in the environment; and

Our study of Masaya could also give us insight into the global impact of persistently active volcanoes. To address human-induced climate change, we must better understand natural processes like volcanic eruptions. While eruptions increase the amount of carbon dioxide (and other gases) in the atmosphere and contribute to the greenhouse effect, their influence is much smaller than that of humans burning fossil fuels. Volcanic eruptions can also have a cooling effect, because the sulfur-rich gases they propel into the atmosphere form dense clouds that reflect solar radiation back into space. Through this project, we hope to learn more about how volcanoes like Masaya fit into this picture.
This is a new country record and the most southerly recording for the species. Understanding more about how the bee is adapted to such an extreme environment is central to the ecology research.

• Measure the flowers and leaves of Dalechampia scandens, also known as the spurgecreeper. This vine grows in both the gassy and non-gassy parts of Masaya National Park, thereby allowing us to make comparisons across contaminated and non-contaminated areas. Many butterfly species lay their eggs on the plant, and their young eat the leaves and flowers as they grow. Some species of bee also rely on the flowers as a source of resin which they use to construct cells in which they lay their eggs. By measuring spurgecreepers in different parts of the park, we can understand how the gas plume may alter its reproductive features, and, in turn, how these changes impact pollinators.

• Map the distribution of plant species from the genus Tillandsia (also called air plant, ball moss, or Spanish moss, depending on the species). These plants are epiphytes—they grow using other plants as a physical support, and draw their water and nutrients from the atmosphere, not the soil. We’ve noticed a sharp contrast in the abundance and presence of these plants depending on their proximity to the gas plume. Even though certain trees can persist close to the ‘kill zone’ directly under the gas plume, these air plants are much more sensitive to the acidic gases. Mapping their distribution allows us to assess their usefulness as bioindicators of air quality.

HOW YOU WILL HELP
You’ll help us take measurements and make observations by setting up geophysical instruments inside the active crater and the area around it, recording pollinating insects, and collecting plant samples. You’ll learn how to use global positioning system (GPS) units and geoelectrical and gravity instruments, and how to monitor the volcanic gas. You’ll help us dig holes to collect soil and water samples, and you’ll have the chance to hike out to striking observation points. You will have the opportunity to catch, handle and photograph butterflies and establish the nest architecture of the bees living close to the active crater. We will also train you in the most important job of all: accurately recording the data.

We strive to give everyone a chance to see and experience all aspects of the project. We hope you will try the full range of activities that are part of this once-in-a-lifetime chance to research volcanic activity firsthand, and to contribute to a project that will truly help protect local people and wildlife.
DAILY LIFE IN THE FIELD
PLANS FOR YOUR TEAM

On this expedition, you will live and work closely together with your teammates. You’ll share all tasks, from collating data to checking instrument batteries to food shopping. During fieldwork, volunteers and staff members will work in small groups, and we will all join together at the beginning and end of each day.

The Earthwatch scientists will share their passions and put the project into context through talks and seminars on a wide range of topics, from evolution to plate tectonics and the geology of the Solar System. We will also update you on the results of our research to date. Safety and health are always our top priority, and we’ll teach you how to use safety equipment including gas masks, which must be worn when gases are prevalent in or around the craters.

In the evenings you’ll attend informal briefings and seminars, and work in small groups to get familiar with the geophysical and geochemical instrumentation and methods we will use in the field. Once in the field, project staff members will work with you to maximize everyone’s contribution and increase everyone’s enjoyment of the experience.

Throughout the expedition, you will also learn about the environmental impact of gas emissions in general, and from passive and active volcanic activity in particular. You’ll learn how to interpret our results, in terms of environmental hazards, and learn more about the issue of climate change.

ITINERARY

Weather and research needs can lead to changes in the daily schedule. We appreciate your cooperation and understanding.

