FOLLOWING FLAMMULATED OWLS IN THE WESTERN U.S.
DEAR EARTHWATCHER,

Welcome to the Following Flammulated Owls in Western US Forests expedition, Arizona Edition!

Cavity nesting species, including small owls, play important roles in many ecosystems. Many rely upon other animals (woodpeckers) or processes (rot and decay) to create the cavities that they shelter and breed in. The flammulated owl is a little-studied cavity nesting species, and aside from a long-running study in coniferous forests in Colorado we know very little about this tiny owl and the habitats it occurs in. In addition to being cavity nesters, flammulated owls are migratory and primarily insectivorous—a unique suite of characteristics in a small forest owl and one that could render this species particularly sensitive to forest management and climate change impacts. On this expedition you will help further understanding of how climate change and forest type impact flammulated owls and their habitat. You will help track changes in both the timing and outcome of owl breeding in a variety of habitats.

We also have very little understanding about cavities themselves; for example, how do formation rates and/or cavity ‘lifespan’ vary in different forest types or in the light of a changing climate? You will help us search for, measure, and document where natural cavities occur; while also monitoring the status of owl nests found along the way. You will also help measure important habitat characteristics around cavities. You may also help collect nocturnal insects to help monitor potential food availability and relate this to owl use and reproductive outcome in different areas.

While your time contributing to the team will be spent in one location—the Chiricahua mountains in beautiful southeast Arizona; we are conducting similar research to the north in the aspen forests of Utah. This gives us a broader picture of flammulated owl ecology across a variety of landscapes and latitudes and will ultimately yield a better understanding of climate change impacts.

I’ve known flammulated owls for 20 years now and am incredibly excited to share a glimpse into their lives with you while collecting valuable data. Your contributions will help us better conserve flammulated owls and other cavity nesting wildlife. I hope that your experiences on this trip will change the way you think about wild spaces at night. We look forward to having you on our research team.

Sincerely,
Dr. Dave Oleyar, Lead Earthwatch Scientist
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EARTHWATCH SCIENTISTS
Dr. Dave Oleyar, Senior Scientist, HawkWatch International

RESEARCH SITE
Chiricahua Mountains, Portal, Arizona

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

EXpedition dates:
Team 1: May 20, 2016 to May 26, 2016
Team 2: June 6, 2016 to June 12, 2016
Team 3: June 27, 2016 to July 3, 2016

*Teen Teams are open to 15- to 18-year-olds (18-year-olds may participate if they finished their last year of high school in the previous school year). 16- and 17-year-olds may also participate on standard teams if accompanied by a parent or guardian.
TRIP PLANNER
FOLLOWING FLAMMULATED OWLS IN THE WESTERN U.S.

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

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

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

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

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

THE STORY

In the western U.S., climate change is altering the habitat of the flammulated owl (*Psiloscops flammeolus*)—one of a few migratory owl species. Migratory birds are particularly vulnerable to the effects of a changing climate as they have synced their migrations to coincide with events within multiple ecosystems that are often great distances apart. When just one aspect of either ecosystem changes, it can throw off this timing and affect the conservation status of the entire species.

Flammulated owls, named for the flame-like markings on their faces and shoulders, hunt for insects under the cover of darkness, taking moths and beetles on the wing. But climate-related changes may disturb the owls’ food sources—for example, warmer temperatures could affect the timing of when insects emerge, which is carefully linked to the owls’ breeding season.

Flammulated owls seek out tree cavities, hollow openings such as those carved by woodpeckers, to build their nests. But climate change may also threaten their habitat. Scientists predict that within this century, aspen forests may all but disappear in many areas. Natural tree cavities will disappear along with them, affecting not only flammulated owls, but other species that rely on these cavities for shelter or breeding. We are taking two approaches to address this issue: 1) we will inventory and study cavity dynamics in different forest-types, and 2) we will investigate the efficacy of introducing nest boxes as a tool that could replace/augment natural cavities and help to keep populations afloat. While this strategy has been effective in Utah, where owls regularly use nest boxes, in other regions, nest boxes are not used by this species.
It is currently unknown why this strategy might work in one location but not in others. One explanation might be that lack of cavities leads to higher rates of nest box use and that is what we are seeing in Utah. To shed some light on the question, we plan to document natural cavity and owl densities in Arizona for several years and then add nest boxes to the mix later. Understanding which strategies are effective and why will enable managers to protect the habitat of flammulated owls across their range.