DAY 1:
Meet at the airport; settle into the hotel; safety and field briefing; team-building exercise

DAYS 2-6:
7:00 a.m. Breakfast together at the hotel
8:00 a.m. Prepare the equipment; pack lunches for the day
8:30 a.m. Leave for the field sites
9:00 a.m. Begin fieldwork; break for lunch at midday
4:30 p.m. End fieldwork and go back to hotel
5:30 p.m. Shower and relax while the equipment is unloaded and the data checked; data inputting to computers.
7:00 p.m. Review the day’s activities; briefing for the next day, lecture, or seminar
8:00 p.m. Dinner at a local restaurant or in the hotel, followed by rest or recreational time

DAY 7
Departure day for volunteers on one-week teams. Volunteers will be transported to the airport in the morning.

TWO-WEEK TEAMS:
Two-week teams will repeat the above schedule. If you are signed up on a two-week team, you will not depart on Day 7, but will have that day to rest, explore the town of Masaya, go on independent excursions, or help the field staff organize equipment and compile data, and you will stay at the team’s accommodation that night.

NOTE: The composition of your team will change as volunteers from the one-week “a-team” depart on Day 7 and volunteers on the one-week “b-team” arrive on Day 8.

EXPLORING AN ACTIVE VOLCANO IN NICARAGUA 2016
ACCOMMODATIONS AND FOOD
ABOUT YOUR HOME IN THE FIELD

SLEEPING
The team (both volunteers and staff) will stay at the Hotel Regis in Masaya, a simple, safe, and clean hotel with single-gender twin, triple, and quad rooms furnished with single beds (bedding, and mosquito net provided). Couples need to contact Earthwatch if they are interested in sharing a room. There may be one or two single rooms available, depending on the number of volunteers.

BATHROOMS
The shared, unisex bathrooms are clean, with flush toilets and lukewarm showers. Towels will be provided, although it is a good idea to bring an additional towel.

ELECTRICITY
The rooms have electric lights, fans, and U.S. standard electrical outlets.

PERSONAL COMMUNICATIONS
An Internet café is near the hotel, and the hotel offers secure wireless Internet access for those who bring their own laptops, smart phones, iPads, or other devices. Please do not assume you can borrow someone else’s computer for this purpose.

Mobile phones equipped with international calling capability should get reception at the field sites.

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

Hotel Regis
Del Almacen La Curacao
35 metros al norte
Masaya, Nicaragua

Mail can take up to two weeks and is not recommended.

PHONE: +505 (2) 522-2300

This number should only be used to reach volunteers for personal communications after research hours. The phone is likely to be answered in Spanish.

EMAIL: The hotel email address is hotelregismasaya@hotmail.com.

FACILITIES AND AMENITIES

The hotel has a central courtyard area where team members can gather together for meals and social time. The hotel also offers a limited laundry service (machine wash and line dry), but please do not abuse this generous service by washing many large loads. Visit the hotel’s website for more information (although some of this information is rather out of date): vianica.com/hotels/85/hotel-regis.

The hotel is in downtown Masaya, within easy walking distance of the central plaza, supermarket and tourist area. You’ll have the chance to visit the tourist market for souvenir shopping.

No smoking is allowed in the hotel, but you can step out on the street.

DISTANCE TO THE FIELD SITE

We will have vehicles for the project which will be used to travel the fifteen minutes or so to the field site each day.

FOOD AND WATER

The hotel will serve typical Central American breakfasts. You’ll help the project staff shop for food and prepare a packed meal to take into the field each day. We’ll eat local fare for dinner, at various restaurants or at the hotel.

You’ll get to enjoy Nicaragua’s amazing fresh fruit and coffee every day. Safe, bottled drinking water will be available from a large water dispenser in the hotel and participants will need to fill-up water bottles from this to meet their hydration needs for the whole day in the field. In Masaya town sodas and other drinks may be purchased from the hotel or at nearby shops.

Below are examples of the foods you might expect during the expedition. 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 you be flexible. Foods that may be common in your home country (peanut butter) are unlikely to be found in Masaya.

TYPICAL MEALS

<table>
<thead>
<tr>
<th>MEAL</th>
<th>FOOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BREAKFAST</td>
<td>Beans and rice, eggs, fried plantain, fruit, bread</td>
</tr>
<tr>
<td>LUNCH</td>
<td>Fresh fruit, cheese, meat, bread</td>
</tr>
<tr>
<td>DINNER</td>
<td>Beans and rice, salad, fish, meat, cheese</td>
</tr>
<tr>
<td>SNACKS</td>
<td>Pastries, biscuits/cookies, crackers</td>
</tr>
<tr>
<td>BEVERAGES</td>
<td>Juice, coffee, beer, wine, soft drinks</td>
</tr>
<tr>
<td>WATER</td>
<td>Bottled water, potable tap water</td>
</tr>
</tbody>
</table>

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 volunteer forms.

Vegetarians can be accommodated with advance notice.
EXPLORING AN ACTIVE VOLCANO IN NICARAGUA 2016

GENERAL CONDITIONS
The information that follows is as accurate as possible, but please keep in mind that conditions may change.

While the terrain is generally not steep, the loose, gravelly, slippery ground can make walking treacherous. You will visit in the dry season, so rain is unlikely but possible.

Volcanic gases can cause respiratory irritation or aggravate existing conditions like asthma. Gas masks and safety instruction will be provided as required.

Day-time temperatures at Masaya volcano regularly exceed 32°C / 90°F, so heat exhaustion and dehydration are potential problems. It is vital to carry (and drink) sufficient water.

Working outside all day can be physically demanding. The best preparation for the expedition is to practice hill walking while carrying a 10-kilogram/22-pound backpack.

FEBRUARY–MARCH

HUMIDITY: 10%–70%
TEMPERATURE RANGE: 20°C / 68°F to 40°C / 104°F
ALTITUDE: 200 m/656 ft–550 m/1,805 ft above sea level
RAINFALL: little to none

PROJECT CONDITIONS

ESSENTIAL ELIGIBILITY REQUIREMENTS:
All participants must be able to:
• Follow verbal and/or visual instructions independently or with the assistance of a companion.
• Wear all protective equipment recommended or required by industry standards.
• Enjoy being outdoors all day in all types of weather and conditions. Some work will be in dense, shady forest; some will take place on flat plains in searing heat.
• Carry personal daily supplies, such as lunch, water, and some small field equipment, of up to 10 kg/22 lbs, up to six hours a day.
• Maintain balance while negotiating steep, slippery, loose gravel trails.
• Remain seated in a vehicle, using a seatbelt, for up to two hours per day.
# HEALTH AND SAFETY INFORMATION