RESEARCH AIMS

Despite being one of the most common owls in western forests, very little information exists on the breeding ecology and habitat relationships of flammulated owls outside of a long-term study in Colorado.

You will help the research team to achieve the following objectives:

1) Document habitat-specific productivity of flammulated owls in both Utah and Arizona (as well as that for other species that may use the cavities and boxes we monitor, including northern saw-whet owl and northern pygmy owl in Utah, and western screech-owl, whiskered screech-owl, northern pygmy owl, and elf owl, a in Arizona). Specifically, teams will help to answer the following questions:
   a. Has productivity at Utah sites changed over time?
   b. Do Utah and Arizona sites differ from each other or from other published studies of the species?
   c. Do rates of nest box use differ between sites?

2) Identify potential impacts of climate change on breeding phenology within and between sites. Specifically:
   a. Has the timing of the first egg hatching or the fledging date changed over time at either study site?
   b. Do Utah and Arizona sites differ from each other or from other published studies of the species?

HOW YOU WILL HELP

You will assist with all components of the study including: nighttime surveys for occupied territories, natural cavity surveys, nest box checks and searches (where applicable), and habitat measurements.

Teams that visit at different times of the season will experience different stages of the breeding season. Some will be there for territory establishment and egg laying, others for incubation and early brooding, and others for late brooding and fledging. During each of these times, volunteers may also get to experience banding of adults and young, either in the nest or during nighttime trapping using mist nets.

Specifically, you will help to:

- Survey and capture owls at night. Listen for the low-pitched ‘boop’ of the flammulated owl as you use recordings of their calls to attract them. You’ll help to set up and take down lightweight mist nets with pockets that catch and hold the owls. When you catch one of these little birds, you’ll help the researchers take its measurements, photograph it, and attach a band before releasing it back into the wild.
- Measure the habitat. Search for natural tree cavities and record their GPS locations. Search cavities for evidence of owl usage using mirror poles or specialized video cameras. Measure tree height and vegetation in surrounding habitat.
- Weigh and band nestlings. Depending on the season, help researchers to weigh and band nestlings found in the cavities or nest boxes.
Upon arrival in Tucson, we’ll travel by van to the Southwestern Research Station (SWRS) near Portal, Arizona (~3hrs). After getting settled and eating we’ll talk about safety, project goals and how they relate to global conservation issues. When we begin our fieldwork, project staff will introduce and demonstrate each new task. We’ll work with you until you’re comfortable with any new activities. We will also supervise to ensure data quality. You will spend days and some nights in the riparian and coniferous forests of southeastern Arizona. During free time you will have the opportunity to bird and explore the spectacular setting around SWRS.

**DAILY LIFE IN THE FIELD**

**PLANS FOR YOUR TEAM**

Upon arrival in Tucson, we’ll travel by van to the Southwestern Research Station (SWRS) near Portal, Arizona (~3hrs). After getting settled and eating we’ll talk about safety, project goals and how they relate to global conservation issues. When we begin our fieldwork, project staff will introduce and demonstrate each new task. We’ll work with you until you’re comfortable with any new activities. We will also supervise to ensure data quality. You will spend days and some nights in the riparian and coniferous forests of southeastern Arizona. During free time you will have the opportunity to bird and explore the spectacular setting around SWRS.

**ITINERARY**

**TYPICAL RESEARCH DAY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>7:30 a.m.</td>
<td>Breakfast</td>
</tr>
<tr>
<td>8:00 a.m.</td>
<td>Rest/free time</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>AM Briefing/Data entry/Gear check</td>
</tr>
<tr>
<td>12:00 p.m.</td>
<td>Lunch</td>
</tr>
<tr>
<td>1:00 p.m.</td>
<td>Depart for field (some days will depart for field @10 and take sack lunch)</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>Field work</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Leave field for Dinner</td>
</tr>
<tr>
<td>6:00 p.m.</td>
<td>Dinner</td>
</tr>
<tr>
<td>8:00 p.m.</td>
<td>Depart for field (night work)</td>
</tr>
<tr>
<td>8:30 p.m.</td>
<td>Field work (surveys/trapping)</td>
</tr>
<tr>
<td>11:30 p.m.</td>
<td>Depart for lodging</td>
</tr>
</tbody>
</table>

**TYPICAL EXPEDITION SCHEDULE:**

**DAY 1**

Arrive at Rendezvous Site, Travel to Accommodations, Project Intro, Welcome Reception

**DAY 2**

Travel to study site, study overview, training on habitat measures, nest cavity survey techniques, and data logging. Nighttime trip to sites for survey training, possible owl trapping using mist nets.