## POTENTIAL HAZARDS

<table>
<thead>
<tr>
<th>HAZARD TYPE</th>
<th>ASSOCIATED RISKS AND PRECAUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>The teams will travel in hired cars or a minibus and local taxis as needed. Vehicles will be certified roadworthy and only licensed project staff members or cab drivers will drive. You must remain seated and wear a seatbelt when vehicles are in motion. Volunteers are not allowed to drive.</td>
</tr>
<tr>
<td>Walking/Hiking/Climbing</td>
<td>You’ll encounter unstable hiking surfaces and the risk of sprains, strains, or breaks due to falling or missteps. Wear hiking boots with good ankle support at all times. The team will be split up each day to perform different tasks; some will work from vehicles, while others will need to hike to their posts. Hiking depends on the location, but everyone will have a chance to work on all aspects of the project and to hike as much as they like. Working outside all day can be physically demanding.</td>
</tr>
<tr>
<td>Terrain</td>
<td>The terrain has steep slopes, loose gravel, and falling rocks; good balance and alertness are needed when hiking (we don’t recommend hiking poles, as this hiking often requires your hands). Walking at night in town can also be a challenge—take care to avoid holes and obstacles in the sidewalk, as well as unpredictable road traffic. After dark, walk with another team member and use a torch/flashlight to light the way.</td>
</tr>
<tr>
<td>Animals/Plants</td>
<td>Irritating plants and biting or stinging insects occur in and around the site. Snakes are rare, but they too occur in the park. We suggest that you use insect repellent to ward off mosquitoes, chiggers, biting flies, and other insects. Most of the plants are harmless, but some are poisonous and cause rashes. Do not lift boulders/rocks or put your hands into crevices. Staff members will brief the team on precautionary actions to take.</td>
</tr>
<tr>
<td>Climate/Weather</td>
<td>The sun at Masaya can be intense, so take care to avoid sunburn and dehydration. Drink plenty of water and wear sunscreen, a hat, and protective clothing.</td>
</tr>
<tr>
<td>Volcanic/Seismic Activity:</td>
<td>The constant emission of gases like sulfur dioxide is the most common risk associated with volcanic activity. These gases can irritate the lungs and worsen pre-existing respiratory problems, such as asthma. You will receive a gas mask to use for the duration of the team; staff members will instruct you on its use and encourage you to wear it whenever in the plume of the volcano or when having any breathing discomfort (such as wheezing). Volcanic eruptions can cause or initiate seismic activity. This region of the world experiences earthquakes, and while these are hard to predict, we will instruct you on what to do and where to go in the event of a natural disaster.</td>
</tr>
<tr>
<td>Personal Security</td>
<td>As in many cities, pickpockets frequent tourist areas, especially just outside the busy airport area and downtown Managua. Usual safety precautions should be taken when walking in urban areas. The risk is lower in the field area and within the town of Masaya, but always be aware and careful when traveling through crowds.</td>
</tr>
<tr>
<td>Swimming</td>
<td>While swimming is not a part of the project activities, there may be opportunities to swim recreationally in a crater lake during your expedition. Lifeguards will not be present, so swimming must not be undertaken alone, and is at your own risk.</td>
</tr>
<tr>
<td>Distance from Medical Care</td>
<td>20 minutes to one hour.</td>
</tr>
<tr>
<td>Disease</td>
<td>Traveler’s diarrhea affects many international travelers. Diseases found in Nicaragua also include malaria, chikungunya, dengue fever, cholera, filariasis, leishmaniasis, onchocerciasis, trypanosomiasis, and schistosomiasis. Please see the U.S. Centers for Disease Control and Prevention <a href="http://ncdc.gov">cdc.gov</a> or the World Health Organization <a href="http://ncdc.gov">who.int/</a> websites for more information on these conditions and how to avoid them. You can decrease your risk of most diseases above by avoiding mosquito bites, practicing good hygiene, and drinking only bottled or filtered water when appropriate. 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.</td>
</tr>
</tbody>
</table>
A few notes on vaccinations and treatment:

- **MALARIA:** is transmitted by mosquitoes that usually bite from dusk to dawn. Symptoms can develop as early as six days or as late as several months after exposure. Because of the time and location of your expedition—during the dry season, and well away from the wetlands—the risk of malaria is low. We do advise, though, that you take precautions and discuss medication with your doctor before traveling. Mosquito nets will be provided.

- **TUBERCULOSIS:** Volunteers returning from developing countries may wish to have a (PPD)-tuberculin skin-test to screen for potential infection.

- **YELLOW FEVER:** A vaccination protecting against yellow fever is available, although pregnant women and immunocompromised individuals cannot be vaccinated. Your home country may require a certificate of vaccination for re-entry if you travel to an area where yellow fever is endemic.

**EMERGENCIES IN THE FIELD**

Staff members will carry first-aid kits into the field to address minor injuries. For more serious issues, the park rangers will assist with evacuation and transport, if required, to the medical center in Masaya (20 minutes away) or hospital in Managua (45 minutes away).

Should a volunteer need to leave early due to an unforeseen emergency, a staff member will arrange transport to the airport, which is less than one hour’s drive from the field area.

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

**FIRST AID:** Hazel Rymer

**NEAREST HOSPITAL AND CLINIC:**

Hospital Metropolitano Vivian Pellas  
Jm 9 ¾, Carretera a Masaya,  
250 metros al oeste, Managua, Nicaragua  
+505 (2) 522-6900, ext. 84126

**DISTANCE:** Approximately 1 hour drive

**EMERGENCY COMMUNICATIONS**

Members of every team will have mobile phones so that when the team splits into smaller groups, we can always stay in contact with each other. One of the Earthwatch scientists’ mobile phones will also be available for emergency situations.

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

**IMMUNIZATIONS**

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

YOUR DESTINATION

LANGUAGE: Spanish (the program will be conducted in English).

TIME ZONE: GMT/UTC -6.

CULTURAL CONSIDERATIONS: In general, people in Nicaragua dress fairly conservatively, especially in rural areas.

Once you arrive at the hotel, your belongings will be safe, but keep an eye on them until then, especially at the rendezvous area at the airport. Project Staff recommend that you do not take your passports/valuables into the field each day.

ELECTRICITY: 60 Hz AC, 120 volts, plug Type A.

TELEPHONE DIALING CODES: When calling Nicaragua from another country, dial the country’s international dialing code, followed by [505] and the number. When calling within Nicaragua, omit the [505]. When calling another country from Nicaragua, dial [00], followed by the other country’s country code and the number. 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.

MONEY MATTERS

LOCAL CURRENCY: Nicaraguan gold córdoba (C$). One córdoba equals 100 centavos. Notes come in denominations of C$500, 100, 50, 20, and 10. Coins come in denominations of C$5 and 1, and 50, 25, 10, and 5 centavos.

PERSONAL FUNDS: During the expedition, your contribution to Earthwatch will cover the cost of food and accommodations. If you need money for additional drinks [drinks with meals will already be included], snacks, Internet access, souvenirs, etc., you can find ATMs at the airports and at banks near our hotel. Most establishments accept credit cards, and many accept cash in U.S. dollars. Tipping 15% of the bill for meals and taxis is usual.

PASSPORTS AND VISAS

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

A Nicaraguan Tourist Visa is usually given at the airport on arrival and will be entered on your passport. Have US$10 [subject increases] available for the fee payable to the immigration official.

<table>
<thead>
<tr>
<th>CITIZENSHIP</th>
<th>PASSPORT REQUIRED?</th>
<th>VISA REQUIRED?</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Australia</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

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

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:

Hotel Regis
Del almacen La Curacao,
35 metros al norte, Masaya, Nicaragua
+505 (2) 522-2300
hotelregismasaya@hotmail.com

TRANSFERRING LUGGAGE: If you will be taking an international flight that has one or more connections within the country of your destination, you must 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.

DEPARTURE TAXES: There is a US$32 departure fee when flying out of Nicaragua, which you must pay in cash. Please check with your airline; this is sometimes included in the cost of your flight.
## EXPEDITION PACKING LIST

### WHAT TO BRING

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

#### CLOTHING/FOOTWEAR FOR FIELDWORK
- Earthwatch T-shirt
- Lightweight, quick-drying pants and long-sleeved shirts
- T-shirts
- Shorts
- Gloves for climbing over rocks
- Sun hat
- Sturdy, broken-in hiking boots with good ankle support
- Sweater or sweatshirt and long trousers for cooler times and evenings

#### CLOTHING/FOOTWEAR FOR LEISURE
- At least one set of clothing to keep clean for end of expedition
- Clean clothing to change into in the evenings (field clothes will smell of sulfur after they have been worn in the field, and may retain that odor for a couple of wash cycles)
- Sandals or comfortable shoes for around the hotel and town

#### FIELD SUPPLIES
- Insect repellent spray
- Backpack for field supplies (at least 10-liter/22-pound capacity)
- Water bottles (minimum of two one-liter bottles or hydration pack)
- A plastic lunchbox/tupperware for transporting your lunch into the field

#### BEDDING AND BATHING
NOTE: Accommodations will provide bedding, a mosquito net, and a towel. We recommend that you bring an additional towel.

#### PERSONAL SUPPLIES
- Personal toiletries (biodegradable soaps and shampoos are encouraged)
- Antibacterial wipes or lotion (good for cleaning hands while in the field)
- Personal first aid kit (e.g., anti-diarrhea pills, antibiotics, antiseptic, itch-relief, pain reliever, bandages, blister covers, etc.) and medications
- Spending money
- Sunscreen lotion with SPF 30 or higher
- Torch (flashlight) or headlamp and extra batteries (primarily for visit to lava cave)