**DAY 3**

Continued training on habitat measures and cavity surveys/searches.

**DAY 4**

Nest cavity checks/Habitat measures/Nighttime Surveys or Trapping

**DAY 5**

Nest cavity checks/Habitat measures/Nighttime Surveys or Trapping

**DAY 6**

Nest cavity checks/Nighttime Surveys or Trapping/Last night with the Owls/Farewell Dinner

**DAY 7**

Travel to Airport/Head home with new skills, ecological knowledge, and satisfaction with your contribution to conservation.
SLEEPING
You’ll stay at the Southwest Research Station (SWRS; www.research.amnh.org/swrs/), which houses scientists from all over the country studying the ecology, behavior, and evolution of many different organisms in the area. You’ll sleep in dormitories and share single-sex rooms with two to four twin beds in each. There are no private rooms for singles. It may be possible to accommodate couples if arranged in advance; please inquire with Earthwatch. All bedding and towels will be supplied.

BATHROOMS
Each room has a shared bathroom with a shower. Hot water is available at all times.

ELECTRICITY
Rooms do not have televisions or telephones, but there are electrical outlets for any personal devices such as digital cameras or laptop computers. You are welcome to bring your own electronic equipment (cell phones, digital cameras, laptops, etc.), but you will be required to limit your use of cellphones or laptops to recreational time only.

PERSONAL COMMUNICATIONS
The station is equipped with internet capability.

FACILITIES AND AMENITIES
SWRS is quite remote. SWRS has a couple of washers and dryers for guests. There are some hiking trails that people can enjoy in groups or pairs.

FOOD AND WATER
The Southwest Research Station offers a full service cafeteria. Teams will eat with other station members during set meal times (7:30, 12:00, 18:00). The station offers guests that will be in the field during the day the opportunity to prepare their own sack lunches. Water is potable at the station.

TYPICAL FOOD

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Cereal, oatmeal, bagels, eggs, toast, fruit, yogurt, coffee/tea, juice.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunch</td>
<td>Sandwiches, chips, fruit.</td>
</tr>
<tr>
<td>Dinners</td>
<td>Pasta and other grain dishes, grilled/roasted meats, salads, vegetables, pizza.</td>
</tr>
</tbody>
</table>

Vegetarian fare is available if requested.
The Chiricahua mountains, and southeast Arizona in general, is a world-renowned birding hot-spot. A blend of riparian canyons and coniferous forest dominate the study areas, which range in elevation from 5400 ft to 7000 ft. Days are hot and nights are cool. Fantastic scenery and a diverse blend of north and central American plant and animal species occur in the area. Portal, Arizona is the nearest town to the research station.

GENERAL CONDITIONS

HUMIDITY: 0%–20%
TEMPERATURE RANGE: 45-100°F (7-38°C)
ALTITUDE: SWRS is situated at about 5,400 feet (1,646 m)
RAINFALL: 21 inches per year

ESSENTIAL ELIGIBILITY REQUIREMENTS:
All participants must be able to:

• Follow verbal and/or visual instructions independently or with the assistance of a companion.
• Enjoy being outdoors most of the day in variable weather, in the potential presence of wild animals and insects.
• Be comfortable walking on and off trail at night, using headlamps, but occasionally turning off lights and standing still in the dark while conducting broadcast surveys.
• Tolerate hot temperatures and a dry, arid environment.
• Traverse uneven, rocky terrain sometimes at an incline for 3-9 (4.8-14.4 km) miles per day, with an average of 4-5 miles (6.4-8 km).
• Move with good balance through low, thick vegetation over variable terrain
• Carry personal daily supplies such as lunch, water (2 liters), and some field equipment (10-20 lbs/4.5-9k)
## POTENTIAL HAZARDS
### FOLLOWING FLAMMULATED OWLS IN THE WESTERN U.S.