#### OPTIONAL ITEMS
- Towel(s) (recommended; lightweight camping towels are great)
- Pocket knife (pack in checked luggage)
- Duct tape (you may want to roll some around a water bottle for easy transport)
- Hiking gaiters to keep ash and debris out of boots
- Travel guide for Nicaragua
- Camera, film or memory card(s), extra camera battery
- Hardware for sharing digital photographs at the end of the expedition (Blank CD, DVD, or flash drive)
- Dry bag or plastic sealable bags (e.g. Ziploc) to protect equipment like cameras from dust, humidity, and water
- Books, games, art supplies, etc. for free time
- Earplugs for light sleepers

NOTE: Do not bring more luggage than you can carry and handle on your own. If traveling by air and checking your luggage, we advise you to pack an extra set of field clothing and personal essentials in your carry-on bag in case your luggage is lost or delayed.
PROF. HAZEL RYMER is the lead Earthwatch scientist. A physicist and geophysicist by training, she has worked for over 30 years on volcano monitoring and hazard mitigation projects in Costa Rica, Nicaragua, Iceland, Italy, and Mexico. Based at The Open University (UK), she researches persistently active volcanic processes and teaches geoscience and science communication at the undergraduate and postgraduate level. She is the Dean and director of studies for the Faculty of Science. She will have overall responsibility for the project and will run the geophysical teams.

DR. MIKE GILLMAN is a tropical ecologist based at The University of Lincoln (UK) with a wide range of fieldwork experience in the neotropics. His past work includes describing and analyzing tropical tree communities and using butterfly species as bioindicators of habitat fragmentation. He has led student groups in the field and has worked with a variety of indigenous groups. He will co-lead the environmental and ecological monitoring aspects of the project with an emphasis on butterflies and plants.

DR. HILARY ERENLER is a Visiting Researcher at the University of Northampton. She has considerable fieldwork experience in Costa Rica, Nicaragua, Venezuela, and the British Virgin Islands. She specializes in plant-pollinator interactions, and will co-lead the environmental and ecological monitoring aspects of the project with an emphasis on butterflies and solitary bees.

NOTE: Staff schedules are subject to change.
RECOMMENDED READING
YOUR RESOURCES AT HOME

ARTICLES

BOOKS

FIELD GUIDES

PROJECT-RELATED WEBSITE
- earthwatch.org/expeditions/exploring-an-active-volcano-in-nicaragua
- youtube.com/watch?v=xJ6xEKY6idc
- youtube.com/watch?v=Pqv9eoJnGXI
- youtube.com/watch?v=3THgRVCLmws

PROJECT FIELD REPORT
Each Earthwatch-supported project submits a report on past research and results. The most recent field report for this project is available online at earthwatch.org/FieldReports/field-report-volcanology-and-ecology-in-nicaragua-2013.pdf.
EMERGENCY NUMBERS
AROUND-THE-CLOCK SUPPORT

EARTHWATCH’S 24-HOUR EMERGENCY HOTLINE

Call Earthwatch’s 24-hour on-call duty officer in the U.S.:
+1 (978) 461.0081
+1 (800) 776.0188 (toll-free for calls placed from within the U.S.)

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

TRAVEL ASSISTANCE PROVIDER: HEALIX INTERNATIONAL

+44.20.3667.8991 (collect calls and reverse charges accepted)
U.S. TOLL FREE: +1.877.759.3917
U.K. FREE PHONE: 0.800.19.5180
E-MAIL: earthwatch@healix.com

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

FOR VOLUNTEERS BOOKED THROUGH THE EARTHWATCH AUSTRALIA OFFICE:

Earthwatch Australia 24-Hour Emergency Helpline
+61.0.3.8508.5537
MESSAGE FROM EARTHWATCH

DEAR EARTHWATCHER,

Thank you for joining this expedition! We greatly appreciate your decision to contribute to hands-on environmental science and conservation.

As an Earthwatch volunteer, you have the opportunity to create positive change. And while you’re out in the field working toward that change, we are committed to caring for your safety. Although risk is an inherent part of the environments in which we work, we’ve been providing volunteer field experiences with careful risk management and diligent planning for over 40 years. You’re in good hands.

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,

Larry Mason
President and CEO, Earthwatch