<table>
<thead>
<tr>
<th>HAZARD TYPE</th>
<th>ASSOCIATED RISKS AND PRECAUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>Teams will be walking up to 9 miles/day (14.4km), possibly in rocky, uphill, rough terrain, or high altitude. Equipment up to 10-20 lbs will be carried during the day, this could include 8-ft extension ladders, measuring tapes, insect traps, and mist nets and poles. Staff and volunteers will share the responsibility of carrying equipment. Participants must wear hiking boots with ankle support and long pants. Individuals unable to walk on and off trail in the forest to measure habitat characteristics and access cavities and nest boxes will have difficulty with this expedition.</td>
</tr>
<tr>
<td>Climbing</td>
<td>Individuals with fear of heights and that are unable to climb a 16 ft ladder to access nests, can still enjoy this expedition but will miss out on this activity.</td>
</tr>
<tr>
<td>Night work</td>
<td>Individuals that have extreme fear of being out in the forest in the dark will have difficulty with some key aspects of this expedition.</td>
</tr>
<tr>
<td>Elevation/Extreme temperatures and dehydration</td>
<td>It will be very hot and dry, so heat exhaustion, dehydration, and sunburn are serious hazards. Working at high altitude puts team members at risk for altitude sickness and at greater risk of sunburn and dehydration. SWRS is at an elevation of 5400 ft and the research sites can be as high as 8500 ft. Be prepared to drink plenty of water, wear protective clothing (such as long sleeves and a wide-brimmed hat), and use lots of sunscreen. Volunteers will be reminded to drink sufficient water in and out of the field. Night temperatures can drop—bring warm clothes and bring layers—it will be warm when moving but cold when we are stationary during surveys/trapping.</td>
</tr>
<tr>
<td>Animals/Plants</td>
<td>Though unlikely, you may see rattlesnakes in the desert habitats. Other hazards include cacti with sharp spines, scorpions, stinging wasps, and ants. Some plants and arthropods in the area are dangerous. Avoid grabbing cacti or arthropods. Wear appropriate footwear, e.g., hiking boots, and watch your step as you hike in these areas. Deer, bear and cougars are also present in the area, though rarely encountered. Do not approach wild animals and follow field staff instructions.</td>
</tr>
<tr>
<td>Insects</td>
<td>Biting and stinging insects and ticks are present. Volunteers will be briefed on how to inspect for tick bites daily. If you are allergic to any insect bites or stings, please bring medication with you into the field (at least two EpiPens, antihistamines, etc.) as appropriate.</td>
</tr>
<tr>
<td>Transportation</td>
<td>We will travel on public roads with few traffic issues, but risks inherent in road travel still apply. All volunteers will have a seat belt and must wear it whenever the vehicle is in motion.</td>
</tr>
<tr>
<td>Personal Security</td>
<td>SWRS is a generally safe region for travelers; however, do not leave valuables unattended in public areas. We are working close to the US/Mexico border and therefore will encounter border patrol agents in the field and run the risk of encounters with individuals in the field that are migrating through the wild and do not wish to be encountered. We will discuss this possibility during safety briefings.</td>
</tr>
<tr>
<td>Communication services</td>
<td>The study areas and SWRS do not have reliable cell phone service. There is cell service in Portal, AZ which is 5 miles away. The SWRS does have phone line for which members can buy a calling card. In extreme emergencies the station number +1-520-558-2396 can be used. The station does have free wired and wireless internet and encourages visitors to communicate via Skype. Note that occasional service outages can occur but are uncommon.</td>
</tr>
</tbody>
</table>
EMERGENCIES IN THE FIELD
SWRS and field vehicles all have first aid kits. In the event of a medical emergency, the Earthwatch scientists will administer first aid, and depending on the seriousness of the injury or condition, either take the volunteer to the hospital using one of the project vehicles (always available) or call emergency services by cell phone or radio. If a volunteer has to leave the expedition early for emergency reasons, the Earthwatch scientists will determine the most appropriate form of transport to the airport (either one of the project vehicles or ambulance).

STAFF CERTIFIED IN SAFETY TRAINING:
Dave Oleyar (Wilderness First Aid/CPR)
For emergency assistance in the field, please contact Earthwatch’s 24-hour emergency hotline number on the last page of this briefing. Earthwatch is available to assist you 24 hours a day, 7 days a week; someone is always on call to respond to messages that come into our live answering service.

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

PROJECT VACCINATIONS
REQUIRED If traveling from countries or region where yellow fever is endemic, you must have a certificate of vaccination.
RECOMMENDED FOR HEALTH REASONS: none
YOUR DESTINATION

LANGUAGE: English

TIME ZONE: Mountain Standard Time, which equals GMT -7 hours. Arizona does not adhere to daylight savings time and therefore is an hour behind nearby New Mexico during our expeditions despite both being in MST—this will occasionally throw cell-phone clocks off as we pass through New Mexico en route to SWRS.

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

ELECTRICITY: The U.S. standard voltage used for small appliances, hair dryers, electronic equipment, etc. is 120 volts, 60Hz, supplied through type A or B sockets.

MONEY MATTERS

LOCAL CURRENCY: U.S. dollar

PERSONAL FUNDS: We recommend you bring some spending money ($100-200 is sufficient) for snacks, extra beverages [e.g., soda] and souvenirs.

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.

<table>
<thead>
<tr>
<th>CITIZENSHIP</th>
<th>PASSPORT REQUIRED?</th>
<th>VISA REQUIRED?</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>No</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:

Dr. Dave Oleyar
C/O Southwestern Research Station
2003 W Cave Creek Rd
San Simon, AZ 85632

FOLLOWING FLAMMULATED OWLS IN THE WESTERN U.S. 2016
# 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)
- Calling card or mobile phone (Note: the SWRS does not have good cell phone reception, but does have wireless internet available throughout, although it is stronger in some areas than others)
- Credit card that may be used in the event of an emergency (travel delays, etc.)

### CLOTHING/FOOTWEAR FOR FIELDWORK
- Earthwatch T-shirt
- Warm layers of clothing (e.g., jacket or fleece)
- Lightweight, quick-drying, long-sleeved shirts
- Lightweight, quick drying long pants
- Rain jacket
- Well worn-in, comfortable hiking boots with grippy soles and adequate full ankle support
- Wide brimmed hat for sun protection
- Warm hat
- Mittens or gloves

### CLOTHING/FOOTWEAR FOR LEISURE
- At least one set of clothing to keep clean for end of expedition
- Pair of light shoes or sandals

### FIELD SUPPLIES
- Small daypack
- Sunscreen lotion with SPF 30 or higher
- Headlamp with extra batteries and extra bulb (we recommend a headlamp for hands-free capability)
- Two one-liter water bottles
- Sunglasses

### BEDDING AND BATHING
- NOTE: the project will provide linens, pillows, towels, blankets, etc.

### 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

### OPTIONAL ITEMS
- Binoculars
- Flip flops or sandals for the shower
- Camera, film or memory card(s), extra camera battery
- Hardware for sharing digital photographs at the end of the expedition
- Dry bag or plastic sealable bags (e.g. Ziploc) to protect equipment like cameras from dust, humidity, and water
- Books, games, art supplies, etc. for free time
- Earplugs for light sleepers

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

DR. DAVE OLEYAR, SENIOR SCIENTIST HAWKWATCH INTERNATIONAL, is the lead researcher and coordinator in the investigation of the habitat and nesting behaviors of flammulated owls in northern Utah and southeastern Arizona. He is looking to increase knowledge of this species and to determine how to best mitigate the effects of climate change and keep populations afloat. He will coordinate all the fieldwork and surveys in Arizona and Utah.

DR. MARKUS MIKA, ASSOCIATE LECTURER UNIV. OF WISCONSIN LACROSSE, is a field team leader for both Arizona (first 2 teams) and Utah (all teams) expedition locations. He has studied flammulated owls across their range in western North America.

NOTE: Staff schedules are subject to change.
# Recommended Reading

## Your Resources at Home

### Articles/Websites
- 314 Species on the Brink: [http://climate.audubon.org/](http://climate.audubon.org/)
  (Flammulated owls not listed here but 26 species of cavity nesters are, including many that create cavities used by flammulated owls)
- USA National Phenology Network: [https://www.usanpn.org/](https://www.usanpn.org/)

### Books
- Walden Warming (Richard Primack)
- A Sand County Almanac (Aldo Leopold)

### Field Guides
- The Sibley Field Guide to Birds of Western North America (David Sibley)

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# Literature Cited

### Literature
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. It is volunteers like you who fuel our mission and inspire our work.

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

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

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

Sincerely,

Scott Kania
President and CEO, Earthwatch